From I-75 northbound, take the First Street exit and proceed east to
the Fourth traffic light which will be the intersection of First and
Ludlow Streets, making sure to be in the right-hand lane. Turn right
and proceed South one-half block. Immediately on the right will be
the Lazarus store. Take the elevator to the second floor, turn right
and proceed to the auditorum.

DIRECTIONS: CINCINNATI

From I-75 southbound, proceed to the I-71 North and 50-East exit (1A),
making sure to be in one of the two leftmost lanes. Shortly after you
take the exit, you will be on I-71 North, and asould continue until
you pass Riverfront Stadium. You would then be sure to get in the
rightmost lane, and take I-471 an Newport exit (1K) and you will cross
the I-471 bridge. Note: the ramp speed is reduces to 30
miles-per-hour. Proceed south on I-471 (you will pass under I-275) to
the intersection of Sunset and U.S. Route 27. Note: this will be the
first red light and the end of I-471. Proceed south on U.S. Route for
approximately one mile. You will pass a Kocolene service station on
the right, take the next driveway, on the right, past the service
station, to the library parking lot.

FOR SALE:

USCD PASCAL CARD, all manuals and disks, plus several shareware disks.
 All manuals and disks are in new condition except the compiler disk
and the card was reconditioned by TI to include the off/on switch.
Price $125.00

TERMINAL EMULATOR II cartridge and manual. Price $10.00.

QUALITY 99 SOFTWARE'S SOFTKEYS and DISK MANAGER IV (a memory resident
manager). Price $5.00 each.

PERSONAL FINACIAL AIDS, cartridge. Price $3.50.

BOOKS: Creating Arcade Games on the TI-99/4A (COMPUTE!), TI-99/4A Game
Programs, Kids & The TI 99/4A. Price: $5.00, 3.00, and 2.00
respectively.

If you need these to be sent to you, please include postage.
Items are for sale by Jim Susco, 95 McVey Place, Springboro, OH 45066.

THE CIN-DAY LIBRARIES (September 1987): by Rick Kellogg

Most of you are familliar with the Disk of the Month, (DOM) library, the
Cassette of the Month, (COM) library, and the Fairware library. But are you
aware that our group has two other libraries! Welcome to the International
User Group, (IUG) listing library and the Video Tape library. Here is a brief
rundown of what these libraries have in store for you.

Disk of the Month (DOM) Library: [28] disks currently, but more on the way.
Breakdown: GAMES   [06] Extended Basic, Assembly
           UTILITY [14] Extended Basic, Assembly
           LANGUAGE [03] Extended Basic, Assembly
           GRAPHICS [03] Extended Basic, Assembly
              MUSIC [01] Basic, Extended Basic
           BUSINESS [01] Extended Basic

Fairware Disk Library: [13] disks currently, about 2 or 3 added every month!
Breakdown: UTILITY [12] Extended Basic, Multiplan
           GRAPHICS [01] Assembly

Cassette of the Month (COM) Library [18] cassettes currently, more to come?
Breakdown: All the cassettes have 10 programs per tape. They are a mixture of
Games, Utility, Graphics, and Music. Many run in Basic, the rest run in
Extended Basic.

International User Group (IUG) Listing Library: [1004] program listings.
Breakdown: GAMES   [388] Basic, Extended Basic
           UTILITY   [124] Basic, Extended Basic
           GRAPHICS [083] Basic, Extended Basic
              MUSIC   [114] Basic, Extended Basic
           BUSINESS   [167] Basic, Extended Basic
           EDUCATION [128] Basic, Extended Basic
  Note: These programs are listings only, they must be typed in to your computer
        in order to work. We hope that the programs that you do enter into your
        computer, that a working copy be returned to the group in either disk or
        cassette form. This way we will be able to release future disk/cassette
        offerings so every member may benefit.

Video Tape Library: [2] tapes currently. (We just started this Library)
Tape #1: Craig Miller demonstrates Triton's TURBO XT and SUPER EXTENDED BASIC
Tape #2: Static and the danger to your computer

Please stay tuned, all of these libraries will be expanded as demand justifies.
These libraries are for you and only you, a member of the CIN-DAY User Group.
Use the services of the library as much as you like, (within the certain
guidelines and small fee charged). How about a Book Library? Is there any
interest about getting that going? As an officer appointed by you, the
membership, I will do what ever I can to make the group the way you want it to
be. I'm listening.... Rick

SUNRISE, SUNSET, TWILIGHT

by Allen J. Rogers

This program calculates the time of sunrise, sunset, and civil, nautical and astronomical twilight based on the formulas found in the U.S. Naval Observatory's "Almanac for Computers".

The program originally appeared in the April 1984 issue of "ASTRONOMY" magazine and was written by Mr. William C. Bell. The program was written in standard BASIC so that it could be adapted to any machine using BASIC. I have written the program in TI Extended BASIC. I have extensively modified the input and output routines and made some changes to the routines which compute the values, but the main program remains the same as written by Mr. Bell.

There are three redefined characters in the program which do not appear in the listings as such because they are invisible to the printer. Therefore, you will have to make the following changes in lines 260, 290, 610, 620 and 1070:

In lines 260 and 290 change "C" to "CTRL C", i.e., instead of pressing C press CTRL C.

In lines 610, 620 and 1070, change "D to "CTRL D and change E" to CTRL E".

There are many REM (!) lines (in addition to the ones put in by CHECKSUM). I suggest that you leave them in, at least initially, because

they contain a lot of information about what functions the individual parts of the program perform.

The (I)nstruction part of the program gives details about what this program does. It includes a sample run showing inputs and outputs. After you key in the program, use the example to check it out. Or you may check the sunrise, sunset times against those published in the weather section of the newspaper.

