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**THE HUGGERS**  
**HOOSIER USERS GROUP**  
**People Helping People**

JULY, 1985

THE HUGGERS NEWSLETTER

VOLUME 3, NUMBER 4

THE OFFICER'S CORNER

The construction at Creative Logic is completed, and the July meeting will be as scheduled on the third Sunday starting at 2:00 pm. A brief description of the scheduled workshops follows.

Look for the Users Group booth at the Indianapolis Hamfest July 13 and 14. Gates are open from 8:00 am to 5:00 pm on Saturday and 6:00 am to 4:00 pm on Sunday. Admission is \$5.00 per person and registration and children under 12 are admitted free.

The Workshops scheduled for the July meeting are: News from the Consumer Electronics Show, another Keyboard Clinic, Disk Operations and a look at the new MYARC 32/128K card. (This new memory card can hold 127 files, and has a printer buffer which would allow you, for example, to simultaneously print long files and have control of your console and can be expanded to 512K only by changing the memory chips.) In my own opinion, this is the best thing to come along since Extended Basic.

Starting this month, there will be new diskettes periodically added which contain "Freeware". For those unfamiliar with Freeware, it is software which you can "try before you buy". The authors of Freeware encourage copying, if you like the Freeware, then you reimburse the author asks for (usually \$5 to \$10), or whatever you feel the software is worth. In most cases, Freeware is superior in performance than its copyrighted counterparts. To quote the words of Ron Albright, whose Freeware article appeared in our June Newsletter, "Best of all, you can try it before you "buy it"! Get the programs from this Forum, a friend, a Users Group or the source and try them out. If you like them (how could you NOT!), send the programmer his just desserts...what he suggests or what you think it is worth. **BUT SEND SOMETHING!** Even a postcard saying "I love your program. I'm broke! If and when I get the money, I'll repay you...but for now, THANKS!" would mean a lot to these "givers". But if you don't respond, guess what these talented guys will be doing this time next year? They'll be programming for IBM or Apple at \$50 to \$500 a program instead of "giving" their art away! For all our sakes...**DO SOMETHING!** Keep programmers programming...show them they are appreciated!"

See you all at the July 21st meeting, and hope to see you at the Indianapolis Hamfest. J.Steven Sims

THE NEXT MONTHLY MEETING WILL BE  
 JULY 21, 1985  
 STARTING AT 2:00 PM AT CREATIVE LOGIC.  
 SEE YOU THERE!

WORKSHOPS: KEYBOARD CLINIC  
 DISK OPERATIONS  
 MYARC 128K CARD  
 NEWS FROM THE C.E.S.

Regional Meetings

South  
 July 25 at 7:00 pm.

Terre Haute  
 July 19 at 7:30 pm.

KEYBOARD CLINIC

by Bill Jones (of Indy)

A few nights ago I was programming away and discovered I had lost the '=' key.

Step one was to pull the key cap and clean the contact. No luck. I pulled off the bottom of the computer and found the problem.

Most of the keyboards I've seen on TI's are made on a paper phenolic PC board that absorbs humidity from the air. That makes it swell and shrink, eventually, the solder joints crack and the key stop working. I checked my other computer and found it also had some cracks starting. Both of them are over two years old. One I use daily, and the other I keep as a spare. This problem is caused by time not by use.

Since it is a problem that we will see more and more of, I'm going to do a clinic at the next meeting for anyone who wants to have their keyboard checked. This is not a problem that is likely to effect blond computers because they are too new, and many of them use a different kind of keyboard.

If you have a black console, bring it next month and we'll check it out!

### HAPPY BIRTHDAY!

A Happy HUGger Birthday to these members who joined the Hoosier Users Group in July, 1984! Chris Weis, Philip & Jane Kurtz, Joe Edmiston, Karl Hiller, Gary Schafer, Eileen Takach, Jo Ann Bryan, and Lawrence Whistoff.

### WELCOME!

The Hoosier Users Group welcomes Ed Brown and Merle Cogswell who joined the group in the past month.

### WELCOME BACK!

we would also like to welcome back these renewing HUGgers: Robert May, David Armock and Dick Frost.

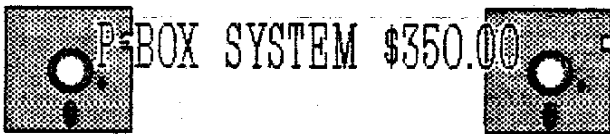
## REGIONAL NEWS

### TERRE HAUTE NEWS

The next Terre Haute regional meeting will be held on Friday, July 19, at 7:30 pm at Vic Kelson's house, 2401 College Ave., Terre Haute. We invite all HUGgers to come, or invite a friend from this region.

### SOUTH REGIONAL MEETING

The South Regional meeting is scheduled for Thursday evening, July 25, beginning at 7:00 P.M. If anyone needs directions to the meeting location, call me at 881-5918.



TILOGO2/WRITER/MULTIPLAN

\$50.00 EACH



\$4.00 AND UP

CASH AND CARRY



## LIBRARY BITS

By Dennis Sherfy

Library disk, E/A-1 contains an assembly language program to copy entire disks on a single disk system in only three passes. It is called MASCOPY. What makes this program especially valuable is that you can run it with EXTENDED BASIC and memory expansion. You don't need the Editor/Assembler Cartridge, and you don't have to know anything about Assembly Language to use this program.

If you have ever copied an entire dsk with Disk Manager, you know how monotonous that is. This program requires you to exchange disks only 3 times to copy every program on a disk.

This program is distributed under the FREeware concept. You try the program and, if you like it, send the creator whatever amount you feel it is worth.

Your support of FREeware authors will encourage more program development for the TI-99/4A. A lack of support will cause this source of programs to dry up.

The BASIC-12 disk contains INDIANA, a graphics program which displays the Indiana state flag on your screen. It's a nice program to add to your library.



## C. ITOH HOTLINE

Editor's Note: The following article comes from the June, 1985 issue of MICRO, Newsletter of the Mid Illinois Computer Resource Organization of Bloomington, Illinois.

C. Itoh is offering a toll-free, technical hotline, that allows you to speak directly with a technician regarding questions or problems that you may have with their products. They are the manufacturers of the PROWRITER line of printers. The toll-free number is: 1-800-348-1984. When calling, please have the two letters from your printer's serial number on hand.

## MICRO'S IN ACTION

By Bill Cagle

Millions of light years from Earth, an electronic frontier was constructed across the universe to protect the Star League of Planets from its enemy, the Ko-Dan. Now the Ko-Dan's gigantic mother ship is pictured gliding into position to blast its way through the frontier as numerous smaller spacecraft take off and land on its multilevel deck. Only the skill and daring of a small group of starfighter pilots, lead by an 18-year-old videogame champion shanghaied from Earth, can save the Star League from destruction.

That scene was from the movie "The Last Starfighter" and it only existed in the memory of a Cray X-MP computer. This movie was the handy work of a company named Digital Productions and they have a copyrighted process that generates extremely complex and realistic pictures of places and things that never existed except in a computer memory. The name of this process is Digital Scene Simulator.

The art of computer imaging and animation have been with us for several years and has even been used by the auto industry and others as well. Only the military and a few of the largest scientific laboratories are using as large a computer as Digital Productions. (The Cray X-MP can do about one billion calculations per second. (The TI99/4A can do about six thousand calculations per second by comparison.)

