

CALL NEWSLETTER

CALL NEWSLETTER is the voice of the Atlanta 99/4A Computer Users Group. P.O.Box 19841, Atlanta, GA. 30325.

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MEETINGS

The dates and times for the meetings of the Atlanta 99/4A Computer User's Group is the third Sunday of the month at the downtown Atlanta Public Library (off Margaret Mitchell Square) at 3 p.m. Whether or not to hold meetings this summer is still being considered. For more information call a club officer or 231-0992.

SOUTHSIDE chapter meetings are held the first Sunday of the month at the Clayton County Recreation Center in Jonesboro, 101 Lake Jodeco Rd., meetings begin at 3 p.m. For more information call Francis Hauke at 461-7193.

EASTSIDE chapter holds regular meetings on the first Monday of every other month. For more information call Ralph Danson at 292-3427.

***** trading post *****
FOR SALE: TRANS-STAR 315 COLOR GRAPHICS PRINTER (PIO 7 colors/ New ink cartridge 8 1/2X11paper Tractor & Friction.*225 Melvin Carter 997-2617

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***** CLUB SALES *****
Available at the Meetings

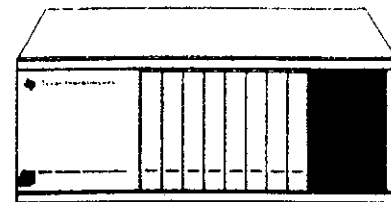
- TI FORTH Members \$20 Non-members \$30
--- thru mail Members \$25 Non-members \$30
Diskettes \$1.50-\$2.00 Depending on brand
Cassettes Tapes C-10, C-20, C-30 \$.90-\$1.10
Best of 99er Magazines as well as selected issues of Home Computer Magazine.
The prepared diskettes are: \$3 Mm. \$4 Non-mem.
1 Line = a disk containing the following:
(Some is FREEWARE- Please Support the Authors)
SCREEN DUMP
NEATLISTER
Disko/MASSCOPY/TK-WRITER/Gothic Print/COMM99
TI-WRITER and MULTIPLAN Updates
FORTH Source Code (2 single sided disks)
Extended Basic FORTH
TAX Forms & GA Sched.84(requires MULTIPLAN)
---Although for 84, can be modified for 85---
TI Advanced Debugger
TE3C - Advanced TE3 with source code
SPRITE BUILDER - takes 2 single sided disks

The above diskettes are available through the mail at the same member/non-member cost.
NOTE: If you send us diskettes with return postage mailer there is no charge.

MYARC

32/128

RAMDISK



Once upon a time everybody else I knew had disk drives while I still was resigned to cassette tapes. Now things have improved somewhat. In my house are four DS/DD disk drives, two expansion boxes, a BPM clock card, a CorComp disk controller card, a TI 32K memory card, a Foundation 128K card, and a MYARC 32/128 Ramdisk memory card.

In the past I have said nice things about the Cor Comp disk controller and not so nice things about the Foundation 128K card. At this point the MYARC Ramdisk also belongs in that class where nice things should be said.

An advertisers job is to point out the great features of his new product. If there are any disadvantages, don't expect to here about them from that source. For a complete picture a User's Group is supposed to do nicely. There, you have folks who expect and want the best from a product but will not hesitate to tell you about any drawbacks.

I just bought the MYARC 32/128K Ramdisk. My Foundation 128K card is now packed in a card board box.

The purpose of a ramdisk is to give you almost instantaneous access to files or programs that are normally on a diskette. For example: When you put the TI Writer EDITA and FORMA files to the MYARC Ramdisk; the program is loaded by the time your finger leaves the 1 key for EDITOR. When you SAVE FILE or LOAD FILE the response is so fast that you start begrudging the time it used to take your disk drives to do anything.

Any program that makes heavy use of file access would also benefit from having that file on the Ramdisk while you use that program. NAME-IT is another good example.

I've noticed a large increase in speed dealing with our 214 sector list of members of the club.

Here is what makes the MYARC Ramdisk worth its price of a bit over \$200:

A true memory expansion card that will work that TI Extended Basic Speech program that the Foundation wouldn't.

A true Ramdisk that lets you access the 96K that it has above the basic 32K Expansion memory.

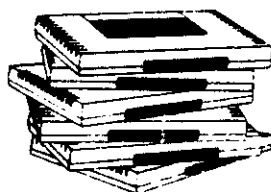
The ability to partition any or all of that 96K into a printer spooler. (A print spooler is like those \$150 extra memory buffers that you can buy to add to your printer.) Now when you print a several page file to your printer you get full use of your computer back a second after you press the button to start printing.

It may take the printer several minutes to print it all out on paper but you don't have to wait. You have your computer back now.

True DSK1 emulation. In other words if a program cartridge like TI-Writer or Multiplan expects to find the program files on DSK1 then your Ramdisk can be DSK1 and you can even name it MP which is what Multiplan expects the disk to be called.

Those features listed above make the card worth the money. What comes next is the gravy:

You can get a Directory of what's on the card at any time from Basic or XBasic with the command CALL RDDIR.



Using an external DC power supply, the card can retain what's in memory even when you power down the rest of the system, P-box included. More on this later.

The card will work with the TI Disk Manager 2. It will work with the MYARC Disk Manager that comes with the MYARC disk controller card. (I say this on faith since I do not have the Myarc disk controller card or the Myarc disk manager.) The Ramdisk card works perfectly well using the CorComp Disk Controller but at the present time the CorComp disk manager will not address the Ramdisk.

The command CALL EMDK(1) will cause the Ramdisk to be DSK1 and your floppy drive 1 is considered non-existent during this time. The CALL EMDK() command can make the Ramdisk 1,2,3,4,5, or 0 with 0 meaning it is no assigned disk drive. SAVE RD.filename or OLD RD.filename, works whether you have assigned it as DSK1-5 or not. The TI Disk Manager will only recognize the Ramdisk if it is DSK1-3.

Other interesting facts or possibilities:

The Ramdisk is expandable to 512K. No one that I am aware of has done this at the present time. The Ramdisk has 16 chips that make up the 128K. They are in 4 banks (4 chips per bank). These chips are called 16x4.

If you replace these 16x4 chips with sixteen 64x4 chips then you have upgraded your card to 512K. I have been told these 64x4 chips will come down in price to about \$5 a chip. That would make a do it yourself upgrade cost \$80, a fair price in my opinion. Right now those chips are more than \$5, enough so that I am not going to go buy any. I also believe that is why MYARC is not shipping or pricing a 512K card. I have heard that the 99/4A can only accept 400K as max on a disk so if you did have the 512K upgrade the extra 112K would serve you best as the printer spooler. Since I don't have 512K I say this but cannot verify it.

An external power supply as mentioned earlier can keep what's in the Ramdisk safe even after everything else has been powered down. After all who wants to keep that P Box blowing when you don't have too. In the back of the Ramdisk card is a receptacle for a sub miniature plug. The tip of the plug is positive biased. The DC power supply should be at least 7.5 Volts 500 ma. The ones I tried less than that were not strong enough to hold the Ramdisk powered up. Another fact worth mentioning is that you can also wire a rechargeable battery in parallel with the power supply to keep the Ramdisk up if you have a power failure. I did do this successfully but the battery I used was a small 9 volt one that would only keep it up about a minute.

Just about any program that will run with the TI Memory Expansion will run with the MYARC Ramdisk. The only exceptions I have found are some disk copy programs that use those areas of memory that are not supposed to be used. For example: MASSCOPY and QUICK COPIER2 by Larry Hughes. Larry Hughes was contacted and did reportedly change the program so it will work. For my money the MYARC Ramdisk is a very good buy and I await other products from MYARC.

Gary Matthews

40 COLUMN BY 24 LINES FOR THE 99/4A AND IN EXTENDED BASIC NO LESS

From the COMPUTER BRIDGE (December 1984) comes this beauty. Our thanks to Dr. Roy T. Tamashiro, Ed. D. for a great program.

I have often wanted to use a 40-column screen in a BASIC program because you can put 43 percent more text on it than on the normal 28-column screen in basic. However, the 40-column screen is not available in TI-BASIC or EXTENDED BASIC, even though this 40-column screen is present in the TI-99/4a ROM. The program below makes it possible to create and implement programs in EXTENDED BASIC on the 40-column screen. The 32-K Memory Expansion, the EXTENDED BASIC cartridge, or cassette or disk system are required. To access the 40-column screen, type in and save the program "FORTY-COLUMN TEXT SCREEN FOR X-BASIC" (below, on disk or cassette). Then compose your program for the 40-column screen.

To turn on the 40-column screen in your program, use the instruction, CALL LINK("FORTY"). You may use most of the normal EXTENDED BASIC instructions, but make the following substitutions:

EXTENDED BASIC INSTRUCTIONS:	REPLACE WITH THIS FORMAT:
CALL CLEAR	CALL LINK("CLS")
INPUT, LINPUT, or ACCE?T AT	CALL LINK("INPUT",ROW\$(1-24),COLUMN\$(1-40),String Variable
PRINT or DISPLAY AT	CALL LINK("DISPL",ROW\$(1-24),COLUMN\$(1-40),String Variable
CALL COLOR, CALL SCREEN	CALL COLORS(Foreground,Background)

(If you wish to change the colors of the characters on the screen, add lines 16000 to 16020 in the SAMPLE PROGRAM below to your program as the last routine in your program. This makes it possible to use the above CALL COLORS(Foreground, Background) instruction. Use the color codes(1-16) normally used in BASIC to designate foreground and background colors. See example in the "SAMPLE PROGRAM" below.)