If you wish to delve more deeply into what the differences are between sunrise, sunset and civil, nautical, and astronomical twilight, you should consult the "Almanac for Computers".

```
100 !%%%%%%%%%%%%%%%%%%%%%%%%%
110 !%  SUNRISE - SUNSET   %
120 !%  By William C. Bell  %
122 !%      Modified by     %
130 !%    Allen J. Rogers   %
140 !%   1 September 1987   %
150 !%%%%%%%%%%%%%%%%%%%%%%%%%
160 DIM EE$(12):: GOTO 210 !
117
170 CALL COLOR :: CALL SCREE
N :: CALL SCHAR :: CALL CHAR
!240
180 CALL SOUND :: CALL VCHAR
!083
190 CALL CLEAR :: CALL KEY :
: @,A,A1,A1$,AA$,B,B1,BB$,B1
$,C,CC$,D,DD,E,F,G,H,I,J,JJ$
,K,L,M,M@,MM,N,NN,OO,P,P1,Q,
R,S,T,U,V,V$,W,X,Y,Z !120
200 !@P- !064
210 M@="    Sunrise - Sunse
t" !131
220 CALL SCREEN(16):: FOR @=
0 TO 14 :: CALL COLOR(@,2,16
):: NEXT @ !176
230 CALL CLEAR :: CALL CHAR(
131,RPT$("FF00",4),132,"0008
0C7E7E0C0800",133,"0010307E7
```

```
E301000")!250
240 FOR X=1 TO 5 :: CALL SOU
ND(50,880-X$110,0):: DISPLAY
AT(X,2):M$ :: DISPLAY AT(X,
2): :: NEXT X !185
250 DISPLAY AT(6,2):M$ !210
260 DISPLAY AT(4,6):RPT$("C"
,18):: CALL VCHAR(4,25,131,4
):: DISPLAY AT(8,6):RPT$("C"
,18):: CALL VCHAR(4,8,131,4)
!124
270 DISPLAY AT(10,14):"By":T
AB(9);"allen rogers" :: DISP
LAY AT(16,8)BEEP:"(I)nstruct
ions":"          (R)un program"
:"          (Q)uit" !089
280 DISPLAY AT(20,11):"Choic
e?" !023
290 DISPLAY AT(13,6):RPT$("C
",18):: CALL VCHAR(14,8,131,
10):: DISPLAY AT(23,6):RPT$(
"C",18):: CALL VCHAR(14,25,1
31,10)!155
300 CALL KEY(0,K,S):: IF S=0
THEN 300 :: IF K=73 THEN 31
0 ELSE IF K=82 THEN 1020 ELS
E IF K=81 THEN 2710 ELSE 300
!239
310 CALL CLEAR :: DISPLAY AT
(1,7):"-- PURPOSE --" !170
320 DISPLAY AT(3,1):"THIS PR
OGRAM GIVES TIME OF" !146
330 DISPLAY AT(4,1):"SUNRISE
, SUNSET AND TWILIGHT" !023
340 DISPLAY AT(5,1):"(ASTRON
OMICAL, NAUTICAL AND" !166
350 DISPLAY AT(6,1):"CIVIL)
TO A MINUTE OR TWO" !052
360 DISPLAY AT(7,1):"DURING
THE SECOND HALF OF" !058
370 DISPLAY AT(8,1):"THE TWE
NTIETH CENTURY." !116
380 DISPLAY AT(10,7):"-- INP
UTS --" !060
390 DISPLAY AT(12,1):"LATITU
DE IN DEGREES, MINUTES" !020
400 DISPLAY AT(13,1):"AND SE
CONDS. NORTH IS POSIT-" !229
410 DISPLAY AT(14,1):"IVE. E
XAMPLE: 30.0028 REPRE-" !049
420 DISPLAY AT(15,1):"SENTS
30 DEGREES, 00 MINUTES" !148
430 DISPLAY AT(16,1):"28 SEC
ONDS NORTH LATITUDE." !097
440 DISPLAY AT(22,1):"PRESS
```

```
ANY KEY TO CONTINUE" !085
450 CALL KEY(0,K,S):: IF S=0
THEN 450 !007
460 !% !173
470 CALL CLEAR :: DISPLAY AT
(1,1):"LONGITUDE IN DEGREES
, MIN-":"UTES AND SECONDS. W
EST IS" !211
490 DISPLAY AT(3,1):"POSITIV
E. EXAMPLE:  90.1109":"REPRE
SENTS 90 DEGREES, 11" !032
510 DISPLAY AT(5,1):"MINUTES
, 09 SECONDS WEST":"LONGI
TUDE." !108
530 DISPLAY AT(8,1):"TIME Z
ONE IN HOURS AND":"MINUT
ES ARE ADDED TO THE" !020
550 DISPLAY AT(10,1):"WALL C
LOCK TIME TO YIELD ":"UNI
VERSAL TIME IN THE FORTY" !0
95
570 DISPLAY AT(12,1):"CONTIG
UOUS UNITED STATES.":"DAYL
IGHT SAVINGS TIME, 1" !03
1
580 DISPLAY AT(14,1):"APRIL
OF THE YEAR TO 31":"OCTO
BER, IS AUTOMATICALLY":"CA
LCULATED BY THE PROGRAM." !
041
585 DISPLAY AT(17,1):"THEREF
ORE, THE STANDARD TIME":"ZON
E SHOULD BE USED, UNLESS":"Y
OU ARE NOT ON DAYLIGHT":
"TIME." !021
590 DISPLAY AT(22,1):"PRESS
ANY KEY TO CONTINUE" !085
600 CALL KEY(0,K,S):: IF S=0
THEN 600 !158
610 CALL CLEAR :: DISPLAY AT
(1,1):"D          STANDARD DAY
LIGHT E" !001
620 DISPLAY AT(2,1):"D
ZONE      ZONE       E" !129
630 DISPLAY AT(4,1):"EASTERN
5.00       4.00" !178
640 DISPLAY AT(5,1):"CENTRAL
6.00       5.00" !172
650 DISPLAY AT(6,1):"MOUNTAI
N 7.00       6.00" !241
660 DISPLAY AT(7,1):"PACIFIC
8.00       7.00" !152
670 DISPLAY AT(9,7):"-- INPU
TS --" !019
680 DISPLAY AT(11,1):"YEAR
```

```
(1951 THRU 2000)" !065
690 DISPLAY AT(13,1):"MONTH
(1 THROUGH 12)" !086
700 DISPLAY AT(15,1):"DAY
(1 THROUGH 31)" !241
710 DISPLAY AT(22,1):"PRESS
ANY KEY TO CONTINUE" !085
720 CALL KEY(0,K,S):: IF S=0
THEN 720 !022
730 CALL CLEAR :: DISPLAY AT
(1,1):"-- OUTPUTS --" !186
740 DISPLAY AT(3,1):"OUTPUTS
 ARE GIVEN  IN HOURS" !189
750 DISPLAY AT(4,1):"AND MIN
UTES - AM OR PM. A" !193
760 DISPLAY AT(5,1):"ZERO O
UTPUT INDICATES THAT" !216
770 DISPLAY AT(6,1):"THE  PH
ENOMENON  DOES  NOT" !245
780 DISPLAY AT(7,1):"OCCUR O
N THE SPECIFIED DATE," !148
790 DISPLAY AT(8,1):"E.G., S
UN DOES NOT SET IN" !139
800 DISPLAY AT(9,1):"MIDSUMM
ER AT HIGH LATITUDES." !235
810 DISPLAY AT(22,1):"PRESS
ANY KEY TO CONTINUE" !085
820 CALL KEY(0,K,S):: IF S=0
THEN 820 !123
830 CALL CLEAR :: DISPLAY AT
(1,7):"-- SAMPLE --" !061
840 DISPLAY AT(3,1):"LATITUD
E = 30 LONGITUDE = 90" !045
850 DISPLAY AT(4,1):"ZONE =
5       YEAR = 1983" !210
860 DISPLAY AT(5,1):"MONTH =
5       DAY = 19" !093
870 DISPLAY AT(7,1):"ASTRONO
MICAL DAWN    4:33 AM" !028
880 DISPLAY AT(8,1):"NAUTICA
L DAWN     5:06 AM" !099
890 DISPLAY AT(9,1):"CIVIL D
AWN     5:38 AM" !239
900 DISPLAY AT(10,1):"SUNRIS
E        6:04 AM" !218
910 DISPLAY AT(11,1):"SUNSET
        7:49 PM" !205
920 DISPLAY AT(12,1):"CIVIL
DUSK       8:15 PM" !052
930 DISPLAY AT(13,1):"NAUTIC
AL DUSK      8:47 PM" !180
940 DISPLAY AT(14,1):"ASTRON
OMICAL DUSK   9:21 PM" !105
950 DISPLAY AT(22,1):"PRESS
ANY KEY TO":"CONTINUE" !176

960 CALL KEY(0,K,S):: IF S=0
THEN 960 !007
970 !# !173
980 !# ------------------
!081
990 !# !173
1000 !#    -- CONSTANTS -- !
222
1010 !# !173
1020 ON WARNING NEXT !215
1030 CALL CLEAR :: A=PI/2 ::
 B=PI :: C=1.5#PI :: D=2#PI
:: P1=PI/180 !180
1040 !# !173
1050 !#      -- INPUTS -- !0
68
1060 !# !173
1070 CALL CLEAR :: DISPLAY A
T(3,1):"D DEFAULT VALUES ARE
 FOR E":"D FAIRBORN, OHIO,
1987 E":"D   STANDARD TIME
ZONE    E" !187
1080 DISPLAY AT(7,1):"LATITU
DE IN DEGREES,MINUTES":"SECO
NDS;           39.5000" !101
1090 DISPLAY AT(10,1):"LONGI
TUDE IN DEGREES":"MINUTES,SE
CONDS;    83.5845" !232
1100 DISPLAY AT(13,1):"ZONE
NUMBER      5" !196
1110 DISPLAY AT(15,1):"YEAR,
1951-2000    1987" !004
