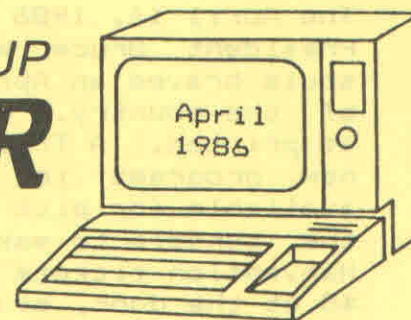


CEDAR VALLEY 99'ER USER GROUP

NEWSLETTER



NEWSLETTER TOPICS

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****CU99'er UG OFFICERS****

President: Jim Green
 288 Windsor Drive NE
 Cedar Rapids, Iowa 52402
 377-4073 (Home) or
 395-1898 (Office)

Vice President: Bruce Winter
 242 11 St. NW
 Cedar Rapids, Iowa 52405
 362-6196

Secretary: Gary Bishop
 860 Westview Dr.
 Marion, Iowa 52302
 377-9574

Treasurer: Ed Hayek
 3864 Lost Valley Rd. SE
 Cedar Rapids, Iowa 52403
 366-4793

Program Chairperson: Dave Dalton
 920 Hillview Dr.
 Marion, Iowa 52302
 377-1715

Publicity: Paul Mortensen
 3179 Country Park Dr.
 Toddville, Iowa
 393-6022

Education: James Trainor
 6013 Langdon Ave. SW
 Cedar Rapids, Iowa
 365-2047

****NEXT MEETING****

Monday, May 12, 7:00 PM at the JA building, 330 Collins Road NE. Jim Reiss will demonstrate his GRAM KRACKER. This product does many things so be sure to see this demonstration. See info later in the newsletter.

****FUTURE MEETING DATES****

Please mark the following dates on your calendar for future meetings: May 12, June 9, July 14.

MINUTES FROM APRIL MEETING

The April 14, 1986 meeting was called to order at 7:08 PM by Vice President Bruce Winter. President Jim Green was in Japan. 20 hearty souls braved an April snow squall with 40 MPH winds common to this part of the country. Minutes as printed in the last newsletter were approved as printed. A Treasurer's report was read and approved. There are 45 new programs in the club's software library. The update list was available for pick up at the meeting. Ribbon connectors for the side of the console to make an extender for the P box are in. See Jerry Canady. Hamvention tickets are available thru the club. Cost is \$5 in advance, \$8 at the door, students \$3 in advance, \$5 at the door. See Bruce Winter for tickets. The club received 50 cents per ticket sold. No new HCM, recent letter stated they were going to a quarterly journal with disk. Memory board project is winding down, no new memory boards will be installed. Jim Trainor is willing to teach an assembly language class, contact Jim Green if interested. Classes for Forth were on Sunday afternoon from 2 to 4, and this worked out well, so this might be a good time for the AL class. Miller Graphics has a card to adapt the IBM PC keyboard to the TI 99, includes buffering.

The presentation was on MIDI, musical instrument digital interface, by Mike Bonifazi. MIDI is a 16 channel standard, each channel can control a musical instrument. 3 types of ports in MIDI are IN, OUT, and THRU. A diagram of connections to explain these was drawn. Devices such as drum machines, keyboard controllers, sequencers normally don't have a THRU connection because they are normally connected at the end of the chain. OMNI mode dedscribed, along with POLY and MONO functions. Three types of sequencers were explained, dedicated, onboard, and software. Several songs were played by 2 synthesizers from the TI disk. One disk can hold many songs, a complete song uses 13 sectors on the disk.

Jerry Canady displayed and explained the extension cables. Cost is \$8.50 for the connectors only, 50 cents per foot for ribbon cable. You only need about 18 inches to move the P box connector to behind the console.

