



# INTERFACE THE TI-99/4A TO COMMUNICATE/LISTEN TO THE WORLD VIA RADIO

SUBMITTED BY R.H.MC QUEEN, SCUG

( CQ CQ DE MCQUEEN CALLING ALL NINETY-NINERS)

Our June Newsletter solicited articles on interfacing the TI-99/4A for Shortwave/Amateur Radio transmission/reception.

FIRST-Let me state that I do not currently hold a FCC license for the transmission of radio signals over the airwaves. I am, however, an avid listener to the Shortwave/Amateur Bands.

YOU must hold a FCC (Federal Communications Commission) license to broadcast radio signals. CB (Citizen Band) MAY be an exception. YOU do not need a license to listen. The FCC act of 1934, made the airwaves "public domain". Any citizen may purchase equipment to receive/listen to transmitted data, provided the data is not used for personal gain/divulged to others.

How often have you heard those dit-dahs, chirp/chirp, and other funny sounds coming from your radio? These sound carry intelligence to those able to interpret them. In future issues we will try to explain how, using your TI-99/4A, with proper interface, you can read these signals. With some help from other members, to provide equipment at meeting site, I plan to give a demonstration. The date will be announced in the newsletter.

If there is sufficient interest, perhaps we can form a Special Interest Group (SIG). With a SIG we could greatly enhance the application of computers with communications- via radio and telephone. As I write this, I am copying Radio Moscow's TASS news broadcast via Radioteletype, at 67 words per minute. The copy makes interesting reading when compared to other news agencies broadcasts.

I am using the TI-99/4A with PEB, RS232, monitor, and a parallel printer; a Heath Kit SW-7800 receiver with sidebands; to interface the radio to the computer, a Kantronics, Inc. Universal Terminal Unit (UTU). It connects to the radio and the RS-232 Serial Port. I am using the TE II to control/program the interface. An outside antenna is also required for most locations. The better radio/antenna combination the better the reception. REMEMBER- you need a license if you plan to broadcast. The interface will accommodate both transmit and receive functions.

Other interfaces are available. I purchased the UTU following advice from an Amateur friend. If you are so inclined, you can assemble one from a kit. Several radio magazines often publish schematics and parts lists.

Members interested in forming a SIG please contact me at meetings or call me at 925-6575. I need your help to assure a successful

demo and project completion.

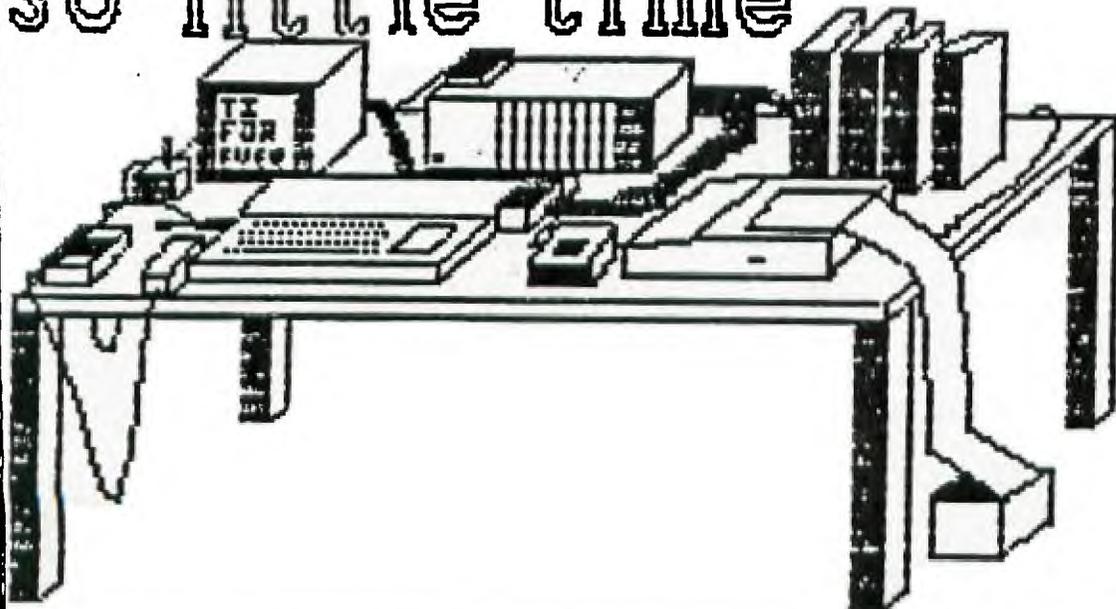
Next issue we plan to discuss the interface in more detail. With the permission of the Newsletter Editor I wish to include the address of the manufacturer and dealer for the UTU. The manufacturer: KANTRONICS, INC., 1202 EAST 23RD STREET, LAWRENCE, KANSAS 66044. OUR NEAREST DEALER IS: AMATEUR ELECTRONICS SUPPLY, 421 COMMONWEALTH AVE., ORLANDO, FLA. 32803 Phone 1-800-327-1917.