1120 DISPLAY AT(17,1):"MONTH
, 1-12" !248
1130 DISPLAY AT(19,1):"DAY,
1-31" !081
1140 ACCEPT AT(8,20)SIZE(-7)
BEEP VALIDATE(NUMERIC):Z ::
IF (Z>90)+(Z<-90)THEN 1140 !
056
1150 GOSUB 1750 :: E=Z#P1 !0
79
1160 ACCEPT AT(11,20)SIZE(-7
)BEEP VALIDATE(NUMERIC):Z ::
 IF (Z>360)+(Z<0)THEN 1160 !
172
1170 GOSUB 1750 :: F=Z#P1 !0
80
1180 ACCEPT AT(13,20)SIZE(-1
)BEEP VALIDATE(DIGIT):Z :: B
8#=STR$(Z) !253
1200 ACCEPT AT(15,20)SIZE(-4
)BEEP VALIDATE(NUMERIC):H ::
IF H>2000 THEN 1200 !046
1210 ACCEPT AT(17,20)SIZE(2)

BEEP VALIDATE(DIGIT):I :: IF
I)12 THEN 1210 !024
1220 ACCEPT AT(19,20)SIZE(2)
BEEP VALIDATE(DIGIT):J :: IF
J)31 THEN 1220 !039
1225 IF (I=4)&(J=1)&(I<11)
THEN 1228 ELSE 1229 !111
1228 Z=Z-1 :: DISPLAY AT(13,
20)SIZE(-4)BEEP:STR$(Z)&"&"
:: DISPLAY AT(21,1):"#DAYLIG
HT SAVING TIME" !101
1229 GOSUB 1750 :: G=Z#P1#15
!068
1230 RESTORE 1240 !057
1240 FOR DD=1 TO 12 :: READ
EE$(DD):: NEXT DD !006
1250 DATA JANUARY,FEBRUARY,M
ARCH,APRIL,MAY,JUNE,JULY,AUG
UST,SEPTEMBER,OCTOBER,NOVEMB
ER,DECEMBER !203
1260 JJ$=STR$(J)&" "&EE$(I)&
" "&STR$(H)&RPT$(" ",12-LEN(
EE$(I)))&"ZONE: "&B8$ !093
1270 !# !173
1280 !#  -- DAY OF YEAR --
!229
1290 !# !173
1300 K=INT((I+9)/12):: X=H/4
 :: Y=INT(X):: Z=X-Y :: IF Z
=0 THEN 1320 !071
1310 K=K#2 !018
1320 H=INT(275#I/9):: H=H+J-
K-30 !084
1330 !# !173
1340 !# - RISING PHENOMENA -
!238
1350 !# !173
1360 !# !173
1370 I=0 :: J=A :: GOSUB 182
0 !192
1380 !# !173
1390 R=COS(108#P1):: GOSUB 2
210 !110
1400 DISPLAY AT(4,1):J;EE$(I
);H !188
1410 CALL CLEAR :: GOSUB 259
0 :: DISPLAY AT(2,1):JJ$ ::
DISPLAY AT(4,1):RPT$("-",27)
:: DISPLAY AT(6,1):"ASTRONOM
ICAL DAWN ";V$ !106
1420 !# !173
1430 R=COS(102#P1):: GOSUB 2
210 !104
1440 GOSUB 2590 :: DISPLAY A
T(8,1):"NAUTICAL DAWN      "

;V$ !191
1450 !# !173
1460 R=COS(96#P1):: GOSUB 22
10 !067
1470 GOSUB 2590 :: DISPLAY A
T(10,1):"CIVIL DAWN
";V$ !111
1480 !# !173
1490 R=COS(90+50/60)#P1 :: G
OSUB 2210 !033
1500 GOSUB 2590 :: DISPLAY A
T(12,1):"SUNRISE
";V$ !057
1510 !# !173
1520 !# - SETTING PHENOMENA
- !064
1530 !# !173
1540 I=1 :: J=C :: GOSUB 182
0 !195
1550 !# !173
1560 R=COS(90+50/60)#P1 :: G
OSUB 2210 !033
1570 GOSUB 2590 :: DISPLAY A
T(14,1):"SUNSET
";V$ !020
1580 !# !173
1590 R=COS(96#P1):: GOSUB 22
10 !067
1600 GOSUB 2590 :: DISPLAY A
T(16,1):"CIVIL DUSK
";V$ !130
1610 !# !173
1620 R=COS(102#P1):: GOSUB 2
210 !104
1630 GOSUB 2590 :: DISPLAY A
T(18,1):"NAUTICAL DUSK
";V$ !254
1640 !# !173
1650 R=COS(108#P1)!242
1660 GOSUB 2210 !250
1670 GOSUB 2590 :: DISPLAY A
T(20,1):"ASTRONOMICAL DUSK
";V$ !178
1680 DISPLAY AT(22,1):"(P)RI
NT SCREEN    (C)ONTINUE":"(Q
)UIT THIS PROGRAM" !025
1690 CALL KEY(0,K,S):: IF S=
0 THEN 1690 ELSE IF K=80 THE
N 2680 ELSE IF K=67 THEN 107
0 ELSE IF K=81 THEN 2710 ELS
E 1690 !083
1700 GOSUB 2590 !120
1710 !# !173
1720 !# - SEXAGESIMAL TO - !
093
```

```
1730 !* -    DECIMAL   - ! 054
1740 !* !173
1750 N=1 :: IF Z>=0 THEN 1770 !079
1760 N=-1 :: Z=ABS(Z)!253
1770 X=INT(Z):: Z=(Z-X)*100 :: Y=INT(Z):: Z=(Z-Y)*100 :: Z=(X+Y/60+Z/3600)*N !011
1780 RETURN !136
1790 !* !173
1800 !* - APPROXIMATE TIME - !000
1810 !* !173
1820 K=H+((J+F)/D)!069
1830 !* !173
1840 !* - SOLAR MEAN ANOMALY !013
1850 !* !173
1860 L=K*.98565*P1 :: L=L-3.2898*P1 !226
1870 !* !173
1880 !* - SOLAR TRUE - !072
1890 !* - LONGITUDE - !050
1900 !* !173
1910 Z=SIN(L):: N=L+1.916*P1*Z :: Z=SIN(2*L):: N=N+.02*P1*Z :: N=N+282.634*P1 !185
1920 !* !173
1930 !*    - QUADRANT - !039
1940 !*  - DETERMINATION - !090
1950 !* !173
1960 Z=N :: GOSUB 2560 !065
1970 N=Z :: X=N/A :: Y=INT(X):: Z=X-Y :: IF Z<>0 THEN 1980 :: N=N+1/206264.80625 !N+ (A SECOND OF ARC IN RADIANS) !030
1980 N=2 :: IF N>C THEN 2050 !224
1990 N=1 :: IF N>A THEN 2050 !221
2000 N=0 !005
2010 !* !173
2020 !* - SOLAR RIGHT - !134
2030 !* - ASCENSION - !074
2040 !* !173
2050 P=SIN(N)/COS(N):: P=ATN(.91746*P)!200
2060 !* !173
2070 !* -QUADRANT ADJUSTMENT !121
2080 !* !173
2090 IF N=0 THEN 2150 ELSE IF N=2 THEN 2110 !059
2100 P=P+8 :: GOTO 2150 !160
2110 LET P=P+D !240
2120 !* !173
2130 !* - SOLAR DECLINATION !229
2140 !* !173
2150 Q=.39782*SIN(N):: Q=Q/SQR(-Q*Q+1):: Q=ATN(Q) !074
2160 RETURN !136
2170 !* !173
2180 !* - COORDINATE - !079
2190 !* - CONVERSION - !109
2200 !* !173
2210 S=R-(SIN(Q)*SIN(E)):: S=S/(COS(Q)*COS(E))!077
2220 !* !173
2230 !* - NULL PHENOMENA - !125
2240 !* !173
2250 Z=ABS(S):: IF Z<=1 THEN 2300 :: V=0 !134
2260 RETURN !136
2270 !* !173
2280 !* - ADJUSTMENT - !134
2290 !* !173
2300 S=S/SQR(-S*S+1):: S=-ATN(S)+A :: IF I=1 THEN 2340 :: S=D-S !202
2310 !* !173
2320 !*-LOCAL APPARENT TIME- !060
2330 !* !173
2340 Z=.98565*P1*K :: T=S+P-Z-1.73364 !076
2350 !* !173
2360 !* - UNIVERSAL TIME - !111
2370 !* !173
2380 U=T+F !110
2390 !* !173
2400 !* - WALL CLOCK TIME - !114
2410 !* !173
2420 V=U-G !114
2430 !* !173
2440 !* - DECIMAL TO - !089
2450 !* - SEXAGESIMAL - !106
2460 !* !173
2470 Z=V :: GOSUB 2560 !074
2490 Z=Z/(15*P1):: V=INT(Z):: W=(Z-V)*60 :: X=INT(W):: Y=W-X :: IF Y<.5 THEN 2510 !124
2500 X=X+1 !041
2510 IF X<60 THEN 2520 :: V=V+1 :: X=0 !093
2520 V=V+X/100 :: RETURN !173
2530 !* !173
2540 !* - NORMALIZATION - !078
2550 !* !173
2560 IF Z>=0 THEN 2570 :: Z=Z+D :: GOTO 2560 !182
2570 IF Z<D THEN 2580 :: Z=Z-D :: GOTO 2570 !087
2580 RETURN !136
2590 A1=INT(V):: IF A1>12 THEN 2610 !220
2600 CC$="AM" :: GOTO 2620 !214
2610 A1=A1-12 :: CC$="PM" !225
2620 B1=100*(V-INT(V))!103
2630 B1$=STR$(B1):: IF B1<10 THEN B1$="0"&B1$ !191
2640 IF A1<10 THEN A1$=" " ELSE A1$="" !104
2650 V$=A1$&STR$(A1)&":"&B1$&" "&CC$ !075
2660 RETURN !136
2670 GOTO 2710 !239
2680 OPEN #1:"RS232.BA=4800" !021
2690 FOR NN=2 TO 20 STEP 2 :: FOR MM=1 TO 29 :: CALL GCHAR(MM,NN,OO):: AA$=AA$&CHR$(OO):: NEXT MM !130
2700 PRINT #1:TAB(20);AA$ :: AA$="" :: NEXT NN :: CLOSE #1 :: CALL CLEAR :: GOTO 250 !205
2710 CALL CLEAR :: END !222
```
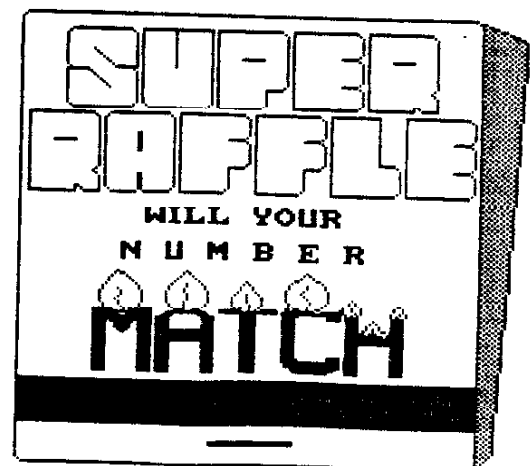
TIWRITER OVERLAY OVERVIEW
by Tom Kennedy

