

# K-3 T.I. Users Group Newsletter

8408 (166)

EDITOR: DAN HESSLING

AUGUST 1984

Hi fellow 99'ers. This month meeting of our group will again be held at the Y.M.C.A. (Use the 'ADULT' door). The meeting will be from 1:00 till 2:30 PM. Our meetings are still on the 3rd Saturday of each month!

The meeting will start with the usual short intro by Al Johnson, followed by reports by the Committees. I will be demoing the Maillist program (it now has 13 choices on the main menu). Bev will be showing Zork II game. The Library will of course be open. By the way we now have a copy of 'Introduction to Assembly Language for the TI Bone Computer' in the book section of the library. We have a large selection of books now! (Also I'll be bringing some 'freebies' computer books in. At the present I've got books on the Atari, Commodore, Timex, Adam, Color Computer, and languages: Lotus 1-2-3, C, Pascal, Logo, etc.)

As mentioned in the last Newsletter. We are starting a 'Consignment Sales Program' for original programs that members would like to sell through the group. We are also starting a 'Consignment Rental Program' for modules that members would loan to the group for rental. Please see board members for details.

## LIBRARY RATES

Membership Dues: \$7.50

Programs copying: \$1.00 ea.

Regular Modules rental: \$3.00

Advanced Modules rental (Extended Basic, Mini Memory, etc.): \$5.00

Software Libraries rental (Logo, etc.): \$5.00

## SPECIAL OF THE MONTH

Business, Home Finance Modules rental: \$1.50

**GET 10 PROGRAMS FREE!!!**

SEE 'LIBRARY' COLUMN AND COME TO MEETING FOR DETAILS.

## WE NEED HELP

We would really like to receive articles from our members. If you would like to write an article, or if you have any questions you would like answered, please submit them to one of the board members. We need your input whether it be a 'one time' or 'monthly' article. If we receive questions we will try to find the answer and print them in the newsletter. The questions and articles can be on anything dealing with computers. So far only myself, Al, Bev, Jim, and Greg are writing for the newsletter. If more of our members would input to the newsletter I believe it would be more "personalized" to our group. Anything is welcome! (possibly short programs as now appear in the newsletter)

# TEXAS INSTRUMENTS



Dear 99er Users Group:

Many groups have requested the source code to TI-FORTH. Here it is! It's on two diskettes, and the attached instruction sheet should provide you with the instructions you will need.

I have also enclosed a diskette with some enhancements that were made to TI-WRITER and Multiplan. Multiplan has been speeded-up a little, plus you will now have auto-repeat when moving the cursor around the screen. Simply replace these files on your Multiplan System diskette with these files on the enclosed diskette:

MPBASE  
MPCHAR  
MPDATA  
MPINTR  
OVERLAY

TI-WRITER has been enhanced to provide true lower case letters, eliminate the form feed while using the Formatter, and provide for a printer default while using the Formatter. You will need to add the CHARAL file to your system diskette and replace the EDITAL and EDITA2 files with those on the diskette. For the printer defaults in the Formatter, to get "RS232.BA=1200.LF" replace the FORMAL and FORMA2 files. The other default is "RS232.BA=4800.LF" and replace the FORMAL and FORMA2 files with the FORMA4800A and FORMA4800B file, while keeping the file names FORMAL and FORMA2 respectively.

This will be the last letter you will be receiving from me, for next month I will be transferred to Dallas to begin working for TI's Information Systems and Services Group. I have enjoyed your newsletter, personal letters and phone calls. I wish you all continued happiness working with your TI-99/4A.

Very truly yours,

William H. Barniea  
Manager Home Computer Software

FORTH ASSEMBLER SOURCE CODE

These two disks contain the portion of TI Forth written in assembler. The disk contents is as follows:

Part 1 (ASMSRC) is the dictionary entry for the 250 or so primitives that are present when Forth is booted. This is loaded into memory at >A000.

Part 2 (DRIVER) is the code for the I/O system and support for Forth. It contains the disk and screen I/O, the allocation of user variable space, the stacks etc. Because it is more efficient to rearrange memory from the way that it defaults in the Editor/Assembler, this section also includes (in the UTIL\* files) those portions of the E/A utilities that Forth requires and assembles them to different addresses. A small portion of code is also placed into the console RAM at >8300 for speed reasons.

Also on part 2 is a program called BOOT. After Forth is loaded using ASMSRC and DRIVER, Forth can (after loading the file words) save an image of itself to the VDP RAM and write this image to disk as a program file. BOOT is used to read this image and to reconstruct the forth system from the image. When booting the Forth system in the normal manner, the file FORTH is the object code of BOOT and the file FORTHSAVE is the memory image of the system. Note that if the size of the system changes, BOOT will have to have some addresses modified to work correctly.