Door prize was won by Ed Edwards from Anamosa. He got a rain check because the door prize selections were at Jim Green's house. Leroy Bopp won second prize of any 4 programs from the club library, including media. One couple came all the way from Dubuque to attend this gathering. Meeting adjourned at 8:50 PM.
-Gary D. Bishop, Secretary.

FOR SALE/WANTED:

If you wish to have extension cables made up please contact Jerry Canady at 377-9382 or 395-2494 or one of the officers. State the length you need and I will try to have it at the meeting.

MISC: If anyone has needs or desires for the newsletter please let me know. I read most newsletters and subscribe to several periodicals including Computer Shopper and will watch and report on any item of interest. If the new editor gets started earlier next month He hopes to include more news items.

- * DISK TO TAPE AND TAPE TO DISK CONVERSION PROGRAM
- * TOM FREEMAN
- * 515 ALMA REAL DR.
- * PACIFIC PALISADES, CA 90272
- * FOR USE WITH PROGRAMS MEANT TO BE LOADED BY THE RUN
- * PROGRAM FILE OPTION (#5) OF E/A. IT MAY BE USED FOR
- * OTHER, NON STANDARD, FILES, BUT IN THAT CASE THE TWO
- * INSTANCES OF BL @CHANGE SHOULD BE DELETED, AND THE
- * 4TH WORD OF EACH PAB SHOULD BE REPLACED BY >XX00,
- * WHERE >XX IS THE HEX EQUIVALENT OF THE NUMBER OF
- * SECTORS TAKEN UP BY THE PROGRAM (PER DISK CATALOG)
- * MINUS 1. IF THE ORIGINAL FILE IS ON TAPE AND THIS
- * NUMBER IS NOT KNOWN, USE >2F, THEN CHECK THE DISK
- * FILE WITH A SECTOR EDITOR TO SEE WHERE 00'S BEGIN.
- * THE PROGRAM CAN THEN BE RERUN WITH THE PROPER NUMBER.
- * NOTE: BECAUSE OF THE REF'S TO GPLLNK AND DSRLNK, THE
- * PROGRAM WILL ONLY WORK WITH E/A. IT IS CALLED FROM
- * BASIC - LISTING FOLLOWS.

```

DEF  DISTAP,TAPDIS
REF  DSRLNK,GPLLNK,VMBW,VMBR
STATUS EQU >837C
FAC  EQU >834A
PAB  EQU >0F80
PNTR EQU >8356
WS   EQU >8300
AORG >3000
    
```

- * THE FOLLOWING IS THE DISK FILE
- * AND HAS BEEN PREPARED FROM BASIC

```

PABDSK DATA >0500,>1000,0,>2000
        BYTE 0
        BYTE 0          LENGTH BYTE
        BSS  15         FILE NAME
    
```