How many of you have a typewriter, please raise your hand. Keep your hand up if your typewriter has interchangeable text. How about automatic bold and underline? Or some amount of memory storage (for letter heads, etc.)? How about an erase key? Those of you left have probably got a pretty expensive piece of machinery, but TI-WRITER has ten times the functions, or features of the best typewriters. With TI-WRITER, your only limitation is your own creativity.

To start off with, what will you need to operate your Word Processor? You must have the 99/4A console (TI-WRITER won't work with the 99/4), a TV or monitor, the cartridge and disk package, the disk system, memory expansion, the RS232 interface, and a printer. In other words, the whole works. The printer is something you definitely want to be careful in choosing because all of your work will be in vain if you can't print out exactly what you type in, and with an attractive appearance. First, let's look at the command line. That's the line at the top of the screen when you're in the command mode. There are seven commands shown and sixteen sub-commands that are options of the main seven. The commands are selected by typing only the letters that are capitalized in the word. For instance: "F" for Files, "SH" for SearcH, or "LF" for Load File. That's an interesting point: you can access any of the sub-commands from the main command menu. In other words, to ShowDirectory (which is a disk catalog) you would enter the command mode, (FCTN 9), and either type "F" for files, and "SD" for ShowDirectory, or just type "SD" immediately. This feature saves a lot of time and keystrokes.

The first command is Edit. This simply enters you into the text-edit mode in which text is created.

Next is Tabs. When you hit "T", the top part of your text is shown with a scale across the top showing the current tabs and margins. Changes are made by simply typing over existing entries with the appropriate symbol (L,R,T, or I).

"F" for files allows you to work with your text file as a whole. To Load, Save, Delete, Print, Purge, or ShowDirectory. "PF" for print file is not what you'll get when you print out through the text formatter: it just prints a "hard copy" of the whole file, just as you see it on the screen. It doesn't print with any of the modifications made by the format commands (more on those later). "PF" is useful for making a fast copy of a long letter, or whatever, in order to check for errors without having to scroll back and forth or up and down. Purge simply erases the file from memory to prepare for a new entry. It is similar to the "NEW" command in BASIC.

Next is "L" for Lines. This allows you to work with whole lines or groups of lines by moving them to somewhere else in the text, copying to somewhere else and leaving the original intact, to delete groups of lines, or to quickly move the cursor to some line in the text with the ShowLines option.

Search (or "SH") gives you the option of either the FindString routine or the ReplaceString routine. FindString will move the cursor to the first and/or each successive use of the word string you give. ReplaceString searches the text for a given string and replaces all or one occurrence with the new string. This is great for correcting a repetitive spelling error.

RecoverEdit is a failsafe repair in case the text buffer was purged in either the File or Quit command. It will pull back everything but the first line and restore the file. I guess the loss of the first line is the penalty paid for accidentally erasing a file, which can't be done very easily.

Finally, Quit, as the name implies, blows it all apart and leaves you with the title frame. But before it goes, all open files are closed (such as to disk or printer) so no data is lost. Fortunately, it first gives you the option of saving your file (in case you forgot to do that already) or just purging the file and going back to the edit mode. But if you really want to quit, you type "E" for Exit and it shuts down.

Now let's go over the keyboard. TI-WRITER makes extensive use of the FCTN and CTRL keys and uses every possible function of the top line of keys (the numbers). There are also many functions that have duplicate methods of keystrokes to activate them. For instance, to enter the command mode, you either press FCTN 9 or CTRL C. The reason for this duplication is to allow you to choose which is easiest to use depending on where your fingers are at. The problem though, is that it can be very confusing trying to remember the fifty different key combinations that activate the thirty functions. A better method is to just pick which keys you're going to use for what function and ignore the rest. What I do is use the number line keys for anything shown on the overlay strip and just memorize the few functions hidden down in the keyboard. Let's start by going down the overlay strip, left to right as shown on the next page.

The last four key functions to mention are the cursor arrows: UP, DOWN, LEFT, & RIGHT. These stay the same as in console BASIC. Now, if you're still following along you may be quite confused with this onslaught of information. The point is, you can't learn all of this in one sitting, but after using TI-WRITER for a while you start to pick things up as you need them. Rest assured, you do spend the majority of your time typing. The purpose of most of the functions I've mentioned are to manipulate the text which is already in the file. I have simply tried to cover all of this in order to bring something to your attention that you might have missed, or to peak your interest in the capability of the TI-WRITER software.