From: Atlanta Newsletter

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Here's a undocumented use of the CONTROL keys, but only for those who have Extended Basic. When you type in a program, you can hold the CTRL key and type U, for example, and when you list the program, RANDOMIZE will appear on that line. Using these commands won't save you any memory space, but by learning some of these commands you may save time typing in the program.

KEY	DEFINITION	KEY	DEFINITION	KEY	DEFINITION
1	TO	2	STEP	3	comma
4	semicolon	5	colon	6	right parenthesis
7	left parenthesis	8	OPTION	9	OPEN
0	THEN	Q	UNTRACE	W	READ
E	GO	R	INPUT	T	RESTORE
Y	DELETE	U	RANDOMIZE	I	DEF
Q	UNBREAK	P	TRACE	/	AND
A	ELSE	D	IF	F	GOTO
G	GOSUB	H	RETURN	J	DIM
K	END	L	FOR	:	PRINT
Z	REM	X	STOP	!	exclamation point
V	NEXT	B	double colon	N	BREAK
M	LET	.	ON		

As you type in these commands nothing will show on the screen, but when you list the program the command will appear.

## WHAT'S NEW WITH TI?

I visited the Arlington Heights TI Exchange Center this week and also called TI-CARES (got thru the first try!) and found that although TI will take parts such as cards and modules for exchange, they are selling absolutely nothing for the home computer - I was looking for cables, and the people there suggested getting cabling done at a Radio Shack store. This is not a bad idea - Jackie Mooks, the technician at the Radio Shack store next to the Bourdonnais K-Mart is very knowledgeable (she has fixed my ailing Model I TRS-80 drives more than once-and I even told her I was using them on my TI99/4A) and is a resource worth cultivating. Triton sells no cables or connector cards. Elek-Tek sells custom cabling but they wouldn't touch our project to hook up Victor 5 $\frac{1}{4}$ " drives to the 99/4A.

The membership may be interested in knowing what happens when a Gemini 10 printer breaks down. I bought my Star Micronics Inc. Gemini for \$325 about 12 months ago and since then I and the club have given it a good workout. Last week it began interchanging the letters b and r, so I took it to Star's Itasca repair center (Suite 645 in the Hamilton Hotel office building annex at Thorndale Rd. and Rt. 59; phone: 312-773 3717). In about 15 minutes while I waited, they decided the main logic board was kaput, changed it, gave me a new print head and sent me forth refreshed in mind as to the level of support available for the Gemini and other Star Micronics printers. The repair cost \$108; had I insisted on a new rather than reconditioned logic board, the repair cost would have been about \$300, a new printer would have been a probable alternative. The Itasca center will also accept UPS or Parcel Post and ship back repaired printers the same way. I also got an addendum to the printer wirebound manual detailing TI99/4A commands for the Gemini. Possibly excerpts will appear in this newsletter from time to time. If those of you who are having trouble with the first row of dots not appearing, tail of the comma being dropped, etc. will call the above Itasca Star Micronics number, they can arrange to be sent a new print head; the technician explained to me that Star tried a new solid lubricant to reduce print head wear, unfortunately the lubricant became gummy and pin firing was affected; hence the offer to replace such original issue heads.

Since we are on the subject, the Industrial Engineering College of Chicago, where I teach, has a TI Professional computer which is still under the original purchase warranty and has had to date three disk drive replacements due to a faulty logic board, (latest diagnosis!) as well as printer lock-up problems (we have the TI printer model 850). Compared to the horror stories I've heard about brand x computers, our maintenance problems do not seem excessive, but they do exist.

I might mention that the Board of Directors has decided to have various of us contact members who have not been attending meetings to see what interests we are not meeting and get some idea of what to do, which demos are of interest, etc. If you could do some thinking about this subject in advance, our phone contacts could give the board some needed direction from the membership.

  
Al Johnson,  
Former TI Rep

**PROGRAM NOTES**

By Ken Chandler

TI 99/4A KEYBOARD CLEANING

I've had my TI 99/4A for about a year-and-a-half and lately I've had trouble with console keys repeat-printing. In other words, you press the "R" key and, instead of printing just one "R" on the screen, it prints 2 or 3 or more. This problem didn't affect all the keys, but just certain ones, like the "A" and "R". This problem made word processing a real pain, since I had to go back and correct misspelled words on almost every line.

I called the TI Exchange Center and they said they had seen this problem on consoles of similar vintage. They offered to exchange my console for \$29.38. I asked if it was possible to somehow clean the key contacts and they said "maybe", but they didn't know how to do it.

