

DUUG EXECUTIVE OFFICERS FOR 1988

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NORMAL MEETING SCHEDULES AND PLACES:

SCULLVILLE,NJ 1st Thurs. 7:30-9:00
 DOVER,DE 2nd Monday 7:00-9:00
 CHRISTIANA,DE 4th Thurs. 6:30-9:30

JERSEY SHORE: Scullville Firehouse #1
 County Rte. 559 (on left, between mile
 markers 4 and 3), in Atlantic County,
 NJ. Ignore Station #2 on right en route.

DELMARVA CHAPTER: Kent County Court-
 house, Basement Conference Rm. #25, The
 Green and State Street, Dover, Delaware.
 Use entrance on The Green side.

CHRISTIANA: Delaware's Christiana Mall
 on Rte. 7 at I-95, Exit 4-S, Community
 Room. Enter inside Mall, between J.C.
 Penney and Liberty Travel.

DUUG BULLETIN BOARD SYSTEMS (BBS)

No. Delaware: (302) 322-3999 24 Hrs.
 300 & 1200 Baud
 So. Delaware: (302) 674-1449 24 Hrs.
 300 Baud
 So. Jersey: (609) 945-7930 24 Hrs.
 300 Baud

A Delaware Valley Users Group membership
 includes monthly newsletter, library and
 software privileges, plus other special
 benefits. Annual membership rate: \$15.

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 DUUG encourages exchange newsletters.

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1/4 Page = \$ 5/issue, or \$ 45/12 issues
 1/2 Page = \$ 8/issue, or \$ 75/12 issues
 Full Page = \$15/issue, or \$125/12 issues

THE DATA BUS goes to DUUG member homes
 in 4 states and over 60 TI User Groups.

Paid-up DUUG members may place a short
 notice of their used computer equipment
 for sale in THE DATA BUS without charge.

TRANSMIT YOUR NEWSLETTER COPY TO EDITOR
 Jack Shattuck, (302)764-8619 or reach us
 at the DUUG mailing address, as shown on
 Page One of this newsletter. NEWSLETTER
 COPY WILL NOT BE ACCEPTED FOR AN ISSUE
 AFTER THE 2ND THURSDAY OF EACH MONTH.

An annual index appears in February each
 year. Single copies of THE DATA BUS are
 available to inquirers who write to the
 Editor at DUUG's mailing address.

NOTICE TO OTHER USER GROUPS, ON MAILINGS
 TO THE DELAWARE VALLEY USERS GROUP:

We ask that you use the P.O. Box on
 THE DATA BUS mast to reach us. In past
 years, mail sent to changing individuals
 in the organization provided undesirable
 delays in reaching others. Thank you.

COMING AREA HAM/COMPUTERFEST SHOWS:

Monday, July 4 - Harrisburg, PA:
 Firecracker Hamfest & Computer Show. If
 interested, call (717)238-5414 for Dave
 Ratcliffe, President, Central Pa. Users

Sunday, July 24, Cherry Hill, NJ at
 Holiday Inn on Rte. 70, also 10 a.m. -
 4p.m. Admission \$4.50; vendor table \$45
 - flea market spot is \$20. For info,
 call (201) 533-1991 in North Jersey, or
 write to Robert Barlow, P.O. Box 76, in
 Livingston, NJ.

If you attend, identify yourself as
 being with DUUG, please.

MINI BUT MIGHTY AID - EXTRACTING ROUTINE

XBasic Programming Utility, published in
 Word Play, The PUNN Newsletter, May 1988

How many times have you wished there
 was a way to extract a routine or part
 of a program from an Extended Basic
 program? Well, this little routine when
 merged into a program allows you to do
 just that. Originally published in
 MICROpendium DEC 1985 and provided by
 George Steffan LA/UG the features of
 this program are often needed. ... After
 typing in this program, save it to disk
 as a program, and again in merge format:
 SAVE DSKx.ROUT/EXTR,MERGE. Now load the
 program that you are going to extract
 the subroutine from.