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EDITOR'S NOTE

Thank you, Mr. McQueen for sharing this information with us. We look forward to further articles on this subject. To those of you who weren't at the last meeting, Mr. McQueen has generously offered to demonstrate his computer/shortwave system to us at a Group cookout in his backyard. If you're interested in seeing his system in action, enjoying a meal with your fellow users, and maybe doing a little horse-trading, let us know at the next meeting. We hope to set a date and make further plans then. Meanwhile, let's see some more articles from other members. Mr. McQueen can't do everything for us!

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At the last meeting, we had an expansion system available ( thanks to Ohlen Bramblett). R.H. McQueen brought a copy of GRAPHX and Wayne Anderson gave us a thorough demonstration. This newsletter has included print samples from GRAPHX before, but GRAPHX is even more impressive on a video display. If you missed out on the first group purchase of this program but want to get a copy, contact one of the officers. If there is enough interest we'll place another order.

SO MANY PROGRAMS  
so little time



Drawing by:  
Steve Peacoc  
using GRAPHX



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The following program comes to from the June ROM newsletter of the Users Group of Orange County, California. Compare it with the MENU LOADER in TIPS FROM THE TIGERCUB #15 (Reprinted in the November '84 SCUG newsletter).  
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```
100 ! DISK DIRECTORY
110 ! VERSION XB.2.0
120 ! 20 APL 85
130 ! BY JIM SWEDLOW
140 !
150 @=1 :: DIM AS(130),CS(5),DS(1),G(130),X(130),Y(130),Z(130):: ON ERROR 440
160 CALL INIT :: CALL LOAD(-31806,16):: GOTO 170 :: A,B,C,D,I,L,M=W :: BS=FS ::
CALL SCREEN :: CALL HCHAR :: CALL KEY :: CALL PEEK :: !@P-
170 FS="DSK1." :: CS(@)="DisFix" :: CS(2)="DisVar" :: CS(3)="IntFix" :: CS(4)="I
ntVar" :: CS(5)="Program" :: DS(0)="P"
180 OPEN #@:FS,RELATIVE,INPUT ,INTERNAL :: D,W=0
190 INPUT #@:AS(D),G(D),X(D),Y(D):: IF AS(D)=" " THEN D=D-@ :: GOTO 210 ELSE IF A
BS(G(D))=5 AND AS(D)<>"LOAD" THEN W=W+@ :: Z(W)=D
200 IF D<130 THEN D=D+@ :: GOTO 190
210 CLOSE #@
220 I=@ :: BS="Press your choice" :: GOSUB 400
230 M=MIN(W,L+25):: B=14+5*(M-L<16):: A=4-L :: FOR C=@+L TO M :: IF B<>9 THEN B=
15-B :: A=A+(C/2=INT(C/2)):: IF C=M AND M/2<>INT(M/2)AND(C<25 OR M=W)THEN B=9
240 DISPLAY AT(A+C,B):CHR$(C+64-L); " ";AS(Z(C)):: IF C=25 AND W>M THEN DISPLAY A
T(A+C,14):"Z More . . ."
250 NEXT C
260 DISPLAY AT(21,@)BEEP:"ERASE stop DEL delete a fileAID disk catalog " print
catBACK menu REDO change drive":
270 CALL KEY(3,A,B):: IF B<@ THEN 270 ELSE IF A=7 THEN CALL SCREEN(8):: STOP ELS
E IF A=15 THEN 220 ELSE IF A=3 THEN IF I>2 THEN 270 ELSE I=I+2 :: CALL SCREEN(10
):: DISPLAY AT(24,@)BEEP:"Press ID to be deleted" :: GOTO 270
280 B=11*(I/2<>INT(I/2)):: IF A=79-B THEN IF M<14-B+L THEN 270 ELSE L=(B-14-L)*(
L<76):: I=I+2*(I>2):: CALL SCREEN(8):: CALL HCHAR(5,@,32,20*32):: ON I GOTO 230,
310 ELSE IF A=@ THEN 300
290 IF A=6 THEN 380 ELSE IF A=34 THEN 330 ELSE IF A<65 OR A>64+M-L THEN 270 ELSE
A=A-64+L :: ON I GOTO 460,270,350,350
300 I=2 :: BS=" Filename Size Type" :: GOSUB 400
310 M=MIN(D,L+14):: FOR C=@+L TO M :: GOSUB 410 :: DISPLAY AT(4+C-L,@):BS :: IF
C=M AND C<D THEN DISPLAY AT(19,@):"O More . . ."
320 NEXT C :: GOTO 260
330 I=I+2*(I>2):: CALL SCREEN(8):: DISPLAY AT(21,@)BEEP:"Printing Catalog": :
: : OPEN #@:"PIO" :: PRINT #@:"Disk ";AS(O);" * Free";Y(O): : "Filename Size Ty
pe": :
340 FOR C=@ TO D :: GOSUB 410 :: PRINT @:SEG$(BS,3,28):: NEXT C :: CLOSE #@ ::
GOTO 260
350 IF I=3 THEN A=2(A)
360 IF G(A)<0 THEN DISPLAY AT(24,@)BEEP:AS(A);" is protected" :: GOTO 270
370 DISPLAY AT(21,@):"Deleteing ";AS(A): : : : : DELETE FS&AS(A):: GOTO 180
380 CALL SCREEN(8):: A=3-VAL(SEG$(FS,4,@))
390 DISPLAY AT(21,@):" Drive: ";A: : : : : ACCEPT AT(21,18)VALIDATE("12
")SIZE(-@)BEEP:FS :: IF FS=" " THEN 390 ELSE FS="DSK"&FS&". " :: GOTO 180
400 CALL SCREEN(8):: DISPLAY AT(@,@)ERASE ALL:FS;AS(O);" * Free";Y(O): :BS :: L=
O :: RETURN
410 BS=CHR$(64+C-L)&" "&AS(C)&RPTS(" ",14-LEN(AS(C))-LEN(STR$(X(C))))&STR$(X(C))
&" "&CS(ABS(G(C))): IF ABS(G(C))<>5 THEN BS=BS&STR$(Y(C))
420 BS=BS&RPTS(" ",27-LEN(BS))&DS(ABS(G(C)>0)): RETURN