To review, in the command mode we can choose between Edit, Tabs, Files, Lines, SearcH, RecoverEdit, or Quit. As sub-commands of those seven, we can choose Load File, Save File, Print File, Delete File, Purge, ShowDirectory, Move Lines, Copy Lines, Delete Lines, ShowLines, FindString, ReplaceString, or Exit.

```
**************************************************************************
OOPS!        * CTRL 1 * This  can be a real lifesaver.  It recovers,  or "backs up" a function
            *(CTRL Z)* that you didn't mean to hit. Like if you goofed and hit "Delete Line"
             *        * instead of "Insert Character", hit "OOPS!" and the line comes back.
Del Char  * FCTN 1 * This is the same as "DEL" in console BASIC.  It deletes one character
            *(CTRL F)* under the cursor and pulls the rest of the line up to fill.
Reformat  * CTRL 2 * This  is  used to close up the text  after using  Insert Character. It
            *(CTRL R)* deletes all spaces between the cursor  and the next word  in the text
             *        * Then  it  draws all subsequent words up through the paragraph until it
             *        * encounters a Carriage Return.
Ins Char  * FCTN 2 * In Word Wrap mode (solid cursor), 32 blank characters are inserted
            *(CTRL G)* after the cursor. The bulk of the text is pushed down the line. After
             *        * insertion  of new text,hit Reformat. Any remaining spaces are removed.
             *        * In the Fixed mode (hollow cursor), this operates the same as BASIC.
Screen      * CTRL 3 * This  allows  you  to  choose  which of the five color combinations of
Color       *        * text/screen  you  prefer. The default, for no good reason, is white on
            *        *  dark  blue. This is hard on the eyes. I prefer to turn down the color
            *        * on my monitor and use either black on green or black on light blue.
Del Line  * FCTN 3 * Deletes the entire line that the cursor is on, including the space
            *(CTRL N)* of the line.
Next        * CRTL 4 * This advances the cursor to the beginning of the following paragraph
Paragraph*(CTRL J)* and puts the first line at the top of the page.
Roll Down* FCTN 4 * This  is  a "vertical block scroll", meaning the next 24 lines of text
            *        * of text are shown. Scans quickly down the text to get to some point.
Dupe Line* CTRL 5 * Creates  a duplicate below of the line the cursor is on. The Move/Copy
            *        *  function  can do the same, but this key makes it faster and easier to
            *        * create repetitive lines such as a double row of '*'s under a title.
Next        * FCTN 5 * A "horizontal block scroll". It jumps across to
  Window    *        * display the next block of 40 characters, in increments of
            *        * 20. For example, the screen starts out on column one to
            *        * forty, then twenty to sixty, then forty to eighty.
Last        * CTRL 6 * The opposite of "Next Paragraph"
Paragraph*(CTRL H)*
Roll up   * FCTN 6 * The opposite of "Roll Down"
            *(CTRL B)*
Word Tab * CTRL 7 * This moves the cursor down the line to the first letter of each word.
            *(CTRL W)*
Tab         * FCTN 7 * Just like on a typewriter, this moves the cursor to next setting,
            *(CTRL I)* defined using the Tab function on the command line.
New         * CTRL 8 * Places Carriage Return at end of current line, then skips down to next
Paragraph*        * line.  If  you  have  preset an auto-indent, (by using an "I" in Tabs)
            *        * then it also indents over to the proper column.
Ins Line  * FCTN 8 * Inserts a blank line above the line the cursor is on.
            *(CTRL O)*
New Page  * CTRL 9 * Inserts a blank line with a Np and Cr symbol at the beginning.
            *        * This causes the printer to feed to the next page.
Command/ * FCTN 9 * This is how to exit from the edit mode to get to the command line.
  Escape  *(CTRL C)* It is also used to cancel a command already in progress.
Word Wrap*CTRL 0  * Switches from the "Word Wrap" mode to the "Fixed" mode. In Word Wrap,
            *        * upon  reaching  the end of the line the cursor jumps to the next line.
*           * If you're in the middle of a word at the end of the line, the word you
            *        * were on moves down too. This allows you to just type continuously
            *        * without looking up to see when to hit enter. In the fixed
            *        * mode, when you reach the end of the line your letters just
            *        * pile on top of each other and you hit enter to move to the
            *        * next line.
Line        * FCTN 0 * This  removes or displays the four-digit line numbers at the left side
Numbers     *        * of the screen. The numbers are used for reference when manipulating
            *        * blocks or lines of text, just like when editing a BASIC program, line
            *        * numbers are needed to refer to where changes will be made.
Quit        * FCTN = * Quit is the same as in console BASIC. Use Quit option of the Command
            *        * line to safely exit TI-WRITER.
Back Tab  * CTRL T * The same as Tab except it backs up one setting.
            *        *
Beginning* CTRL V * Moves the cursor to the beginning of the line you're on.
 of Line *        *
Del.End   * CTRL K * This is just like Delete Character (FCTN 1), except it takes out
 of Line*        * everything to the right of the cursor.
Home        * CTRL L * Moves the cursor to row 1, column 1, on the screen only. Unfortunately
  Cursor    *        * it  doesn't move to first line of text, which would be more convenient
            *        * when  at  the end of a long document and want to jump to the top. [For
            *        * that, enter S, then enter I.]
Left Mrgn* CTRL Y * Allows  you  to  temporarily back-arrow beyond the left margin when it
  Release*        * has been set past zero.
**************************************************************************
```

TIWRITER FORMATTER OVERVIEW
by Tom Kennedy

Now I want to cover the Text Formatter, which prints out the document. Most importantly, the special symbols, called Format Commands, that the formatter uses to alter the print-out of the document, which are installed in the Text Editor.

In other words, you put these commands into the text when you write it and as the formatter comes across them it changes the text accordingly but doesn't actually print the symbols.

There are six groups of formatter commands that are all applied in a similar manner. All commands must be in caps and must be on a line that starts with a period.

The use of these commands in your text is what separates the word processor from a typewriter. They allow you to get the most out of your printer.

So, now you've written your document, and inserted all the format commands, now how do you print it out? First, save the document and exit the Text Editor. At the title menu, select Text formatter, (make sure the program disk is in the drive) and the screen will blank with the prompt "ENTER INPUT FILENAME". Enter the name of the file you just saved, (ex. DSK1.MYFILE) and hit enter.

Next, the prompt "ENTER PRINT DEVICENAME" appears after the file is loaded. If you use a serial printer, the device name would be RS232.BA=xxx with xxx being the baud rate. If you're using a parallel printer, the device name is PIO. Also, you must add either .CR or .LF to the end of the device name. This tells TI-Writer whether your printer will handle the carriage return or the line feed. Check your printer manual and the TI-Writer manual in detail to find out which you use.

The next prompt is "USE MAILING LIST". If you aren't printing "form letters" just hit enter to accept the default of N (NO).

Next is "WHAT PAGE(S)? <ALL>. If you want to print the whole document, accept the default for all pages. Otherwise, you can print any of the pages or groups of pages.

The prompt "NUMBER OF COPIES: 1" tells how many copies of each page are to be printed.

The last prompt is "PAUSE AT END OF PAGE? N". The main purpose of this function is if you are using separate sheets of paper it will stop and wait for you to align the next sheet.

Now, about the Mailing List Option. Let's say you've written a form letter to send out to various individuals, maybe a resume'. You write the letter like normal, but when you come to a name or address or something that will change with each letter, you put in its place a variable in the form of *n*, where n is a number to identify the order. So instead of starting off with:"Dear Mr. Smith" you would have "Dear Mr. *1*" and so on. when you're all through with your letter, save it and purge the memory. Now you must create what is called a Value File, which is your mailing list where TI-Writer will draw the variables from. A value file consists of a list values to be inserted into the letter, listed one to a line, preceded by the number of the variable and ending with a carriage return symbol. Groups of values must be separated by a line with just an asterisk and a carriage return. For example:

```
1 John Smith
2 123 STREET
3 Seattle, WA
  *
1 Jane Doe
2 456 STREET
3 Seattle, WA
```

At the top of your letter you insert the .ML f command where f equals the filename of your value file. After selecting the mailing list option the computer will use this command to fill in the variables. If there is no .ML command in the letter then when you are prompted for "MAILING LIST NAME:" you supply the filename. This allows you to call on a number of files for different 'groups.

