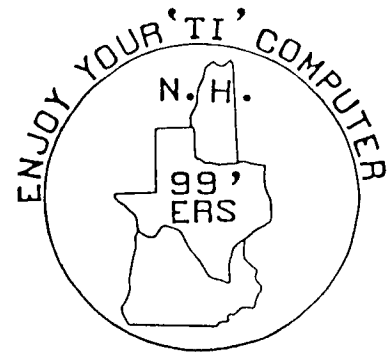


NEW HAMPSHIRE 99'ERS
SEPTEMBER 1984
NEWSLETTER



NHUG NEWSLETTER - PO BOX 7199 HEIGHTS STATION - CONCORD, NH 03301

OFFICERS' CORNER

As you may be aware the last three months had been dedicated to the membership drive. We were highly gratified with the turnout at the August meeting and are pleased to welcome eighteen new members to our group. We realize that many of you cannot motor down to meet with us, but let us assure you that you are not forgotten. We attempt to squeeze every bit of info that we can in our monthly newsletters. Please write to us (or call) with your questions, suggestions, etc. Please remember that we are an all-volunteer group. We try to handle all requests with dispatch, but, we are not experts, so sometimes we must reach several contacts to handle your requests... Please be patient as we learn together.

Under new business, it was announced at the August meeting that TI has released to all recognized Users' Groups (we are!) the following Public domain software:

TI-ADVANCED ASSEMBLY LANGUAGE DEBUGGER

TI-FORTH (plus manual)

ENHANCEMENTS to TI-WRITER & MULTIPLAN

SOURCE CODE for TI-FORTH (Parts A & B)

Further details on the software (and how to obtain copies at cost [to active members only!]) appear on the following pages.

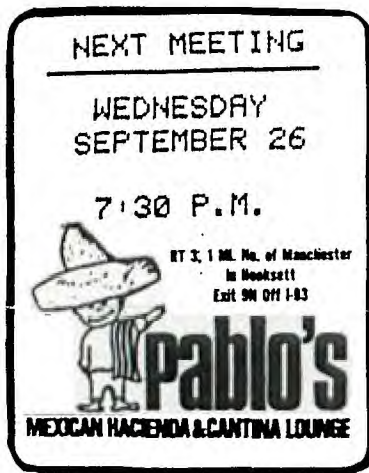
Additionally, because we are a recognized TI USER GROUP we also have received an offer from Reston Computer Group to purchase copies of KIDS AND THE TI 99/4A and SPRITES, A TURTLE, AND TI LOGO at almost two-thirds-off the bookstore prices!!!! You will find a copy of the letter we received on the next page. This is a limited time offer and available only to active members. The exact costs will depend on the number of books ordered and whether you will pick them up at a meeting or have them shipped. The deadline for placing your orders will be October 5th. Please call Helene at 472-3369 or write H. M. LaBonville - 121 Camelot Dr. RFD5 - Bedford 03102 with your orders or questions. (P.S. We called Reston and confirmed that these are first quality editions.)

The August meeting featured demonstrations of three programs from our software library by Scott Belanger and Nick Cassavaugh of the Library Committee. They will be so featured at each meeting. Also, Ellen Rule of Concord, one of our newest members, described TI's PERSONAL RECORD KEEPING and how she utilizes it to simplify her life (she even uses it to compile data for her cable movie channel viewing!). As you will remember, Ellen's article, COMPUTE INDEX, appeared in last month's Newsletter. In this issue she reviews Steve Davis's book, PROGRAMS FOR TI HOME COMPUTER. Well done, Ellen!

Let's not forget to thank Jerome Belair of Manchester for providing the insignia which "dresses-up" our masthead. Looks Great!

Many thanks must go to Richard Bailey of Gonic who has been providing our readers with a wealth of hints, tidbits, and how-to's. We hope you enjoy and learn from his articles on the TI Reset Switch and TI-WRITER which appear in this issue. Look for his tips on centering and how-to on making your own touch-tone Phone which will appear in a future edition.

Sharing of information is one of the important functions of a user's group. As you have seen, our group has several top-notch writers and sharers of information, but we need everyone's input! Books are now being published at a pace many of us only dreamed of. If you buy a book, share with others via the newsletter how you feel about it. If you buy a software package, give us your opinion(s) of it. Rate its performance, documentation, ease of use, error handling, and value. With hardware, did it interface readily to the TI, was the manufacturer or dealer any helpful? Do they honor their warranties promptly, etc. Please let us know!