430 ON ERROR 440 :: CLOSE #@
440 ON ERROR 450 :: DISPLAY AT(15,@)ERASE ALL:SEG$(FS,@,4);" Could not be access
ed" :: ON ERROR 430 :: RETURN 380
450 DISPLAY AT(23,1)BEEP:"Program not found" :: RUN
460 BS=AS(Z(A)): DISPLAY AT(21,@)BEEP:"Loading ";BS: : : : : BS=FS&BS
470 CALL PEEK(-31952,A,B):: CALL PEEK(A*256+B-65534,A,B):: C=A*256+B-65534 :: CA
LL LOAD(C,LEN(BS)): FOR I=@ TO LEN(BS):: CALL LOAD(C+I,ASC(SEG$(BS,I,@))): NEX
T I :: CALL LOAD(C+I,0)
480 RUN "DSK2.0123456789"
```

Also from the June ROM is the following handy table:

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**GEMINI 10X FUNCTION CODES**  
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FUNCTION	COMMAND	CANCEL	TI-WRITER	RANGE	COMMENT
Pica/Normal	18		18=SHIFT R		10/inch 80/line
Elite	27 66/B 2		2=SHIFT B		12/inch 96/line
Condensed	15	18	15=SHIFT O		17/inch 132/line
Double Width	14	20 or CR	14=SHIFT N		40, 48 or 68 per line & 20=SHIFT T
Double Strike	27 71/6	27 72/H	27=FCTN R		
Emphasized	27 69/E	27 70/F			Use only with normal and double width
Underline	27 45/- 1	27 45/- 0	1=SHIFT A		
Superscript	27 83/S 0	27 84/T	0=SHIFT 2		Not used with double width or emphasized; uses double strike
Subscript	27 83/S 1	27 84/T			and unidirectional; ESC T does not cancel double strike
Unidirectional	27 85/U 1	27 85/U 0			
Line Feed	10		10=SHIFT J		
OTO Line Feed	27 74/J n			1-127	n/144 inch
Change Line Feed	27 48/0				1/8 inch
	27 49/1				7/72 inch
	27 50/2				1/6 inch (default)
	27 51/3 n		3=SHIFT C	1-127	n/144 inch
	27 65/A n			1-127	n/72 inch
Top of Form	12		12=SHIFT L		
Change Form Length	27 67/C n			1-127	n lines
	27 67/C 0 n			1-32	n inches
Change Form Header	27 82/R n	27 79/0		1-16	Location of first print line; default = 1
Skip Over Perforation	27 78/N n	27 79/0		0-255	TOF when n lines left; ESC 0 cancels both
Carrage Return	13		13=SHIFT M		
Vertical Tab	11		11=SHIFT K		Default: 6 to 60 step 6
Change Vertical Tab	27 80/P n1,n2,n3 0			1-255	
OTO Vertical Tab	27 97/a n			1-127	n lines
Set Left Margin	27 77/M n			1-255	
Set Right Margin	27 81/Q n			1-255	
Back Space	8		8=SHIFT H		
Horizontal Tab	9		9=SHIFT I		Default: 10, 20, 30, etc.
Set Horizontal Tab	27 68/D n1,n2,n3 0			1-255	
OTO Horizontal Tab	27 98/b n			1-127	Shifts n columns to the right
Define Macro	27 43/+ ... 30		30=SHIFT 6		Upto 16 bytes
Select Macro	27 33/!				
Delete Last Character	127				Does not delete function codes
Online	17		17=SHIFT Q		
Offline	19		19=SHIFT S		Recongizes only 17 (online)
Buzzer	7		7=SHIFT 6		
Initialize	27 64/@				
Italic font	27 52/4	27 53/5			ESC 5 invokes standard font

OTO = One Time Only & ESC = CHR\$(27) & 27 77/M = CHR\$(27);CHR\$(77) or CHR\$(27);"M" & TI WRITER see CTRL U on pages 98 & 146  
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FOR SALE:

David Smith has the following items for sale:

2 TEAC 55A 1/2 height SS/DD disk drives. These drives are fully compatible with TI, Radio Shack, IBM and compatible computers. Used very little and in excellent condition. \$75.00 ea.

1 Sanyo CRT 30 hi-res monochrome monitor. Composite video input. Excellent condition, used one month. \$85.00

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 This article comes to us from the June Topics - LA 99ers Newsletter. This is the kind of handy little program we'd like to see our members submit to their newsletter!  
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\*\*\* Tom Freeman \*\*\*

MAKE YOUR PRINTER PRINT SIDEWAYS!!

Have you ever wished that you could print text or tables sideways on the paper (that is, with the text reading vertical, instead of horizontally)? The following two programs will enable you to do this on an Epson/Gemini compatible printer. The method uses the bitmap graphics mode of the printer.

First you must create the data statements that give the printer the codes for each letter turned on its side. They can't be typed in because they are mostly control characters. The first program creates a mergeable file for IB for all of them. The letters created will look exactly like the ones on your screen (i.e. small letters are actually small caps) unless you put in CALL CHAR statements before line 100. This newsletter should also contain a program which you can type in which gives the same ones as are in the CHARA1 file for the TI-Writer.