- * THE FOLLOWING IS THE CASSETTE FILE
- * NOTE: IF USING CS1 FOR INPUT IN "RUN PROGRAM FILE" IN E/A
- * USE CS1.X AS DEVICE NAME, NOT CS1

```

PABCS  DATA >0600,>1000,0,>2000,>6003   LAST WORD IS SCR OFFSET & LEN BYTE
CS1    TEXT 'CS1'
SAVE   BYTE >06
LOAD   BYTE >05
SAVRTN DATA 0
DISK   LI 0,PAB
        LI 1,PABDSK   LOAD PAB FOR DISK FILE
        LI 2,25
        BLWP @VMBW
        LI 6,PAB+9
        MOV 6,@PNTR
        BLWP @DSRLNK
        DATA 8        MOVE FILE TO VDP AT >1000
        RT
CHANGE LI 0,>1002     2ND WORD CONTAINS # BYTES IN FILE
        LI 2,2        AND BELONGS IN 4TH WORD OF PAB(R1)
        BLWP @VMBR
        RT
TAPE   LI 0,PAB
        LI 1,PABCS
        LI 2,13
        BLWP @VMBW     SET UP CASSETTE PAB TO SAVE
        LI 1,PAB+13    1ST CHAR AFTER PAB MUST BE AT PNTR
    
```

```

MOV 1,@PNTR
LI 1,>0800
MOVB 1,@>836D >836D MUST CONTAIN 8 (DSR CALL)
LI 0,PAB+10
LI 1,FAC
LI 2,3
MOV 2,@PNTR-2 >8345-5 MUST CONTAIN NAME LEN (3)
BLWP @VMBR FAC MUST CONTAIN DEVICE NAME
CLR @>83DO >83DO MUST CONTAIN 0
MOVB @>83DO,@STATUS CLEAR STATUS BYTE
BLWP @GPLLNK BRANCH TO THE DSR
DATA >3D
RT
DISTAP MOV 11,@SAVRTN
LWPI WS
MOVB @LOAD,@PABDSK PREPARE DISKFILE FOR LOAD
MOVB @SAVE,@PABCS " TAPE " " SAVE
BL @DISK
LI 1,PABCS+6
BL @CHANGE
BL @TAPE
JMP RETURN
TAPDIS MOV 11,@SAVRTN
LWPI WS
MOVB @LOAD,@PABCS PREPARE TAPEFILE FOR LOAD
MOVB @SAVE,@PABDSK " DISK " " SAVE
BL @TAPE
LI 1,PABDSK+6
BL @CHANGE
BL @DISK
RETURN CLR 0
MOVB 0,@STATUS
MOV @SAVRTN,11
RT RETURN FROM THIS PROGRAM
END

```

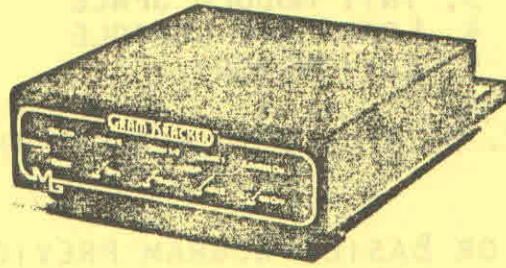
=====
this is the basic program that runs the above file,
if it is assembled under the name DISKTAPE/0
=====

```

100 DNAME=4096*3+9
110 CALL INIT
120 CALL LOAD("DSK1.DISKTAPE/0")
130 INPUT "DISKFILE TO SAVE/LOAD " :NAME$
140 LE=LEN(NAME$)
150 CALL LOAD(DNAME,LE)
160 FOR X=1 TO LE
170 CALL LOAD(DNAME+X,ASC(SEG$(NAME$,X,1)))
180 NEXT X
190 PRINT "PRESS D. DISK TO TAPE": " OR T. TAPE TO DISK"
200 CALL KEY(O,K,S)
210 IF S=0 THEN 200
220 IF K=68 THEN 260
230 IF K<>84 THEN 200
240 CALL LINK("TAPDIS")
250 GOTO 270
260 CALL LINK("DISTAP")
270 PRINT "DO ANOTHER? Y/N": ::
280 CALL KEY(O,K,S)
290 IF S=0 THEN 280
300 IF K=89 THEN 130
310 IF K<>78 THEN 280
320 STOP