REMINDER: Our meetings are generally held on the last Wednesday of the month. The next MEETING will be held in the function room of PABLO'S at 7:30 Pm on WEDNESDAY SEPTEMBER 26. Pablo's has requested that members and guests try to Park next door at Ronson Ziebart or in the back of the restaurant. The owners of Pablo's have been very good to us and we hope you come early and enjoy a tasty Mexican dinner before the meetings.

* R E S T O N C O M P U T E R G R O U P *
*
*
New Hampshire 00ers Users Group Inc.
P.O. Box 7199 Heights Station
Concord, NH 03301

Dear Group President:

Will it pique your curiosity if I tell you that I can help you keep your elementary school aged children entertained, while encouraging them to work independently and improve their problem-solving abilities? It's true! Just because you represent a TI 99/4A User's Group, I can offer your children--and the children of all of the members of your group--an opportunity to build and sustain an interest in their home computer using two outstanding books from the Reston Computer Group.

My name is Martin Connor, and I would like to bring to your attention two books that are written specifically for your child's use with the TI 99/4A--books that are loaded with "fun" projects that develop creative thinking while building an important skill: the ability to write programs for a computer! Take a look at what these books can offer your children:

KIDS AND THE TI 99/4A

Designed for 10 to 14 year olds, this outstanding book is divided into 33 lessons that are accompanied by detailed explanations and review exercises. Using a convenient, spiral-bound format that permits computer-side use, KIDS AND THE TI 99/4A shows your children how to make action games, board games and word games; or how to organize a record collection or a paper route. Normally, KIDS AND THE TI 99/4A sells for \$19.95 a copy, but you and your group may purchase this book directly from the publisher for only \$7.00! And there is another excellent, entertaining book that I would like to bring to your attention that you may purchase at similar savings:

SPRITES, A TURTLE, AND TI LOGO

This friendly, playful introduction to the most understandable language of all--Logo--is filled with whimsical drawings and detailed photographs. SPRITES, A TURTLE, AND TI LOGO introduces children to the drawing turtle, the 32 flying sprites, and the 256 character tiles that will help them create computer stories. Using images and symbols, children learn to write computer programs for their TI 99/4A in an atmosphere of fun. SPRITES, A TURTLE, AND TI LOGO lists for \$14.95, but again, because you represent a group of computer users, you may purchase this book for only \$4.50 per copy.

LIMITED-TIME OFFER

AVAILABLE TO

MEMBERS

ONLY!

for more info, call or write:

Helene LaBonville
121 Camelot Drive RFD5
Bedford, NH 03102
Phone: 472-3369

TI FORTH

TI FORTH is an adaptation of the FIG-FORTH language. FORTH is a programming language which can be extremely fast, in some cases approaching half the speed of assembly language. The first page of the documentation (230 pages) is a disclaimer that the program and manual may contain errors or omissions and will not be supported by TI. The language is similar to LOGO in that you build program procedures (FORTH calls them WORDS) which can be combined into more complex words which are combined to form programs. It is similar to assembly language in that knowledge of the computer's architecture, memory and graphics language program and assembly language commands are necessary to fully utilize the speed and capabilities of the language.

In order to use TI FORTH you need a minimum of the following equipment: 99/4A console, Monitor (or T.V.), 32K Memory expansion, Disk Drive and Controller, and an Editor/Assembler module.

NOTE: We are currently out of the first printing of the manual. To keep the price down we need at least five new orders. Please, reserve your copies now!

FORTH ASSEMBLER SOURCE CODE

This double-sided disk contains the portion of TI FORTH written in assembler. 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 the 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 some addresses modified to work correctly.

ENHANCEMENTS to TI-WRITER & MULTIPLAN

(on same disk)

MULTIPLAN has been speeded-up, plus you will now have auto-repeat when moving the cursor. Simply replace these files on your MULTIPLAN system disk with these files on the enclosed diskette: MPBASE, MPCHAR, MPDATA, MPINTR, and 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 CHARA1 file to your system disk and replace the EDITA1 and EDITA2 files with those on the disk. For the printer defaults in the formatter, to get "RS232.BA=1200.LF" replace the FORMA1 and FORMA2 files. The other default is "RS232.BA4800.LF" and replace the FORMA1 and FORMA2 files with FORMA4800A and FORMA4800B file, while keeping the file names FORMA1 and FORMA2 respectively.