Do not use SPRITE instructions (CALL SPRITE, CALL MAGNIFY, CALL COINC, etc.) on the 40-column screen. Other instructions such as CALL HCHAR and CALL GCHAR work, but since they are oriented to the 32-column screen rather than the 40-column screen, the locations are confusing.

To switch back to the normal 32-column screen in EXTENDED BASIC, use the instructions, CALL LINK("BSCRN"). Be sure to include this CALL LINK when you exit the EXTENDED BASIC program-- otherwise your program will not be visible on the screen. (See line 200 in the "SAMPLE PROGRAM" below.)

Note that the new INPUT and DISPLAY instructions use string variables only. Thus, numeric variables must be converted before or after these CALLS. For example, to DISPLAY a numeric variable, use the following model:

```
210 N=1:N$=STR$(N)::CALL LINK("DISPL",24,1,N$)      (In this example, the value in N, which is 1, is
                                                    converted to the string variable N$ and displayed
                                                    at row 24, column 1.)
```

Or, to INPUT a numeric variable:

```
230 CALL LINK("INPUT",24,1,N$)::N=VAL(N$)          (In this example, a number is accepted at row 24,
                                                    column 1 and assigned to N.)
```

To RUN your program, first load and RUN the program below ("FORTY-COLUMN TEXT SCREEN FOR X-BASIC"), then load and RUN your program. As long as you do not use CALL INIT or load another Assembly Language program, you can run your program without re-RUNNING the "FORTY-COLUMN TEXT" program.

```
100 ! *****
110 ! * FORTY-COLUMN TEXT *
120 ! * SCREEN FOR X-BASIC *
130 ! *****
140 ! AUTHOR: ROY T. TAMASHI
RO, ED.D
150 ! DECEMBER 1984,X-BASIC
W/ MEMORY EXPANSION
155 ! FIRST LOAD AND RUN THI
S PROGRAM. THEN LOAD AND RUN
YOUR PROGRAM.
160 ! AS LONG AS YOU DO NOT
DO A 'CALL INIT' OR LOAD AN
'ASSEMBLY',
165 ! YOU CAN RUN YOUR PROGR
AM WITHOUT RERUNNING THIS ON
E.
170 CALL INIT

180 CALL LOAD(8196,63,216)::
CALL LOAD(16344,66,83,67,82
,78,32,50,108,68,73,83,80,76
,32,48,190)
190 CALL LOAD(16360,73,78,80
,85,84,32,49,36,67,76,83,32,
32,32,48,78,70,79,82,84,89,3
2,48,38)
200 CALL LOAD(12288,8,31,16,
0,50,190,0,0,0,0,1,108,51,18
8,0,0,0,0,0,2,12,50,116)
210 CALL LOAD(12312,215,32,4
7,190,215,32,47,191,13,0,1,1
08,2,107,2,224,131,224,2,1,2
40,129,216,1)
220 CALL LOAD(12336,131,212,
216,1,140,2,6,193,216,1,140,
2,2,1,245,135,216,1,140,2,6,
193,216,1)

230 CALL LOAD(12360,140,2,4,
96,48,86,2,224,48,0,6,160,48
,98,4,224,131,124,2,224,131,
224,4,96)
240 CALL LOAD(12384,0,112,4,
192,2,1,128,0,4,32,32,32,5,1
28,2,128,3,192,22,250,4,91,2
,1)
250 CALL LOAD(12408,0,1,4,19
,2,4,32,32,12,200,32,131,74,4
8,36,192,224,48,36,2,67,0,25
5,2,2)
260 CALL LOAD(12432,255,216,
2,34,0,40,6,3,22,252,200,2,4
8,34,2,1,0,2,4,192,4,32,32,1
2)
270 CALL LOAD(12456,200,32,1
31,74,48,36,192,96,48,36,2,6
5,0,255,6,1,168,1,48,34,4,91
,2,224)
CON'T
```

```

280 CALL LOAD(12480,48,0,6,1
60,48,118,2,1,255,0,216,1,50
,189,2,1,0,3,4,192,2,2,50,18
9)
290 CALL LOAD(12504,4,32,32,
20,4,197,209,96,50,189,6,197
,2,6,50,190,192,32,48,34,6,1
60,49,28)
300 CALL LOAD(12528,4,193,19
2,86,2,33,96,0,4,32,32,32,5,
128,6,160,49,28,6,5,19,9,6,1
93)
310 CALL LOAD(12552,2,33,96,
0,4,32,32,32,5,198,5,128,6,5
,22,236,4,96,48,86,2,128,3,1
92)
320 CALL LOAD(12576,21,251,4
,91,2,224,48,0,2,2,1,0,2,1,3
2,0,216,129,50,190,6,2,22,25
2)
330 CALL LOAD(12600,6,160,48
,118,2,1,0,255,192,32,48,34,
160,64,2,129,3,192,18,2,2,1,
3,192)
340 CALL LOAD(12624,200,1,48
,36,4,196,193,64,2,1,32,0,21
7,1,50,191,2,1,126,0,4,32,32
,32)
350 CALL LOAD(12648,2,1,5,0,
216,1,131,116,6,160,50,34,21
6,32,131,117,48,32,4,193,208
,96,131,117)
360 CALL LOAD(12672,192,5,2,
129,13,0,22,18,2,1,128,0,4,3
2,32,32,4,224,131,124,4,192,
2,1)
370 CALL LOAD(12696,0,3,6,19
6,216,4,50,190,2,2,50,190,4,
32,32,16,4,96,48,86,2,129,7,
0)
380 CALL LOAD(12720,22,13,2,
1,32,0,217,1,50,191,2,33,96,
0,4,32,32,32,6,0,6,4,22,245)
390 CALL LOAD(12744,4,96,49,
36,2,129,8,0,22,17,2,1,32,0,
217,1,50,191,2,33,96,0,4,32)
400 CALL LOAD(12768,32,32,6,
0,6,4,128,32,48,34,18,181,5,
132,5,128,4,96,49,86,2,129,9
,0)
410 CALL LOAD(12792,22,2,2,1
,32,0,2,129,32,0,17,169,217,
1,50,191,2,33,96,0,4,32,32,3
2)
420 CALL LOAD(12816,5,132,5,
128,136,0,48,36,18,158,6,0,6
,4,4,96,49,86,4,193,2,0,32,0
)

```

```

430 CALL LOAD(12840,2,2,255,
0,4,32,32,28,144,32,131,124,
19,26,144,160,131,117,19,243
,2,3,0,5)
440 CALL LOAD(12864,6,3,2,1,
9,192,6,1,22,254,4,32,32,28,
144,32,131,124,19,11,144,160
,131,117)
450 CALL LOAD(12888,19,228,4
,32,32,28,192,195,22,239,152
,32,48,32,131,117,22,220,4,9
1,2,224,48,0)
460 CALL LOAD(12912,6,160,48
,98,2,0,3,0,4,193,4,32,32,32
,5,128,2,128,3,192,22,250,2,
0)
470 CALL LOAD(12936,224,1,21
6,0,131,212,6,192,4,32,32,48
,2,0,3,32,4,32,32,48,2,0,7,2
3)
480 CALL LOAD(12960,4,32,32,
48,2,0,8,0,2,1,16,0,4,32,32,
32,5,128,2,128,8,31,22,250)
490 CALL LOAD(12984,4,96,48,
86,0,255,0,32,32)

```



```

100 REM *SAMPLE PROGRAM *
110 CALL LINK("FORTY")
120 CALL LINK("CLS"):: CALL
LINK("DISPL",1,15,"HELLO THE
RE")
130 CALL LINK("DISPL",10,1,"
Foreground Color--Enter 1-16
:")
140 CALL LINK("INPUT",10,35,
F$):: F=VAL(F$)
150 CALL LINK("DISPL",12,1,"
Background Color--Enter 1-16
:")
160 CALL LINK("INPUT",12,35,
B$):: B=VAL(B$)
170 CALL COLORS(F,B)
180 CALL LINK("DISPL",23,1,"
Enter <1> to go on; or <2> t
o exit:")
190 CALL LINK("INPUT",23,38,
K$):: IF K$="1" THEN 120
200 CALL LINK("BSCRN"):: END
16000 SUB COLORS(F,B)
16010 CALL LOAD(12350,16*(F-
1)+(B-1)):: CALL LINK("FORTY
")
16020 SUBEND