Resequence your program to start at
 line 10, as this six-liner is now MERGED
 - MERGE DSKx.ROUT/EXTR into the start of
 your program. Enter RUN and you will be
 prompted for the starting and ending
 lines you wish to extract. You will
 receive an error prompt but just simply
 enter LIST to see the routine lines you
 just extracted; the other lines are
 deleted. This routine can then be saved
 in Merge format, which can then be made
 runnable by NEWing and RUN DSKx.(Routine
 name). In most cases it will run when
 saved as a program.

```

1 CALL CLEAR :: CALL INIT ::
  INPUT "LINE NUMBERS OF ROUT
  INE TO BE SAVED: FIRST, LAST?
  ":L,M :: G=256 :: CALL PEEK
(-31952,H,I,J,K)!M/pend 12/5
2 C=INT(M/G):: D=M-C*G :: F=
(J-G)*G*K :: FOR E=(H-G)*G+I
  TO F STEP 4 :: CALL PEEK(E,
A,B):: IF A=C AND B=D THEN 4
3 NEXT E :: PRINT "LINE";0;
"NOT FOUND!" :: STOP !2P-
4 H=INT(E/G):: I=E-(G*H):: H
=H+G :: C=INT(L/G):: D=L-C*G
:: FOR E=E+4 TO F STEP 4 ::
  CALL PEEK(E,A,B):: IF A=C A
ND B=D THEN 6 !2P-
5 NEXT E :: PRINT "LINE";N;
"NOT FOUND!" :: STOP !2P-
6 E=E+3 :: J=INT(E/G):: K=E-
(G*J):: J=J+G :: CALL LOAD(-
31952,H,I,J,K):: STOP !2P-
    
```

DELAWARE VALLEY USERS GROUP MEETING, Christiana, May 23rd:

Meeting was officially called to order at 7:25 p.m.; Jim Davis agreed to take minutes in Secretary's absence. President Jack Shattuck noted with appreciation readiness of the ever reliable Vice President to help in unexpected as well as scheduled club activities.

Norm Sellers gave an updated Treasurer's Report. Committee reports followed.

Newsletter Editor requested assistance from members who had familiarity with special topics to review selected newsletters from other User Groups, to determine relevant items in various categories, and write short articles for THE DATA BUS about them. Given breadth of TI interests, it is not possible for Editor to be on top of and write about every area, month after month.

Librarian Don Newsom will have updated Public Domain catalog of Software Library available in June. Delays were necessitated by requests for some descriptions beyond just the titles in Library Catalog, which has many programs.

TIBBS Committee suggested that more frequent calls to our main BBS would access latest software acquisitions, in a speedy manner. Calls are down in Summer despite student use, and much new has arrived. There appears an excellent opportunity for DVUG to obtain several hard drives, which which boost speed and storage capacity such that the whole DVUG software library could be available through the TIBBS line. That would be subject to obtaining Myarc's Hard and Floppy Disk Controller, finally available. The latter can handle up to 3 hard drives of 70 megabytes, plus 4 floppy drives. With 20 meg hard drives equating to 27 DSDD floppy storage capacity, that's a lot of programs. The President suggested deferral of a motion to purchase, pending notice to the broader membership.

John Kelley observed that CompuServe now advertises a Dover tie line, allowing those area residents to access it without need of a toll call.

Program demonstrations followed:

Jack Shattuck provided hard copy screen dump and the full listing for each member present, and for each Chapter of DVUG, for an XBasic program he used for a Hospital Week display at the Veterans Administration. Among other items noted was ability to run it from XB Load in 50 sectors but not having to Call Files. This was attributed to doing a RESequence to start at 1 and save memory. The program was then shown to the group.

A group of approximately one-half dozen is studying use of Assembly Language under Norm Sellers' tutelage. Jim Davis provided a "chalkboard" comparison of TI's BASIC and

assembly language routines to accomplish both data storage and addition of simple sums. If the BASIC compiler in our computers can be said to operate in a blink of an eye from our human perspective then A/L routines may be said to run at 1000 times the blink of an eye.

Congratulations to Bill Godshall, 50/50 winner.

DVUG DELMARVA CHAPTER MEETING, Dover, May 9th:

"Dem" Dawson, Chapter Chairman, opened the meeting at the Kent County Courthouse at 7:30 p.m.

Treasurer's Report was read by Al Freischmidt, which was approved as read.

Discussion centered on relocation of the BBS and upgrading to 1200 Baud. A problem identified with moving it was the necessity of toll calls from certain exchanges. The question arose, "do we really want to retain the BBS?" Another discussion cited aspects of the phone line and the limitations of the features thereon, i.e., no touch-tone, a limited number of outgoing calls or any other restriction that will aid in keeping the monthly bill to a minimum. All present agreed that the Chapter should retain the BBS for at least another year; that Jim Gentry be considered the reluctant and temporary SYSOP.