```


GRAM KRACKER™



THE PERIPHERAL THAT TI SHOULD HAVE BUILT YEARS AGO

- * OPENS UP AN ENTIRE NEW AREA OF MEMORY FOR ADDITIONAL PROGRAMMING AND CUSTOM MODIFICATIONS.
- * SAVES THE CONTENTS OF ANY MODULE TO DISK, CASSETTE, RAM DISK OR HARD DISK. LOADS THE SAVED MODULE INTO THE GRAM KRACKER TO RUN IT. (ALLOWS YOU TO BACK UP AND/OR MODIFY YOUR MODULES.)
- * STORES APPROXIMATELY 15 MODULES ON 1 DOUBLE SIDED DOUBLE DENSITY DISKETTE.
- * ALLOWS PROGRAMMING IN THE TI PROPRIETARY GRAPHICS PROGRAMMING LANGUAGE (GPL).
- * CONTAINS 80K OF BATTERY BACKED UP CARTRIDGE RAM AND GRAM.
- * CONTAINS ITS OWN MODULE PORT FOR EASIER SAVING OF MODULES.
- * CONTAINS 8K OF PREPROGRAMMING FOR ON-LINE SAVING, LOADING AND EDITING OF MODULES AND OPTIONAL CONSOLE GRAMS.
- * COMES WITH A UTILITY DISKETTE THAT CONTAINS MANY EASY TO RUN UTILITIES TO HELP YOU CUSTOMIZE YOUR XB, TI-WRITER AND EDITOR ASSEMBLER MODULES AND MENU SELECTIONS WHICH ALSO ALLOWS A MENU WITH ALL THREE MODULES ON IT.
- * SHOWS YOU HOW TO SET YOUR OWN DEFAULT COLORS FOR YOUR MODULES AND ASSOCIATED SOFTWARE.
- * ALLOWS YOU TO CHANGE THE DEFAULT PRINTER CONFIGURATION FOR YOUR MODULES, SUCH AS REPLACING RS232 WITH PIO.
- * EASY TO INSTALL - JUST PLUG IT INTO YOUR MODULE PORT AND YOU ARE READY TO GO!
- * SIMPLE TO OPERATE, WITH FULL EXAMPLES IN THE OPERATORS MANUAL.

THE 8K OF BUILT IN PREPROGRAMMING DISPLAYS THE FOLLOWING MENU:

1. LOAD MODULE
2. SAVE MODULE
3. INIT MODULE SPACE
4. LOAD/SAVE CONSOLE
5. EDIT MEMORY

JUST PRESS 1, 2, 3, 4 OR 5 TO PERFORM THE FOLLOWING:

LOAD MODULE

LOADS ANY MODULE OR BASIC PROGRAM PREVIOUSLY SAVED WITH THE SAVE MODULE SELECTION. THIS SELECTION WILL ALSO ALLOW YOU TO LOAD ANY UTIL1 OR RUN PROGRAM FILE TYPE FILE. THE MODULE LOADING AND UTIL1 TYPE FILE LOADING CAN AUTOMATICALLY BE CHAINED TOGETHER WITH A BUILT IN GRAM KRACKER OPTION. THIS MEANS THAT YOU CAN LOAD UP TO 88K BY TYPING IN 1 FILE NAME!

SAVE MODULE

SAVES THE CONTENTS OF ANY MODULE PLUGGED INTO THE GRAM KRACKER MODULE PORT TO DISK, CASSETTE, RAM DISK OR HARD DISK. THIS SELECTION WILL ALSO SAVE THE CONTENTS OF THE GRAM KRACKER'S RAM AND GRAM OR YOUR BASIC PROGRAM THAT HAS BEEN SET UP IN GRAM WITH OUR UTILITY. TO SAVE A MODULE, SIMPLY PLUG IT INTO THE MODULE PORT, SELECT 2 AND TYPE IN THE FILENAME TO SAVE IT TO.

INIT MODULE SPACE

CLEARs OUT THE GRAM KRACKER'S MODULE RAM AND GRAM.

LOAD/SAVE CONSOLE

ALLOWS YOU TO LOAD AND SAVE THE CONSOLE GRAMS, THAT CAN BE TURNED ON AND OFF IN PLACE OF THE CONSOLE GROMS.