```

```

10 REM BREAKDANCING
20 REM by Travis Works
30 REM of Ringold GA
40 REM Reprinted from ENTER

50 REM Thanks to SPIRIT OF
99
60 REM PRESS A NUMBER KEY A
ND THEY WILL CHANGE STEPS.

70 REM HOLD ONE KEY DOWN FO
UR KEEP DANCING THE MIDDLE S
TAYS STILL.
90 CALL CLEAR
100 RANDOMIZE
110 GOSUB 350
115 CALL CLEAR
120 PRINT " BREAKDANCIN
G!!!"
125 PRINT "::::::::::"
130 PRINT "HUMAN OR COMPUTER
CONTROL???"
135 PRINT "::::"
140 INPUT CON$
150 CALL CLEAR
160 IF SEG$(CON$,1,1)="H" TH
EN 220
170 BD=INT(RND*5)+153
180 CALL KEY(3,W,E)
190 IF E=1 THEN 220
200 GOSUB 280
210 GOTO 170
220 CALL KEY(0,BD,N)
230 IF N=0 THEN 220
240 IF BD=32 THEN 170
250 BD=BD+102
260 GOSUB 280
270 GOTO 220
280 CALL VCHAR(12,10,BD+(INT
(RND*2))+1)
290 CALL VCHAR(12,12,BD+(INT
(RND*2))+1)
300 CALL VCHAR(12,16,BD)
310 CALL VCHAR(12,20,BD+(INT
(RND*2))+1)
320 CALL VCHAR(12,22,BD+(INT
(RND*2))+1)
330 RETURN
340 GOTO 220
350 REM CHARACTERS
360 CALL CHAR(151,"000000000
4884438")
370 CALL CHAR(152,"0000B2443
8383854")
380 CALL CHAR(153,"0010FE383
84482")
390 CALL CHAR(154,"8090FC3A3
9484808")
400 CALL CHAR(155,"000000000
0847936")
410 CALL CHAR(156,"00107CBA7
C281808")
420 CALL CHAR(157,"142424783
8")
430 CALL CHAR(158,"41493E1C1
C2214")
440 CALL CHAR(159,"40281E1D1
41414")
450 RETURN

```

PROGRAM MODIFICATIONS

** MODIFICATIONS to MASTERDISK **

* By Larry Wilson *

Taken from the 99'ers UGA NL #11 10/84

Information from Pronto System Comm Link TI BBS in Tampa, Fla. For those of you with double-sided drives and MASTERDISK, the following modifications will allow the program to hold up to 250 disks of information or a listing for 3000 programs.

1. Place MASTERDISK onto a double-sided disk.
2. Access the program named AD.
3. Call up line 540 and change "IF DT<121" to "IF DT<251"
4. Call up line 550 and change "IF PF<1100" to "IF PF<3000".
5. SAVE this revised program. Then RUN the LOAD program and you will have a double sided MASTERDISK.

CUSTOMIZED - MULTI-PLAN

by Ted Anderson
Pittsburgh Users Group

One of my hobbies is customizing programs I use frequently to my own system and needs. MULTIPLAN normally requires initialization for dual disk drives and PIO each time it is booted. Poking around with DISK-FIXER fixed the default configuration right on my back-up TIMP disk. The I/O parameters are set up on the MPINTR program file. Interpretation of the disk directory shows MPINTR beginning at sector 010F on my disk. Sector 0110 contains the only recognizable (ASCII interpreted) information, namely the DSK and PRINTER names. To change the default data file disk for DSK1 to DSK2 use any disk reading program to change the word beginning at address 0058 from 4B31 to 4B32. Likewise, to change the printer change the words beginning at 00BE to the ASCII code for PIO.EC: 5049 4F2E 4543 2020 2020. A similar change can be made on DISK-FIXER itself (on disk only) at sector 23.

As you can see, poking around disks with DISK-FIXER can be a great adventure.. I'll report more in a later issue. Meanwhile, I'd like to hear from anyone who can achieve printer control codes from within MULTIPLAN or through SYLK files.

TI-WRITER ENHANCEMENT

by Rob Goff
MANNERS Newsletter

When I received the enhancements to the TI-WRITER. I was quite pleased with what it provided, with the exception of the Text Formatter that defaults to an RS232 serial output. I personally, have a parallel printer output so I had to modify this setting each time I wanted to print a document. The other day I was browsing through the mail on CompuServe and ran across the solution to this problem. So

if you have a parallel printer (Ed. note: or any serial printer with a baud rate other than 1200) and want to change your default settings permanently, follow these instructions.

If you are changing the disk as it was received from the Club Library then power up DISKO and select option 1. goto section 50 Hex, the beginning of line 3. use FCTN 2 to switch to ASCII, and you will see "RS232.BA=1200". Position the cursor over the "R" at the beginning of the line and type "PIO.LF" then blockout the rest of the existing information, through "LF" with spaces. (Ed note: or change 1200 to the baud rate of your printer.). Next hit FCTN 8 and answer "Y" to the prompt. That's it. Now when you print out a document and come to the printer default all you'll need to do is hit ENTER and you are off and running.

In case you have transferred FORM1 to your own disk, you can use option 2 of DISKO to locate the beginning of FORM1 proceed ten (10) sectors, and you'll find the printer default information.

TK-WRITER REVISIONS
JACKSON COUNTY 99ers

If you have TK-Writer from Tom Knight, there is now a modification to the LOAD program that will cut down the wait when switching from the Editor to the Formatter. This wait is caused by the assembly language program being loaded back into the computer when the load program is rebooted. This assembly language program, however, is still present in memory if you haven't done something like turn off the computer or run some other program. Converting your LOAD program by replacing line 100 and adding lines 102,104, and 108. Line 100 checks to see if the assembly program is in memory. If not, it jumps to 108 and loads the program. If it is in memory, the REF/DEF table and last free address are loaded, and you can access the assembly code as usual. In plain talk, it will save a whole bunch of time.

```
>100 CALL CLEAR :: CALL INIT
:: CALL PEEK(-2043,A,B):: IF
A(>84 OR B(>75 THEN 108
>102 CALL LOAD(16360,85,84,73
76,73,84,250,212,70,79,82,7
7,65,84,250,132,69,68,73,84,
79,82,250,22)
>104 CALL LOAD(8196,63,232)::
GOTO 110
>108 CALL LOAD("DSK1.WRITER")
```

The TK-WRITER loader program written by Tom Knight is a terrific program freeing everyone from the necessity of using the TI-WRITER Module. There is one minor problem - bombing out the program by typing in "SD" for Show Directory to catalog a disk. Once you become aware of this problem, you can avoid it. But here is a fix that modifies the EDITA1 program so that if you press "SD" by mistake the program doesn't recognize the request and

returns to the command line with no loss of data. The sector that needs to be changed is the third sector of the EDITAI program. The hex values at bytes >14 and >15 are >53 and >44 (ASCII S,D). change the >53 to >20 (space character). listed below are the printouts of a portion of the sector before and after the change.

ORIGINAL FORM

```
2D 54 53 48 3E 0F 2D 54 52 45 3E 2C 0C
2F CA 4D 20 3E 84 2F 42 53 44 3C D4 18
2E 4C 53 46 00 00 2E 8A 4C 46 00 00
```

ALTERED FORM

```
2D 54 53 48 3E 0F 2D 54 52 45 3E 2C 0C
2F CA 4D 20 3E 84 2F 42 20 44 3C D4 18
2E 4C 53 46 00 00 2E 8A 4C 46 00 00
```

This change is not very elegant but it does work - if you are using TK-WRITER. You will not be able to show Directory when you go back to your TI-WRITER cartridge after making this change. The decision is up to you. if you are only using TK-WRITER, it is an easy decision to make

THE DEMISE OF THE INTERNATIONAL USERS GROUP INC.

The following "letter" was taken from the Jackson County 99ers Newsletter. Since we did not get a copy our reprint is a bit late. It also seems that there are several letters out there from the IUG on the same subject. Each worded a little differently. (Ed)

For those of you who are members of the International Users Group of Bethany, OK, and are waiting for programs you have ordered, the following letter may be of interest:

THE IUG HAS FILED FOR PROTECTION UNDER CHAPTER 7 OF THE FED. BANKRUPTCY ACT. ALL SOFTWARE LIBRARY ORDERS RECEIVED ON OR BEFORE APRIL 30, 1985 WILL BE SHIPPED PRIOR TO MAY, 1985. WE HIGHLY REGRET THIS ACTION BUT HAVE NO OTHER ALTERNATIVE AT THIS POINT. THE CURRENT LIBRARY AS WELL AS SOME 400 NEW PROGRAMS HAVE BEEN KEPT INTACT AND WILL BE MARKETED BY A NEWLY FORMED COMPANY WHICH WILL BE ANNOUNCED ON 6/1.

THIS NEW COMPANY WILL USE THE CURRENT IUG CATALOGS AND PROGRAM NUMBERS SO THERE WILL BE NO CONFUSION TO NEW MEMBERS. I PERSONALLY FEEL DEEPLY SADDENED THAT THE QUALITY OF SERVICE THAT WE STRIVED FOR OVER THE PAST 5 YEARS HAS SUFFERED SO IN OUR LAST 6 MONTHS OF OPERATION AND HOPE THAT OUR THOUSANDS OF MEMBERS AND FRIENDS CAN UNDERSTAND THAT WE DID EVERYTHING IN OUR POWER TO CONTINUE TO SUPPORT OUR MEMBERS TO THE BITTER END. FOR THOSE HOSTILE MEMBERS WHO SEEM TO THINK THAT I HAVE AMASSED A PERSONAL FORTUNE FROM THE IUG PLEASE REST ASSURED THAT THIS IS NOT THE CASE.