All present attempted to present ideas for inducing new members into DVUG and to entice participation of current members. It was mentioned that at the most recent DVUG meeting, a visitor from the Baltimore Users Group stated that their group had gotten a listing from TI Lubbock, identifying owners of TI/99's in their area. We ask that our DVUG attempt to do the same, sharing such information with this Chapter. We could then intensify our membership efforts.

Chuck Bower and Dem Dawson gave a rundown on the Trenton Computer fair and displays/material available.

Chuck explained the experience he and Jim Gentry had, working computer-to-computer, using Jim's new modem which had the auto-answering feature.

Jim England, with an awesome array of hardware and systems, demonstrated the TI/Home Entertainment interface, using Video taping, filming and playback.

The members held a general discussion of "Things to Come", the impact of digital processing on video, audio and combinations thereof.

The meeting was adjourned at 9:00 p.m.

WIRE IT YOURSELF

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ALTERNATE DRIVE INTERFACES

-----

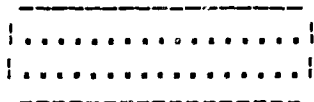
Downloaded From DELPHI TI NET.  
submitted by Tom Burke

If you are thinking of adding a second drive to your system, and it is not a T.I. drive, it may or may not work by connecting it to the external drive connector on the back of the Disk Controller Card.

If it does NOT work with the T.I. recommended installation procedure, try this.....

You will need the following: An adequate length of 34 conductor ribbon cable. (2 to 3 feet)

1 - female 34 pin connector. This will connect to the controller card inside the P.E. box. Part #41-908 6C



It should look something like this. 2 - female 34 contact edgcard connectors. Part #41-946

This makes a total of three connectors. The part #'s are from RESCO Electronics. Use the crimp-on type connectors. Put part #41-908 6C on one end of the cable. Plug this into the controller card inside the PE box. Place the first edge card connector approx. eight to twelve inches from the controller card. Crimp it on the cable. Now you should loosen the screw on the right, rear, top of the outside of the PE box enough so that you can slide the other end of the cable out through the gap. When this is done,

plug the middle connector onto the internal drive, (don't forget to plug the power cable back on the drive), and put the drive back into the PE box, pulling the excess cable through the gap.

DO NOT INSTALL THE DRIVE PERMANENTLY AT THIS TIME. JUST LEAVE IT SIT IN THE PEB

Next, crimp the remaining connector on to the other end of the cable. Bare in mind that when you do put the connectors on the cable, that the same wires must be connected to the same numbered contacts on all three connectors. ( e.g. wire one goes to pin one on connectors 1, 2, 3) Plug the last connector onto the external drive. (contact one to contact one, etc) Now test the system. You may or may not have to remove the resistor from drive #1. Info on where the resistor is found is in the Controller Manual.

~~~~~

MAKE YOUR OWN CASSETTE CABLE

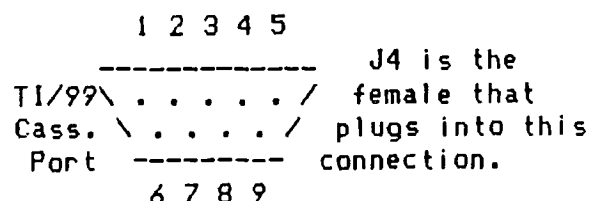
The following information will enable you to make your own single cassette cable for your TI. All parts are easily obtainable from Radio Shack, and for convenience the part numbers are given. All you need is a little skill and time to wire it up.

~~~~~

- J1, J2 1/8" plugs 274-287.....2 for 1.29
- J3 3/32" plugs 274-281..... .99
- J4 D-connector 276-1537..... 2.49
- Hood for J4 276-1539..... 1.99

~~~~~

This is the diagram of the cassette port located on the rear of the TI, next to the power jack:



- J3=Cassette control (usually black)
- J2=Microphone jack (usually red)
- J1=Earpiece jack (usually white)

(Continued on Page 5)



SCREEN DUMPS FOR STARTERS

Your first TI expansion item may be storage capability to retain programming activity. If so, the next supplemental equipment to advance program development surely has to be a printer, to allow an easy recall of what's captured in a file or listing. Next are

additional printout features to observe: capturing one's creations for posterity is an endless pursuit of mankind.

Following are some introductory screen dump routines. First in BASIC from the keyboard, let the user enter any 28-character (one line) string, dump it to a printer (your serial option may be "RS232.BA=4800" instead of "PIO") and wait for the next one-line input ... 24 times, one screen.