So, I decided to give it a try. The drawing below details the construction of each key assembly:

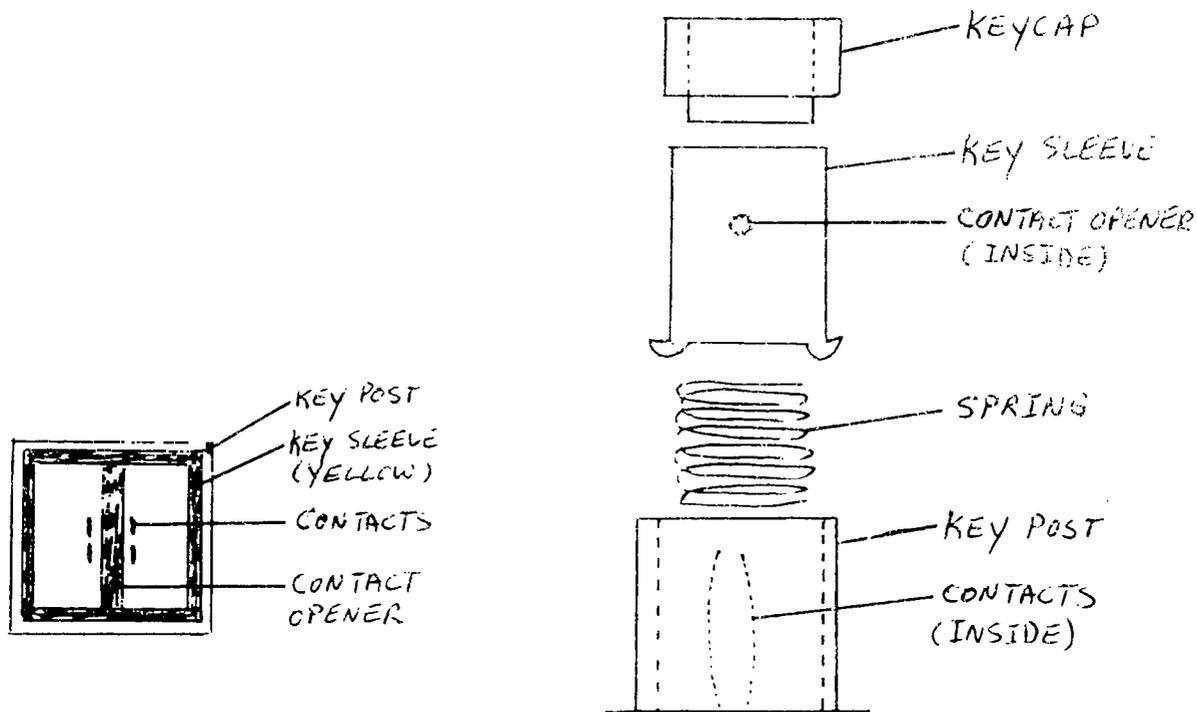


FIG.1. Looking down with keycap removed.

FIG.2. Side View

The keycap press-fits down inside the yellow key sleeve. When you press the key down, the keycap/key sleeve assembly slides down inside the key post, lowering the contact opener and allowing the contacts to close. The spring pushes the assembly

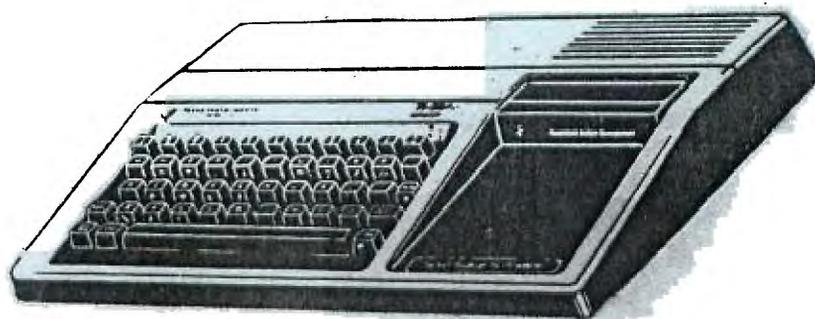
back up and opens the contacts again. The contacts actually close with a wiping action intended to keep them clean. However, when they do become dirty, this wiping action can cause multiple closures, which results in several "keypress" signals being sent to the CPU.

WARNING: FIRST, UNPLUG THE CONSOLE!

The first thing to do is to remove the key cap. You will need something with a tiny hook on the end to slide under the keycap and pull up. A bent paperclip will probably work or maybe a knitting needle. You will need two of them, one on each side of the keycap so that you can pull straight up without binding. If you only have one hook, use your finger on the opposite side of the key to apply pressure and prevent the key from cocking sideways. Use even, steady pressure and the keycap will slide right up. Occasionally, the keycap is stubborn and the whole keycap/key sleeve assembly pops out. Don't panic! Simply remove the keycap from the assembly and press the yellow key sleeve down over the spring, inside the key post, until it clicks home (See FIG. 2).

You should now see something that looks like FIG. 1. To clean the contacts, you will need a small cotton swab and some isopropyl alcohol (don't use regular rubbing alcohol!). Dip the swab in the alcohol and carefully clean in between the contacts, being careful not to bend them out of position. After cleaning, push the yellow key sleeve down with your fingernail and make sure the contacts close properly. Also, if the key sleeve sticks or binds in its travel, put a small amount of silicon lubricant between it and the key post.