Another measure of the power required to generate high detail scenes, is the number of polygons of information is required for each frame. The Starfighter picture used from 350,000 to 4 million polygons of information for each scene. To give you an idea of how many this is, the Disney picture "Tron" used about 7 thousand polygons of information per frame.

There is some thought being given for the production of human form and speech. The amount of processing power to recreate the human form with all it's nuances of movement will be ready in about seven to eight years. Just think, you will have movies with The Duke and Clark Gable at our command. Producers, writers and directors are beginning to realize that traditional special effects cannot produce, in a cost effective way, the motion picture sequences they have in their imaginations.

If Sam Goldwin were alive today, he would probably have a heart attack with the excitement this tool will eventually bring to the entertainment industry.

# KEY CODE / TOKENIZED BASIC CODE CHART

Compiled by Don Donlan

COMMAND	ASCII/Hex	Key	COMMAND	ASCII/Hex	Key	COMMAND	ASCII/Hex	Key	COMMAND	ASCII/Hex	Key
Marks EOL	0	>00		64	>40	DEF.....	137	>B9 CTRL I	Flag Line No	201	>C9
AID	1	>01 FCTN 7	Upper Case..	65	>41	DIM.....	138	>BA CTRL J	EOF.....	202	>CA
BREAK/INTRUPT	2	>02 FCTN 4		66	>42	END.....	139	>BB CTRL K	ABS.....	203	>CB
DELETE CHAR.	3	>03 FCTN 1		67	>43	FOR.....	140	>BC CTRL L	ATN.....	204	>CC
INSERT	4	>04 FCTN 2		68	>44	LET.....	141	>BD CTRL M	CDS.....	205	>CD
QUIT/RESET	5	>05 FCTN =		69	>45	BREAK.....	142	>BE CTRL N	EXP.....	206	>CE
REDO/REPEAT	6	>06 FCTN 8		70	>46	UNBREAK.....	143	>BF CTRL O	INT.....	207	>CF
ERASE A LINE	7	>07 FCTN 3		71	>47	TRACE.....	144	>90 CTRL P	LOG.....	208	>D0
Cursor Left	8	>08 FCTN S		72	>48	UNTRACE.....	145	>91 CTRL Q	SGN.....	209	>D1
Cursor Right	9	>09 FCTN D		73	>49	INPUT.....	146	>92 CTRL R	SIN.....	210	>D2
Cursor Down	10	>0A FCTN X		74	>4A	DATA.....	147	>93 CTRL S	SQR.....	211	>D3
Cursor Up	11	>0B FCTN E		75	>4B	RESTORE.....	148	>94 CTRL T	TAN.....	212	>D4
PROC'D	12	>0C FCTN 6		76	>4C	RANDOMIZE....	149	>95 CTRL U	LEN.....	213	>D5
Carriage Rtrn	13	>0D ENTER		77	>4D	NEXT.....	150	>96 CTRL V	CHR\$.....	214	>D6
BEGIN	14	>0E FCTN 5		78	>4E	READ.....	151	>97 CTRL W	RND.....	215	>D7
BACK	15	>0F FCTN 9		79	>4F	STOP.....	152	>98 CTRL X	SEG\$.....	216	>D8
*DLEscape	16	>10 CTRL P		80	>50	DELETE.....	153	>99 CTRL Y	POS.....	217	>D9
*DC1 (X-ON)	17	>11 CTRL Q		81	>51	REN.....	154	>9A CTRL Z	VAL.....	218	>DA
*DC2	18	>12 CTRL R		82	>52	ON.....	155	>9B CTRL [	STR\$.....	219	>DB
*DC3 (X-OFF)	19	>13 CTRL S		83	>53	PRINT.....	156	>9C CTRL \	ASC.....	220	>DC
*DC4	20	>14 CTRL T		84	>54	CALL.....	157	>9D CTRL ]	%PI.....	221	>DD
*NAKnowledge	21	>15 CTRL U		85	>55	OPTION.....	158	>9E CTRL ^	REC.....	222	>DE
*SYNc idle	22	>16 CTRL V		86	>56	OPEN.....	159	>9F CTRL _	%MAX.....	223	>DF
*ETBlock	23	>17 CTRL W		87	>57	CLOSE.....	160	>A0	%MIN.....	224	>E0
*CANcel	24	>18 CTRL X		88	>58	SUB.....	161	>A1	%RPT\$.....	225	>E1
*End of Medium	25	>19 CTRL Y		89	>59	DISPLAY.....	162	>A2		226	>E2
*SUBstitute	26	>1A CTRL Z		90	>5A	%IMAGE.....	163	>A3		227	>E3
*ESCAPE	27	>1B CTRL .		91	>5B	%ACCEPT.....	164	>A4		228	>E4
*File Separatr	28	>1C CTRL ;		92	>5C	%ERROR.....	165	>A5		229	>E5
*Grp Separator	29	>1D CTRL =		93	>5D	%WARNING.....	166	>A6		230	>E6
Cursor Char.	30	>1E		94	>5E	%SUBEXIT.....	167	>A7		231	>E7
Edge Char.	31	>1F	Underline	95	>5F	%SUBEND.....	168	>A8	%NUMERIC.....	232	>E8
Blank/Space	32	>20 Space	Grave Accent	96	>60	%RUN.....	169	>A9	%DIGIT.....	233	>E9
	33	>21	Lower Case..	97	>61	%INPUT.....	170	>AA	%ALPHA.....	234	>EA
	34	>22		98	>62		171	>AB	%SIZE.....	235	>EB
	35	>23		99	>63		172	>AC	%ALL.....	236	>EC
	36	>24		100	>64		173	>AD	%USING.....	237	>ED
	37	>25		101	>65		174	>AE	%BEEP.....	238	>EE
	38	>26		102	>66		175	>AF	%ERASE.....	239	>EF
	39	>27		103	>67		176	>B0 CTRL 0	%AT.....	240	>F0
	40	>28		104	>68		177	>B1 CTRL 1	BASE.....	241	>F1
	41	>29		105	>69		178	>B2 CTRL 2	? TEMPORARY...	242	>F2
	42	>2A		106	>6A		179	>B3 CTRL 3	VARIABLE.....	243	>F3
	43	>2B		107	>6B		180	>B4 CTRL 4	RELATIVE.....	244	>F4
	44	>2C		108	>6C		181	>B5 CTRL 5	INTERNAL.....	245	>F5
	45	>2D		109	>6D		182	>B6 CTRL 6	SEQUENTIAL..	246	>F6
	46	>2E		110	>6E		183	>B7 CTRL 7	OUTPUT.....	247	>F7
	47	>2F		111	>6F		184	>B8 FCTN ,	UPDATE.....	248	>F8
	48	>30		112	>70		185	>B9	APPEND.....	249	>F9
	49	>31		113	>71		186	>BA FCTN /	FIXED.....	250	>FA
	50	>32		114	>72		187	>BB CTRL / ?	PERMANENT...	251	>FB
	51	>33		115	>73		188	>BC FCTN 0	TAB.....	252	>FC
	52	>34		116	>74		189	>BD FCTN ;	# (FILE NUM)	253	>FD
	53	>35		117	>75		190	>BE FCTN 8	%VALIDATE	254	>FE
	54	>36		118	>76		191	>BF FCTN H	2 MARK EOF	255	>FF
	55	>37		119	>77						
	56	>38		120	>78						
	57	>39		121	>79						
	58	>3A		122	>7A						
	59	>3B		123	>7B						
	60	>3C		124	>7C						
	61	>3D		125	>7D						
	62	>3E		126	>7E						
	63	>3F		127	>7F						
Null	128	>80 CTRL	Delete Char.	127	>7F						
ELSE.....	129	>81 CTRL A	-> Grtr Than.	192	>C0 FCTN J						
!.....	130	>82 CTRL B	*.....	193	>C1 FCTN K						
! (REM).....	131	>83 CTRL C	*.....	194	>C2 FCTN L						
IF.....	132	>84 CTRL D	*.....	195	>C3 FCTN M						
GO.....	133	>85 CTRL E	*.....	196	>C4 FCTN N						
GOTO.....	134	>86 CTRL F	*.....	197	>C5 FCTN O						
GOSUB.....	135	>87 CTRL G	* undefined	198	>C6 FCTN Y						
RETURN.....	136	>88 CTRL H	Flag Quoted\$	199	>C7						
			Fl Unquoted\$	200	>C8						