EDIT MEMORY

BRINGS UP A FULL SCREEN MEMORY EDITOR SIMILAR TO THE EXPLORER'S EDITOR. THIS EDITOR ALSO ALLOWS YOU TO MOVE BLOCKS OF MEMORY, FROM ANYWHERE TO ANYWHERE, FILL ANY BLOCK OF MEMORY WITH A DESIGNATED BYTE OR DUMP ANY BLOCK OF MEMORY TO A SELECTED OUTPUT DEVICE IN HEX, ASCII AND ASCII WITH THE BASIC BIAS. (PLEASE NOTE: EDIT MEMORY AND LOAD AND SAVE CONSOLE SELECTIONS REQUIRE MEMORY EXPANSION)

UTILITY DISKETTE

CONTAINS FILES THAT WILL; ADD NEW CALLS TO EXTENDED BASIC, ADD THE EDITOR AND FORMATTOR TO THE TI-WRITER MODULE FOR INSTANT ACCESS, ADD THE EDITOR AND ASSEMBLER TO THE EDITOR/ASSEMBLER MODULE FOR INSTANT ACCESS, MOVE THE TI-WRITER AND EDITOR/ASSEMBLER MODULES TO DIFFERENT GRAM CHIPS FOR MORE THAN ONE ITEM ON THE MENU, ALLOW YOU TO WRITE BASIC PROGRAMS AS MODULES, CHANGE THE DEFAULT CHARACTER SETS AND MORE.

TIPS FROM THE TIGERCUB

032

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156 Collingwood Ave.
Columbus, OH 43213

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Over 130 original programs in Basic and Extended Basic, available on cassette or disk, only \$3.00 each plus \$1.50 per order for PPM. Entertainment, education, programmer's utilities. Descriptive catalog \$1.00, deductible from your first order.

Tips from The Tigercub, a full disk containing the complete contents of this newsletter Nos. 1 through 14, 50 original programs and files, just \$15 postpaid.

Tips from the Tigercub Vol. 2, another diskfull, complete contents of Nos. 15 through 24, over 60 files and programs, also just \$15 postpaid. Or, both for \$27 postpaid.

Nuts & Bolts (No. 1), a full disk of 100 Extended Basic utility subprograms in merge format, ready to merge into your own programs. Plus the Tigercub Menuloader, a tutorial on using subprograms, and 5 pages of documentation with an example of the use of each subprogram. All for just \$19.95 postpaid.

Nuts & Bolts No. 2, another full disk of 100 utility subprograms in merge format, all new and fully compatible with the last, and with 10 pages of documentation and examples. Also \$19.95

postpaid, or both Nuts Bolts disks for \$37 postpaid.

Tigercub Full Disk Collections, just \$12 postpaid! Each of these contains either 5 or 6 of my regular \$3 catalog programs, and the remaining disk space has been filled with some of the best public domain programs of the same category. I am NOT selling public domain programs - my own programs on these disks are greatly discounted from their usual price, and the public domain is a FREE bonus!

- TIGERCUB'S BEST PROGRAMMING TUTOR
- PROGRAMMER'S UTILITIES
- BRAIN GAMES
- BRAIN TEASERS
- BRAIN BUSTERS!
- MANEUVERING GAMES
- ACTION GAMES
- REFLEX AND CONCENTRATION
- TWO-PLAYER GAMES
- KID'S GAMES
- MORE GAMES
- WORD GAMES
- ELEMENTARY MATH
- MIDDLE/HIGH SCHOOL MATH
- VOCABULARY AND READING
- MUSICAL EDUCATION
- KALEIDOSCOPIES AND DISPLAYS

For descriptions of these send a dollar for my catalog!

I've found a bug in the Tigercub Menuloader V.05 which won't let you print a disk catalog if the disk contains the maximum 127 files. This should fix it.
340 I=I+1 : IF I>127 THEN K=X : GOTO 430
520 DISPLAY AT(X+5,12)SIZE(12):" ??" : ACCEPT AT(X+5,15)SIZE(3)VALIDATE(DIGIT):KD : IF KD<1 OR KD>NN THEN 520