Now you're ready to reinstall the keycap. Just press it down inside the key sleeve and you're done! I cleaned all of my keys this way and apparently cured my repeat-printing problem. I say "apparently" because this may only be a temporary cure and I may still wind up exchanging the console. The key action on the newer consoles feels different than mine and maybe TI made some improvements. Of course, if I exchange, I want to make sure I don't get a console with the built-in GROM checking routine. Now, if there was just some way to make it stop misspelling so many words when I type!!!



# BIORYTHMS 2

THIS IS THE OUTPUT OF ONE OF THE PROGRAMS IN OUR LIBRARY "BIORYTHMS 2". PLEASE CONTACT THE LIBRARY TO PURCHASE

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ANALYSIS FOR.....DAN HESSLING  
DATE OF BIRTH.....WEDNESDAY. JUNE 20 . 1956  
ANALYSIS STARTS ON.....MONDAY . AUGUST 1 . 84  
ANALYSIS ENDS ON.....TUESDAY . AUGUST 30 . 84

COMPUTED BY:  
DANNY HESSLING  
RT.2 BOX 203  
MOMENCE. ILL  
60945  
472-6216

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## BACKGROUND OF THIS GRAPH:

THIS GRAPH FOLLOWS THE FOLLOWING THEORIES OF BIORHYTHMIC STATES:

THE PHYSICAL CYCLE IS 23 DAYS LONG  
THE EMOTIONAL CYCLE IS 28 DAYS LONG  
THE INTELLECTUAL CYCLE IS 33 DAYS LONG

## OUTLINE:

BIORHYTHM IS THE RYTHM OF YOUR LIFE.  
THERE ARE THEORIES THAT THEY AFFECT  
YOUR PHYSICAL, EMOTIONAL AND INTELLECTUAL  
MODES. WHETHER THIS IS TRUE OR NOT IS  
HARD TO SAY. IT IS UP TO YOU TO DECIDE.  
THE MODES ARE SHOWN AS SINE WAVES ON A  
TIME CHART.

### PHYSICAL CYCLE-----P. 23 DAY CYCLE

UP.....HIGH STRENGTH AND ENDURANCE  
CRITICAL.....ACCIDENT PRONE TIMES  
DOWN.....SHOULD REST. POOR PERFORMANCE

### EMOTIONAL CYCLE-----E. 28 DAY CYCLE

UP.....PERSONAL RELATIONS THRIVE  
CRITICAL.....UNSTABLE SOCIAL RELATIONS  
DOWN.....NEGATIVE OUTLOOK HERE. AVOID CLOSE RELATIONS

### INTELLECTUAL CYCLE-I. 33 DAY CYCLE

UP.....JUDGEMENT AND HIGH PERCEPTION. CREATIVE DAYS  
CRITICAL.....ERROR PRONE TIMES. AVOID BIG DEALS  
DOWN.....SLOW THINKING. AVOID NEW PROJECTS

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	DOWN	CRITICAL	UP
MON 1	AUGUST	P I	E
TUE 2		P I	E
WED 3		*	E
THUR 4		IP	E
FRI 5		I P	E
SAT 6		I P	E
SUN 7		I P	E
MON 8		I P	E
TUE 9		I P	E
WED 10		I P	E
THUR 11		I P	E
FRI 12		I P	*
SAT 13		I P	E P
SUN 14		I P	E P
MON 15		I P	E P
TUE 16		I P	E P
WED 17		I P	E P
THUR 18		I P	E P
FRI 19		I P	E P
SAT 20		I P	E P
SUN 21		I P	E P
MON 22		I P	E P
TUE 23		I P	E P
WED 24		I P	E P
THUR 25		I P	E P
FRI 26		I P	E P
SAT 27		I P	E P
SUN 28		I P	E P
MON 29		I P	E P
TUE 30		I P	E P

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MINUTES OF JULY 1ST BOARD MEETING  
 GEORGE LEMPEOTIS, SECRETARY

8 members in attendance

We will have general meetings for July and August at the Kankakee Y.M.C.A. Cost of the room should be about \$22.00. The board will still try to find another site for the general meetings starting in September that is cheaper and more convenient for the Club.

It was decided to put Business and Home Management software on special for \$1.50 for this month. These modules were not renting, so we hope this will be an incentive to rent these packages.

The board decided to talk to the two "Program Contest" entrants to see what prizes they would accept considering the very low number of entries.

The board decided the Club will now offer a "consignment deal" for originally written programs. The deal will offer a market for programs submitted by our membership. The offer will be: 75% of sale price to programmer, and 25% to the treasury. The price set for the program will be at the programmers discretion. Anyone intrested should contact Bev Cook.

The board decided that "Special Interest Groups" will meet independantly of the main and board meetings.