Text Dimension commands, as the name implies, move or shape the words in the
document (margins, linespacing, right justify, etc.)
```
 .FI   : FILL     : PUTS AS MANY WORDS ON A LINE AS WILL FIT.
 .NF   : NO FILL  : CANCELS FILL.
 .AD   : ADJUST   : ALIGNS THE TEXT TO THE LEFT AND RIGHT MARGINS. (RT. JUSTIFY)
 .NA   : NO ADJUST: CANCELS ADJUST.
 .LM n : LF MARGIN: SETS LEFT MARGIN TO "n".
 .RM n : RT MARGIN: SETS RIGHT MARGIN TO "n".
 .IN n : INDENT   : CREATES AN AUTO-INDENT FROM LEFT MARGIN.
 .LS n : LINE SP  : SETS LINE SPACING TO "n" LINES.
 .PL n : PG LENGTH: DEFINES NUMBER OF LINES TO A PAGE.
 .BP   : BEGIN PG : DEFINES FIRST LINE OF NEW PAGE.
```
Internal Format commands control the spacing of characters on a line.
```
 .SP n : SPACE    : SIMILAR TO THE TAB FUNCTION.
 .CE n : CENTER   : CENTERS NEXT "n" LINES BETWEEN MARGINS.
```
Highlighting commands control functions such as underline or bold and allow you to
redefine characters to use them to send CTRL codes to the printer.
```
       : REQUIRED : JOINS WORDS TOGETHER WHEN REQUIRED TO PREVENT SPLITTING IN
       :    SPACE :      REFORMATING, UNDERLINE, ETC.
   &   : UNDERLINE: (UNDERSCORE) UNDERLINES ALL TEXT FOLLOWING UNTIL NEXT PAGE.
   @   : BOLD     : (OVERSTRIKE) RETYPES FOLLOWING TEXT FOUR TIMES.
 .TL xx: TRANS-   : ALLOWS REASSIGNMENT OF ONE CHARACTER TO REPRESENT A NUMBER.
       : LITERATE : OF CHARACTER VALUES TO SEND CODES TO THE PRINTER.
 .CO t : COMMENT  : SIMILAR TO REM IN BASIC--ALLOWS NOTES THAT DONT PRINT.
```
Page identification commands print notes in the upper or lower corner of each
page, either headers or footers.
```
 .HE t : HEADER   : PRINTS TEXT (t) AND PAGE NUMBER AT TOP OF EACH PAGE.
 .FO t : FOOTER   : PRINTS TEXT (t) AND PAGE NUMBER AT BOTTOM OF EACH PAGE.
 .PA   : PAGE #   : RESETS PAGE NUMBER IN .HE AND .FO
```
File management commands
```
 .IF f : INCLUDE  : MERGES A FILE TO PRINT A DOCUMENT TOO LARGE FOR ONE FILE.
       : FILE     :
```
Mail Merge option commands are used to supply values to the variables in a letter
that has been set up for the mail merge option
```
 .ML f :MAIL LIST: IDENTIFIES VALUE FILE (f) FOR MAIL LIST.
 *n*   :VARIABLE : INSERTED IN TEXT AS VARIABLE FOR ASSIGNMENT FROM VALUE FILE.
 .DP n:t:DISPLAY  : PROMPTS YOU USING TEXT "t" TO ASSIGN TO VARIABLE (*n*).
       : PROMPT  :
```
****

        Another way to insert values is to use the Define Prompt command. With this
command you do not insert a .ML comand calling a value file and instead you insert
lines containing the format: .DP n:t - where n is the number of the variable and t is
the prompt text. Now, when you come to the prompt "USE MAILING LIST?" you select "N"
for NO and as the document is printed when a variable is encountered the printing stops
and the text you chose appears on the screen asking you for the appropriate value. If
you don't include a ".DP n:t" command in your text, the computer responds with "ENTER
DATA FOR VARIABLE *n*" and it can get confusing trying to remember which item you're
on. This method is handy for letters which you only want to print one copy at different
times to different people.
        Let me tell you, this is why I bought a computer. I'm sure we all went through
that period of time before buying a computer when we would ask: "what am I going to use
a computer for, anyway?".   Well I decided there were two things I wanted to do: 1)
Store files of data (recipes, albums, etc.) and 2) Use my computer as a typewriter. I
didn't know about TI-WRITER when I bought the 99/4A, but now I know that I made the
best choice possible. I hope you will all find TI-WRITER as easy to use and as powerful
as I have.

TI BITS ⊠ Number 4 ⊠ By Jim Swedlow

[This article originally appeared in the User Group of Orange County, California ROM]

A LETTER FROM FRANCE

I exchanged letters with a TI owner in France. His English is not perfect but what he had to say is worth repeating:

"You asked me about the TI-99/4A support in France.

"The support is now very weak. The only magazine dedicated to the 4A will stop with the next issue because many TI users brought French computers over the last 3 years, often to get French educational software for children. This magazine has published fine programs, especially for assembly programmers.

"Before the Texas Instruments departure of the home computer market, the 4A was the best seller here. Many teachers used French version of TI-LOGO II. People from the French division of TI told me their division was leader in Europe, even before England division. (Over than 100,000 consoles sold in France, 70,000 in England). They had been very disappointed."

PROGRAMMING TIP

Suppose you are writing a program that does a great deal of printing. There is a bug somewhere in the middle of the printing instructions. Every time you try and find it, however, you must wait while your printer wastes a lot of paper getting to the problem. What to do? If your printer is PIO, try substituting RS232.BA=9600. Unlike the parallel port, the serial port does not wait for a ready signal to return from your printer. So all of your print instructions will go out thru the RS232 port into thin air until you find your problem. Setting the baud rate at 9600 speeds things up (if you don't specify a rate, your TI will use 300 – much slower).

QUOTES OF THE MONTH

"Only those who attempt the absurd achieve the impossible."
    ---Anon

"The technique is wonderful. I didn't even dream it would be so good. But I would never let my children to come close to the thing. It's awful what they are doing."
    ---Vladimir Kosma Zworykin (1889)
        Developer of television
        on his 92nd birthday.

AN INTRODUCTION TO PRINTERS

If you are thinking about buying a printer, beware. Your choices are many as are the pitfalls.

First, you will need some things other than a printer. You need an RS232 card (stand alone or one for your P Box) and a cable. Most printers with a Centronics parallel port that will work with a standard cable (available from the houses that still support the 4A – Tenex, Tex-Comp, etc).

But which printer to buy? Epson? Star? Gorilla? Tandy? What kind? Dot matrix? Daisy Wheel?

First, lets look at the two basic types: daisy wheel and dot matrix (the others are probably out of your price range). A dot matrix printer is five to ten times faster and much more versatile. A daisy wheel gives you letter quality print while the dot matrix gives draft (poor) and 'near' letter quality (better). A tractor feed usually comes with a dot matrix printer but can be an extra cost item with a daisy wheel printer.

If 90% of your work is correspondance and you need top quality in its visual presentation, a daisy wheel is probably for you. Otherwise, for listing programs and all the other things that a printer can do, a dot matrix printer is the better choice.

Having narrowed the field, you still have to pick between the many models on the market. There are no standards in the world of printers for command structures (the codes your computer sends to the printer to tell it what to do). About the only codes two that are close to universal are Carriage Return and Line Feed. After that, anything can mean anything.

There are two 'de-facto' standards. The first is IBM. When big blue made a printer for its PC, it used a character set and command structure completely different than ASCII and just about every printer on the market. Alas, what will work with an IBM PC will NOT work on the 4A, so IBM compatibility is useless (unless you plan to defect).

The other quasi-standard is Epson. These folks developed a rather comprehensive instruction set (including graphics protocols) that some other manufactures and many software manufacturer followed. The TI impact printer is actually a bottom of the line Epson MX80. Most of the graphics programs for the TI will work with Epsons. Some of them support other printers, others do not.

A number of manufacturers make printers that follow Epson commands. Most Star (Gemini 10X, SG10, etc) and Panasonics do while the Axiom, Tandy and Banana printers do not.

Here are some suggestions to help you choose. First, see what your friends have and what they think of it. Then, in the store, have the salesman show you the draft and near letter quality print fonts. Note how long it takes to print a page (200 cps - characters per second - means different things depending on who is writing the advertising, I mean specs). Look for true decenders (is the loop below the 'g' below the line?) and the difference between the zero (0) and the letter (O). Make sure you can return it if it doesn't workout.

Plan to spend at least $200 (if you are buying a new printer). Any of the bargains below that normally do not have the features you will need.

My printer? A Star Gemini 10X. Its about 85% Epson compatible and has been a faithful companion.

ANOTHER PROGRAMMING HINT

When working on a program, you save it to disk often just in case your system locks up, etc. To save time, use a working name of <A> for these frequent saves. This saves up to nine key strokes. Also, if you have a load program that reads the disk directory, your working program will be at the top of the list.

Enjoy!