```

100 OPEN #1:"DSK1.DATAMERGE",VARIABLE 163
110 FOR X=1 TO 19 :: PRINT #1:CHR$(0);CHR$(X*5);CHR$(147);
120 FOR Y=1 TO 5 :: CALL CHARPAT(X*5+Y+26,C$):: GOSUB 170 :: D$=""
130 FOR Z=8 TO 1 STEP -1 :: D$=D$&CHR$(D(Z)):: NEXT Z
140 PRINT #1:CHR$(199);CHR$(0);D$;
150 IF Y=5 THEN PRINT #1:CHR$(0)ELSE PRINT #1:CHR$(179);
160 NEXT Y :: NEXT X :: PRINT #1:CHR$(255)&CHR$(255):: CLOSE #1 :: STOP
170 FOR Z=1 TO 8 :: E1$=SEB$(C$,2*Z-1,1):: E2$=SEB$(C$,2*Z,1)
180 F1=ASC(E1$)-48+7*(ASC(E1$)>60)
190 F2=ASC(E2$)-48+7*(ASC(E2$)>60)
200 D(Z)=F1:F2 :: NEXT Z :: RETURN
  
```

Next you type in the main program - it's actually quite short!

```

100 DIM D$(126),A$(60):: FOR X=32 TO 126 :: READ D$(X):: NEXT X
110 ESC$=CHR$(27):: OPEN #2:"PIO.CR" :: PRINT #2:ESC$&"A"&CHR$(7);ESC$;"C";CHR$(0);CHR$(11);
120 FLAG=0 :: INPUT "TEXT FILE: DSK1:"F$ :: OPEN #1:"DSK1"&F$
130 FOR X=1 TO 60 :: LINPUT #1:A$(X):: IF EOF(1)THEN 150
140 NEXT X :: GOTO 170
150 FLAG=1 :: CLOSE #1 :: IF X=61 THEN 170
160 FOR X=X+1 TO 60 :: A$(X)=RPT$(" ",80):: NEXT X
170 FOR X=1 TO 60 :: A$(X)=A$(X)&RPT$(" ",80-LEN(A$(X))): NEXT X :: FOR X=1 TO 80 :: PRINT #2:ESC$&"K"&CHR$(224)&CHR$(1)
180 FOR Y=60 TO 1 STEP -1 :: B$=SEB$(A$(Y),X,1)
190 PRINT #2:D$(ASC(B$));
200 NEXT Y :: PRINT #2:CHR$(13)&CHR$(10):: NEXT X :: PRINT #2:CHR$(12):: IF FLAG=0 THEN 130
210 INPUT "DO ANOTHER?(Y/N)":AN$ :: IF AN$="Y" THEN 120 ELSE CLOSE #2
  
```

Note that in line 110 I have put in codes for 7/72 inch linefeeds, and a formfeed of 11 inches. Check your printer codes to make sure they are the same. Now merge in the file created previously by typing MERGE DSK1.DATAMERGE This will put in 19 lines numbered from 5 to 95 in increments of 5, and if you list them they will look crazy. DON'T CHANGE THEM! Now save the program under whatever name you wish, and it's ready to run. The only limitation is that the file must contain only ASCII codes 32-126, that is, no control characters or deletes (127). You can ensure this by using the PF function of the TI-Writer and typing C DSK1.yourfile

Note also that if you are sure that the right margin of your file is always less than 80, you can substitute whatever is for 80 in lines 160 and 170 (twice). You can also use this program to print an entire Multiplan listing lengthwise by using the print on disk option and always giving a margin of 80 or less.

Have fun.....Tom Freeman

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## PIANO-

**KIDS #** Do you want your children to learn to play the piano, but can't afford one right now? Here is an inexpensive substitute: the TI-99/4A piano.

You play only the bottom three rows, essentially all of the letter keys. You can play them with the shift key up or down. In one case you play whole notes, in the other one you play half notes, which repeat when you hold down the key.

The very bottom row plays noise tones when the shift key is locked down, very amusing to little children.

To keep the program simple, the screen is left blank. But that does not impede all you budding programmers to create some nice graphics to enliven this music program, and make it even more attractive to children.

This program was published in Nittinian, the Swedish newsletter for 99-ers, by an unknown author. The translation was done by Maurice E.T. Swinnen of the Washington DC Area 99-er Computer Club.