I think that all program listings should be printed in 28-column format, exactly as they appear on the screen - it makes it so much easier to key them in without errors. I combined parts of two of my programs to make

the following. It is written for the Gemini 10X but the lines of printer control codes are annotated to help others make adjustments.

```

100 DIM K$(240):: LN=100 :
DISPLAY AT(3,4)ERASE ALL:"TIGERCUB PROGLISTER": " Will
convert a program":listing
to 28-column format,"
110 DISPLAY AT(7,1):"exactly
as it appears on the":screen,
and print it in 4":columns."
120 DISPLAY AT(11,1):" Program
must be RESequenced":and
LISTED to disk by":RES (enter)":LIST DSK1.(filename)
(Enter)"
130 DISPLAY AT(18,1):"Filename?
DSK" : ACCEPT AT(18,14)
BEEP:F#
140 OPEN #1:"DSK"&F#,DISPLAY
,VARIABLE B#,INPUT
150 IF EOF(1)=1 THEN 260 :
LINPUT #1:A#
160 IF LEN(A#)<B# THEN LN=LN
+1# : GOTO 210
170 LINPUT #1:B# : IF POS(B
#,STR$(LN),1)=1 THEN FLAG=1
: LN=LN+1# : GOTO 210
180 A#&A#&B# : IF LEN(A#)<1
60 THEN LN=LN+1# : GOTO 210
190 LINPUT #1:B# : IF POS(B
#,STR$(LN),1)=1 THEN FLAG=1
: LN=LN+1# : GOTO 210
200 A#&A#&B# : LN=LN+1#
210 B=1
220 L#&SEG$(A#,B,28)
230 IF L#<" THEN 240 : IF
FLAG=1 THEN FLAG=0 : A#&B#
: GOTO 160 : ELSE GOTO 150
240 X=X+1 : K$(X)=L# : S=B
+28 : IF X=240 THEN 250 :
GOTO 220
250 X=0 : CALL PRINTER(K$(
)) : GOTO 220
260 CLOSE #1 : FOR J=X+1 TO
240 : K$(J)=" : NEXT J :
CALL PRINTER(K$( )) : PRINT
#2:CHR$(12):: END
270 SUB PRINTER(B#()) : IF F
=1 THEN 340 : F=1
280 OPEN #2:"PIO.LF",VARIABLE
I 132 : PRINT #2:CHR$(15);C
HR$(27);"N";CHR$(6);!condens
ed print and perforation ski
p
290 PRINT #2:CHR$(27);"6";!

```

```

- double-struck printing, optional
300 PRINT #2:CHR$(27);CHR$(4
2);CHR$(8);!download normal
characters - required if lines
310-330 are used
310 PRINT #2:CHR$(27);CHR$(4
2);CHR$(1);CHR$(48);CHR$(8);
CHR$(64);CHR$(38);CHR$(96);C
HR$(17);CHR$(72);CHR$(5);CHR
$(66);CHR$(61);CHR$(8);!slas
h the zero - optional
320 PRINT #2:CHR$(27);CHR$(4
2);CHR$(1);CHR$(42);CHR$(8);
CHR$(8);CHR$(34);CHR$(8);CHR
$(8);CHR$(62);CHR$(8);CHR$(8
);CHR$(34);CHR$(8);!broaden
the asterisk - optional
330 PRINT #2:CHR$(27);CHR$(3
6);CHR$(1);!activate redefin
ed characters - required if
lines 310-320 are used
340 FOR C=1 TO 60 : IF B#(C
)=" THEN 360 : PRINT #2:TA
B(18);B#(C);TAB(41);B#(C+60)
;TAB(72);B#(C+120);TAB(103);
B#(C+180);CHR$(10)
350 NEXT C
360 SUBEND

```

I had trouble in debugging that program because printing the control codes gave me unwanted line feeds, and using semicolons to prevent line feeds will interfere with tabs in the first line of text. An article by Art Byers in the Central Westchester UG newsletter gave me the solution - suppress all the line feeds by opening the printer with PIO.LF, and put them back in where you need them with CHR\$(10)!