CAUTION ! ! !
COMPUTER DISK INSIDE— PLEASE DO NOT BEND OR EXPOSE TO MAGNETIC FIELD

DESIGNER LABELS:
By Jim Susco (Cin-Day User Group)
    The above label was made with TI-ARTIST files and printed out with DESIGNER LABELS. The program is a standalone 'C' program and works fairly quickly. You can make 15/16 labels, 1 7/16s labels, 3.0 by 5.0 cards, 4.0 x 6.0 cards, 8.5 x 11.0 sheets, and other user specified sizes. From what I understand it will do up to 24 rows maximum.
    I liked it for the ease of creating the fonts and graphics to be used.
            Paul Coleman
            NAMELOC SOFTWARE
            3971 S.E. LINCOLN
            PORTLAND, OR 97214
    PRICE: $10.00 + 1.50 S&H.
    REQUIRES: Epson Compatible Printer.

SUPER RAFFLE III

Drawing in January

FIRST PRIZE CHOICE:
    1* TWO HALF HEIGHT DRIVES
    2* 300/1200 SMART MODEM
    3* RAM DISK CARD
    4* DOT MATRIX PRINTER
SECOND PRIZE CHOICE:
    1* 300 BAUD MODEM
    2* DAVE ROSE "CSGD" PACKAGE
THIRD PRIZE:
    1* PACKAGE OF 25 DS/DD DISKS

OPEN TO MEMBERS ONLY!

SPECIAL BONUS !!!

FOR EVERY 5.00 TICKET PURCHASED - YOU GET A FREE DISKETTE IN RETURN ON THE DAY OF THE DRAWING

NEED NOT BE PRESENT TO WIN

SUPER RAFFLE II

(sounds good - doesn't it!)

TIPS FROM THE TIGERCUB

#22

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TIGERCUB SOFTWARE
156 Collingwood Ave.
Columbus, OH 43213

Distributed by Tigercub Software to TI-99/4A Users Groups for promotional purposes and in exchange for their newsletters. May be reprinted by non-profit users groups, with credit to Tigercub Software.

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 casette, packing and postage, or $3.00 for diskette, PPM) Some users groups charge their members that much for public domain programs! I will send you my descriptive catalog for a dollar, which you can then deduct from your first order.

This challenge was printed in Tips #21 -

100 !The Unpristable Unkeyabl
e Program!
110 !To shuffle the numbers 1
to 255 into a random sequen
ce without duplication
120 !The strings contain the
ASCII characters 1 to 127 an
d 128 to 255
130 !Most of the ASCII charac
ters below 32 or above 159 c
annot be input from the keyb
oard
140 !So how was this program
programmed?
150 M$="
!"#$%&'()*+,-./0
123456789:;(=)?@ABCDEFGHIJKL
MNOPQRSTUVWXYZ[\]^_'abcdefgh
ijklmnopqrstuvwxyz{i}~"
160 N2$="

170 M$=M$&N2$
180 L=LEN(M$):: RANDOMIZE ::
I=INT(L&RND+1):: N=ASC(SEG$
(M$,I,1)):: M$=SEG$(M$,1,I-1
)&SEG$(M$,I+1,LEN(M$))
190 PRINT N;:: IF LEN(M$)=0
THEN STOP ELSE 180

And here is the answer -
It was written by a program that writes a program!
Key this in and run it to create a MERGE format disk file. Then type NEW, then type MERGE DSK1.LONGSTRING and you will have a RUNable program consisting of lines 150-170 of the puzzle!

100 OPEN #1:"DSK1.LONGSTRING
",VARIABLE 163
110 LN=100 :: GOSUB 190 :: A
$=L$&"M$"&CHR$(190)
120 FOR J=1 TO 127 :: C$=C$&
CHR$(J):: NEXT J :: A$=A$&CH
R$(199)&CHR$(127)&C$&CHR$(0)
130 PRINT #1:A$
140 GOSUB 190 :: B$=L$&"N2$"
&CHR$(190)
150 FOR J=128 TO 255 :: B$=B
$&CHR$(J):: NEXT J :: B$=B$&
CHR$(199)&CHR$(128)&B$&CHR$(
0)
160 PRINT #1:B$
170 GOSUB 190 :: F$=L$&"M$"&
CHR$(190)&"M$"&CHR$(184)&"N2

$"&CHR$(0)
180 PRINT #1:F$ :: PRINT #1:
CHR$(255)&CHR$(255):: CLOSE
#1 :: END
190 L$=CHR$(INT(LN/256))&CHR
$(LN-256&INT(LN/256)):: LN=L
N+10 :: RETURN

Now type in the remaining lines, and you will have a speeded-up version of the Tigercub Scramble which was published in Tips #10. It is still not as fast as the CALL PEEK versions but is much more useful because you can modify it to scramble a sequence of any length anywhere between 1 and 255. For example, to shuffle the numbers 100 to 150 into a random sequence without duplication, just add a line 175 M$=SEG$(M$,100,50).

The method of writing a "program that writes a program" was fully explained by John Clulow in the 99er magazine Vol. 1 Nos. 3 and 4. It is a little-used but very valuable technique.
For instance, Tips#9 contained the following routine to turn the alphabet upside-down.

100 FOR CH=33 TO 127 :: CALL
CHARPAT(CH,CH$):: FOR J=1 T
O 16 STEP 2 :: I$=SEG$(CH$,J
,2)&I$ :: NEXT J :: CALL CHA
R(CH,I$):: I$="" :: NEXT CH
110 INPUT A$ :: GOTO 110

The only trouble with that is that it takes about 50 seconds to run. Try this instead -

100 FOR CH=33 TO 127 :: CALL
CHARPAT(CH,CH$):: FOR J=1 T
O 16 STEP 2 :: I$=SEG$(CH$,J
,2)&I$ :: NEXT J :: CALL WRI
TE(CH,I$):: I$="" :: NEXT CH
1000 SUB WRITE(CH,I$):: IF F
LAG=1 THEN 1010 :: FLAG=1 ::
OPEN #1:"DSK1.WRITE",OUTPUT
,DISPLAY ,VARIABLE 163 :: LN
=3000 :: GOSUB 3000
1010 I=I+1 :: L$=L$&CHR$(200

)&CHR$(16)&I$ :: IF I<5 AND
CH<127 THEN L$=L$&CHR$(179):
: SUBEXIT
1020 I=0 :: PRINT #1:L$&CHR$
(0):: L$="" :: IF CH=127 THE
N 1030 :: GOSUB 3000 :: SUBE
XIT
1030 PRINT #1:CHR$(255)&CHR$
(255):: CLOSE #1 :: GOTO 301
0
3000 L1=INT(LN/256):: L2=LN-
256&L1 :: L$=CHR$(L1)&CHR$(L
2)&CHR$(147):: LN=LN+10 :: R
ETURN
3010 SUBEND

RUN that, type NEW, then MERGE DSK1.WRITE, and you will have a program consisting of DATA statements containing the hex codes for all the upside-down characters. Add a line 100 FOR CH=33 TO 127 :: READ CH$ :: CALL CHAR(CH,CH$):: NEXT CH, and you can turn everything upside-down in only 12 seconds.

Someone sent me a classified ad, clipped from an unknown publication, which read -
TI-WRITER COMPANION. Loaded with ingenious ways to make your TI-Writer more effective. Well written. Send $2.50 to Dr. Bill Browning, 7541 Jersey Avenue North, Brooklyn Park, MN 55428. Money back guarantee.
I sent off my money and have just received 29 pages, 3-hole punched, loaded with useful and ingenious tips and ideas for getting more out of TI-Writer. I recommend it - it's worth twice the money and then some!