TI ADVANCED ASSEMBLY LANGUAGE DEBUGGER

This disk based Product is an interactive Assembly Language Debugger which features a memory dump utility, a bit-mapped screen, single step trace and a disassembler. The Editor/Assembler module and memory expansion are required. There were no hardcopy instructions accompanying this disk, but, a HELP file which contains an introduction and instructions is included.

```
*****
*                               *
*      NHUG SALES              *
*                               *
* C10 BLANK TAPES/incl case  $ 1.00 ea *
* C20 BLANK TAPES/incl case  $ 1.25 ea *
*                               *
* 5 1/4 SS/SD DISKS          $ 1.75 ea *
*                               *
*      MEMBER                 NON-MEMBER*
* FORTH                       *
*   DISK      $ 3.50 ea      $ 5.00 ea *
*   MANUAL    $15.00 ea      $23.00 ea *
*   DISK+MANUAL $17.00 set   $28.00 set*
*   SOURCE A&B $ 5.00 DS     $ 6.50 DS *
*   PACKAGE (includes FORTH disk +   *
*             manual + source A & B) *
*             $20.00 pkg   $34.50 pkg*
* TIMP & TIWRT                 *
* ENHANCEMENTS $ 3.50 ea      $ 5.00 ea *
* ASSM DEBUGGER $ 3.50 ea      $ 5.00 ea *
*                               *
* These are CASH & CARRY prices. For *
* shipping/handling add $1.50 on orders *
* less than $14.99 ELSE add $3.00/ordr *
*****
```

NEWSLETTER EXCHANGE

NHUG Participates in a Newsletter Exchange Program with other recognized TI User Groups. This offer is made with the understanding that, with proper credit, your User Group can reprint articles from the NHUG Newsletter, and with proper credit, we can reprint articles from other TI User Group newsletters.

NEWSLETTER CORRESPONDENCE

Please send all Newsletter related ideas, articles, hints, etc. to:

Helene M. LaBonville
121 Camelot Drive RFD5
Bedford, NH 03102
472-3369

CLASSIFIED ADS

Current NHUG members may Place up to a Quarter Page ad (classified type) Per issue during their entire membership. Display ads at 25% off. All ads must be computer related and must be received by the 10th in order to appear in that month's Newsletter. Please write for current display ad rates.

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PROGRAMS FOR THE TI HOME COMPUTER by Steve Davis

A Review by Ellen Rule

You say you're interested in programming your TI 99/4A but you're not quite ready to wing it alone? Or you've acquired some new device and want to enter a ready-to-run program to give that add-on a whirl? In either case, you'll find PROGRAMS FOR THE TI HOME COMPUTER by Steve Davis an asset to your computer library.

This book contains fifty programs written in BASIC especially for the TI 99/4A. A wide variety of programs are included, some of which utilize only the console and cassette recorder. Others take advantage of such options as Extended BASIC, Terminal Emulator II, speech synthesizer, printer or disk drive. For example, the game of "Murder!", written in TI BASIC, gives you the chance to exercise your sleuthing skills by finding out "who dunnit" much the same way as you play the board game "Clue". Or you can entertain with computer-generated versions of a trivia game (Movie Star Quiz) or Charades. Tutor yourself in French nouns, with or without speech, or have your Tarot read by "Madame Zoltana". Other programs, such as Cassette Program Finder, Bar Graph Printer, and Electronic Scratchpad have more utilitarian use. The most extensive listing in the book, Adventure in Oz, makes use of the varied capabilities of the TI (music, color, sprites and graphics) with the aid of Memory Expansion and Disk.

One of the best ways to learn computer language is to use it; by typing in programs written by others, the beginner can observe the language and learn about programming and the BASIC statements that make a program work. Among the limited number of programming books written specifically for the TI, this book ranks as one of the best, both for its variety of usages and its application of the unique capabilities and accessories of the Home Computer.

If you have difficulty locating a copy of this book, it is available at Bookland in Concord for \$14.95, and by mail from Arizona Discount Software, P.O.Box 5398, Glandale, Arizona 85312.

DID YOU KNOW?