We haven't had a random music player in a long time. This one is called ECHO but I don't know where it came from.

```

100 RANDOMIZE : DEF X=INT(R
ND*7):: FOR B=0 TO 6 : A(B)
=VAL(SEG$( "24726229433034939
2440", (B+1)*3-2,3)) : NEXT B
: B,C,D=X
110 CALL SOUND(-900,A(B),B,A
(C),9,A(D),19) : D=C : C=B
: B=X : GOTO 110

```



```

Sound effects - thanks to
Greg Healy in the Edmonton
User Group newsletter -
100 CALL INIT
110 FOR J=2000 TO 2300 STEP
10 :: CALL LOAD(-31568,J)::
NEXT J

```

To go directly from XBasic to console Basic - thanks to Greg Healy in the Edmonton User Group newsletter - CALL INIT :: CALL LOAD(-31962,0787) Enter. Ignore the error message. Type NEW and Enter. > TI BASIC READY

```

This routine will read a
file of 28-character records
and scroll them up the lower
half of the screen without
disturbing the upper half.
100 DISPLAY AT(12,1)ERASE AL
L:"FILENAME? DSK" :: ACCEPT
AT(12,14)BEEP:F0 :: CALL CLE
AR
111 OPEN #1:"DSK"&F0,INPUT
112 DIM M$(400)
113 X=X+1 :: LINPUT #1:M$(X)
120 DISPLAY AT(24,1):M$(X)
125 R=24
130 FOR T=X-1 TO 1 STEP -1 :
: IF R>13 THEN R=R-1 :: DISP
LAY AT(R,1):M$(T)
140 NEXT T :: IF EOF(1)<>1 T
HEN 113 ELSE CLOSE #1

```

```

10 !ONE-LINE MORTGAGE PAYMEN
T CALCULATOR BY SAM MORABITO
100 CALL CLEAR :: INPUT "ENT
ER P,R,N WHERE P=AMOUNT, R=R
ATE, N=YEARS":P,R,N :: PRINT
"0":INT((P*R/1200)/(1-1/(1+
R/1200)^(N*12)))/100+.5)/100;
"PER MONTH"

```

A number always prints out with a blank space before and after it (except that a negative number is preceded by -). This is not always desirable when formatting a screen or printout. The solution is to change the number to a string by using STR\$ -

```

100 CALL CLEAR
110 PRINT " MULTIPLICATION
TABLES":

```

```

120 FOR J=1 TO 9
130 FOR K=1 TO 9
140 PRINT TAB(K*3-2);BTR$(J*
K);
150 NEXT K
160 PRINT :
170 NEXT J

```

Regarding the CHECKER program in Tips #31, I should have mentioned that the two programs to be compared must first be LISTed to one disk by - LIST "DSK1.(filename) - using a different file-name for each.

We are still finding new ways to skin the kitty. In Tips #26 I listed three algorithms to alternate between the two joysticks. Rick Humburg sent me another which is the simplest and fastest of all -

```

100 Z=2
110 Z=3-Z :: CALL JOYST(Z,X,
Y).....and back to 110!

```

Here are some more dark secrets Texas Instruments didn't tell us. The User's Reference Guide claims that the computer can produce frequencies up to 44733 Hz, "well above human hearing limits", but then admits "the actual frequency produced may vary from 0 to 10 percent depending on the frequency." According to Jim Hindley, the highest frequency actually produced is 37207 (which is certainly not above the hearing range of some humans, but neither is 44733!), and the maximum error rate far exceeds 10 % because any frequency you call for from 31953 to 43733 ends up as exactly 37207! Not to worry, the frequencies in the normal range of music are accurate enough and your TV speaker probably can't reproduce frequencies above 20000 anyway.