```
100 REM *24-LINE BASIC DUMP* 140 PRINT #1:A$
110 OPEN #1:"PIO"           150 NEXT R
120 FOR R=1 TO 24          160 CLOSE #1
130 INPUT "":A$
```

Should you want to print more than 28 characters on a line on the printer at a time - as opposed to 24 28-char. lines - you'll need to escape from the 24-line loop with a slight diversion by adding:

```
135 IF LEN(A$)>24 THEN 170 170 PRINT #1:A$
180 GOTO 130
```

Now, however, you'll get more than a single screen of text dumped since you have the 24-line limit PLUS a longer (screen) line you allowed yourself. The For-Next loop from lines 120 and 150 was a convenience, for a single screen at a time, a line at a time.

Use another option: set yourself to DIMension your output to an entire screen at a time. It's then irrelevant as to where your screen line ends, as a 24-line, 28-column screen can get dumped to the printer as a unit. Following is an Extended BASIC (XB) routine to do so:

```
90 REM Quick and Dirty Word Processor by Del Gittinger, Marion, Ohio: Marion Area 99ers
95 REM *PRODUCES 28 COL. LINES THAT DUMP AFTER 24 LINES (ONE SCREEN); GOOD FOR A PROGRAM LISTING IN XBASIC
100 CALL CLEAR
110 DIM TEXT$(24)
120 CALL SCREEN(12):: CALL VCHAR(1,2,30,24):: CALL VCHAR(1,31,30,24)
130 FOR X=1 TO 24:: ACCEPT A T(X,1)BEEP SIZE(28):TEXT$(X):: NEXT X
140 OPEN #1:"PIO"
150 PRINT #1:CHR$(15):: FOR X=1 TO 24:: PRINT #1:TEXT$(X):: NEXT X
160 CLOSE #1:: GOTO 100
```

Why dump the screen? To capture some instructions or perhaps the way text is displayed. More popular is the desire to capture a graphic display from the screen, often with specially formed characters.

Undoubtedly, the first piece of non-cartridge based software I bought was a \$12 ScreenDump first advertised in the pages of 99'er Magazine in January, 1983. Available in both the cassette and a disk format, the introduction of Extended Software's version (requiring Extended Basic then selling as a \$75 cartridge) was notable above all for its User Friendly explanation of the always mysterious world of printer codes.

Back in those days, having thorough documentation was deemed even more essential than ever, if you didn't have a TI Impact (i.e., Epson MX 80) Printer. The popular second choice of those dot matrices available at the time was the C.Itoh Prowriter (codes identical to the NEC 8023A-C), and these codes were provided, as well. Considering prices of \$880 for the TI printer, that alternative was important.

That Screen Dump program has been used for a variety of printers over the years due to clarity of documentation by author Jim Schwaller from Cincinnati. It last appeared for sale in the Holiday (December) 1986 Tenex catalog.

That program, superseded by speedier or specialized versions since then, never the less draws users of both the newer as well as older printers to it, as a starting point for graphic code commands. Writers to MICROpendium often provide changes in internal code lines, while not citing the complete original program, due to copyright limits. THE DATA BUS Editor has obtained the author's consent to print the original program -- no longer with a meaningful commercial base -- to illustrate the purpose and method of screen dump for newer users.

How do they work? SLOWLY. Character patterns at each location, 24 rows of 32 - not 28 - column locations, 768 times 8 blocks, are found on the screen. That totals 6,144 blocks of 8 picture elements (pixels), or 49,152 pixels that require dumping. That means converting hexadecimal character patterns (Charpats) into a binary code, and then changing it into a decimal code, for a printer to use.

How slowly it occurs depends on whether characters to be dumped, i.e., on the screen, occur more than once. If each ASCII character from 32-143 (available in XBasic) is used, the process for one screen could take as much as 15 minutes ... otherwise, 6 - 9 minutes, suggests the author. (Note that Sprites will not be captured by the printouts.) Yes, there are faster routines, with assembly language, or interrupt switches, special chips; but it's the principles we're learning here. (Continued on next page ...)

SCREEN DUMPS (Continued from Page 6)

In a moment, you'll get to the the program itself, on pages 8 (for cassette) and 9 (for disk).

To capture your favorite screen, first you'll need to run your favorite program with the display you want. DEMO1 is a random sample graphics program, on page 8 of THE DATA BUS, which can be used with cassette.

Let's analyze the program you want to dump. Basically you run it, until you get to where you want to dump. You don't have to turn the page yet; just get an understanding as to where we're going.

Line 110 places various characters on screen. Line 120 reshapes them in accord with patterns found in Lines 140 - 370. Then Line 130 calls up the subroutine which activates the Screen Dump. In this case, it's Line 130, but it can be inserted at any particular line you wish into any program of choice. There are two parts which need to be included (for tape users). First, when you reach a point when you want to stop and print, use <FCTN 4> to interrupt the display. When the screen shows:

```
BREAKPOINT IN XXX
```

with XXX being the line number of the breakpoint, type in:

```
XXX CALL DUMP :: END
```

and press <ENTER>. In this case, XXX = <Line> 130.

Now add lines 32000 - 32040 (also on page 8), which will be invoked by the CALL DUMP command. Type RUN <ENTER> and the sample DEMO1, or whatever program you use, will be loaded, ready to print out. At that point, for tape users, load, then RUN, the main Screen Dump program (on page 8) itself, to activate the printer.

Disk users should save "SCREEN/D", program found on Page 9 of this newsletter. Load DEMO1 but for Line 130 use RUN "DSK1.SCREEN/D" instead. Omit Lines 32000 -. When the program reaches Line 130, it will kick directly into your Screen Dump program (looking for it as DSK1.SCREEN/D).

Extended Software's screen dump shows you progress by moving an asterisk across the screen as it converts, then dumps the screen line by line and eventually sounds a loud tone to alert you to completion (you can get a coffee in the next room, meanwhile). You should realize that usually one runs a program once, to dump a particular screen. If there are several screens to dump, you'll have to rerun it and <BREAK>, save, and rerun for each dump. Use a second tape, not the same cassette, for safety and convenience.

There may be occasions in which you'll return to that same graphic to redo the same dump to a printed page, time after time. THE DATA BUS logo, page 1 of this newsletter, is dumped month after month; it's permanently saved with the CALL DUMP (or RUN for disk) line inserted as needed. Of course the companion Screen Dump program is kept on the same disk.

MODIFYING THE SCREEN DUMP FOR YOUR PRINTER:

We come finally to the real strength of the Schwaller program (aside from providing tape users a needed tool). The initial lines of the Screen Dump program, up until 160 or so, are geared to differences between tape and disk use since the data is scanned differently. You'll see a minor change or two in lines that follow, e.g., PRINT #1 versus PRINT #2, and in the CLOSE statement, else they're alike.

What lines take into account changes in printers?:

Commands to printers begin with an ESCape, or notice that following data is INTERPRETED rather than printed as follow in the program. The ESCape command is [PRINT #X:] CHR\$(27); and then the information. NOW you can look at listings on pages 8 and 9 and note these lines (the first reference is to the tape listing, then the Disk version):

Line 220 (Tape - Page 8) or Line 180 (Disk - Page 9):

Control or Escape codes to set the printer in graphic mode to produce lines closely spaced are found here. With a Gemini/Star/Epson compatible, the line shown works fine. The expression is CHR\$(27); "A" (ASCII 65); and a number. It tells us to use the decimal value of 8 to print lines that are 8/72nds of a dot position apart. That could also be expressed as 16/144ths, and may not use an easily-read decimal expression, but could appear as ASCII equivalent. Printers (like the C.Itoh 8510/NEC 8023A-C) would compare like this:

```
Decimal: PRINT #1: CHR$(27);CHR$(65);CHR$(8);
```

```
ASCII: PRINT #1: CHR$(27);CHR$(84);CHR$(49);CHR$(54);
```

Not only does it use the form CHR\$(27); "T"; and a number instead of CHR\$(27); "A"; but additionally, the number is in 144ths of an inch, and is expressed in ASCII instead of decimal. (ASCII 84 = "T") So it really says:

```
PRINT #1: <ESCape command>; "T"; and then 16. (49 and 54 are ACII equivalents of 1 and 16, or 16/144ths of an inch)
```

Once you understand which language your own printer uses, you can make the appropriate substitutions. There will be four or five other lines in which changes can occur:

Lines 230 / 190 : Continue to print, despite normal Gemini /Star/Epson skipping of several lines on tractor feed paper, to avoid perforation

Lines 250 / 210 : Provide a Character Return and Line Feed to go to column 1 and start next line

Lines 310 / 270 : Inverts character printout (C.Itoh/NEC)

Lines 350 / 310 : Concludes and closes printer file

Necessary information to make changes is found on page 9.

CASSETTE VERSION:

```

100 !SCREEN DUMP, COPYRIGHT 1982 EXTENDED SOFTWARE CO., INSPIRED BY ED YORK
110 OPEN #1:"CS1",INTERNAL,FIXED 192,INPUT
120 INPUT #1:A$ :: FOR R=1 TO 24 :: FOR C=1 TO 32
130 X=X+1 :: CALL HCHAR(R,C,ASC(SEG$(A$,X,1))):: IF X=198 THEN INPUT #1:A$ :: X=
0
140 NEXT C :: NEXT R
150 FOR C=32 TO 143 :: IF (C-31)/11=INT((C-31)/11)THEN INPUT #1:A$ ELSE INPUT #1
:A$,
160 CALL CHAR(C,A$):: NEXT C
170 DIM K(112,8)
180 FOR A=2 TO 112 :: K(A,1)=-1 :: NEXT A :: H$="123456789ABCDEF" :: B$=RPT$("0"
16):: C$=RPT$("F",16)
190 FOR A=1 TO 8 :: K(0,A)=255 :: NEXT A
200 OPEN #2:"RS232.BA=4800,DA=0.CR",OUTPUT
210 FOR A=1 TO 256 :: PRINT #2:CHR$(0);:: NEXT A :: PRINT #2:CHR$(13);CHR$(10)
220 PRINT #2:CHR$(27);CHR$(65);CHR$(8);!SET DISTANCE BETWEEN LINES
230 PRINT #2:CHR$(27);CHR$(79);!TURN OFF SKIP PERFORATION
240 FOR R=1 TO 24
250 PRINT #2:CHR$(13);CHR$(10);RPT$(" ",24);CHR$(27);CHR$(75);CHR$(8);CHR$(1);
260 FOR C=1 TO 32
270 CALL GCHAR(R,C,X):: CALL HCHAR(R,C,42):: X=X-31 :: IF X<1 THEN X=1 :: GOTO 3
40
280 IF K(X,1)<-1 THEN 340 ELSE CALL CHARPAT(X+31,A$)
290 IF A$=0$ THEN X=1 :: GOTO 340
300 IF A$=C$ THEN X=0 :: GOTO 340
310 G=0 :: FOR A=15 TO 1 STEP -2 :: B(0,G)=POS(H$,SEG$(A$,A,1),1):: B(1,G)=POS(H
$,SEG$(A$,A+1,1),1):: G=G+1 :: NEXT A
320 FOR D=0 TO 1 :: FOR E=3 TO 0 STEP -1 :: FOR F=0 TO 7 :: IF (B(D,F)AND 2^E)TH
EN H=H+2^F
330 NEXT F :: Y=Y+1 :: K(X,Y)=H :: H=0 :: NEXT E :: NEXT D :: Y=0
340 PRINT #2:CHR$(K(X,1));CHR$(K(X,2));CHR$(K(X,3));CHR$(K(X,4));CHR$(K(X,5));CH
R$(K(X,6));CHR$(K(X,7));CHR$(K(X,8));
350 NEXT C :: NEXT R :: PRINT #2:CHR$(10);CHR$(13):: CLOSE #2 :: CLOSE #1 :: CAL
L SOUND(1800,523,8):: PRINT "FINISHED"

```

Sample DEMO1
Graphic Program:

```

100 CALL CLEAR
110 FOR A=1 TO 24 :: CALL H
CHAR(A,1,95+A,32):: NEXT A
120 FOR A=1 TO 24 :: READ A
$ :: CALL CHAR(95+A,A$):: N
EXT A
130 CALL DUMP :: END
140 DATA "0987654321123456"
150 DATA "A5A5A5A5A5A5A5"
160 DATA "F1F2F3F4F5F6F7F8"
170 DATA "3838394949505032"
180 DATA "D7F8A9F8D0F8FAAA"
190 DATA "2929292929292929"
200 DATA "4F5F6F7F8F9F8F7F"
210 DATA "ABCDEF5432109875"
220 DATA "3574685678796561"
230 DATA "A809C8E7F5456787"
240 DATA "5576879896564352"
250 DATA "5745342321ACDFBE"
260 DATA "2487347587840238"
270 DATA "A8A8A8A8A7A7A6A6"
280 DATA "4564568798978532"
290 DATA "5676798864435324"
300 DATA "887878788887877A"
310 DATA "352463457678789F"
320 DATA "456768767965743A"
330 DATA "57468767856423CE"
340 DATA "ECCCECCCECCCECCDE"
350 DATA "AELCEFA3CDEFABCD"
360 DATA "ACEACEACEACEACEA"
370 DATA "FACEFACEFACEFACE"

```

Insert lines
32000 - 32060
(Sub Dump) here

LINES TO SAVE GRAPHICS

Type these lines into your graphics program. They will be used by the line you added in the operating portion of the program (CALL DUMP) to save the screen and characters onto cassette tape.

```

32000 SUB DUMP :: FOR R=1 TO 17 :: FOR C=1 TO 32 :: X=X+1 :: CALL GCHAR(R,C,Y)::
CALL HCHAR(R,C,42):: IF X=224 THEN GOSUB 32050
32020 A$=A$&CHR$(Y):: NEXT C :: NEXT R :: GOSUB 32050 :: GOSUB 32050
32030 FOR R=32 TO 143 :: CALL CHARPAT(R,A$):: IF (R-31)/11=INT((R-31)/11)THEN
PRINT #1:A$ ELSE PRINT #1:A$,
32040 NEXT R :: CLOSE #1 :: SUBEXIT
32050 IF S=0 THEN S=1 :: OPEN #1:"CS1",INTERNAL,FIXED 192,OUTPUT :: R=0
32060 PRINT #1:SEG$(A$,1,198):: A$=SEG$(A$,191,66):: X=LEN(A$):: RETURN ::
SUBEND

```

SUB DUMP will remove the characters from the screen until it has the first seven rows. It will then open the cassette. The screen will scroll upward as the instructions built into the 99/4(A) appear. Save the data that is output on a tape for loading into the SCREEN/DUMP program (once saved, you can use the data as many times as you want without going through this output section). The first 5 outputs will save the screen and the next 11 outputs save the character patterns (17 outputs in all). After the outputs, READY will appear at the bottom of the screen and you can run SCREEN/DUMP.

USING THE GRAPHICS DATA

Load and run the SCREEN/DUMP program. It will immediately open the cassette to input the data saved from your graphics program. Position the data tape for this input (ten seconds of blank tape must be read first, just as it was output). As the data comes in, it will reconstruct the screen and then change the character patterns.

DISK VERSION:

```

100 !SCREEN/DUMP - COPYRIGHT 1983 EXTENDED SOFTWARE COMPANY; INSPIRED BY ED YORK
110 DIM K(112,8)
120 FOR A=1 TO 8 :: K(0,A)=255 :: NEXT A
130 FOR A=2 TO 112 :: K(A,1)=-1 :: NEXT A
140 H$="123456789ABCDEF" :: B$=RPT$("0",16) :: C$=RPT$("F",16)
150 CALL DELSPRITE(ALL) :: FOR R=1 TO 14 :: CALL COLOR(R,2,8) :: NEXT R
160 OPEN #1:"RS232.BA=4800.DA=8.CR",OUTPUT
170 FOR R=1 TO 256 :: PRINT #1:CHR$(0) :: NEXT R :: PRINT #1:CHR$(13);CHR$(10)
180 PRINT #1:CHR$(27);CHR$(65);CHR$(8) :: !SET DISTANCE BETWEEN LINES
190 PRINT #1:CHR$(27);CHR$(79) :: !TURN OFF SKIP PERFORATION
200 FOR R=1 TO 24
210 PRINT #1:CHR$(13);CHR$(10);RPT$(" ",24);CHR$(27);CHR$(75);CHR$(0);CHR$(1);
220 FOR C=1 TO 32
230 CALL GCHAR(R,C,X) :: CALL HCHAR(R,C,42) :: X=X-31 :: IF X<1 THEN X=1 :: GOTO 3
00
240 IF K(X,1)<>-1 THEN 300 ELSE CALL CHARPAT(X+31,A$)
250 IF A$=B$ THEN X=1 :: GOTO 300
260 IF A$=C$ THEN X=0 :: GOTO 300
270 G=0 :: FOR A=15 TO 1 STEP -2 :: B(0,G)=POS(H$,SEG$(A$,A,1),1) :: B(1,G)=POS(H
$,SEG$(A$,A+1,1),1) :: G=G+1 :: NEXT A
280 FOR D=0 TO 1 :: FOR E=3 TO 0 STEP -1 :: FOR F=0 TO 7 :: IF (B(D,F)AND 2^E)TH
EN H=H+2^F
290 NEXT F :: Y=Y+1 :: K(X,Y)=H :: H=0 :: NEXT E :: NEXT D :: Y=0
300 PRINT #1:CHR$(K(X,1));CHR$(K(X,2));CHR$(K(X,3));CHR$(K(X,4));CHR$(K(X,5));CH
R$(K(X,6));CHR$(K(X,7));CHR$(K(X,8));
310 NEXT C :: NEXT R :: PRINT #1:CHR$(10);CHR$(13) :: CALL SOUND(1000,523,0) :: CL
OSE #1

```

Lines 230 Tape / 190 Disk: Turn off Skip Perforation

If you've got a Skip Perforation command, the printer skips one inch (6 lines) at the top of the page, then will print 54 lines, skip 12 more lines (6 at the bottom, and 6 at the top of the next page, etc.) leaving one-inch margin space at top and bottom of all pages. Using continuous or non-tractor feed paper, or for cases where print cannot be interrupted (like a screen dump, needing tightly connected text, as opposed to a listing, for instance), Gemini/Epson and compatible printers use these lines, to shut off any automatically-set Skip Perforation command. Another way of saying it could be [PRINT #X:] CHR\$(27);"0";

Some other printers don't perform a Skip Perforation; in which case you could !REM or ignore this line. You may want to experiment. SAVE the version that works for you.

P.S. Not shown here: Gemini/Epson SETS the Skip Over Perforation command by using CHR\$(27);CHR\$(78);CHR\$(12);

Lines 250 Tape / 210 Disk: Finish one Line, Start Next

Normally the printer finishes one line, starts a next (Did you recognize CHR\$(13) as the (ENTER) Call Key?), and then drops one line before printing. That's a Line Feed - CHR\$(10) and Carriage Return - CHR\$(13). You won't need to fool with this unless you overprint or get blank lines.

The RPT\$ in the middle of the line is interesting.

Using this line as written produces a centered screen dump, in the middle of the page (24 blank characters, then

32 columns of screen, then another 24 blank = 80 printer columns. See the next two lines.) To start a screen dump at the extreme left of a page, OMIT the RPT\$ string part.

Why not do a Wide Dump, in which you can expand your screen dump across the entire 80-column printed page? Do so by deleting the RPT\$ string and add line 205 (Tape), or 165 (Disk) to read: PRINT #1:CHR\$(14); (for the Gemini), - Note! No CHR\$(27) - or PRINT #1:CHR\$(31); (Okidata 92), or PRINT #1:CHR\$(27);CHR\$(81);CHR\$(1); (for the Panasonic KX-P1091), etc. This is called Enlarged or Expanded type, if you're trying to find your manual reference.

The rest of the line tells the printer to send 8x32 or 256 graphic characters. Unfortunately, other printers could get as exotic as CHR\$(83);CHR\$(48);CHR\$(53);CHR\$(54); after the CHR\$(27); Escape command. ASCII values of 2 5 6 are, of course, 50, 53, and 54. If you get the idea, check your printer manual for the Decimal/ASCII command.

Jim Schwaller's 8-page documentation for TAPE or DISK version helps! Write to DVUG, PO Box 6240 Stanton Branch, Wilmington, DE 19804-9998, specify version, be polite!

Lines 310 Tape / 270 Disk: Invert Print Characters

C.Itoh/NEC ONLY: Use G=7 and G=G-1 instead of G=0 and G=G+1 as G values at the start and end of this line. Inverted C.Itoh/NEC characters are the reason they are not included as available printers for the more recent graphic software. This change resolves the screen dump inversion.