MUNCH MAN has, hidden away in its Program, a Test Mode. This gives you the ability to chose any round (1-20, 21-40, 41-60), and screen (1-20), and up to nine Munch Men. To enter the Test Mode, just Press (within three seconds when the MUNCH MAN title screen appears):

[SHIFT] [8]
[SHIFT] [3]
[SHIFT] [8]

After this is done, RND(0-2) will appear (what round?). When you've chosen what round you want, SCN(0-19) will appear (what screen?). Then MM(1-9) (how many Munch Men?).
NOTE: Remember 0 is 1 in the first two responses!

***** Many thanks to Tony Cappa for this interesting note. *****

HINTS ON USING TI-WRITER

If you're using TI-WRITER for letter or report writing, you probably enter the same commands at the beginning of each file. I always set the left tab=0 and right tab=39 so if I turn the line numbers off (FCTN 0), everything I type is on screen (horizontal scrolling gives me a headache). Next I enter commands for the margins, indent, fill, adjust, emphasized, double strike, and centering for the title. Instead of entering this information each time it's easier to create a file with just this information (I save it as DSK1.START) that you can load, add your text, and resave under a new file name (like DSK1.TI-HINTS). Just remember that the screen tabs don't show in the file but are saved. My DSK1.START file looks like this:

```
.LM 5=
.RM 75=
.IN +3=
.FI=
.AD=
.TL 126:27,69,27,71=
~
.CE=
```

In place of the transliteration command you could use CTRL U, FCTN R, CTRL U,E, CTRL U, FCTN R, CTRL U, G which prints as ¹E¹G . This method was mentioned in the letters to the editor HCM, Aug., 1984 but it does have some drawbacks. If you use PF (PrintFile) with the text editor to get a draft copy of your file, these control characters won't print so you won't know from the printout what commands you entered on that line. The transliteration commands do print and have the advantage that if you are continually switching back and forth between print modes (as I'm doing in this article) you only have to enter one character that is defined by the transliteration command at the beginning of your file.

No matter which method you use or what commands you need, you can have these saved in a file to make using the TI-WRITER easier. If you don't need all the commands for a particular letter, it's still easier to delete the commands you don't need than to look up and enter the ones you do need.

Richard J. Bailey
68A Church Street
Gonic, N.H. 03867

I have over 600 non-copyrighted Programs in my library. I will Process your choices onto cassette, disk, or hardcopy for \$1.00 each and copy unit. Comparable Programs may be exchanged. For more info, see me at the next meeting or contact me at:

JEROME G. BELAIR

672 HUSE ROAD #38
MANCHESTER, NH 03103
603-669-9498

Please enclose a SASE for written info



TIPS FROM
THE
TIGERCUB
No. 14

Distributed by Tigercub Software to users groups for promotional purposes and in exchange for their newsletters.

Tigercub Software, 156 Collingwood Ave., Columbus OHIO 43213, has over 130 original programs available at only \$3.00 each. My catalog is available for \$1.00 which may be deducted from your first order.

It has come to my attention that the members of some users groups have never heard of my kitchen-table enterprise, although their group has been receiving my newsletter for several months. It appears that many users groups have no method of making available to their members the information from newsletters which they receive in exchange.

My software business is a failure, and my Tips are a complete failure as a promotional effort. During the month of July I received a total of 31 requests for my catalog, of which only 9 were the result of newsletter publicity. I do not want to discontinue these Tips, because of the many interesting newsletters that I receive in exchange. However, I can no longer afford to distribute them to those groups which never give any indication that my Tips are reaching their members.