\* Used in Pascal. Useful information found in the Users Reference Guide page III-2.

% Used in Extended BASIC.

? Little used parameters related to disk files. See the TI Users Reference Guide, page II-121.

~ Compiled from MicroCompendium. Other information compiled from past issues of 99'er Magazine.

## Adding 8K of battery-backed RAM

# A homebrew module

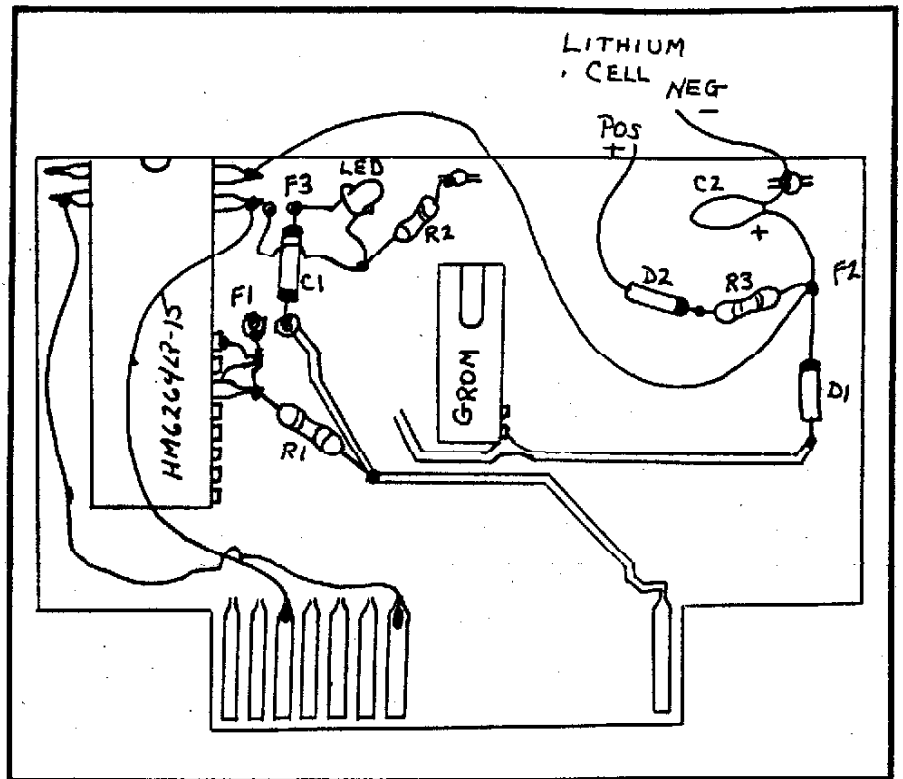
By JOHN CLULOW

Ron Gries has developed a number of useful modifications for the TI computer. Some of you may have heard of Ron's auto-answer auto-dial device which allows an inexpensive modem to be used in a bulletin board system. Ron has also built an EPROM programmer and a battery-backed DSR RAM card for the peripheral expansion box, added 256 bytes of RAM to the 16-bit bus CPU pad in the console and is currently constructing a battery-backed RAM disk. If there is sufficient interest we will be happy to share any schematics and other information on these projects with MICROpendium readers.

This article discusses construction of a very useful Gries circuit that adds 8K of battery-backed RAM to the Editor/Assembler module. The utility of this device derives in large part from its capacity to provide E/A module *menu access* to assembly language software. In effect, this means you can write your own 8K battery-backed command module software.

Software requirements are discussed in a separate article by David R. Romer [scheduled to be printed next issue—Ed.]. The information David provides can be used with programs which do not reference external utilities. A future article will provide a method of loading programs which make use of E/A utilities and the BASIC support package. We believe that source code will not be necessary.

Before you start tearing your E/A module apart, a few words of caution are in order. You will have to remove your E/A GROM and transplant it into a new board: DO NOT USE an E/A module you cannot afford to lose. Secondly, we recommend that this project be undertaken only by readers who have had some prior experience building electronics kits. A low wat-



tage (25 watt) soldering pencil should be used with minimal contact on IC pins. Soldering and de-soldering techniques are not easily conveyed in an article such as this: If you have any concerns about technique, seek help from someone with more experience.

Do not start the project until you have obtained all items in the parts list and read all of the steps below. Then complete each step in order, checking it off as you go along. If you have any questions you may call either Ron Gries (419) 874-1414 or John Clulow (419) 874-8838 for assistance.

### Preparation of the Game Module Circuit Board

1. Open the game module by removing the screw and prying the corners near the edge connector.
2. Remove the circuit board.
3. Remove the re-set resistor. The resistor is located near F2 in the diagram. It is at the end of the board opposite the large ROM IC.
4. Carefully de-solder the capacitor C1 located to the right of the ROM. Save this capacitor.
5. De-solder and remove both the ROM and the smaller GROM. Use a vacuum type solder remover to suck the solder from each pin from the bottom of the board. Apply the soldering pencil to each pin for 5-6 seconds before removing the solder. After the solder has been removed from all pins try moving the pins back and forth to verify that each one is no longer attached to the board. Some pins may still be loosely attached and the remaining solder connection can sometimes be

broken by applying a little force with a knife or screwdriver. When all the pins are free, remove the IC.

Both the ROM and GROM ICs from the game module will be discarded. You can safely practice your desoldering technique on them. Try to minimize the time heat is applied to each pin while at the same time insuring the solder is molten enough to be removed by the vacuum device. This technique will subsequently be applied in removing the E/A GROM which will be re-used in the new module.

6. Break the foil connection at F1. F1 consists of two adjacent holes. One end of the C1 capacitor had been in the hole nearest the ROM. Using a knife or other sharp tool, break the foil connecting the two holes on the top surface of the board. Don't worry if you scratch into the plastic portion of the board in the process. Just make sure that there is no metal connecting the two holes at F1.

7. Break the foil connecting the two holes at F3. This time you will find the connecting foil on the underside of the board. The other end of the capacitor C1 had been soldered into one of the adjacent holes. Make sure there is no metal connecting the holes at F3 on the underside of the board.