THE FACT IS THAT WE CURRENTLY STAND TO LOOSE "EVERYTHING" THAT VIRGINIA AND I HAVE WORKED FOR OVER THE PAST 20 YEARS TO ASSURE THAT OUR MEMBERS AND CREDITORS ARE SATISFIED.

(signed) CHARLES LA FARA

con't

The Demise Of The IUG Inc. (Con't)

I must say I'm sorry to see the IUG go it was always a rallying point for 99/4A owners. I'm sorry that the owners of this Corporation acted the way that they did, ie: using threats rather than cooperation to gain their ends.

I'm also sorry to see the statement in the second half of the first paragraph. Could these be the very same programs that the IUG had donated to them as public domain only to turn around and try to cover them with their own copyright.

I can not understand why the IUG with its userbase of tens of thousands could have fallen so quickly. With all those thousands of people to sell equipment and programs to it would seem that better use could have been of its contacts and resources. No I do not believe that La Fara made off with any personal fortune. I've been helping to run a users group too long to believe that there is any large sum of money to be made.

I guess that what gets me is that several other commercial companies have made out well supplying 99/4A users. One of them, here in our own backyard, started on a shoestring yet continues to grow and prosper. Without the programs the IUG had access to, without the big name 99/4A-programers the IUG had access to, without the thousands of members the IUG had access to. If they can do it why didn't the IUG do it.

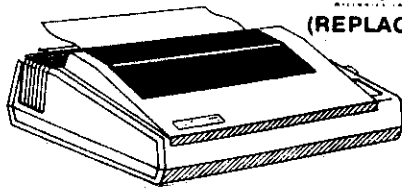
Marshall

```
TTTT I      TTTT RRR I V      V I AAAA !!!
T I      T R R I V      V I A A !!!
T I      T RRR I V V      I AAAA !!!
T I      T R R I V      I A A !!!
T I      T R R I V      I A A !!!
```

See how many of the following questions you can answer?

(ANSWERS ON PAGE 13)

- 1) What do the letters "C.P.U." designate?
- 2) The TI 99/4A is a --- bit computer.
- 3) Where did the word "bit" come from?
- 4) Where did the word "modem" come from?
- 5) What does "BASIC" stand for?
- 6) Who invented FORTH?
- 7) Why is FORTH not spelled FOURTH?
- 8) Exactly how many bytes are in a kilobyte?
- 9) What is the CPU in the 99/4A?
- 10) What is faster: Serial or Parallel data transmission?
- 11) What does a VDT do?
- 12) What came first: FORTRAN or BASIC?
- 13) What was the first computer called?
- 14) Who invented the first micro-processor? What year?
- 15) Name the Three components of a C.P.U.
- 16) TI BASIC is a compiled language. T/F?
- 17) How much data can be saved on a SS/SD disk in 99/4a format?
- 18) Where did the word "FORTRAN" come from?
- 19) What is easier to learn: Quantum Physics or Graphic Programming Language?
- 20) Name the TWO unconditional line transfers in basic.



Star SG-10 (REPLACES THE GEMINI 10X)

SG-10 PRINTER

This is a review of the new Star Micronics SG-10 printer. The printer has several good points for everyday use with your TI-99/4A home computer.

One nice thing about the new printer is the NLQ (Near Letter Quality) mode that the printer has. Another thing is that the SG-10 printer has a 2K buffer and not a 2 line buffer. The SG-10 prints at 120 cps like the Gemini-10X. They are almost the same with the exception of the NLQ mode and the 2K buffer.

The SG-10 for those of you who have an IBM fully supports all IBM character modes. The SG-10 also has a built in character set for graphics and is fully dot addressable. The printer will run around \$289.00 and the cable (PIO) will run about \$32.00 to \$34.00. (Ed. note: The prices in COMPUTER SHOPPER have been around \$240-250) So the printer is not that cheap but at the same time for all that it can do this appears to be a fair price.

The SG-10 users manual will explain to the first time user of a printer just how the printer works and what it can do. The manual does go into detail as to what commands you need to send the printer to get it to do the things that you need it to do. The manual does not tell you how to use the printer with a TI. If you stay with the Star Mode and use the examples for the IBM you will be able to use the printers many functions.

The SG-10 has all 6 of the DIP switches on the left hand side of the printer. So the DIP switches are easily accessed. With the near letter quality mode the printer will decrease its speed from 120 cps to 100 cps. This is not that bad and the print is very good. In the NLQ mode the print has to make two passes. The first one is the main body of the letter and the second pass makes all of the curves. The NLQ mode has two character sets and combines them as one in order to get the near letter quality.

For the most part the SG-10 is an upgrade from the Gemini-10X printer. The SG-10 also uses a ribbon and not a cartridge. All in all if you don't have a printer and are thinking of getting on in the near future I would suggest the SG-10. I think that it is the best printer out for any computer.

Paul H.

WHEW 4 (CON'T)

```
EP:B :: NEXT B
9 ! CALL LOAD(-31878,0)
10 ACCEPT AT(14,14)SIZE(-1):
A# 11 CALL LOAD(-31878,0)
```

PIO PRINTERS ALL

It is possible to operate 2 parallel printers on one PIO port with a simple manual selector switch using a DPDT switch. The idea is that both printers can see the data, but only the one with access to the two handshake lines will print.

The pin connections I used are listed below. The two printers I am operating are a GEMINI 10X and a COMREX CR II. They have the standard parallel port pin arrangement. The TI pin 10 handshake connects to pin 11 on the printer.

PIN CONNECTIONS:

TI	SW	PRNTR 1	PRNTR 2
	0-----1		
1-----0/			
	0-----1		
2-----2		2-----2	
3-----3		3-----3	
4-----4		4-----4	
5-----5		5-----5	
6-----6		6-----6	
7-----7		7-----7	
8-----8		8-----8	
9-----9		9-----9	
	10		10
	0----11		
10----0/			
	0-----11		
12			
13			
14			
15			
16-----30		30-----30	

Pin 16 on the TI is grnd and pin 30 on the printers is a more convenient grnd.

I am NOT a specialist in the field of electronics. Use this information at your own risk.

(Ed note. Neither the club nor the author can take any responsibility for damage done if you use these plans. In doing all projects like this you must proceed at your own risk.

SHORT SHORTS

The following programs are short ones that have both interesting visual and programming features.

Do not type the spaces before and after the double colons (::) or several of the programs will not fit. Also when you have reached the end of a permissible line, hit ENTER, then EDIT the line to extend its legal length.