```

50 REM PIANO, NITTINIAN 84-2
100 CALL KEY(0,K,S):: IF S=0 THEN 100
110 IF K=45 THEN 100
120 IF K<44 THEN 100 ELSE IF K>46 AND K<
58 THEN 100 ELSE IF K>60 AND K<65 THEN 1
00
130 IF K>98 AND K<96 THEN 100 ELSE IF K>
96 THEN 200 !CHECK IF LOWER OR UPPER CAS
E LETTER HAS BEEN PRESSED
140 IF K=44 THEN CALL SOUND(-100,1568,0)
:: GOTO 100
150 IF K=46 THEN CALL SOUND(-100,1760,0)
:: GOTO 100
160 IF K=59 THEN CALL SOUND(-100,698,0)
: GOTO 100
170 IF K=58 THEN CALL SOUND(-100,1661,0)
:: GOTO 100
180 IF K=60 THEN CALL SOUND(-120,-8,0)::
GOTO 100
185 REM UPPER CASE LETTERS ASCII=65->90
190 ON K-64 GOTO 210,220,230,240,250,260
,270,280,290,300,310,320,330,340,350,360
,370,380,390,400,410,420,430,440,450,460
195 REM LOWER CASE LETTERS ASCII=97->122
200 ON K-96 GOTO 470,480,490,500,510,520
,530,540,550,560,570,580,590,600,610,620
,630,640,650,660,670,680,690,700,710,720
205 REM UPPER CASE LETTERS=HALF TONES+NO
ISE
210 CALL SOUND(-120,466,0):: GOTO 100
220 CALL SOUND(-120,-6,0):: GOTO 100
230 CALL SOUND(-120,-1,0):: GOTO 100
240 CALL SOUND(-120,622,0):: GOTO 100
250 CALL SOUND(-120,156,0):: GOTO 100
260 CALL SOUND(-120,740,0):: GOTO 100
270 CALL SOUND(-120,831,0):: GOTO 100
280 CALL SOUND(-120,932,0):: GOTO 100
290 CALL SOUND(-120,311,0):: GOTO 100
300 CALL SOUND(-120,1109,0):: GOTO 100
310 CALL SOUND(-120,1245,0):: GOTO 100
320 CALL SOUND(-120,1480,0):: GOTO 100
330 CALL SOUND(-120,-4,0):: GOTO 100
340 CALL SOUND(-120,-5,0):: GOTO 100
350 CALL SOUND(-120,370,0):: GOTO 100
360 CALL SOUND(-120,415,0):: GOTO 100
370 CALL SOUND(-120,177,0):: GOTO 100
380 CALL SOUND(-120,185,0):: GOTO 100
390 CALL SOUND(-120,554,0):: GOTO 100
400 CALL SOUND(-120,208,0):: GOTO 100
410 CALL SOUND(-120,277,0):: GOTO 100
420 CALL SOUND(-120,-7,0):: GOTO 100
430 CALL SOUND(-120,139,0):: GOTO 100
440 CALL SOUND(-120,-2,0):: GOTO 100
450 CALL SOUND(-120,233,0):: GOTO 100
460 CALL SOUND(-120,-3,0):: GOTO 100
465 REM LOWER CASE LETTERS=WHOLE TONES
470 CALL SOUND(-100,294,0):: GOTO 100
480 CALL SOUND(-100,1175,0):: GOTO 100
490 CALL SOUND(-100,988,0):: GOTO 100
500 CALL SOUND(-100,349,0):: GOTO 100
510 CALL SOUND(-100,131,0):: GOTO 100
520 CALL SOUND(-100,392,0):: GOTO 100
530 CALL SOUND(-100,440,0):: GOTO 100
540 CALL SOUND(-100,494,0):: GOTO 100
550 CALL SOUND(-100,220,0):: GOTO 100
560 CALL SOUND(-100,523,0):: GOTO 100
570 CALL SOUND(-100,587,0):: GOTO 100
580 CALL SOUND(-100,659,0):: GOTO 100
590 CALL SOUND(-100,1397,0):: GOTO 100
600 CALL SOUND(-100,1319,0):: GOTO 100
610 CALL SOUND(-100,247,0):: GOTO 100
620 CALL SOUND(-100,262,0):: GOTO 100
630 CALL SOUND(-100,110,0):: GOTO 100
640 CALL SOUND(-100,147,0):: GOTO 100
650 CALL SOUND(-100,330,0):: GOTO 100
660 CALL SOUND(-100,165,0):: GOTO 100
670 CALL SOUND(-100,196,0):: GOTO 100
680 CALL SOUND(-100,1047,0):: GOTO 100
690 CALL SOUND(-100,123,0):: GOTO 100
700 CALL SOUND(-100,880,0):: GOTO 100
710 CALL SOUND(-100,175,0):: GOTO 100
720 CALL SOUND(-100,784,0):: GOTO 100

```

TIPS FROM THE TIGERCUB

#24

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156 Collingwood Ave.  
Columbus, OH 43213

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The entire contents of Tips from the Tigercub Nos. 1 through 14, with more added, are now available as a full disk of 50 programs, routines and files for just \$15.00 postpaid!

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

And I have about 140 other absolutely original programs in Basic and XBasic at only \$3.00 each!(plus \$1.50 per order for cassette, packing and postage, or \$3.00 for diskette, PPM) I will send you my descriptive catalog for a dollar, which you can then deduct from your first order.

TIJ  
JDS:TDF1FA  
BJIF  
JDIF  
SURS  
STSA  
SFBF  
TRA

The above is a long division problem in the proper format, with each numeral replaced by a letter. Can you solve it?

My program TC-41 Long Division Cryptograms, will generate an infinite number of such puzzles for you, and help you to solve them - and it only costs \$3.00. It took me a week to program, and I've sold 12 copies in 2 years! Doesn't anyone like to exercise their brains anymore?

TIGERCUB CHALLENGE