8. Now replace and solder the capacitor C1 this time locating it in the right hole of the F1 and F3 pairs between which you broke the foil connection.

9. At the end of the board at which the reset resistor was located, you will find a row of eight solder holes. Isolate a hole near the back of the board (F2) by breaking ALL foil connecting it with ANYTHING ELSE. After you have completed this, TRIPLE CHECK to make sure this hole is isolated from all other foil on the board. Solder a resistor lead or other stiff wire into this hole allowing it to stick up about 3/16 inch above the board.

10. Solder a short piece of wire from the ROM hole 18 to the left hole of the pair at F1. Note that ROM hole 18 is the sixth hole up from the lower right.

11. Solder one end of a 1K resistor (R2) to a grounded hole at the back of the board. There are several of them in a row and all have two tabs connecting them to the ground foil that surrounds the board. If you're not sure you have a ground hole check for continuity with any of the large metal circles at the corners of the board.

12. To the other end of the resistor R2, solder one lead of a small red LED. You MUST solder the lead that is adjacent to the FLAT SIDE of the LED enclosure. Solder the other lead of the LED to the F3 end of the C1 capacitor.

13. Solder a wire from the left F3 hole to the resistor-LED connection. This junction (LED-resistor-F3) is not attached to the board. The stiffness of the LED and resistor leads should be sufficient to suspend it above the board.

14. Connect the cathode (banded) end of the D1 diode to the wire you soldered into the F2 hole. Solder the other end of D1 into the hole in the foil connecting to the bottom right pin in the GROM location as shown.

15. Solder one end of a 1K resistor (R3) to the F2 wire and the other end to the banded end of a diode (D2). Solder a wire to the other lead of the diode. This wire is in turn soldered to the POSITIVE pin of the battery holder (the battery is NOT to be placed in the holder at this point). Bend the leads of the battery holder over before soldering.

16. Wrap the R3-D2-wire connection with electrical tape.

17. Solder the + (positive) lead of the tantalum capacitor (C2) to the F2 wire. Solder the other lead to one of the ground holes at the back of the board.

18. Solder a wire from the ground lead of the C2 capacitor to the NEGATIVE lead of the battery holder. DO NOT insert the battery yet.

#### Installation of the RAM Chip

Although it has not happened to us, CMOS devices can be damaged by static electricity. As the saying goes, an ounce of prevention... When handling the RAM follow the precautions below TO THE LETTER!

Do not work on a carpet or rug of any kind. Spread a large sheet of aluminum foil on the bench you will be working on. Wear all cotton clothing—NO SYNTHETICS. Keep contact with the pins of the IC to a minimum. Handle the plastic body—not the pins—whenever possible.

1. Remove the RAM IC from its static protective packaging. Align the pins to fit into the holes in the circuit board by placing the pins on one side of the IC flat on a table (aluminum foil) and pushing the body of the IC

toward them. This procedure will keep the pins in a straight line. Check the alignment with the board and repeat the process as needed.

2. Bend these pins out using needle-nose pliers: Pins 1, 2, 20, 27 and 28. They should be bent outward parallel with the top of the IC.

3. Place the IC in the holes for the ROM such that the notched end is flush with the back of the board. Pin 14 of the RAM IC should be in the last hole on the right side left by the ROM (hole 12).

4. Solder in all pins on the underside of the board. Minimize contact of the soldering pencil with each pin. (Four to five seconds is plenty safe).

5. Solder a wire from Pin 2 to the seventh edge connector pin from the left as shown.

6. Solder a wire from pin 20—CSI—(bent out) to the part of Pin 22 on the upper surface of the board. Make the connection as close to the board as possible and minimize contact time with the soldering pencil.

7. Solder one end of a 1K resistor (R1) to the foiled hole shown and the other end to Pin 20 (bent out). The drawing has been altered for clarity—the foiled hole is actually directly below the left side of the GROM IC holes.

8. Solder a wire from Pin 27 to the third edge connector pin from the left as shown.

9. Solder a wire from Pin 28 to the wire at hole F2 as shown in the diagram.

#### Removal of the E/A GROM

1. Open the E/A module using the same procedure as with the game module and take out the circuit board.

2. Remove the E/A GROM by desoldering each of the GROM pins. While you should minimize contact time with the solder pencil, we have not had any problems with GROM damage—they are not super-sensitive.

3. Place the E/A GROM on the new board (notch toward the back) and solder in all of the pins.

#### Initial Test of the RAM Chip

1. With the console OFF, insert the module card into the GROM slot. (The board need not be in the plastic case.)

2. Turn the console on. The LED should light. If it does not, turn the console off and re-check all wiring to find the error.

## CC, TK and TI

Here's a trick that came off The Source TI bulletin board. It should be of interest to users with a CorComp disk controller and the TK\*Writer by Tom Knight that loads TI-Writer without the TI-Writer cartridge.

Assuming that you have TK\*Writer and your TI-Writer edit and format files on the same disk, load the CorComp disk manager and go to the File Utilities section. Then press Option 2 for Load and Run. Under file name enter the WRTR program from TK\*Writer and under the program name enter EDITOR. Then hit enter. The TK\*Writer program will load the CHARA, EDITA1 and EDITA2 files, bringing you into TI-Writer without the use of any cartridge. The same process can be used to load Formatter or Utility files. Enter FORMAT for the formatter and UTILIT to access the Utility option.

## Datax software in public domain

Datax Co. of Ridgewood, New York, reports problems with TI products previously advertised in MICROpendium.

Mike Bergen of Datax writes, "We are now looking for a good Wycove Forth programmer, and if we will find such a person we might again support the TI99/4A. All our 99/4A products are now available as public domain, while quantities last."

For further information, contact Datax, 1923 Linden Street, Ridgewood, NY 11385 or (718) 417-0165.

## Rewarding sound

Pleasant sounds can be so rewarding, and here's a tune that can be inserted into a BASIC or Extended BASIC program to brighten it up. Each statement must be on a separately numbered line in BASIC, or may be entered as is in Extended BASIC:

```
100 CALL SOUND(110,262,1) ::  
CALL SOUND(110,330,1) :: CALL  
SOUND(110,392,1) :: CALL  
SOUND(298,523,1) :: CALL  
SOUND(95,392,1) :: CALL  
SOUND(350,523,1)
```

This sound advice comes from the Delaware Valley Users Group, Wilmington.

## Changing colors

The following comes from the Winnipeg 99/4 Users Group. T.L. Atkinson, who writes a column for the Winnipeg UG newsletter, issued a challenge concerning modifications to the color defaults in TI-Writer. The response came from Tim MacEachern, author of Wycove Forth.

First, since the color defaults are in the EDITA1 program, it is necessary to copy EDITA1 to a newly initialized disk so that the first sector of the program is at sector 22. Then load a program that allows sector access—Disk Fixer, DISKO, Disk + Aid, etc. Then load sector 22 from the EDITA1 disk into memory. "This sector should be headed by FFFF 2000 2000 0420 3674," Atkinson wrote. Those with a printer may wish to dump this sector for future reference. "Located at address 00F4 you will see a series of words starting with 87xx. The xx is the bytes you will have to change." The five words correspond to the five color choices offered by TI-Writer Editor.