Mark Harms would like to start a "SIG" for Assembly Language Programming. For more information contact Mark: 937-9097.

Four of the board members will review the membership attendance and submit a report that will be used for future board decisions.

MINUTES OF JULY 29TH BOARD MEETING

GEORGE LEMPEOTIS, SECRETARY

6 members in attendance

The board decided to return to the 'Reduced Format' Newsletter, starting with the August issue. The reduced format will provide room for more information at no higher postage, thus saving postage, paper, and copying costs. The format of the next August meeting was decided, and that the Library will offer printer paper for sale to members at \$27.50 a box of 3200 sheets (15LB.). Smaller quantities will also be available. Unlabeled disks will be sold for \$1.50 each (supplier claims these are unlabeled Elephant disks)

It was also decided to send a letter of thanks to the Municipal Bank for their allowing us to use the bank free for the past year (we hope to re-acquire the Bank location.

The prizes for the original program contest were approved at \$25.00 in savings bonds or library coupons. The award will be delayed until September because of a lack of funds in our Treasury.

George gave a report on membership. The summary follows: The group has 82 paid member families, of which 61 (74%) are from the Kankakee area. In five meetings, with data from Dec. 83 thru June 84 we averaged 23 members at the general meetings. Our new memberships were from June 83 till Feb 84, reaching a peak in Nov 83. Paid members had dropped of to 0 in April/May and 2 in June 84. The data from sign in sheets taken from the general meeting for the last six months show that 37 members have not attended a meeting in this time.

In response to this report the board has decided to institute a member attendance, sign-in incentive of giving away program copies to members that attend meetings in 3 month stints. A member may receive up to 10 free programs for attending every meeting in a year. The board also decided to contact the non-attending members, to find out through personal contact thier reasons for not attending.

BUY\*SELL\*TRADE

FOR SALE:

Dan Morrissette: 426-6697

Speech Synthesizer\_\_\_\_\_ \$50.00

Dan Hessling: 472-6216

Microsoft Multiplan\_\_\_\_\_ \$40.00 (if I find the module)

Extended Basic\_\_\_\_\_ \$70.00

Mini Memory\_\_\_\_\_ \$50.00

Maxell/Memorex diskettes\_\_\_\_\_ \$2.00 each

TV/Game stand\_\_\_\_\_ \$20.00

Speech Synthesizer (New)\_\_\_\_\_ \$50.00

Assorted Game Modules\_\_\_\_\_ \$5.00

TI books in 3/ring binders\_\_\_\_\_ \$5 to \$10.00

Samsonite Suitcase\_\_\_\_\_ \$15.00 (used to carry computer set-up)

Jim Johnston: 932-4020

(2) 10" color TV's\_\_\_\_\_ \$125.00 each

TRADE:

Mark Harms: 937-9097

Out-of-Box Disk Controller for In-Box Disk Controller

(also want In-Box RS232)

MEMBERSHIP NOTES  
By DAN MORRISSETTE

Membership renewal time is here for some of us. The dues have been raised to \$7.50 to help the club cover mailing costs for the newsletter that goes out to each member family. What can you get anvplace for \$7.50 that gives as much value? A Family Membership for one year entitles you to participate in the club activities, use the library, participate in group purchases when available, gives 12 issues of our newsletter that's full of TI news from other user's groups, hardware and software supplies, and tips on operation and programing - all this and more. Don't delay. Renew right away!

Just a note to those people who were due to renew in July- this will be the last newsletter you will receive unless you renew by our August meeting. Don't miss out! If you can't attend, you can renew by mail. Send all renewals to Dan Morrissette, 526 Vernon St., Herscher, Il. 60941. Enclose a check or money order for \$7.50.

Those due for renewal are:

Kevin Zehart July  
Eleanor Hackl July  
John Chiodo July  
William Bell July  
Pat Riley July  
Harlyn Schmidt July  
Del Stueck July

Paul Miller Aug.  
J. Allison Aug.  
Cristv Resler Aug.  
Darla Bourelle Aug.  
Al Whitmon Aug.  
Larry Koets Aug.

GET UP TO 10 FREE PROGRAMS!!!

LIBRARY NEWS  
By BEV COOK

Hope everyone is enjoying the summer. It's been nice. I admit, but I hope you can spare some time to attend our August meeting. We need your support badly. We can't run the club without your input, so please, come to our meeting! You may be pleasantly surprised.

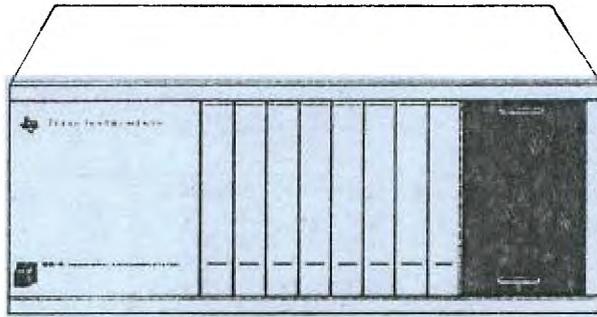
Our new project is starting at this meeting. Earn free programs just for attending! We'll have file cards at the meeting and will keep them. Just sign in and ask to have your file card punched. That's all there is to it! Attend 3 meetings in a row and get a free program--6 in a row earns 2 free and so on. Confused? We'll explain it at the meeting. Check with one of the library people.