```
100 FOR J=1 TO 7 :: READ M$
:: PRINT M$ :: NEXT J
30000 DATA AAAAAAAAAAAAAA
AAAAAAAAAA,BBBBBBBBBBBBBB,BB
BBBBBBBBBBBB,CCCCCCCCCCCC,
DDDDDDDDDDDDDD
30010 DATA "TESTING",,,,,,
,,,,,"TESTING"
>RUN
AAAA*AAAA*AAAA*AAAA*AAAA
BBBBBBBBBBBB,BBBBBBBBBBBB
CCCCCCCCCCCC
DDDDDDDDDDDDDD
```

```
"TESTING"
,,,,,
"TESTING"
$ READY $
```

Can you run this program and get these results? You won't even be able to key in that last DATA item! So, how was this programmed? No, there are no redefined characters!

Do you need something educational? Here is a little routine to give the plural endings for most words. I will leave it to you to develop further - and see if you can teach the computer the plurals of PANTS, TOOTH, MAN, FUNGUS, DATA and the other inconsistencies of the English language.

```
100 REM PLURAL ENDINGS
    by Jim Peterson
110 INPUT M$
120 Z$=SEG$(M$,LEN(M$),1)
130 Y$=SEG$(M$,LEN(M$)-1,2)
140 ON PDS("EFHSXYZ",Z$,1)+1
    GOTO 270,150,190,180,250,25
0,220,250
150 IF SEG$(M$,LEN(M$)-2,2)<
>"IF" THEN 270
160 PL$=SEG$(M$,1,LEN(M$)-2)
&"VES"
170 GOTO 280
180 IF (Y$="CH")+ (Y$="SH")TH
EN 250 ELSE 270
190 IF (Y$<"LF")+(Y$<"RF")
+(Y$<"AF")+(M$<"HOOF")THEN
270
200 PL$=SEG$(M$,1,LEN(M$)-1)
&"VES"
210 GOTO 280
220 IF (Y$="AY")+ (Y$="EY")+
(Y$="OY")+ (Y$="UY")THEN 270
230 PL$=SEG$(M$,1,LEN(M$)-1)
&"IES"
240 GOTO 280
250 PL$=M$&"ES"
260 GOTO 280
270 PL$=M$&"S"
280 PRINT PL$
290 GOTO 110
```

If you want to turn that into a quiz, change line 110 to READ M\$, change line 280 to PRINT M\$;" PLURAL?":. Add lines - 281 INPUT Q\$ 282 IF Q\$<PL\$ THEN 285 283 PRINT :;"RIGHT!": 284 GOTO 110 285 PRINT :;"WRONG! PLURAL OF ";M\$;" IS ";PL\$: 300 DATA BOX,WATCH,WIFE,BOY (And as much more as you want)

Just one more optional refinement to my Menu Loader. If you want to use a filename ending in an asterisk for those Basic programs which will not run in XBasic, this change will keep you from loading and crashing them.