The words are:

87F4—White characters on blue background

8713—Black on green

87F3—White on green

8717—Black on cyan

87F1—White on black

(The third and fourth digits refer to the foreground and background colors, respectively. Here is a list of the 16 colors and their corresponding hexadecimal codes: Transparent, 0; black, 1; medium green, 2; light green, 3; dark blue, 4; light blue, 5; dark red, 6; cyan, 7; medium red, 8; light red, 9; dark yellow, A; light yellow, B; dark green, C; magenta, D; gray, E; and white, F.)

Now simply change the hex code in any or all of the words to correspond to the colors you prefer. Then simply save the screen back to the disk and copy the newly edited EDITA1 file back to your TI-Writer disk.

3. In BASIC, enter:

```
CALL LOAD(24576,1,2,3,4)
```

```
CALL PEEK(24576.A.B.C.D)
```

```
PRINT A;B;C;D
```

4. If you see the numbers 1 2 3 4 displayed on the screen after entering the PRINT statement, the module checks out OK (so far).

5. Turn off the console, remove the module and install the battery in its holder. Be careful to get the + side of the battery facing up.

6. Repeat test steps 1 to 3.

7. If you still see the numbers 1 2 3 4 displayed upon entry of the PRINT statement, turn the console OFF and wait several minutes.

8. Turn the console ON and enter ONLY the PRINT statement. If the battery back-up portion of the circuit is working properly, you will still see 1 2 3 4 displayed on the screen.

### Final Steps

Once the board tests OK, carefully wrap the battery holder in electrical tape so there will be no possibility of shorting. Then place the spring in the BOTTOM of the E/A module case and re-position the sliding door. Place the board in the case, locate the battery (wrapped in tape) and snap the case closed.

Now repeat the testing process. Once you have verified that the module is working correctly, you will be ready to use the material presented in David R. Romer's article.

## More from MICROpendium..... IUG goes bankrupt

The International 99/4 Users Group, headquartered in Bethany, Oklahoma, has announced that it has filed for protection under Chapter 7 of the Federal Bankruptcy Act.

Charles La Fara, president of the defunct five-year-old group, said that he wished to ship all in-house orders for owner written and translated software to IUG members prior to May 30, 1985. He said there would not be enough capital to refund any full or partial membership dues, and that creditors will be notified by the court as to the final division of assets.

La Fara said that the IUG's software library has been kept intact and that active IUG members will be notified by a new supplier how to purchase items from it.

## ELIMINATING BACKGROUND NOISE WITH THE R.F. MODULATOR

(Editor's Note: The following article is printed in the HUGgers Newsletter through the courtesy of the Indianapolis TI Exchange Center.)

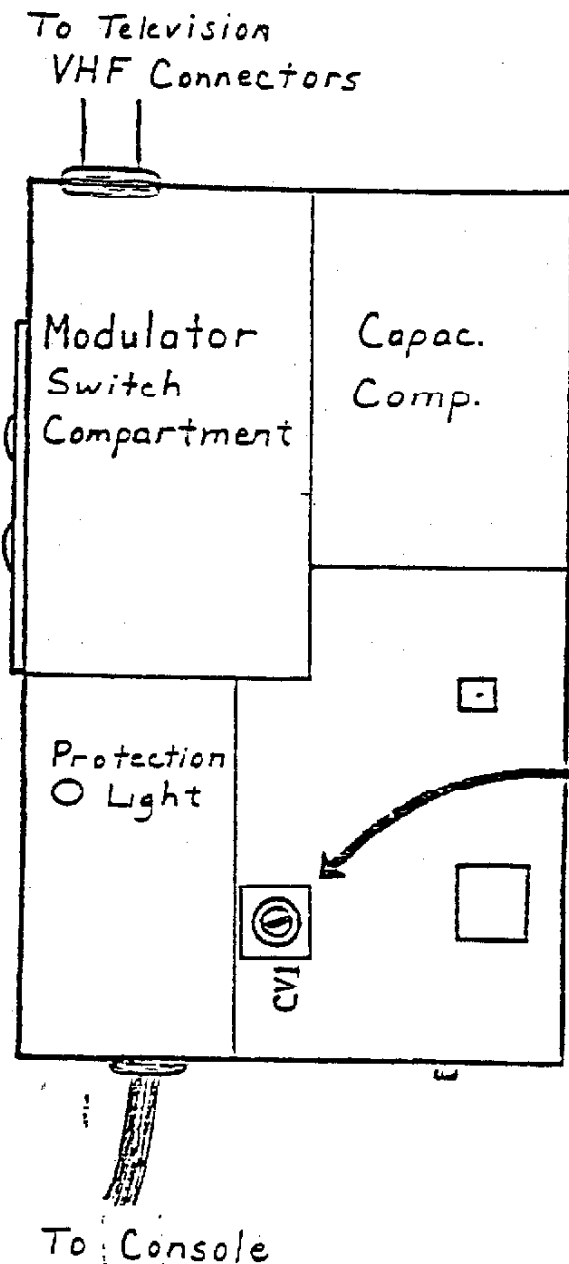
When experiencing background noise, such as humming or buzzing, with the R. F. Modulator, internal adjustment in the Modulator will usually alleviate the problem. This can be accomplished by the user by following the steps below and referencing the illustration below. This procedure is to be done while all equipment is on and operating. If you have the old version of the TI900 Video Modulator, this procedure does not apply.

(Materials required: one small, flat, thin-bladed screwdriver)

To correct the noise difficulty:

- 1) Turn the volume of the television all the way down, but do NOT turn it off
- 2) Select the Master Title Screen on the computer (FCTN =, if necessary)
- 3) Using the title screen color grid, fine tune the television to the best color picture
- 4) With the screwdriver, pry off the lid of the Modulator box by lifting under one edge of the lid near the indentation holding it on
- 5) Lift off the lid and turn the television volume up to half (50%)
- 6) Insert the blade of the screwdriver into the slot of the small box labelled CVI (see fig.) and turn it slightly until the background noise is at a minimum (should take less than 1/8th of a turn)
- 7) After bending the Modulator lid edge back into place, put it back over the Modulator box and press it firmly into place until it snaps.

The system is now ready for optimum usage.



Insert  
Screwdriver  
Blade and  
Turn gently  
(No more than  
1/8th turn)



## TERMINAL EMULATOR II ALTERNATIVES by William M. Lucid

This article discusses Joe Freeman's TE3C, Version 3.1 program. TE3C is public domain, a copy of this program along with source code is available in the User Group Library. TE3C disk in the library includes source code, true lower case letters, two configuration files, as well as documentation on disk in display, variable 80 format.

Features of TE3C include the following: 1. Choice of 40 column screen or 80 column screen. 2. 24 K byte download capture buffer (this is about 100 sectors). 3. 20 K byte upload buffer (this allows composing text off line using program capable of creating display, variable 80 files, i.e. TI-WRITER editor or EDITOR/ASSEMBLER's editor). 4. Program has an auto-dial feature, which is also documented on the library disk. 5. Loads TI-WRITER's lower case characters. 6. On-screen help is available while program is running by pressing the function key and 7 at the same time. 7. Supports ADM3A protocol for UNIX systems or SERIES 1's running YALEIUP. 8. Upload and download files are done in the display, variable 80 format (program does not support TE II file upload and download protocol). 9. Program supports eleven function keys and eight control keys. 10. Baud rates supported are 300 and 1200.