You may have observed that the Tigercub now possesses a Gemini 10X printer. The only fault I could find with it was that it wouldn't print Chinese, so I remedied that defect with this little program.

```
100 !THIS ROUTINE INITIALIZE
S THE GEMINI 10X TO PRINT 'C
HINESE' UNTIL IT IS TURNED O
FF - by Jim Peterson
110 OPEN #1:"PIO"
```

```
120 PRINT #1:CHR$(27);CHR$(4
2);CHR$(0);: CALL CLEAR
130 FOR CH=65 TO 90 :: PRINT
"WORKING..." :: FOR J=1 TO
7 :: FOR L=1 TO 9 :: RANDOMI
ZE :: IF (INT(3#RND+1)<3)+(L
L>1)*(D(J,L-1)>0)THEN 150
140 D(J,L),D(J,10-L)=(1+ABS(
J>1))^J
150 NEXT L
160 NEXT J
170 FOR L=1 TO 9 :: FOR J=1
TO 7 :: X(L)=X(L)+D(J,L):: N
EXT J :: NEXT L
180 PRINT #1:CHR$(27);CHR$(4
2);CHR$(1);CHR$(CH);CHR$(1);
CHR$(X(1));CHR$(X(2));CHR$(X
(3));CHR$(X(4));CHR$(X(5));C
HR$(X(6));CHR$(X(7));CHR$(X(
8));CHR$(X(9))
190 FOR J=1 TO 7 :: FOR L=1
TO 9 :: D(J,L)=0 :: NEXT L :
: NEXT J
200 FOR L=1 TO 9 :: X(L)=0 :
: NEXT L :: NEXT CH
210 PRINT #1:CHR$(27);CHR$(3
6);CHR$(1);
220 PRINT #1:CHR$(27);CHR$(8
7);CHR$(1)
230 PRINT #1:CHR$(27);CHR$(7
1)
240 STOP
```

Now, without turning off the printer, type LIST "PIO" or run any program that puts out text to the printer. It won't fool a Chinaman but it might impress your friends.

Here's a little something for you who own the Terminal Emulator II and the Speech Synthesizer. Maybe our Congressmen could use it to help them discuss the national debt.

```
100 CALL CLEAR
110 PRINT TAB(7);"NUMBER SPE
AKER": : "by Jim Peterson":
" of Tigercub Software"
: :
120 PRINT " This program wil
I print any": " number of les
s than 67": "digits in number
s and in"
130 PRINT "words, and will s
peak the": "words." : : : " R
equires Terminal Emulator": "
II and Speech Synthesizer.":
: :
140 CALL CHAR(39,"0000000000
301020")
```

```
150 OPEN #1:"SPEECH",OUTPUT
160 DIM HIGH$(21),NN$(23)
170 DATA ONE,TWO,THREE,FOUR,
FIVE,SIX,SEVEN,EIGHT,NINE
180 DATA TEN,ELEVEN,TWELVE,T
HIRTEEN,FOURTEEN,FIFTEEN,SIX
TEEN,SEVENTEEN,EIGHTEEN,NINE
TEEN
190 DATA TWENTY,THIRTY,FORTY
,FIFTY,SIXTY,SEVENTY,EIGHTY,
NINETY
200 DATA THOUSAND,MILLION,BI
LLION,TRILLION,QUADRILLION,Q
UINTILLION,SEXTILLION,SEPTIL
LION,OCTILLION,NONILLION
210 DATA DECILLION,UNDECILLI
ON,DUODECILLION,TREDECILLION
,QUATTUORDECILLION,QUINDECIL
LION,SEXTEDECILLION
220 DATA SEPTENDECILLION,OCT
ODECILLION,NOVEMDECILLION,VI
GINTILLION
230 FOR J=1 TO 9
240 READ ONE$(J)
250 NEXT J
260 FOR J=1 TO 10
270 READ TEEN$(J)
280 NEXT J
290 FOR J=1 TO 8
300 READ TEN$(J)
310 NEXT J
320 FOR J=1 TO 21
330 READ HIGH$(J)
340 NEXT J
350 PRINT : :
360 PRINT #1:"NUMBER"
370 INPUT "NUMBER? ":N$
380 L=LEN(N$)
390 FOR J=1 TO L
400 IF POS("0123456789".SEG$
(N$,J,1),1)=0 THEN 360
410 NEXT J
420 IF (VAL(N$)<1)+(VAL(N$)<
>INT(VAL(N$)))THEN 360
430 IF L<67 THEN 470
440 PRINT "HEY! I CAN ONLY C
OUNT TO A": "VIGINTILLION!":
:
450 PRINT #1:"HAY I CAN ONLY
COUNT TO A VIGINTILLION"
460 GOTO 360
470 IF VAL(N$)>0 THEN 510
480 PRINT : : "ZERO": :
490 PRINT #1:"ZERO"
500 GOTO 360
510 IF L/3=INT(L/3)THEN 540
520 N$="0"&N$
530 GOTO 360
540 X=L/2
550 FOR J=1 TO L STEP 3
560 JJ=JJ+1
570 NN$(JJ)=SEG$(N$,J,3)
```

```

580 IF J>1 THEN 610
590 P$=STR$(VAL(NN$(JJ)))
600 GOTO 620
610 P$=P$&" " & NN$(JJ)
620 NEXT J
630 PRINT : : P$ : :
640 FOR J=1 TO X
650 GOSUB 670
660 GOTO 1150
670 IF VAL(NN$(J))<>0 THEN 7
10
680 A$=""
690 FLAG=1
700 GOTO 1140
710 FLAG=0
720 H=VAL(SEG$(NN$(J),1,1))
730 T=VAL(SEG$(NN$(J),2,2))
740 TT=VAL(SEG$(NN$(J),2,1))
-1
750 VV=VAL(SEG$(NN$(J),3,1))
760 IF T=0 THEN 1000
770 IF T>9 THEN 810
780 A$=ONE$(T)
790 SP$=A$
800 GOTO 1000
810 IF T>19 THEN 880
820 A$=TEEN$(T-9)
830 IF T<>19 THEN 860
840 SP$="NINE TEEN"
850 GOTO 1000
860 SP$=A$
870 GOTO 1000
880 IF VV<>0 THEN 950
890 A$=TEN$(TT)
900 IF TT<>8 THEN 930
910 SP$="NINE TEE"
920 GOTO 1000
930 SP$=A$
940 GOTO 1000
950 A$=TEN$(TT)&" "&ONE$(VV)
960 IF TT<>8 THEN 990
970 SP$="NINE TEE"&ONE$(VV)
980 GOTO 1000
990 SP$=A$
1000 IF H=0 THEN 1080
1010 IF T=0 THEN 1050
1020 A$=ONE$(H)&" HUNDRED &
"&A$
1030 SP$=ONE$(H)&" HUNDRED &
"&SP$
1040 GOTO 1140
1050 A$=ONE$(H)&" HUNDRED"
1060 SP$=A$
1070 GOTO 1140
1080 IF (J<X)+(T=0)+(VAL(N$)
<100)THEN 1140
1090 A$=" & "&A$
1100 IF (TT<>8)*(T<>19)THEN
1130
1110 SP$=" & "&SP$
1120 GOTO 1140
1130 SP$=A$