And did you know that TI really gave us only 15 vol-

```

umes, not 30? Listen and
count them -
100 FOR V=0 TO 29 STEP 2
110 CALL SOUND(1000,500,V)
120 CALL SOUND(1000,500,V+1
1)
130 FOR D=1 TO 500
140 NEXT D
150 NEXT V

```

And the duration values are just as inaccurate. Experimenting with a series of 8 CALL SOUNDS in a loop repeated 100 times, I found that execution time was 40 seconds for any duration between 1 and 49, or a negative duration; 54 seconds for any duration between 50 and 66; 67 seconds between 67 and 83; 80 seconds between 84 and 99; 94 between 100-116; 106 between 117-133....!

I guess I've been neglecting those who don't have the Extended Basic module, so -

```

100 CALL SCREEN(16)
110 CALL CLEAR
120 PRINT TAB(0);"GREENSLEEVE
ES": : : : : : : : : : :
:"programmed by Jim Peterso
n"
130 DIM S(15)
140 FOR N=1 TO 12
150 READ S(N)
160 NEXT N
170 M$="421800995ABDC324E7DB
A5106699182400425A00DBC35A66
A5243C7EB1994200A57E66003CA5
423C107E423C005A810099FFC3"
180 RANDOMIZE
190 FOR R=1 TO 12
200 CALL COLOR(R+1,1,1)
210 CALL CHAR(32+R*8,CH0&CH0
)
220 FOR T=R TO 25-R
230 CALL HCHAR(T,R,32+R*8,34
-2*R)
240 NEXT T
250 NEXT R
260 CALL SCREEN(2)
270 FOR R=1 TO 12
280 CALL COLOR(R+1,R+2,1)
290 CH0=SE6$(M$,INT(47*RND+1
)*2-1,0)
300 CALL CHAR(32+R*8,CH0&CH0
)
310 NEXT R

```

```

320 DATA 247,277,294,311,330
,370,392,440,494,523,554,587
330 DATA 2,5,5,4,7,5,2,8,5,3
,9,5,1,10,1,2,9,3,4,8,3,2,6,
3,3,3,1,1,5,3
340 DATA 2,6,1,4,7,5,3,5,2,1
,4,2,2,5,2,4,6,1,2,4,4,4,1,1
350 DATA 2,5,1,4,7,5,2,8,5,3
,9,5,1,10,5,2,9,5
360 DATA 4,8,3,2,6,3,3,3,1
,5,3,2,6,3,3,7,5,1,6,2,2,5,1
370 DATA 3,4,1,1,2,2,2,4,1,4
,5,1,2,1,5,6,5,1
380 DATA 2,12,9,2,12,7,2,12,
3,3,12,12,1,11,9,2,9,7
390 DATA 4,8,6,2,6,3,3,3,1
,5,5,2,6,3,4,7,5,2,5,3
400 DATA 3,5,5,1,4,4,2,5,5,4
,6,1,2,4,1,6,1,1
410 DATA 6,12,9,3,9,12,1,11,
8,2,9,7,4,8,6,2,6,3,3,3,3
420 DATA 1,5,3,2,6,2,3,7,5,1
,6,6,2,5,5,3,4,1,1,2,2,2,4,4
,6,5,1,1,1,5,7,5,1
430 FOR J=1 TO 223 STEP 3
440 READ T,A,B
450 GOSUB 530
460 FOR TT=1 TO T
470 CALL SOUND(-999,8(A),0,8
(B),7)
480 NEXT TT
490 NEXT J
491 FOR V=0 TO 20
492 CALL SOUND(-999,8(A),V,8
(B),V+7)
493 NEXT V
500 CALL SCREEN(INT(14*RND+2
))
510 RESTORE 330
520 GOTO 270
530 CALL COLOR(A+1,INT(14*RND
D+2),1)
540 CALL COLOR(B+1,INT(14*RND
D+2),1)
550 RETURN

```

! from 9 T 9 UG news1. Aug 85
100 PRINT ""Hello" said TI
"
110 PRINT "Press "ENTER" t
o continue"

If you bite the hand that feeds you, you'll go hungry tomorrow. Don't be a pirate!

MEMORY FULL TO BUSTIN'

Jim Peterson