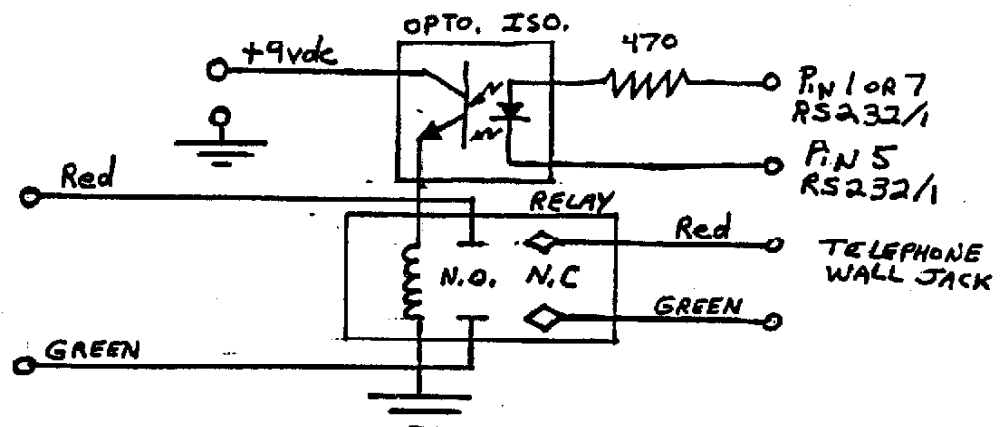
Loading program for use requires a disk system, 32 K memory expansion and EDITOR/ASSEMBLER module or CORCOMP's disk controller. Using EDITOR/ASSEMBLER select option 3, load and run option, filename to enter is TE3C. Program will run automatically. When prompted for configure filename, enter UFENG or CONFIG. An alternative to enter a configuration filename is to press enter key and select parameter as prompted. Documentation tells how to create your own configuration file.

Joe Freeman is to be commended for making TE3C, Version 3.1 public domain. Source coding for TE3C is well documented.

I have had my disk controller fail and have had no alternative except TI's TERMINAL EMULATOR II, it really made me feel handicapped after have used one of the other alternative terminal emulators; however, with TE II, you do not need a disk system. This comment is included here for those that might consider selling or trading TERMINAL EMULATOR II after obtaining an alternative terminal emulator.

Here is Joe Freeman's schematic for implementing auto-dial function. There are no specific part numbers listed, use of this schematic is at ONE'S OWN RISK!

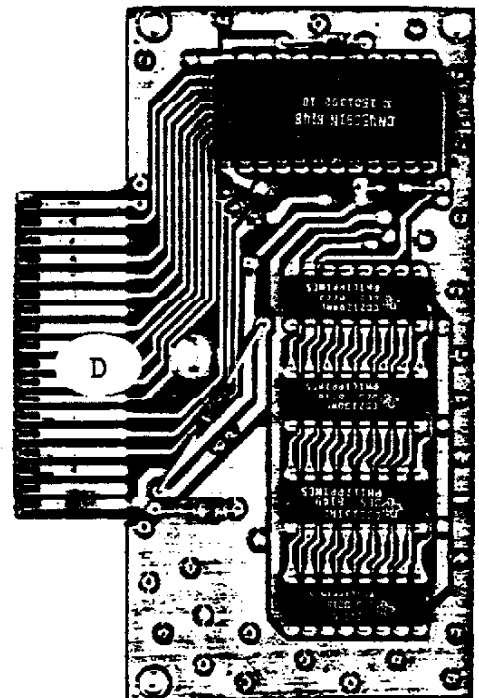
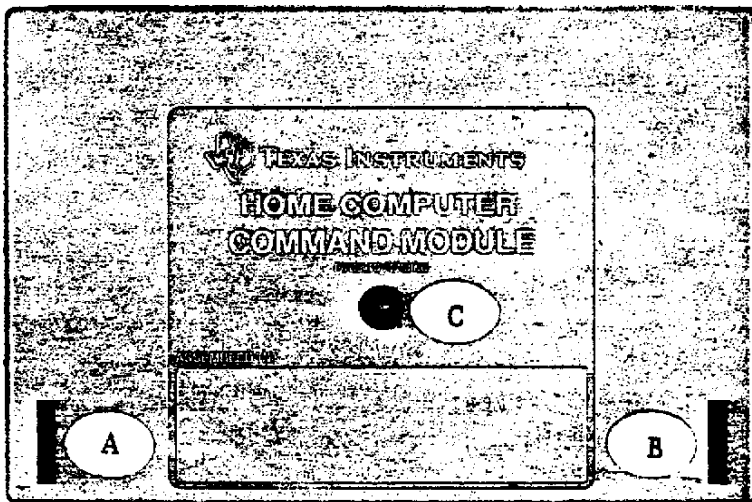
### TE3C AUTO-DIALER



Dirty contacts can screw-up any electrical device and the 4A is not an exception. The only place you are fairly likely to run into this problem is in using command modules. Both the module contacts and the port itself can become dirty but cleaning the port itself is a big job as you have to disassemble the console. The good news is that cleaning the cartridge will almost always suffice and can be done quickly without any special tools or cleaners. All you need is a regular screwdriver, some sort of rag, a standard pencil eraser, and in some cases a medium phillips screwdriver.

Remove the screw from "C" if there is one. Then pry the clips in slots "A" and "B" outward to pop open the cartridge. If there is a clip in "C" pry it back after "A" and "B" are loose. If it should bend off don't worry, it won't affect the performance of your module.

The module board can now be removed. Do this carefully and note how the spring-loaded "door" is assembled if there is one so that you can put it back together if it pops out. Once you have the board removed take your rag (a kleenex will work but something cloth is much better) and rub off any residue from the contacts, shown as "D". Remember to do the contacts on both sides if that particular module has them. Once the worst is removed take any soft rubber eraser and "erase" the contacts until they become dry, clean and shiny. You need to do only about the outer half of the contacts as that is more than ever gets used (you can see the scratch marks in the picture below). Once this is done simply put the cartridge back together and go. Some symptoms of dirty contacts are the console locking-up, strange errors where no occurred before, etc (my XB cartridge giving me a syntax error when there was non for example). Don't jump to clean a cartridge on your first error, it could be alot of things like static, not having the module in tight, or a number of other things. But if you find you have a continuing problem cleaning the contacts is quick and free and may correct what was wrong.



# TIPS FROM THE TIGERCUB

021

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TIGERCUB SOFTWARE  
156 Collingwood Ave.  
Columbus, OH 43213

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The entire contents of Tips from the Tigercub Nos. 1 through 14, with some added, are now available as a full disk of 50 programs, routines and files for just \$13.00 postpaid!

Nuts & Bolts is a diskfull of 100 (that's right, 100!) Basic utility subprograms in MERGE format, ready for you to merge into your own programs. Contents include 13 type fonts, 14 text display routines, 12 sorts and shuffles, 9 data saving and reading routines, 9 wipes, 8 pauses, 6 music, 2 protection, etc., and now also a tutorial on using subprograms, all for just \$19.95 postpaid!