```

```

1140 RETURN
1150 PRINT A$
1160 IF FLAG=1 THEN 1200
1170 PRINT #1:SP$
1180 PRINT HIGH$(X-J)
1190 PRINT #1:HIGH$(X-J)
1200 GOSUB 670
1210 NEXT J
1220 PRINT B$
1230 A$=""
1240 JJ=0
1250 B$=""
1260 P$=""
1270 FOR D=1 TO 500
1280 NEXT D
1290 GOTO 350

```

I hope you noticed that all those zeros were neatly slashed so that you wouldn't mistake them for 0's. Here's a little routine that will set up your printer to slash the 0's until you turn it off.

```

100 OPEN #1:"PIO"
110 PRINT #1:CHR$(27);CHR$(4
2);CHR$(0);
120 PRINT #1:CHR$(27);CHR$(4
2);CHR$(1);CHR$(48);CHR$(0);
CHR$(92);CHR$(34);CHR$(81);C
HR$(8);CHR$(69);CHR$(2);CHR$(
65);CHR$(34);CHR$(28)
130 PRINT #1:CHR$(27);CHR$(13
6);CHR$(1)
140 STOP

```

And, somebody might get mad if I don't include a little music -

```

100 REM - BELL MUSIC program
med by Jim Peterson
110 CALL CLEAR :: CALL SCREE
N(5):: RANDOMIZE
120 FOR CH=96 TO 136 STEP 4
:: FOR L=1 TO 4 :: X$=SEG$("
0018243C425A667E8199A5BDC3DB
E7FF",INT(16*RND+1)*2-1,2)::
B$=B$&X$ :: C$=X$&C$ :: NEX
T L
130 D$=B$&C$ :: Z$=RPT$(D$,4
)
140 CALL CHAR(CH,Z$):: B$,C$,
Z$=NUL$ :: CALL MAGNIFY(4):
CALL SPRITE(#CH/4-23,CH,IN
T(15*RND+2),255,255):: NEXT
CH
142 FOR J=1 TO 10 STEP 2 ::
X=9*RND-9*RND :: Y=9*RND-9*R
ND :: CALL MOTION(#J,X,Y,#J+
1,X,Y):: NEXT J
150 FOR J=1 TO 20