One more thing save these before you RUN them one or two of these will lock up your screen.

```
1 N=28 :: FOR X=4 TO N :: CA
LL SPRITE(#X,60+X,X/2,N,N,X,
M):: FOR Y=5 TO X :: CALL CD
INC(#Y,#4,N+M,C):: M=M-C ::
DISPLAY AT(4,9):M :: CALL JO
YST(1,E,F):: CALL MOTION(#4,
-2*F,2+E):: NEXT Y :: NEXT X
```

```
1 DIM A(255),C(254):: RANDOM
IZE :: CALL PEEK(-31808,B)::
IF B=0 OR A(B)=B THEN ELSE C
(D)=B :: A(B)=B :: D=D+1 ::
DISPLAY AT(24,1):A(B);D :: I
F D=255 THEN END ELSE 1
```

```
1 CALL INIT :: CALL CLEAR ::
CALL MAGNIFY(4)
2 FOR B=1 TO 10 :: FOR A=100
TO 255 :: PRINT A:: CALL LO
AD(-31873,-A):: PRINT CHR$(A
);:: NEXT A :: NEXT B
```

```
1 CALL CLEAR :: FOR A=1 TO 1
4 :: CALL COLOR(A,16,2):: CA
LL SCREEN(5):: NEXT A
2 CALL MAGNIFY(4)
3 FOR B=10 TO -10 STEP -1 ::
FOR A=100 TO 255 STEP ABS(B-
(B=0)*14):: C=64+(A AND 31)::
D=SGN(B)*(A*B)
4 PRINT B;A;"OK";CHR$(C);CHR
$(D):: CALL INIT :: CALL LO
AD(-31873,-A):: PRINT CHR$(A
);CHR$(C);
5 CALL LOAD(-31744,-C,-A,A,-
D,C):: NEXT A & CALL VCHAR(1
,1,32,464):: NEXT B !:: CALL
DELSPRITE(ALL):: NEXT B
7 CALL SOUND(100,444,3)
```

```
100 CALL CLEAR
110 CALL CHAR(96,"0000041805
3B01314F8F8F1C30282400000008
9B86C62E0E0F82424488")
120 CALL CHAR(100,"03000C020
D321514F8F0F3C5060A000080408
8BC8B4E0E0E0F824120904")
130 CALL MAGNIFY(4):: CALL S
PRITE(#1,96,2,90,90,#2,100,2
,90,90)
140 CALL MOTION(#1,-1,18,#2,
-1,18)
150 FOR FLY=1 TO 40 :: FOR A
=1 TO 2
160 CALL COLOR(A,1):: CALL
COLOR(#(3-A),2)
170 FOR X=1 TO 90 :: NEXT X
```

```
:: NEXT A :: NEXT FLY
180 CALL MAGNIFY(3):: GOTO 1
50
```

```
100 REM Barchart
110 REM THIS WILL PRODUCE A
RANDOM BAR CHART ON THE
SCREEN
120 CALL CLEAR
130 FOR SET=1 TO 31 STEP 2
140 CALL COLOR(SET/2,8,8)
150 A=INT(RND*24+1)
160 CALL VCHAR(24-A,SET+1,SE
T*4+31,A)
170 CALL VCHAR(24-A,SET+1,SE
T*4+31,A)
180 NEXT SET
190 FOR X=1 TO 16
200 CALL COLOR(X,X,X)
210 NEXT X
220 GOTO 220
```

```
10 ! *****
20 ! COMET SPLICE
30 ! by
40 ! Danny Cox
50 ! for
```

```
60 ! Mid South 99 User Group
70 ! *****
80 CALL CLEAR :: CALL MAGNIF
Y(2):: CALL SCREEN(2):: CALL
CHAR(140,"0102040810204080")
:: FOR X=1 TO 28
90 CALL SPRITE(#X,140,X/2+2,
92,124,0,0) :: NEXT X
100 FOR I=2 TO 18 STEP 4 ::
FOR K=1 TO T :: FOR I=1 TO 2
B :: CALL MOTION(#I,K-I,I-K)
:: NEXT I :: NEXT K :: FOR M
=1 TO T+2 :: FOR N=1 TO 28
110 CALL MOTION(#N,N-M,M-N):
: NEXT N :: NEXT M :: NEXT T
:: RUN
```

```
100 REM *****
110 REM * SNAKE DANCE *
120 REM * by David Vaughn *
130 REM * VAUGHN SOFTWARE *
140 REM *****
150 REM
160 REM YOU DON'T NEED TO TY
PE THE REM STATEMENTS
```

```
170 REM
180 REM THIS PROGRAM IS IN E
XTENDED BASIC
190 REM
200 REM
210 RANDOMIZE :: CALL CLEAR
:: CALL SCREEN(2)
220 B=RND*190 :: CALL MAGNIF
Y(1):: CALL CHAR(96,"B"):: F
OR A=1 TO 28 :: CALL SPRITE(
#A,96,8,95,10,10,SGN(95-B)*A
):: NEXT A
230 D=RND*20 :: F OR A=1 TO
28 :: CALL MOTION(#A,D,A*SGN
(10-D)):: NEXT A :: C=C+1 :
: IF C=25 THEN GOTO 240 ELSE
GOTO 230
240 FOR A=1 TO 28 :: CALL CO
LOR(#A,RND*14+2):: NEXT A ::
C=0 :: CALL MAGNIFY(2)
250 FOR A=1 TO 28 :: B=RND*1
4+2 :: CALL PATTERN(#A,46)::
CALL POSITION(#A,U,V):: CALL
MOTION(#A,SGN(96-U)*9,SGN(10
-U)*9):: NEXT A
260 FOR A=1 TO 28 :: CALL PA
```

```
TERN(#A,96):: NEXT A :: CAL
L DELSPRITE(ALL):: GOTO 220
```

```
100 ! *****
110 ! SPRITEPEDE
120 ! by:
130 ! Gary Christensen
140 ! of TI B.U.G.
150 ! *****
160 CALL CLEAR :: CALL SCREE
N(16):: CALL COLOR(2,5,5)::
CALL MCHAR(24,1,42,64):: CAL
L VCHAR(1,31,42,96)
170 DISPLAY AT(1,9)SIZE(12):
"SPRITEPEDE"
180 FOR A=4 TO 109 STEP 5 ::
FOR B=1 TO 7 :: GOSUB 200 ::
NEXT B :: NEXT A :: FOR A=10
9 TO 4 STEP -5 :: FOR B=7 TO
1 STEP -1 :: GOSUB 200
190 NEXT B :: NEXT A :: GOTO
180
200 CALL SPRITE(#B,42,2,B*3+
A,128,#B+7,42,2,B*3+A+16,128
,#B+14,42,2,B*3+A+32,128,#B+
21,42,2,B*3+A+48,128):: RETU
RN
```

```
100 REM *****
110 REM * TELTUNES *
120 REM *by David Vaughn*
130 REM *VAUGHN SOFTWARE*
140 REM *****
150 REM
160 REM
170 CALL CLEAR
180 DIM TN$(9)
190 DATA 948.01331.7,699.112
15.9,699.11331.7,699.11471.9
,766.21215.9,766.21331.7,766
.21471.9
200 DATA 847.41215.9,847.413
31.7,847.41471.9
210 FOR A=0 TO 9
220 READ TN$(A)
230 NEXT A
240 INPUT "PHONE NUMBER?: " :
PH$
250 FOR A=1 TO LEN(PH$)
260 C=VAL(SEG$(PH$,A,1))
270 CALL SOUND(50,VAL(SEG$(T
N$(C),1,5)),0,VAL(SEG$(TN$(C
),6,6)),0)
280 NEXT A
290 FOR D=1 TO 50
300 NEXT D
301 GOTO 240
```

```
1 ! WHEW4
2 CALL CLEAR :: PRINT "SET C
OLORS" :: FOR A=1 TO 12 :: C
ALL COLOR(A,16,4):: NEXT A
3 PRINT "BUILD THE STR#" ::
FOR A=0 TO 254 :: A$=A$&CHR$(
A):: NEXT A
4 PRINT "SHOW ALL CHARS" ::
FOR A=0 TO 31 STEP 2 :: B=1+
(A*B):: DISPLAY AT(A/2+3,3):
SEG$(A$,B,8);" ";SEG$(A$,
B+8,8):: NEXT A
5 PRINT "ANY KEY TO TEST CAL
L LOAD"
6 CALL KEY(0,K,S):: IF S=0 T
HEN 6
7 FOR B=31 TO 125 :: CALL IN
IT :: CALL LOAD(-31878,B)
8 DISPLAY AT(14,5)SIZE(-5)BE
```

THE NEW! NEWER! NEWEST!!! 99/8

(CON'T)

it without fanfare or vaporware announcements. They built it, produced it, and it worked. They are now bring out a line of cards for the 99/4A's P-BOX, a disk controller, an RS232 card and a Memory Expansion Card. (Reviewed on page 3 Ed)

Lately however Lou Phillips has been giving interviews about the new machine. Every newsletter has been publishing details about the new machine. The following is an example, it comes from the newsletter of the Corpus Christi TI-99/4A Users Group, CC99'ER.

THE PRESIDENT'S CORNER By Lance Parr

...I spoke with Lou Phillips, president of MYARC, on May 20th. He told me that the hardware had been designed, and that MYARC had secured everything it needed from TI to make the machine. (This is the GPL or Graphics Programming Language that TI uses in its GROM chips. Ed Note) He said that several "large, independent third party software houses" are busy writing software for the new machine, which he hopes will be in production sometime late this year. ...

Unfortunately the machine did not make the CES in June, and since then everyone speaking about the 99/8 has been backpedaling. The machine is out for BETA testing, the machine is not out for BETA testing. (Beta test means letting some potential consumers get their hands on the prototype to see what bugs they find. Ed note). The machine will have 128K, 512K, 1Mk. It will be CPM compatible, it'll be IBM compatible. It'll have Forth or Pascal or Lisp in onboard ROM. The machine will have a full keyboard, it'll be a P-BOX card. It'll make use of the P-BOX it'll have no use for the P-BOX. And on and on, ad infinitum, ad nauseum.

I like the 99/4A too much to turn up my nose at new products, especially one like this, but I can not see in this wealth of rumour what is and what is not. I am tired of hearing about new this and new that and never seeing anything. There are a lot of new products on the market and a lot of new software. I like a lot of it. I might purchase some of it, but with all the rumors I keep saying to myself 'If I wait just a little longer I'll be getting something bigger, better, that will have better software, I'll wait, and I'll wait. When the 99/4A dies from lack of support, I'll still be waiting.

If your waiting for, as another Georgia 99/4A newsletter editor has called it, the 99/8Messiah, you may very well be disappointed, learn to use what you have here and now. The 99/4A is still the best HOME COMPUTER around. The only difference is the lack of software, and that can be

(CON'T)

remedied by supporting software authors that support the 99/4A. Too many are leaving the business because there are no purchasers for their goods. The large "independent" houses are looking at the profit end and do not see any, so they will not write for us. This will only end if they see that there are 99/4A Authors making a profit from the 99/4A.
Marshall

New TI BBS in town (Con't from page 1)

Larry Lord a local HAM has opened a board for other local HAM's. The board is open to all who wish to use it. I do not have operating hours at this time.

Give it a call and try it out. The local phone number is:

363-1640

This is a board that's really going to be interesting.