And I have about 140 other absolutely original programs in Basic and Basic at only \$3.00 each! (plus \$1.50 per order for cassette, packing and postage, or \$3.00 for diskette. PPH) Some users groups charge their members that much for public domain programs! I will send you my descriptive catalog for a dollar, which you can then deduct from your first order.

I thought that my 28-Column Converter, as published in Tips #18, was

finally foolproof, but someone found a way to print a program incorrectly with it!

I'm sure you know that characters 127-143, and on up to 159 in Basic, can be redefined and used in graphics. You probably also know that these redefined characters can be put into PRINT or DISPLAY AT statements, by holding down the CTRL key as you type them. If you load a program containing such redefined characters and LIST it, they will appear as blanks. If you RUN the program, so that they are redefined by the CALL CHAR statements, and then LIST it again, they will show up in their redefined form - but if you print out the program on your printer, they will still appear as blanks. So, before you publish a program, it's a good idea to RUN it and LIST it, and look for any of these gremlins.

If you do want to publish such a program, this fix will take care of it by underlining all characters that must be typed with CTRL down (except that lower case v is typed with FCTN down). It's slow, so only use it when you need to.

```
190 IF M$="-E" THEN 195 :: PR
INT @2:".TL 126:94:" :: PRIN
T @2:".TL 123:64:" :: PRINT
@2:".TL 125:38:" :: PRINT @2
:".TL 124:42:" :: PRINT @2"
.TL 92:46:" :: PRINT @2".NF
"
195 PHINT "Does the program
contain": "redefined characte
rs above": "ASCII 126? (Y/N)"
196 ACCEPT AT(24,1)VALIDATE(
"YN"):UGG
292 IF GUS="N" THEN 290
293 FOR J=1 TO LEN(L$)
294 A=ASC(SEEK(L$,J,1)):: IF
AC127 THEN L2$=L2$&CHR$(A):
: GOTO 268
295 IF A=127 THEN A=118 ELSE
IF A=128 THEN A=44 ELSE IF
```

```
A=155 THEN A=46 ELSE IF A=15
6 THEN A=59 ELSE IF A=157 TH
EN A=61 ELSE IF A=158 THEN A
=56 ELSE IF A=159 THEN A=57
ELSE A=A-64
296 L2$=L2$&CHR$(27)&CHR$(45
)&CHR$(1)&CHR$(A)&CHR$(27)&C
HR$(45)&CHR$(0)
298 NEXT J :: L$=L2$ :: L2$=
""
```

That should do it, unless the number of added control characters stretches the line beyond 80 characters. Such is the case with the following, which I had to type in manually (it also contains low ASCII characters which the printer misinterprets as controls).

## TIGERCUB CHALLENGE

```
100!The Unprintable Unkeyabl
e Program!
110!To shuffle the numbers 1
to 255 into a random sequen
ce without duplication
120!The strings contain the
ASCII characters 1 to 127 an
d 128 to 255
130!Most of the ASCII charac
ters below 32 or above 159 c
annot be input from the keyb
oard
140!So how was this program
programmed?
150 M$=""
!"@%&'()*+,-./0
123456789:;<=>?@BCDEFGHIJKL
MNOPQRSTUVWXYZ[\]^_`abcdefg
hijklmnopqrstuvwxyz{|}~"
160 M2$=""
```

```
170 M$=M$&M2$
180 L=LEN(M$):: RANDOMIZE ::
X=INT(L*RAND+1):: M=ASC(SEEK
(M$,X,1)):: M$=SEEK(M$,1,X-1
)&SEEK(M$,X+1,LEN(M$))
190 PRINT M$:: IF LEN(M$)=0
THEN STOP ELSE 130
```

## GROCERY SHOPPING LIST

Are you desperate for some way to convince your wife that your computer and PEB and printer and all are not just a too-expensive plaything? Maybe this will do the job.

The first thing to do is to prepare a file of the grocery items she might want to buy. It will be especially useful if you can list the items in the sequence in which she will come to them in the aisles of her favorite store. This little program will set up the file. Type END when you are finished.

```
100 OPEN @1:"DSK1.BUYLIST",O
UTPUT
110 INPUT A$
120 IF A$="END" THEN 150
130 PRINT @1:A$
140 GOTO 110
150 CLOSE @1
```

If you have TI-Writer, you can also use that to create the file, edit it and add to it - but BE SURE to delete all the carriage return symbols and any blank lines at the end. Save it under the filename BUYLIST.

Next, this program will hopefully get your wife to actually sit down at the keyboard and try out your computer. It will go through the list and ask if she wants to buy. If she types in any quantity other than 0, it will output the item name and quantity to the printer. At the end, she will be given the opportunity to add any other items.

```
100 CALL CLEAR
110 OPEN @1:"DSK1.BUYLIST",I
NPUT
120 OPEN @2:"PIO"
130 LINPUT @1:A$
140 IF EOF(1) THEN 210
```

```

150 DISPLAY AT(12,1):A$
160 DISPLAY AT(12,LEN(A$)+2)
:0"
170 ACCEPT AT(12,LEN(A$)+2):S
IZE(-4):Q
180 IF Q=0 THEN 130
190 PRINT @2:AS@ "STR$(Q)&
" &CHR$(175)
200 GOTO 130
210 DISPLAY AT(12,1):"ADDITI
ONAL? Y"
220 ACCEPT AT(12,13):VALIDATE
("YM")SIZE(-1):M@
230 IF M="N" THEN 300
240 DISPLAY AT(12,1):"ITEM?"
250 ACCEPT AT(12,7):A$
260 DISPLAY AT(14,1):"QUANTI
TY?"
270 ACCEPT AT(14,11):Q
280 PRINT @2:AS@ "STR$(Q)&
" &CHR$(175)
290 GOTO 210
300 CLOSE #1
310 CLOSE #2
320 END

```

The list will be in enlarged print, so that no one in the store will see her putting on her reading spectacles. And after each item and quantity is a blank square to be checked off when she picks up the item.

You might also point out that she could use the checkoff blocks to mark the items she has coupons for, and she could jot down prices on it to be sure she isn't cheated at the checkout counter, or to shop for better bargains elsewhere.

The program is set up for the Gemini printer. You may need to change the "PIO" to the name of your printer, and other printers may not have the open block character CHR\$(175) available.

Of course, you can also use this program for more important things, such as shopping for computer software....!

If you type the period key while holding down the

CTRL key, the printer interprets the resulting blank space as CHR\$(27), even though the computer knows it is really CHR\$(155). Since CHR\$(27) is the ESC or "escape code" which tells the printer to interpret the following characters as function command codes, you can for instance set up the printer for emphasized double-struck double-width underlined italics by OPEN #1:"PIO" :: PRINT #1:" E G W"&CHR\$(1)&" -"&CHR\$(1)&" 4", using CTRL . in the blanks. I have been overlooking another very useful feature, the skip-over perforation. PRINT #1:" N"&CHR\$(6), again with CTRL . in the blank, causes the paper to advance to the top of the next page when there are only 6 lines left at the bottom of the page (providing that you started at the top, of course). This makes it possible to LIST "PIO" a program, or PF PIO from TI-Writer Editor, without printing right across the perforations.