```

```

155 CALL COLOR(INT(10*RND+1
),INT(15*RND+2))
160 FOR V=0 TO 16 STEP 4
170 DN J GOSUB 250,270,290,3
10,330,350,370,390,410,430,4
10,390,370,350,330,310,290,2
70,250,270,290,310,330,350
180 NEXT V
190 READ X
200 FOR D=1 TO X*5
210 NEXT D
220 NEXT J
230 RESTORE
240 GOTO 150
250 CALL SOUND(-999,131,V,52
3,V,131/2,30,-4,V)
260 RETURN
270 CALL SOUND(-999,165,V,16
7,V)
280 RETURN
290 CALL SOUND(-999,196,V,19
9,V)
300 RETURN
310 CALL SOUND(-999,262,V,26
5,V)
320 RETURN
330 CALL SOUND(-999,330,V,33
3,V)
340 RETURN
350 CALL SOUND(-999,392,V,39
4,V)
360 RETURN
370 CALL SOUND(-999,523,V,39
2,V,330,V)
380 RETURN
390 CALL SOUND(-999,659,V,66
6,V)
400 RETURN
410 CALL SOUND(-999,784,V,79
2,V)
420 RETURN
430 CALL SOUND(-999,1047,V,1
057,V)
440 RETURN
450 DATA 16,16,2,16,8,16,4,4
,16,2,16,4,16,8,8,16,2,2,16,
4,2,8,16

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Just about MEMORY FULL, so
Happy hackin'

Jim Peterson

MODIFICATIONS TO
T.I. RESET CIRCUIT

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When T.I. dropped the price of the expansion box package to around \$400 last year a good number of people like myself rushed out and bought one. An annoying problem with the operation of the expanded system is that you have to turn the console on last or the initialization on power-up may not be performed in the proper sequence. If other people like myself have a switched outlet strip to turn every piece of equipment in the system on and off simultaneously then they too have probably forgotten to turn the console off then back on to assure proper initialization. You generally discover this after you try to save a program on disk only to find that the console doesn't think that the disk drive exists.

For those people who have expertise in electronics there is a relatively simple modification to the power-up reset circuit in the console that will allow one switch operation and assure proper initialization. The added circuitry will cost under \$5 for two diodes, one resistor, and one capacitor. No holes have to be drilled, no runs have to be cut, and you can convert the console in under one hour.

No one should attempt this modification unless they are competent to finish the job themselves or are willing to pay T.I. to fix what they mess up. Keep in mind if you have a warranty this will void it. I have made this modification to my own 99/4A but assume no responsibility for any disaster that may befall others who may try to implement this change. Now that I've issued my disclaimer, details for the change.

Other than a two second delay on power-up reset, the reset will act the same as before. If the console locks up when running, you can still switch it off then on to reset it. If you insert a cartridge it will still reset the console.

Power-up reset is accomplished by a simple resistor-capacitor charging circuit associated with the 9904 (74LS362) clock chip which supplies the 3MHZ clock signal to the 9900 CPU chip. To increase the reset time you could increase the value of the timing capacitor. Unfortunately this reset line is also used when a cartridge is inserted so the circuit has to be a little more complicated than just an added capacitor.

The added circuitry is shown within the dotted lines of figure 1. When you turn the console on the original 12KOHM resistor will charge both the original 22MFD capacitor and the added 150MFD capacitor through the diode connected between the two capacitors but the added 150OHM resistor will not contribute any charging current because of the reverse-biased diode connected in series with it. When you turn the system on, it will take two seconds to charge the two capacitors. If you are running the system and need to turn the console off momentarily to reset it, the 22MFD capacitor discharges in about one second and is isolated from the 150MFD capacitor by the reverse-biased diode between them. If the diode were not there it would take longer for this 150MFD capacitor to discharge and allow a reset plus the cartridge reset wouldn't work.