The K-Town newsletter recently published a utility routine that is so useful that I want to pass it on to everyone. If a program is not resequenced after it is modified, this will compare

it with the original and prepare a MERGE format file of all the changes, for the use of others to update their copy.

```
100 !$$$$$$$$$$$$$$$$$$$$$$$$$
110 !$ COMPARE PROGRAM    $
120 !    by Mike Dodd      $
130 !$$$$$$$$$$$$$$$$$$$$$$$$$
131 ! In k-Town 99'er V.2 #1
     April 1985
140 !Version 05.0406.11B
     Requires disk drive.
     Compares two programs,
     gives list of all diff-
     erences.
150 !SAVE old program in
     MERGE format (SAVE DSK1.(ol
     dfilename),MERGE). SAVE up-
     dated program in MERGE for-
     mat(SAVE DSK1.(newfilename)
     ,MERGE)
160 !RUN this program, answe
     r prompts for OLD FILE name,
     NEW FILE name, and a differ
     ent OUTPUT FILE name.
170 !When finished, type NEW
     , then MERGE DSK1.(outputfil
     ename) and ENTER
180 !Can be MERGED into othe
     r copies of OLD program to
     update them
190 DEF @(ww)=ASC(SEG$(@@,1,
     1))$256+ASC(SEG$(@@,2,1))
200 A$=CHR$(255)&CHR$(255)::
     DISPLAY AT(1,1)ERASE ALL:"O
     LD   FILE:": :"NEW   FILE:
     ": :"OUTPUT FILE:"
210 ACCEPT AT(1,13)BEEP:B$ :
     : ACCEPT AT(3,13)BEEP:C$ ::
     ACCEPT AT(5,13)BEEP:D$ :: OP
     EN #1:B$,INPUT ,VARIABLE 163
220 OPEN #2:C$,INPUT ,VARIAB
     LE 163 :: OPEN #3:D$,OUTPUT,
     VARIABLE 163
230 LINPUT #1:@@ :: LINPUT #
     2:E$ :: F$=SEG$(@@,1,2):: G@
     =SEG$(E$,1,2):: A=@(F$):: B=
     @(G@)
240 IF F$=A$ AND G@=A@ THEN
     CLOSE #1 :: CLOSE #2 :: PRIN
     T #3:A$ :: CLOSE #3 :: STOP
250 IF B>A THEN PRINT #3:F$&
     CHR$(131)&" $$DELETED LINE $
     $"&CHR$(0):: LINPUT #1 :: @@
     :: F$=SEG$(@@,1,2):: A=@(F$
     )::  GOTO 240
260 IF A>B THEN PRINT #3:E$
     :: LINPUT #2:E$ :: G@=SEG$(E
```

$,1,2):: B=@(G@):: GOTO 240
270 IF @$<>E$ THEN PRINT #3:
E$
280 GOTO 230

Thanks to some ideas from Joyce Corker, I have made some more improvements to the Tigercub Menuloader, and I have used the above utility routine to list all the changes made since it was published in Tips#15.

```
100 !by A. Kludge/R. Gordon/
     T. Boisseau/J. Peterson/etc.
     modified in Tips #22
102 OPTION BASE 1 :: DIM P6$
     (127),VV(127),VI(127):: GOTO
     110
105 @,A,A$,B,C,D@,FLAG,I,J,K
     ,K@,KK,M@,MM,P@,P6$(),Q@,S,S
     T,T@(),TT,VT,VV(),VI(),M@,X,
     X@,K2,S2
106 CALL INIT :: CALL LOAD :
     : CALL LINK :: CALL PEEK ::
     CALL KEY :: CALL SCREEN :: C
     ALL COLOR :: CALL CLEAR :: C
     ALL VCHAR :: CALL SOUND :: !
     @-
150 : $$DELETED LINE $$
160 T@(1)="d/f" :: T@(2)="d/
     v" :: T@(3)="i/f" :: T@(4)="
     i/v" :: T@(5)="pro" :: ON WA
     RNING NEXT
170 IMAGE ###
180 DISPLAY AT(1,4):"TIGERCU
     B MENU LOADER"
210 D@="DSK1." :: OPEN #1:D@
     ,INPUT ,RELATIVE,INTERNAL ::
     INPUT #1:N@,A,J,K :: DISPLA
     Y AT(1,2)SIZE(27):SEG$(D@,1,
     4)&" - Diskname= "&N@;
230 FOR I=1 TO 127 :: IF X/2
     @<>INT(X/20)THEN 260
240 DISPLAY AT(24,1):"Type c
     hoice or 0 for more @" :: AC
     CEPT AT(24,27)VALIDATE(DIGIT
     )SIZE(-3):K :: IF K=0 THEN 2
     50 :: IF VV(K)<>5 THEN 411 :
     : IF K>0 AND K<MM+1 THEN 420
     ELSE 240
290 DISPLAY AT(X+4,2):USING
     170:MM :: DISPLAY AT(X+4,6):
     P@ :: P6$(MM)=P@ :: DISPLAY
     AT(X+4,10):USING 170:J :: DI
     SPLAY AT(X+4,22):T@(ABS(A))
291 VV(MM)=ABS(A):: VI(MM)=A
     B$(J)
295 I$=" "&STR$(@):: DISPLA
```

Y AT(X+4,26):SEG$(I$,LEN(I$)
-2,3):: VT=VT+J
350 DISPLAY AT(X+6,1):" C
hoice?" :: ACCEPT AT(X+6,16)
SIZE(3)VALIDATE(DIGIT):K ::
IF K<>MM AND K<>MM+1 THEN 41
0
410 IF K<1 OR K>127 OR LEN(P
6$(K))=0 THEN 320
411 IF VV(K)=5 OR(VV(K)=4 AN
D VI(K)=254)THEN 420
412 ON ERROR 417 :: CALL CLE
AR :: OPEN #2:D@&P6$(K):: CA
LL SCREEN(16)
413 LINPUT #2:M@ :: IF EOF(2
)THEN 416 :: PRINT M@
414 CALL KEY(0,K,S):: IF S=0
THEN 413
415 CALL KEY(0,K2,S2):: IF S
2<1 THEN 415 ELSE 413
416 CLOSE #1 :: CLOSE #2 ::
END
417 DISPLAY AT(12,10):"UNLIS
TABLE" :: CALL SOUND(200,110
,0):: RETURN 400
430 ON ERROR 417 :: CALL INI
T :: CALL PEEK(-31952,A,B)::
 CALL PEEK(A$256+B-65534,A,B
):: C=A$256+B-65534 :: A@=D@
&P6$(K):: CALL LOAD(C,LEN(A$
))

The Menu Loader will now list up to 127 programs and files, showing the number of sectors in each and the file type, record type and record length of each file. It will stop at the end of each page, and continue on a default value of 0, or will stop for selection when any key is pressed. It gives disk name, number of sectors used and available. It adds up sectors actually used and gives a warning if all sectors are not accounted for. It will load and run any program which can be loaded from Extended Basic, displaying the program being loaded. It will delete any program or file, after first displaying the filename and requesting verification. It will list any listable file to the screen, pausing on any key input, and can be

very easily modified to list to a printer. If a file is not listable, it will inform you so, and restart the menu selection. It has the pre-scan option to speed it up.

Fairly often, the disk directory will lose track of one or a few sectors during the process of loading records, even though the Disk Manager showed all 358 were initialized. That's why I put the checking routine in the Menu Loader. The figure shown as "used" is actually 358 minus the number of sectors still available, and is checked against the total sectors of all files.

The loss of a few sectors is no serious matter, but once in a great while you may notice that the "available" and "used" sector quantities have obviously been reversed. I have found that this is a signal that the disk is about to go haywire and you had best back it up immediately!

Programs and files are loaded in the first available sector, and continued in the next available sector. If a number of small files are deleted from a disk, and a long file is then loaded, it may thus be fractured into many parts. If you have a work disk on which you continually add and delete files of various lengths, it will become badly fractured. This can cause disk errors, and it also badly overworks your drive. It is a good idea to recopy your work disk occasionally - file by file, not sector by sector with a quick copier.

MEMORY FULL! - Jim Peterson

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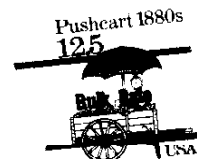
THIS MONTH'S DAYTON MEETING: Nov. 14, 1987. Lazarus
Coin room, 12:00 Noon.
NEXT DAYTON MEETING: Lazarus - Coin room, 12:00 Noon.
December 12,1987,12:00

THIS MONTH'S CINCINNATI MEETING: Nov. 14, 1987.
Campbell County Library. 1:00.
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