Now, down to business. We still have a few people who haven't returned their rented modules or books. We can't rent them if they aren't returned, so please, take a few minutes and drop them off at the meeting. If we have to send someone to your home to pick them up, we will, but this may result in refusal the next time you want to use the library. Think about it and please, return your rented items.

MV thanks to the people who mailed their modules back to us. I appreciate it. In the future, please send returning items directly to me. It's easier to keeo track of that way. My address is RR#3 Box 245, Kankakee, Il 60901. Thanks!

If you are listed below, your rentals are overdue. See you at the meeting!

John Kujawa - Alpiner - 101 Programming Tips  
Diane Cunningham - Centipede - Ships  
Brian Bolf - Donkey Kong - Star Trek  
Brian Marcukaitis - Dragon Mix - Snow Trek  
Paul Parkhill - Touch Typing Tutor  
Pat O'Brien - 99'er Magazines 9



### COMPUTER "DON'TS"

#### DON'T:

1. Think about buying a competitors computer!
2. Impersonate Liberace while setting at the keyboard!  
(unless your using a music program)
3. Use diskettes as frisbees!
4. Eat watermelon while sitting at the console!
5. use your P.E.Box as a step-stool!

*Frank Anderson*

#### 99/4A VS. ADAM

After much publicity in the newspapers and magazines the long awaited ADAM from Coleco is out.

The Adam is supposed to be the newest state of the art. Guess what Video Display Processor it uses. The same as the TI-99/4A. The TMS9918A VDP.

The ADAM however, can only display a maximum of 36 characters per line in the text mode. As you know the 99/4A will display 48 characters per line.

How about the built-in word processor for the Adam? Well compared with TI-WRITER it is very slow. A user can type fast into the computer, but if you want to move from one part of the document to another, movement is done via the cursor control keys and can be done either one line at a time by pressing the up or down arrow key or several lines at a time by pressing one of the arrow keys and the HOME key together. But even when you are moving

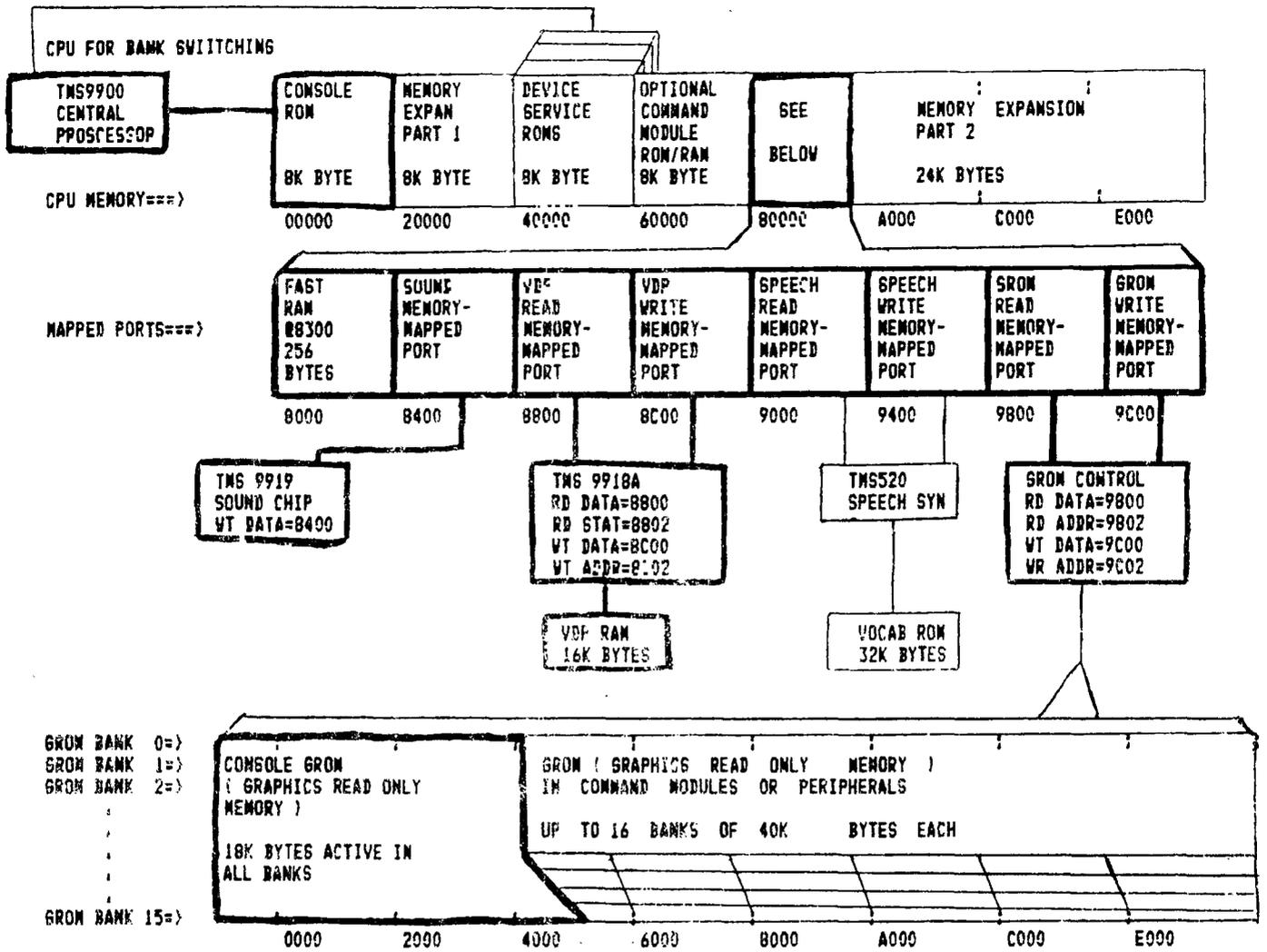
several lines at a time, the scrolling is very slow. If you are use to the TI-WRITER, it can become quite annoying.