```
420 CLOSE #1 :: IF SEG$(P$(K),LEN(P$(K)),1)="" THEN DISPLAY AT(12,1)ERASE ALL:"RE
```

TURN TO BASIC AND LOAD BY:" TYPING OLD DSK1."&P\$(K):: STOP

The idea of a program that writes a program has stirred up a little interest, so here's another. This routine will aid you in formatting your screen text into neat 28-column lines, and will save the text in program lines of DATA statements. When you are ready to save, type @@@ and enter as the last line, then NEW and MERGE DSK1.LINEFILE

```
100 !LINEWRITER
    - by Jim Peterson
130 CALL CLEAR :: OPEN #1:"D
SK1.LINEFILE",VARIABLE 163 :
: LN=30000
140 FOR R=1 TO 24 :: DISPLAY
    AT(R,1)SIZE(1):" " :: ACCEP
T AT(R,0)SIZE(-28):A$ :: IF
A$="@@@" THEN 180 :: B$=B$&C
HR$(200)&CHR$(LEN(A$))&A$
150 X=X+1 :: IF X/4=INT(X/4)
THEN 160 ELSE B$=B$&CHR$(179
):: GOTO 170
160 GOSUB 210 :: LN=LN+10
170 NEXT R :: X=0 :: CALL CL
EAR :: GOTO 140
180 IF B$="" THEN 200 :: IF
SEG$(B$,LEN(B$),1)=CHR$(179)
THEN B$=SEG$(B$,1,LEN(B$)-1)
190 GOSUB 210
200 PRINT #1:CHR$(255)&CHR$(
255):: CLOSE #1 :: END
210 PRINT #1:CHR$(INT(LN/256
))&CHR$(LN-256*INT(LN/256/))&
CHR$(147)&B$&CHR$(0) :: B$=NU
L$ :: RETURN
```

Here's something for "JET" and Danny and Gene and all the rest of my friends in Alabama - and in all the rest of Dixie. You've never seen fireworks quite like these before!

```
100 CALL CLEAR :: PRINT TAB(
5);"ALABAMA 4th of JULY":
: : : : : "programmed by
Jim Peterson" :: FOR D=1 TO
200
110 NEXT D :: RANDOMIZE
120 DIM S$(12),A$(16),S(16),
```

```

SX$(15)
130 DATA 196,220,247,262,294
,330,349,392,440,494,523,587
,659
140 FOR J=4 TO 16 :: READ S(
J):: NEXT J :: FOR SET=2 TO
14 :: CALL COLOR(SET,1,1)::
NEXT SET :: CALL SCREEN(2)
150 DATA 00,18,24,3C,42,5A,6
6,7E,81,99,AS,BD,C3,DB,E7,FF
160 FOR J=1 TO 16 :: READ A$(
J):: NEXT J
170 FOR CH=40 TO 136 STEP 8
:: FOR L=1 TO 4 :: X=INT(16*
RND+1):: B=B$(A$(X)): C=A$(
X)&C$ :: NEXT L
180 SX$(CH/8-4)=B$&C$ :: CAL
L CHAR(CH,B$&C$):: GOSUB 350
:: B=NUL$ :: C=NUL$ :: NE
XT CH
190 FOR J=1 TO 12 :: FOR L=1
TO 6 :: X=CHR$(INT(13*RND+
5)+8):: B=B$&X$&X$ :: C=X$
&X$&C$ :: NEXT L
200 S$(J)=B$&C$ :: B=NUL$ :
: C=NUL$ :: NEXT J :: CALL
MAGNIFY(2)
210 FOR J=1 TO 12 :: DISPLAY
AT(J,3):S$(J):: NEXT J :: X
=1 :: FOR J=13 TO 24 :: DISP
LAY AT(J,3):S$(J-X):: X=X+2
:: NEXT J :: CALL DELSPRITE(
ALL):: FOR D=1 TO 200 :: NEX
T D
220 DATA 1,11,7,1,9,7,2,7,4,
2,4,7,1,7,4,1,4,8,1,4,9,1,4,
10,2,11,7,2,7,11,2,11,7,2,9,
4
230 DATA 2,12,5,2,5,12,3,12,
7,1,11,7,3,12,5,1,11,7,1,12,
5,1,13,4,1,14,5,1,15,10
240 DATA 6,16,7,1,14,9,1,11,
7,6,14,4,1,11,7,1,9,4,6,11,6
,1,8,6,1,9,7,6,7,4
250 DATA 1,11,7,1,13,4,2,14,
9,2,16,11,3,15,4,1,14,9,2,12
,10,4,14,10,2,12,7,6,15,10,2
,12,8
260 DATA 6,15,6,1,11,6,1,13,
4,2,14,9,2,16,14,3,15,11,1,1
4,9,2,12,10,2,13,7,3,14,10,1
,12,10
270 DATA 2,11,7,2,9,4,3,14,9
,1,9,5,2,9,4,4,8,4,2,9,4,6,7
,4,2,9,4,6,8,4,2,12,5
280 DATA 2,11,7,2,9,4,3,14,7
,1,16,7,2,15,10,4,14,9,2,9,4
,6,7,4,2,9,4,6,8,4,2,12,10
290 DATA 2,11,7,2,9,4,3,16,1
1,1,14,9,2,15,4,2,14,7,2,14,

```