FORTH FORTH

SCR 049

THE FORTH CALENDAR

1
2 The following seven FORTH screens were submitted by
3 Rich Hubbard and produce the Calendar printed in last
4 months newsletter. The original program can be found in
5 'THE COMPLETE FORTH' by Alan F.T. Winfield. Permission
6 to reprint this corrected and edited version from the Copy
7 right book has been granted by the publisher-WILEY PRESS
8 Inc. Comments on each screen should HELP explain how the
9 program works. Screen 54 contains the 'words' to print a
10 yr or mo to your monitor. I.E.-after typing 50 LOAD (ENTER),
11 type 1985 year (ENTER). The year 1985 starting with Jan.
12 will scroll up your monitor. Screen 056 was written by
13 Rich to print any calendar year or month from 1582 to
14 4902. You may have to alter these commands to match your
15 printer. Good luck & Happy FORTHing!

SCR 050

0 (Calendar Vocabulary, Zeller's congruence)
1 DECIMAL
2 FORTH DEFINITIONS
3 VOCABULARY calendar
4 calendar DEFINITIONS
5
6 0 VARIABLE Y 0 VARIABLE M 0 VARIABLE D
7 (Year, Month, Day)
8 0 VARIABLE a 0 VARIABLE b (work variables for janist)
9 : janist (return the day, 0-6, of Jan 1st in year Y)
10 Y 2 1 - 100 / a !
11 Y 2 1 - 100 a 2 2 - b !
12 799 b 2 + b 2 4 / + a 2 4 / + 2 a 2 2 -
13 7 MOD ; (-) a
14
15 51 LOAD 52 LOAD 53 LOAD 54 LOAD 55 LOAD

SCR 051

0 (Calendar Vocabulary, string printing)
1 'days' (weekday string table)
2 ' Sunday ' Monday ' Tuesday ' Wednesday '
3 ' Thursday ' Friday ' Saturday '
4 : printday (print weekday 0-6)
5 12 * 'days' + 3 + 9 TYPE ; (n -)
6 : test1 DO J Y : Jan 1st 1 . SPACE janist - -
7 : printday CR PAUSE DROP LOOP ; (i.e. 2000 1900 test1)
8 'months' (month string table)
9 ' January ' February ' March ' April '
10 ' May ' June ' July ' August '
11 ' September ' October ' November ' December '
12 : printmonth (print month 0-11)
13 1 - 12 * 'months' + 3 + 9 TYPE ; (n -)
14
15 : NOT 0 - ;

FORTH CON'T

Scott, Foresman Educational Courseware
Atlanta Office (404) 939-7210 Illinois (312) 273-5900

CLOSE OUT SALE!

Scott, Foresman and Company, leading educational publisher, offers big savings on well known educational courseware for the Texas Instruments 99/4A microcomputer.

Thousands of packages have been sold to homes and schools at the suggested retail price of \$39.95. Now discontinued, these packages are available for only \$4.95 while supplies last.

Many have never before been offered for sale anywhere.



```
SCR #52
0 ( Calendar Vocabulary, date checking words )
1 31 VARIABLE dpmtable
2 28 C, 31 C, 30 C, 31 C, 30 C,
3 31 C, 31 C, 30 C, 31 C, 30 C, 31 C,
4 : Leap? Y 3 4 MOD 0= ( is year Y a leap year )
5 Y 3 188 MOD 0= NOT AND
6 Y 3 488 MOD 0= OR ; (-) flag
7 : dpm DUP dpmtable + C0 ( return no of days/month )
8 SWAP 2 = Leap? AND ( add 1 if Feb and Leap yr )
9 IF 1+ THEN ; ( a1 -) a2 )
10 ( Check date within range, all return 'true' if NOT )
11 : Ycheck Y 3 DUP 1582 ( SWAP 4962 ) OR ; (-) flag )
12 : Mcheck M 3 13 U< NOT ; (-) flag )
13 : Dcheck D 3 1 - M 3 dpm U< NOT ; (-) flag )
14 : datecheck Ycheck Mcheck Dcheck OR OR
15 IF " Date error" ABORT THEN ;
```

```
SCR #53
0 ( Calendar Vocabulary, daynumber and day ) : C CONSTANT ;
1 1 C January 2 C february 3 C march 4 C april
2 5 C may 6 C june 7 C july 8 C august
3 9 C september 10 C october 11 C november 12 C december
4
5 : daynumber 0 13 0 DO ( calculate days up to date D/M/Y )
6 M 3 1 = IF ( Loop through months )
7 D 3 + LEAVE ( until M= )
8 ELSE
9 I dpm + ( accumulate days )
10 THEN
11 LOOP ; (-) n )
12 ( calculate day of week of date D/M/Y, 0-6 )
13 : D/M/Y janist daynumber + 1- 7 MOD ; (-) n )
14 : day Y ! M ! D ! datecheck ( print day of date given )
15 D/M/Y printday ; ( d m y - )
```

```
SCR #54
0 ( calendar Vocabulary, month and year )
1 0 VARIABLE chars ( character counter )
2 : month Y ! M ! D ! datecheck ( print specified month )
3 CR M 2 7 SPACES printmonth 2 SPACES Y 3 . CR
4 CR SPACE ." Sun Mon Tue Wed Thu Fri Sat" CR CR
5 D/M/Y ( calculate 1st day of month )
6 4 + DUP SPACES chars ! ( go to day column )
7 M 3 dpm 1+ 1 DO ( step thru days in month )
8 I 4 .R 4 chars +!
9 chars 2 24 ) IF CR CR 0 chars ! THEN
10 LOOP CR CR ; ( m y - )
11
12 : year ( print whole year calendar )
13 13 1 DO Loop thru months )
14 I OVER month PAUSE DROP
15 LOOP DROP ; ( y - )
```

```
SCR #55
0 ( Calendar Vocabulary, yearend and daysleft )
1 0 VARIABLE Mend 0 VARIABLE Dend ( current end of year )
2 : yearend ( initialize end of year )
3 OVER OVER 2 = SWAP 29 = AND ( 29th of Feb? )
4 IF " You can't be serious!" ABORT THEN
5 Mend ! Dend ! ; ( d m - )
6 : daysinY ( How many days in year Y )
7 Leap? IF 366 ELSE 365 THEN ; (-) n )
8 : daysleft ( Number of days up to yearend )
9 Y ! M ! D ! datecheck daynumber
10 Mend 3 M ! Dend 3 D ! datecheck daynumber
11 OVER OVER ) NOT IF ( specified date BEFORE yearend? )
12 SWAP -
13 ELSE daysinY SWAP -
14 I Y +! datecheck daynumber +
15 THEN ; ( d m y - )
```

```
SCR #56
0 ( Calendar Print Options )
1 : 3EM ENIT ENIT ENIT ; ( n n n - )
2 : SUP 9 65 27 3EM ( SUP = set up printer )
3 15 ENIT ; ( opens pio in compressed/m )
4 ( line spacing at 9/72 in. )
5 : JANSPLACE SWCH SUP 13 188 27 3EM UNSWCH ;
6 : FEBSPACE SWCH SUP 53 188 27 3EM UNSWCH ;
7 : MARSPLACE SWCH SUP 93 188 27 3EM UNSWCH ;
8
9 : COLUMN 13 SWAP DO
10 1 OVER month PAUSE DROP
11 3 +LOOP DROP ;
12
13
14
15
```

Reading Skills Courseware

A host of animals and story characters help children strengthen a variety of reading skills. Bright graphics, music, and sound effects create an exciting learning atmosphere.

Quantity	Title	Regular Price	Special Price	Unit
---	117 Reading Rainbows-Grade 1 (Comprehension)	\$39.95	\$4.95	---
---	119 Reading Cheem-Grade 2 (Word identification)	\$39.95	\$4.95	---
---	121 Reading Adventures-Grade 3 (Comprehension)	\$39.95	\$4.95	---
---	123 Reading Trail-Grade 4 (Literary understanding and appreciation)	\$39.95	\$4.95	---
---	125 Reading Power-Grade 5 (Study and research)	\$39.95	\$4.95	---
---	127 Reading Wonders-Grade 6 (Literary understanding and appreciation)	\$39.95	\$4.95	---

Mathematics Action Games

Children get involved in exciting adventures as they practice fundamental math skills. Sound and music trigger quiet thinking.

Quantity	Title	Regular Price	Special Price	Unit
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All packages contain a Command Module and complete User's Guide.

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This is the second time I have run this item from Scott, Foresman and Company, but I believe that it is worthwhile.

Especially since the sources of good educational programing for the TI are drying up. If you think your children can use some good Educational programs, this is one good source.

And apparently so do a lot of other people, because as you can see from the programs that have been lined through, Scott, Foresman is running out also.

I purchased about 10 of them when they first became available. If anyone would like to see them, let me know and I'll bring them to the next meeting. If there are enough people interested, we can have a meeting on these programs.



TIPS FROM THE TIGERCUB

TIPS # 13

and 14

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These Tips are distributed to Users' Groups in exchange for their newsletters - and in the faint hope that someday, somewhere, someone may buy some of my original programs. I have over 130 of them, at only \$3 each. My catalog costs a dollar, refundable on your first order. I give one-day service by 1st class mail, I give bonus programs for repeat orders, I give free programs on disk orders, and I'm still not getting any orders.