Another annoying feature of the Adam word processor is the fact that in order to implement many of the functions, several keystrokes must be performed. For example, to delete text, you must press the DELETE key, then move the cursor to the first letter of the word to be erased, then press the HI-LITE key, then you use the right arrow key to highlight all of the text that is to be deleted, then press the HI-LITE OFF key and then press either the FINAL DELETE or the DELETE keys. This key pushing makes the word processor quite tedious and hard to use compared to TI-WRITER.

The TI-WRITER only requires pressing two keys to delete anything (characters, lines, paragraphs, all text, etc.). And just in case you make a mistake, you have an OOPS! key that puts it back the way it was before you goofed.

THIS MAP IS ORIGINALLY FROM A T.I. 'CORE' PACKAGE.

TI 99/4A MEMORY ARCHITECTURE



WORDSEARCH PUZZLE (AUGUST)

```

*****
*GMXHLXHXGY*
*EYXRTFANGEA*
*MBJFHUIRDI*
*SBVBGTOPZC*
*PPYUEUDUPV*
*YUSEPNYSRI*
*ITMXDZRENZ*
*VZELDOPRQIE*
*INWYVLDVSCW*
*DUQWYJTVIV*
*****
    
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AUGUST  
 USERS  
 GROUP  
 MEETING

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*****
*          G *
*        ANG *
*       UIR *
*      GTO *
*     UED *
*    SEP *
*   IM  *
*  R   *
* S   *
*     *
*****
    
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FROM THE L.A. 99'ers NEWSLETTER:

```

10 CALL CLEAR
12 PRINT TAB(4);"*****":TAB(4);"*"
20 PRINT TAB(4);"* A SOUND TUTORIAL *":TAB(4);"*"
30 PRINT TAB(4);"* by Chick De Marti *":TAB(4);"*"
40 PRINT TAB(4);"*****":TAB(4);":::":
50 REM
60 REM *** LA 99ers USER GROUP ***
70 REM
75 GOSUB 400
80 CALL SCREEN(12)
90 T=300
94 RESTORE 100
95 GOSUB 599
96 PRINT "THIS IS OUR DATA FILE"::"WE'LL READ THE FIRST 2 ITEMS"
97 PRINT "AS 'F' AND THE LAST 3 AS"::"A,B,C"::
98 INPUT "Press (ENTER) when ready":Y#
100 DATA 196,145,196,247,294
110 FOR I=1 TO 2
120 READ F
130 CALL SOUND(T,F,3)
150 NEXT I
160 READ A,B,C
170 CALL SOUND(T*2,A,3,B,3,C,3)
180 GOSUB 400
181 GOSUB 599
183 PRINT "HERE WE USED THE WORD"::"RESTORE' WITHOUT A LINE #"
184 PRINT "THE COMPUTER WILL RESTORE"::"THE <LAST> GROUP WE READ"::
185 INPUT "Press <ENTER> when ready":Y#
189 FOR I=1 TO 3
190 RESTORE
210 CALL SOUND(T/2,A,3)
220 CALL SOUND(T/4,B,3)
230 CALL SOUND(T/4,C,3)
240 NEXT I
260 RESTORE
270 CALL SOUND(T*3,A,3,B,3,C,3)
280 GOSUB 400
282 GOSUB 599
283 PRINT "HERE WE ENTERED RESTORE 100"::"(MEANING LINE 100). NOW THE"
284 PRINT "COMPUTER WILL READ THE DATA FROM THE BEGINNING"::
285 PRINT "WE WILL READ THE DATA AS AN ARRAY (N(I))."
286 PRINT "'N'=NOTE AND (I)=A NUMBER"::"IN THIS CASE '1 TO 4'"::
287 INPUT "Press <ENTER> when ready":Y#
290 RESTORE 100
300 FOR I=1 TO 4
310 READ N(I)
320 CALL SOUND(T,N(I),3)
330 NEXT I
335 READ N(5)
340 CALL SOUND(T*4,N(5),0)
350 CALL SOUND(T,220,1,277,1)
355 CALL SOUND(T,196,1,277,1)
360 CALL SOUND(T,165,1,277,1)
365 CALL SOUND(T*3,147,1,185,1,294,0)
370 PRINT :::
380 INPUT "ONCE AGAIN? (Y/N) :":Y#
390 IF Y#="Y" THEN 94 ELSE 395
395 END
400 FOR D=1 TO 1000
410 NEXT D
420 RETURN
599 CALL CLEAR
600 PRINT "DATA 196,145,196,247,294"::
610 RETURN

```

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For those who have Extended Basic and 32K Memory, type in the following line:  
 CALL INIT :: CALL LOAD(-31866,33,0) then hit enter, type SIZE and hit enter  
 again. Now the computer shows that there is 32K of program memory. Whether  
 this actually gives you that much memory to use is unknown, but be cautious.  
 you exceed the 32K limit on programs the console may lock up. You can also  
 place this line in the beginning of a program.

FROM THE ARIZONA NEWSLETTER

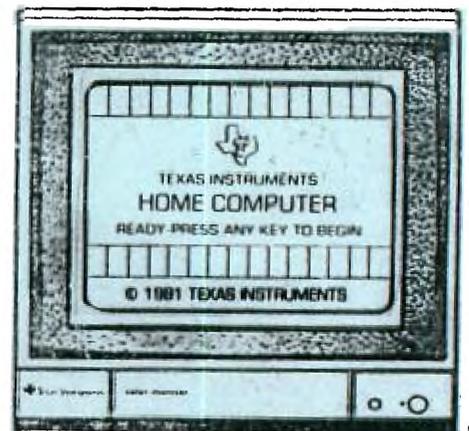
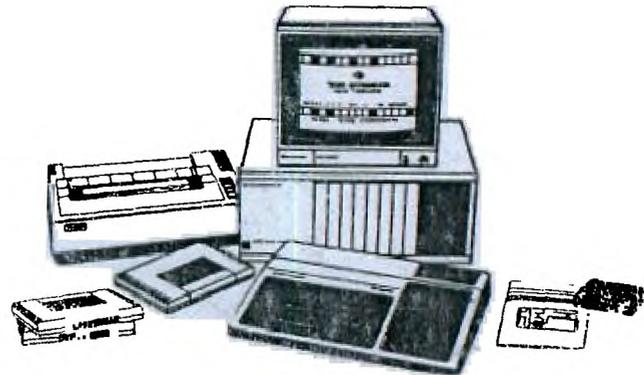
**EXTENDED BASIC PRESCAN**

Have you ever wondered why it takes so long for a program to run after you type in RUN? The pause is the time the computer takes to pre-scan your program to set up memory space for variables, arrays, data, and subprograms. The computer has to go over each line and reserve memory space. This takes a lot of time because it must proceed through each instruction, perform the appropriate functions, and establish variable values. The time required to pre-scan depends on the length of the program. There is a way to reduce this wait time using EXTENDED BASIC. This is just one of many reasons we recommend EXTENDED BASIC as the best first purchase you can make after buying the 99/4A.

Unlike most of our tips, this one is documented in the EXTENDED BASIC manual, but few seem to take advantage of it. (Our FROGGY program does -Ed.)

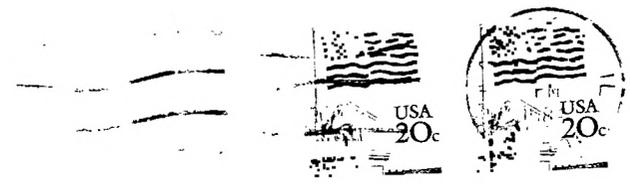
The commands are pre-scan off and pre-scan on. These commands allow you to control which instructions will not be pre-scanned. In a program, only those instructions which contain the first reference to the variables need to be pre-scanned. Therefore, you will find that many program lines don't require a pre-scan.

A 23K byte program that would normally take 31.5 seconds to start RUNNING will only take 9.5 seconds by using the pre-scan commands. As an added hint, think about the time you could save by having the program reset itself by RUNNING itself and using the pre-scan commands. Execution speed is greatly increased. (The ARIZONA 99 UG FROGGY game uses this trick -ED.)





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