```

9,6,14,11
300 FOR N=1 TO 96 STEP 3 ::
READ T,A,B :: CALL COLOR(A-2
,A-2,1):: CALL COLOR(B-2,B-2
,1):: FOR TT=1 TO T :: CALL
SOUND(-999,S(A),0,S(B),5)::
NEXT TT
310 CALL COLOR(A-2,1,1):: CA
LL COLOR(B-2,1,1)
320 NEXT N :: RESTORE 220 ::
FOR N=1 TO 252 STEP 3 :: RE
AD T,A,B :: CALL COLOR(A-2,A
-2,1):: CALL COLOR(B-2,B-2,1
):: FOR TT=1 TO T :: CALL SO
UND(-999,S(A),0,S(B),5):: NE
XT TT
330 CALL COLOR(A-2,1,1):: CA
LL COLOR(B-2,1,1)
340 NEXT N :: FOR J=5 TO 30
:: CALL SOUND(-999,S(A),J,S(
B),J):: NEXT J :: RESTORE 22
0 :: FOR CH=40 TO 136 STEP 8
:: GOSUB 350 :: NEXT CH ::
GOTO 190
350 CALL MAGNIFY(1):: CALL S
PRITE(#CH/8-4,CH,13*RND+3,20
0,128,-30,RND*20-RND*20):: R
ETURN

```

The Home Computer Magazine, Vol. 4 No. 3, had a program called Elementary Addition and Subtraction, which generates random numbers between 1 and 5 for elementary math practice.

The first time I tried it, it asked me for the answer to 1 + 1. When I answered correctly, it produced another random problem - 1 + 1 again!

This is known as the idiotic computer syndrome, and it helps us to remember that our computers are still no smarter than their programmers!

Fortunately, this bit of idiocy is easy to cure. Try this -

```

100 RANDOMIZE
110 X=INT(5*RND+1)
120 IF X=X2 THEN 110
130 X2=X
140 PRINT X;
150 GOTO 110

```

Do you see how it works? The first time you

get a number, X2 will equal 0 because it has never been given a value. X will be selected as a number between 1 and 5. Let's suppose it is 2. Line 120 compares it with X2; 2 is not equal to 0, so the program continues to line 130, where X2 now picks up the value of 2, then on to print the value, and back to 110. Now, suppose that the random factor in line 110 picks 2 again. Line 120 finds that 2=2, X=X2, and sends the program back to 110 to pick a different number.

If you want to avoid a repeat until after two times, change line 120 to read 120 IF (X=X2)+(X=X3)THE N 110 and add a line 125 X3=X2.

For a longer series without repeating, it might be better to use this method.

```

100 A$="ABCDEFGHJIJ"
110 FOR J=1 TO 10
120 RANDOMIZE
130 Y=INT(RND*LEN(A$)+1)
140 X=ASC(SEG$(A$,Y,1))-64
150 A$=SEG$(A$,1,Y-1)&SEG$(A
$,Y+1,LEN(A$))
160 PRINT X
170 NEXT J
180 GOTO 100

```

That will give you a random series of 1 through 10 and then repeat with a different random series. Adjust the number of letters in the string A\$, and the corresponding "TD" value in 110, for whatever you require.

Several newsletters recently have published articles on the "program that you never run" - because it consists entirely of REM statements!

For instance, you can keep a list of the members of your users group, using their membership number for the program line number,

followed by REM (or ! in XBasic) and their name and address. For a printed list, just LIST the program to the printer. To change someone's address, or to delete a deadbeat who doesn't pay his dues, just edit the program. You can also LIST the program to disk to create a DIS/VAR 80 file which you can then load into TI-Writer and use its editing features, FindString, etc.

The same method can give you a tickler file, or appointment calendar, which is just as good as some rather complex disk filing programs written for this purpose. Just use the month number (1-12) and date (always in two digits, 01-31) for the line number -

```

1000 !buy birthday pres
sent for wife!
1009 !wife's birthday!
1010 !apologize to wife for
forgetting birthday

```

You can schedule several things in one program line -

```

1011 !get haircut/change oil
in car/pinch secretary.....
- but it might be better
to add an extra digit (0-9)
to the line number and
schedule separately -
10110 !get haircut
10111 !change oil

```

Then, if something doesn't get done, just use the REDD key to change the line number and reschedule it for another date. You can print out a list of the day's chores by simply LIST "PIO":7010-7019 (did you know you could do that?)

MEMORY FULL IN LINE 470

- Jim Peterson

Savannah Computer Users Group  
128 Jacquelyn Dr.  
Savannah, GA 31406



Edmonton Computer  
User Society  
P.O. Box 11983  
Edmonton, Alberta Canada T5J3L1