I'm told that someone actually found a practical use for my number-scrambling routine, so here is an expanded version. It will scramble any sequence beginning with 1 and ending with any number less than 256 or any number greater than 256 which is evenly divisible by any number less than 256 and greater than 1, within the limits of computer memory. In Extended Basic with Memory Expansion, the limit is about 10,700; if you reformat it to basic and run it bare bones, you might get close to 13,000.

```
>100 CALL CLEAR :: OPEN #1:"P
IO",OUTPUT
>110 INPUT "HIGHEST NUMBER? "
:HN :: IF HN<256 THEN TN=HN
:: XX=1 :: GOTO 150
>120 FOR TN=255 TO 2 STEP -1
:: IF HN/TN=INT(HN/TN) THEN 1
40
>130 NEXT TN :: PRINT HN;"IS
NOT DIVISIBLE BY":"ANYTHING
LESS THAN 256 - ":"CANNOT U
SE" :: GOTO 110
>140 VV=HN/TN
>150 DIM M$(50)
```

```
>160 CALL CLEAR :: FOR J=1 TO
TN :: M$(1)=M$(1)&CHR$(J)::
NEXT J :: FOR J=1 TO XX ::
M$(J)=M$(1):: NEXT J :: FOR
J=1 TO HN :: TT=1+INT((J-1)/
255)
>170 RANDOMIZE :: X=INT(XX*RN
D+1):: IF LEN(M$(X))=0 THEN
170
>180 Y=INT(LEN(M$(X))*RND+1)
>190 PRINT #1:ASC(SEG$(M$(X),
Y,1))+TN*(X-1);
>200 M$(X)=SEG$(M$(X),1,Y-1)&
SEG$(M$(X),Y+1,LEN(M$(X)))::
NEXT J
```

Here's a little routine you can use to jazz up your title screen or text.

```
>100 CALL CLEAR
>110 DATA "THIS IS A DEMONSTR
ATION","OF THE","TIGERCUB SO
FTWARE","TWO-WAY PRINT ROUTI
NE"
>112 FOR T=1 TO 4
>113 READ M$
>120 IF LEN(M$)/2=INT(LEN(M$)
/2) THEN 135
>130 M4=M$2 "
>131 GOTO 140
>135 M$=M$2 "
>140 L=LEN(M$)
>150 C=16-L/2
>160 FOR J=L/2 TO 1 STEP -1
>170 CALL HCHAR(10+T*2,C+J,AS
C(SEG$(M$,J,1)))
>190 NEXT J
>200 NEXT T
```

Did you ever go through your checkbook 5 times in order to add up your gas bill, then your electric bill, etc? With this little handy-dandy, you can do it all in one pass

```
>100 CALL CLEAR
>110 REM ADDER-UPPER by: Jim
Peterson
>120 A$="ABCDEFGHIJKLMNQRST
UVWXYZ"
>130 DIM C$(26),T(26)
>140 PRINT " ADDER-UPP
ER" :: :
>150 PRINT "WITH THIS PROGRAM
YOU CAN GO THROUGH YOUR CHE
CKBOOK, OR ANYTHING ELSE, AN
D ADD UP AMOUNTS IN SEVERA
L CATE-"
>160 PRINT "GORIES ALL AT ONE
TIME." :: :
>170 PRINT " FIRST, LIST THE
CATEGORIES:" "YOU WANT TO ADD
UP." :: " TYPE 'END' WHEN FINI
SHED." :: :
>180 PRINT " NEXT, ENTER THE
CATEGORY:" "CODE AND AMOUNT F
OR EACH:" "BILL"
>190 PRINT " : "WHEN YOU HAVE
ENTERED ALL:" "THE BILLS, TYP
E " :: :
>200 N=N+1
>210 PRINT "CATEGORY #":N
>220 INPUT " " :C$(N
)
>230 IF C$(N)="END" THEN 340
>240 W$=SEG$(C$(N),1,1)
>250 IF POS(A$,W$,1)<>0 THEN
290
```

```
>260 PRINT "CODE LETTER " :W$
: " ALREADY USED - PICK A CO
DE LETTER,P
>270 INPUT W$
>280 GOTO 250
>290 X=POS(A$,W$,1)
>300 A$=SEG$(A$,1,X-1)&SEG$(A
$,X+1,LEN(A$))
>310 X$=X&W$
>320 PRINT "CODE LETTER FOR
":C$(N); " WILL BE " :W$: :
>330 GOTO 200
>340 C$(N)=" "
>350 N=N-1
>360 X$=X$2"="
>370 FLAG=1
>390 PRINT " : "READY TO START
- " : :
>400 PRINT "WHEN FINISHED, TY
PE " : :
>410 INPUT "DO YOU WANT TO VE
RIFY EACH INPUT? " :V$
>420 PRINT "CODE (":X$;")"
>430 INPUT Q$
>440 IF Q$="=" THEN 600
>450 IF POS(X$,Q$,1)<>0 THEN
510
>460 PRINT "THAT IS NOT ONE O
F THE CODES" : :
>470 INPUT "IS IT A NEW CATEG
ORY?(Y/N) " :Q$
>480 IF SEG$(X$,1,1),."Y" THE
N 420
>490 X$=SEG$(X$,1,LEN(X$)-1)
>500 GOTO 200
>510 Y=POS(X$,Q$,1)
>520 INPUT "AMOUNT ?":A
>530 IF SEG$(V$,1,1)="N" THEN
580
>540 PRINT :C$(Y);A : :
>550 INPUT "CORRECT? (Y/N)":L
$
>560 IF SEG$(L$,1,1)="" THEN
580
>570 IF SEG$(L$,1,1)="N" THEN
420 ELSE 550
>580 T(Y)=T(Y)+A
>590 GOTO 420
>600 FOR J=1 TO N
>610 PRINT :C$(J);T(J)
>620 TT=TT+T(J)
>630 NEXT J
>640 PRINT "GRAND TOTAL OF A
LL IS":TT
>650 END
```

And, did you ever wish that you could make numbers smaller, so that you could squeeze more of them on a chart or graph? The problem is that resolution is so poor, at least on my TV screen, but maybe you'll find a use for this.

```
>100 REM - NUMBER SCRUNCHER -
programmed by Jim Peterson..
>110 CALL SCREEN(5)
>120 FOR S=2 TO 14
>130 CALL COLOR(S,15,1)
>140 NEXT S
>150 CALL CLEAR
>160 RANDOMIZE
>170 DATA 75557,22222,25127,6
1216,55571,74616,74757,71222
,75257,75711
>180 FOR J=0 TO 9
>190 READ C$
>200 CH$(J)="00"&C$
>210 NEXT J
>220 CH=91
```

```

>230 INPUT "NUMBER? ":RX
>240 N$=STR$(RX)
>250 IF LEN(N$)/2=INT(LEN(N$)
/2)THEN 270
>260 N$="0"&N$
>270 FOR J=1 TO LEN(N$)STEP 2
>280 P1=VAL(SEG$(N$,J,1))
>290 P2=VAL(SEG$(N$,J+1,1))
>300 FOR T=1 TO 7
>310 Z$=Z$&SEG$(CH$(P1),T,1)&
SEG$(CH$(P2),T,1)
>320 NEXT T
>330 CALL CHAR(CH,Z$)
>340 Z$=""
>350 P$=P$&CHR$(CH)
>360 CH=CH+1
>370 NEXT J
>380 PRINT N$;" ";P$
>390 P$=""
>400 N$=""
>410 GOTO 230
    
```

Almost OUT OF MEMORY.
Happy hackin'
Jim Peterson

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:"PID"
120 PRINT #1:CHR$(27);CHR$(4
2);CHR$(8);: CALL CLEAR
130 FOR CH=65 TO 90 :: PRINT
"WORKING..." :: FOR J=1 TO
7 :: FOR L=1 TO 9 :: RANDOMI
ZE :: IF (INT(3&RND+1)<3)+((
L>1)&(D(J,L-1)>0))THEN 150
140 D(J,L),D(J,10-L)=(1+ABS(
J))\J
150 NEXT L
160 NEXT J
170 FOR L=1 TO 9 :: FOR J=1
TO 7 :: X(L)=X(L)+D(J,L):: N
EXT J :: NEXT L
180 PRINT #1:CHR$(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 "PID" 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 will
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$(21),NNS(23)
170 DATA ONE,TWO,THREE,FOUR,
FIVE,SIX,SEVEN,EIGHT,NINE
180 DATA TEN,ELEVEN,TWELVE,T
HIRTEEN,FOURTEEN,FIFTEEN,SIX
TEEN,SEVENTEEN,EIGHTEEN,NINE
TEEN
190 DATA TWENTY,THIRTY,FORTY
,FIFTY,SIXTY,SEVENTY,EIGHTY,
NINETY
200 DATA THOUSAND,MILLION,BI
LLION,TRILLION,QUADRILLION,Q
UINTILLION,SEXTILLION,SEPTIL
LION,OCTILLION,NONILLION
210 DATA DECILLION,UNDECILLI
ON,DUODECILLION,TREDECILLION
,QUATTORDECILLION,QUINDECIL
LION,SEXTEDECILLION
220 DATA SEPTEDECILLION,OCT
ODECILLION,NOVEMDECILLION,VI
GINTILLION
230 FOR J=1 TO 9
240 READ ONE$(J)
250 NEXT J
    