When you are through using the system and shut it down, the diode between the two capacitors is reverse-biased and the 150MFD capacitor cannot discharge through this path. The function of the second diode and 150OHM resistor that were added is to discharge the 150MFD capacitor when you shut the system down.

So the net effect is that every feature of the console remains the same except the power-up reset is delayed for about two seconds.

My console has the brushed aluminum trim and I had to perform the following steps to dismantle it.

- 1) Disconnect power and all cables.
- 2) Pull straight out (toward front) on plastic on-off switch to remove it.
- 3) Remove the seven screws that hold the bottom half of the case and remove it.
- 4) After noting the exact location of the power supply leads, remove its two screws, unplug main board, set power supply to one side.
- 5) Remove three screws holding main board (one in middle of board).
- 6) Lift main board about one inch and CAREFULLY unplug keyboard. (avoid excess flexing of these leads!)
- 7) Unplug cartridge connector from main board.
- 8) Remove the two clips and three screws holding the shields-note the location and shape of the two clips and length and direction of screws through the shields. IMPORTANT!!!
- 9) Solder one end of a four inch long piece of stranded insulated wire to the positive end of the 22MFD capacitor (C506) nearest the 9904 (74LS362) clock chip. This chip may or may not have heatsink grease on it. Do not wipe grease off!
- 10) Resmear grease over tops of chips that have it and reassemble shields making sure the shield pieces near the expansion box connector slide together properly. The free end of the added wire is put through a side hole close to the right end of L115 on edge of board near the four power supply wires. Do not pinch wire between crystal and shield, etc..
- 11) Reassemble shield clips and screws. Plug in cartridge connector.
- 12) Slide one inch long piece of sleeving over free end of added wire.
- 13) Place components as shown in drawing using existing holes in board, and solder all connections. Make sure to slide sleeving over diode-wire connection. Push excess wire inside shield.
- 14) Double-check all wiring and polarity of added components.
- 15) Reassemble console by reversing steps 1-7, making sure that when you replace the power supply the switch lever fits into the slot in the slide. Check to make sure that it slides properly. Use care when reconnecting keyboard.

Reconnect the console, and turn everything on except the console. After you have a blank screen on the TV, turn on the console and note the time delay until you get the title screen. This should be about two seconds. Switch console off then on to check for about one second delay before display of title screen. Plug cartridge in to check for one second delay before display of title screen.

If the console passes these tests the modification is correct and you can use one main switch to turn the system on and off.

FOR SALE

T199/48 CONSOLE\$45
External, 35 Track SS DISK DRIVE with Power Supply\$80
EPSON MX-80 Type RS232 INTERFACE/2K BUFFER\$80

For further information please contact NHUG member:

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T.I. reset circuit

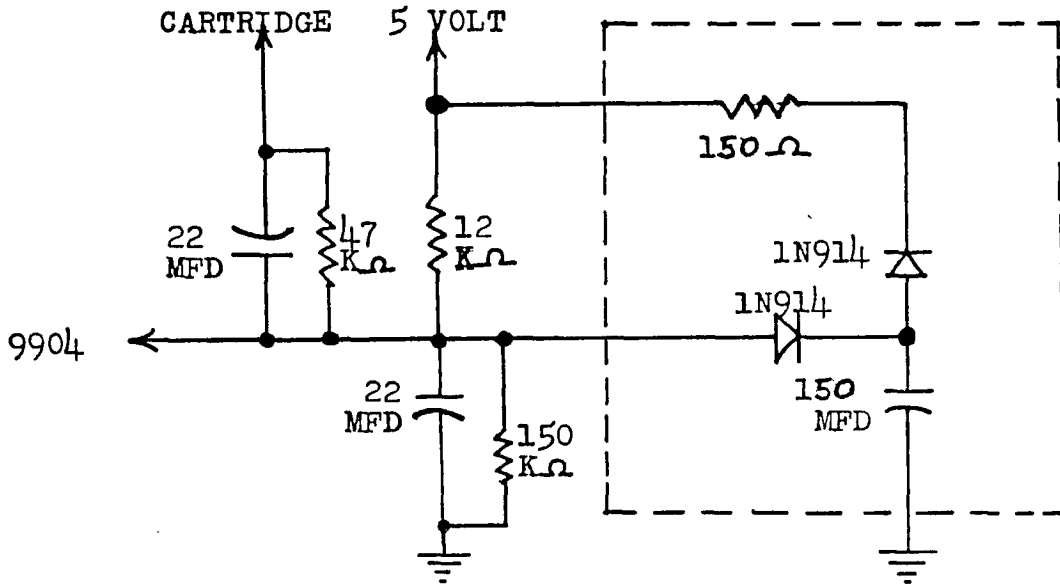


FIGURE 1