Ghosts! Did you ever read data from a file, and find that you were getting data from a file that was no longer on the disk? It can happen, at least if you are reading from a RELATIVE file in the UPDATE mode. When you delete a file, only its address is actually deleted - the data remains on the disk until it is overwritten by a new file. If the new file is shorter than the old one, and you try to read beyond the end of the file, you may awaken the ghost!

Are you making use of those special characters that are available on your Gemini printer? You didn't know about them? Try this.

```

100 OPEN #1:"PIO" :: 110
PRINT #1:" (hold down the
CTRL key and type 1234567/
and then hold down the FCTN
key and type <>/0;BNJKLNMY
)". RUM . Surprised? Some
of those can be very
useful, such as the true
division sign that you get
with FCTN H. There are many
more of these that you can
access by CHR$. For a
complete list of them and
their CHR$ codes, run this -
100 OPEN #1:"PIO" :: FOR
CH=160 TO 254 :: PRINT
@1:CH;CHR$(CH);: NEXT CH ::
CLOSE #1. Unfortunately,
these can't be used out of
TI-Writer.

```

Here's a handy little routine to practice up on your typing.

```

100 CALL CLEAR
110 CALL CHAR(94,"3C4299A1A1
99423C")
120 CALL SCREEN(5)
130 CALL VCHAR(1,31,1,96)
140 CALL COLOR(1,8,16)
150 FOR SET=2 TO 12
160 CALL COLOR(SET,2,16)
170 NEXT SET
180 PRINT TAB(10);"TIGERCUB"
: TAB(8);"TOUCH-TYPING": IT
AB(11);"TUTOR": TAB(9);" T
igercub Software": :
190 REM by Jim Peterson
200 PRINT " Match the scree
n, not the" keyboard!": : "
Letters and numbers will"
210 PRINT " appear on the sc
reen and" in position cor
responding": " to their keybo
ard position.": : " Type the
a and they will"
220 PRINT " disappear.": : :
" Press any key"
230 CALL KEY(0,K,ST)
240 IF ST=0 THEN 230
250 CALL CLEAR
260 CALL CHAR(32,"FFB0B0B0B0
B0B0B")
270 CALL VCHAR(1,30,1,192)
280 CALL HCHAR(14,1,1,384)
290 CALL VCHAR(1,4,1,14):: C
ALL VCHAR(5,6,1,11):: CALL V
CHAR(8,7,1,6):: CALL VCHAR(1
1,8,1,3):: CALL VCHAR(8,29,1

```

```

,6)
300 CALL VCHAR(11,28,1,3)
310 CALL CHAR(48,"003A444C54
6444B8")
320 KEYS="1234567890-QWERTYU
IOP/ASDFGHJKL;*&CHR$(13)&"ZX
CVBNM,."
330 RANDOMIZE
340 K=ASC(SEG$(KEY$,INT(428R
ND+1),1))
350 GOSUB 370
360 GOTO 420
370 X=POS(KEY$,CHR$(K),1)
380 Y=ABS(X>11)+ABS(X>22)+AB
S(X>33)+1
390 R=Y*3
400 C=((X-ABS(Y))+(Y-1)*11)
@2)+4+Y
410 RETURN
420 CALL HCHAR(R,C,K)
430 CALL KEY(3,K,ST)
440 IF ST=0 THEN 430
450 GOSUB 370
460 CALL GCHAR(R,C,6)
470 IF 6<>32 THEN 500
480 CALL SOUND(-100,110,0,-4
,0)
490 GOTO 340
500 CALL HCHAR(R,C,32)
510 CALL SOUND(-100,1000,0,1
005,0)
520 GOTO 340

```

Here's one for the kids to have fun with. I'm sorry I lost track of who published it.

```

100 CALL INIT :: FOR J=1 TO
100 :: PRINT J :: FOR P=1000
TO 1 STEP -J :: CALL LOAD(-
31456.P):: NEXT P :: NEXT J

```

MEMORY FULL,

Jim Peterson

HOOSIER-USERS' GROUP DIRECTORY

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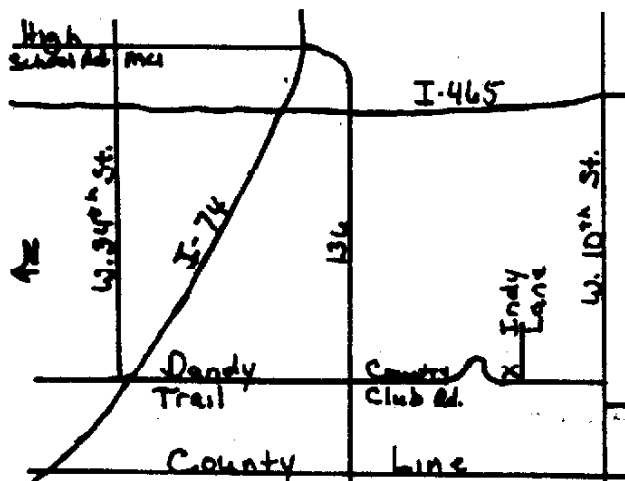
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PRINTOUTS

Library listings can be ordered for \$.25 & a 6x9 self addressed envelope with \$.66 postage. The HUGbbs Reference Guide can be ordered for \$.50 and a 4x9 self addressed envelope with \$.22 postage. Please send orders to our P.O. Box. SORRY, PRINTOUTS WILL BE SENT TO ACTIVE MEMBERS ONLY!



SPONSOR THE HUGbbs: Any member or retail business can sponsor the HUGbbs. For a \$5.00 donation, you get 5 (40 column) lines on the Log-On Title Screen for a week (or for a \$10.00 donation, you get 10 (40 column) lines) plus a 24 line by 40 character ad in the Sales option of the File Module. To sponsor the HUGbbs, send a check or money order to our P.O. Box (or turn in at our Monthly Meeting) specifying how many weeks (and how many lines) you want to sponsor, your name (or company name), address, phone, what you want to say, and the week (and an alternate week) you want the ad to appear.\*

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Back Issues purchased at the monthly meeting is \$1.00 each. Mail order price is \$1.50 per Newsletter (postage included). Orders will be filled within 3 weeks of receipt by the Documents Committee.

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There will be no charge for advertisements submitted to the HUGger Newsletter by members (for private sale only). Format for the advertisements is 45 characters wide by 10 lines long. The Ad should be typed or hand printed exactly how it is to appear in the Newsletter. Deadline for an ad to appear in next month's Newsletter is the 2nd Saturday of the month.\*

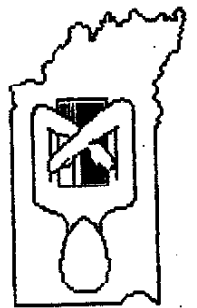
For companies who wish to advertise in the HUGger Newsletter, our rates are as follows:
Pre-Printed Inserts (one page) \$20.00
One Full Page (one sided) Ad: \$25.00
One Half Page Ad: \$13.00
One Quarter Page Ad: \$7.00

All ads must be in a ready to print condition. Advertisements must be in our P.O. Box before the 2nd Saturday of the month to appear in the following month's Newsletter.\*

\*NOTE: The Officers of the Hoosier Users Group reserve final approval on all advertisements submitted for the HUGger Newsletter and the HUGbbs. The Officers and the Newsletter committee are not responsible for typographical errors due to illegible advertisements. All proceeds are accepted as donations to the Hoosier Users Group.

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