```

```

260 FOR J=1 TO 10
270 READ TEENS(J)
280 NEXT J
290 FOR J=1 TO 8
300 READ TENS(J)
310 NEXT J
320 FOR J=1 TO 21
330 READ HIGHS(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 380
540 X=L/3
550 FOR J=1 TO L STEP 3
560 JJ=JJ+1
570 NNS(JJ)=SEG$(N$,J,3)
580 IF JJ>1 THEN 610
590 P$=STR$(VAL(NNS(JJ)))
600 GOTO 620 &
610 P$=P$&" "NNS(JJ)
620 NEXT J
630 PRINT : : : P$: : :
640 FOR J=1 TO X
650 GOSUB 670
660 GOTO 1150
670 IF VAL(NNS(J))<>0 THEN 7
10
680 AS=""
690 FLAG=1
700 GOTO 1140
710 FLAG=0
720 H=VAL(SEG$(NNS(J),1,1))
730 T=VAL(SEG$(NNS(J),2,2))
740 TT=VAL(SEG$(NNS(J),2,1))
-1
750 VV=VAL(SEG$(NNS(J),3,1))
760 IF T=0 THEN 1000
770 IF T>9 THEN 810
780 AS=ONES(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$=TENS(TT)
900 IF TT<>8 THEN 930
910 SP$="NINE TEE"
920 GOTO 1000
930 SP$=A$
940 GOTO 1000
950 A$=TENS(TT)&"&LONE$(VV)
960 IF TT<>8 THEN 990
970 SP$="NINE TEE"&LONE$(VV)
980 GOTO 1000
990 SP$=A$
1000 IF M=0 THEN 1080
1010 IF T=0 THEN 1050
1020 A$=ONE$(H)&" HUNDRED &
  *L$
1030 SP$=ONE$(H)&" HUNDRED &
  *L$P$
1040 GOTO 1140
1050 A$=ONE$(H)&" HUNDRED"
1060 SP$=A$
1070 GOTO 1140
1080 IF (J(X)+(T=0)+(VAL(N$)
<100) THEN 1140
1090 A$=" & *L$
1100 IF (TT<>8)&(T<>19) THEN
1130
1110 SP$=" & *L$P$
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 @$
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 O'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$(34);CHR$(20)
130 PRINT @1:CHR$(27);CHR$(3
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$=SE6$(
  0010243C425A667E8199A5BDC3DB
  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$=NULL :: 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 ::
I=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 ON 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

```

Just about MEMORY FULL, so
Happy hackin'
Jim Peterson

THE FOLLOWING IS REPRINTED FROM THE CLUB 99 OF ATTLESBORO, MA.

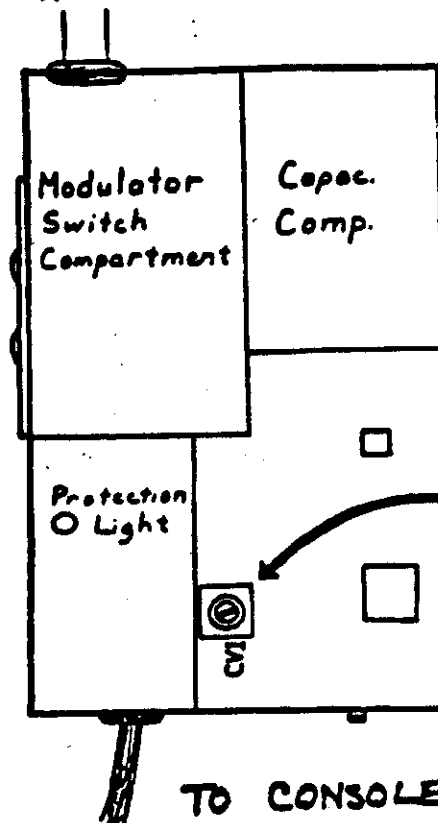
BACKGROUND NOISE

WE RECEIVED FROM THE WALTHAM TI EXCHANGE CENTER THE FOLLOWING INFORMATION. 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 REFER TO THE DRAWING. THIS PROCEDURE IS TO BE DONE WHILE ALL EQUIPMENT IS ON AND OPERATING. IF YOU HAVE THE OLD VERSION OF THE TI900 VIDIO 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 TV ALL THE WAY DOWN, BUT DO NOT TURN IT OFF.
- 2 SELECT THE MASTER TITLE SCREEN ON THE COMPUTER FCN = IF NECESSARY.
- 3 USING THE TITLE SCREEN COLOR GRID, FINE TUNE THE TV 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 INDENTATIONS HOLDING IT ON.
- 5 LIFT OFF THE LID AND TURN THE TV VOLUME UP TO HALF.
- 6 INSERT THE BLADE OF THE SCREWDRIVER INTO THE SLOT OF THE SMALL BOX LABELLED CV1-SEE FIGURE- AND TURN IT SLIGHTLY UNTIL THE BACKGROUND NOISE IS AT A MINIMUM-THIS SHOULD TAKE LESS THAN 1/8 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.

VHF Connectors TO T.V.

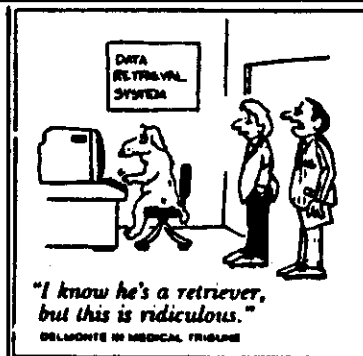


Insert Screwdriver Blade and Turn gently (No more than 1/8th turn)

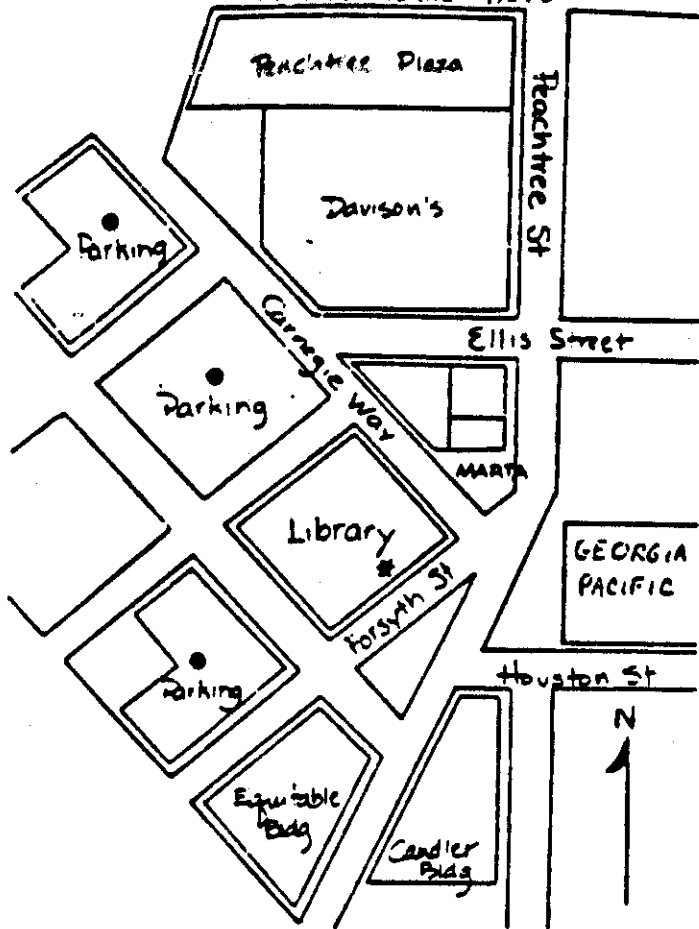
TO CONSOLE

TI TRIVIA ANSWERS TI TRIVIA ANSWERS

- 1) Central Processing Unit
- 2) 16.
- 3) Binary digIT.
- 4) MODulator DEModulator.
- 5) Beginners All-purpose Symbolic Instructional Code.
- 6) Charles Moore.
- 7) Because the IBM that Moore was creating FORTH on would only accept 5 letter file names.
- 8) 2*10 or 1024.
- 9) TMS9900.
- 10) Parallel, by a landslide.
- 11) It functions as a Monitor. Video Display Terminal.
- 12) FORTRAN.
- 13) UNIVAC.
- 14) Texas Instruments Laboratories.
- 15) Memory, Control and Arithmetic/Logic.
- 16) False, it is a translated language.
- 17) 90 kilobytes, or 92160 bytes.
- 18) FORMula TRANslation.
- 19) Quantum Physics.
- 20) GOTO and GOSUB.



Ed
You mean that after unpacking the styrofoam padding, the cushion-layering, the thermodynamic seal, and plastic wrapper, that was left?"



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