BITS,BYTES&PIXELS

LIMA 99/4A USERS GROUP

January 1995 Volume 11, #1

JIM PETERSON LIBRARY AVAILABLE FOR FREE COPYING AT THE APRIL 29 LIMA MUG CONFERENCE.

The C.O.N.N.I. user group has informed us that they will have a complete set of the Jim Peterson public domain software library and three computers available for copying this material at the next Lima Multi User Group Conference scheduled for Saturday April 29. Anybody who brings their own disks can copy anything from this library at no charge during the show. The only limitations are time (show hours only) and the physical setup (one set of master disks and three copy stations).

This software library includes all of Jim's software that has been released to the public domain as well as hundreds of disks of PD software from other sources. Most is in SSSD format. We (the C.O.N.N.I. and Lima groups) hope to arrange a pre conference distribution of the on disk catalog of the Peterson library to interested parties, but details of this are incomplete at this time.

After the April 29 MUG Conference C.O.N.N.I. will donate the set of Peterson disks to the Lima User Group for distribution to our members in the normal way. There is much overlap between the Lima software library and the Peterson software library. We request members of the Lima User Group to order Peterson library disks from us in the normal way after the conference. This will make it easier for non members to make their own copies on April 29 with fewer delays.

As usual, all software added to the Lima library since the previous year's conference will also be available for free copying by anyone. This material will include about 150 disks mostly in DSSD format. Some of these disks contain public domain versions of classic books including the complete works of William Shakespeare.

We look foreward to seeing you all at the Ohio State University Lima Campus on Friday and Saturday April 28 and 29, 1995.

DONE

A DISK OF CC40 AND TI74 PROGRAM LISTINGS

available from Charles Good
Lima Ohio User Group

I have a 99/4A disk with DV80 files that contain listings of BASIC programs you can type into your CC40 and TI74. Some of these programs are games. Others, particularly the financial and word processing programs, are quite useful. Many make use of the special features available with various hexbus peripherals such as the printer/plotter and the (very very rare) wafertape drive. No, there is no way of loading these programs directly from the 99/4A disk into your CC40 or TI74. You have to type them in.

Also included on the disk are some 99/4A basic programs that send data to and from hexbus peripherals. To use these programs you have to have the (very rare) 99/4A hexbus interface.

I'll send this disk to anyone who sends me $1, which pays for the disk postage and mailer. Send your money to me at P.O. Box 647, Venedocia OH 45894. The disk contains the following files:

Filename	File Type	Size	
10CHARSET	D/V	80	3
4A2WAFER	PGM	142	2
ADDRESSLIT	D/V	80	7
ARROWGAME	D/V	80	7
BARGRAPH	D/V	80	4
BIORHYTHM	D/V	80	10
CALENDAR	D/V	80	6
CALENDAR2	D/V	80	8
CATWAFBK	D/V	80	6
CC402WAFER	PGM	144	2
DATATRANS	D/V	80	9
DIRECTORY	D/V	80	13
DIRWAFER	D/V	80	12
FINHELP40	D/V	80	39
FINHELP74	D/V	80	34
HEADLINE	D/V	80	8
HILO	D/V	80	6
INVENTORY	D/V	80	12
JUMPJACK	D/V	80	2
MULTIPROG	D/V	80	67
PHONETRANS	D/V	80	8
PLSMAX	D/V	80	3
POLARCOORD	D/V	80	4
RUMANNUMER	D/V	80	5
SETRAM40	D/V	80	3

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SOCCER	D/V	80	3
SORTIM610	D/V	80	12
WAFER/2/4A	PGM	129	2
WAFER2CC40	PGM	137	2
WAFERCAT	PGM	127	2
WAFERCAT2	PGM	574	4
WORDPROC	D/V	80	22

LISTING CC40/TI74 PROGRAMS TO A 99/4A DISK
by Charles Good

If you have a Hexbus RS232 you can save CC40 program listings (not runable programs) to a 99/4A disk as DV80 files. You need a serial cable linking the Hexbus RS232 to your 99/4A's RS232. L.L. Conner can make you the needed cable if you don't want to make one yourself.

1- On the 99/4A boot the Funnelweb editor (or any other TI Writer type of editor). Go to the command line (FCTN 9) and type LF followed by <enter>. Then type RS232.CR for the file name and press <enter>. The 99/4A cursor quits blinking as Funnelweb waits for data to start flowing into it via the RS232.

2- On the CC40 or TI74 which has your BASIC program in its memory, go to the command line. At the flashing cursor type LIST "20.R=C" and press <enter>. Be sure to include the quotes. The CC40 or TI74 cursor will disappear and the i/o indicator will turn on as your program list flows out of the little computer towards the Hexbus RS232.

3- When the cursor reappears in the display of the CC40 or TI74 press FCTN 4 followed by <enter> on the 99/4A. Your BASIC program list will now appear on the 99/4A monitor.

Unfortunately you cannot successfully use the CC40 or TI74 to SAVE or OLD to and from the Hexbus RS232. This means that you can't store actual CC40 runable software on a 99/4A disk using the above procedures.

DONE

BITS, BYTES & PIXELS
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Making Loadable Characters for the FX80

By Jacques Groslouis

(BB&P EDITOR'S NOTE: Although this article refers to the Funnelweb v5.00 editor, the same tricks and techniques work with the more recent v5.01 Funnelweb editor. This article was printed on an old Star S610 printer in IBM mode, which has a slightly different IBM character set than most modern printers. The graphics would look

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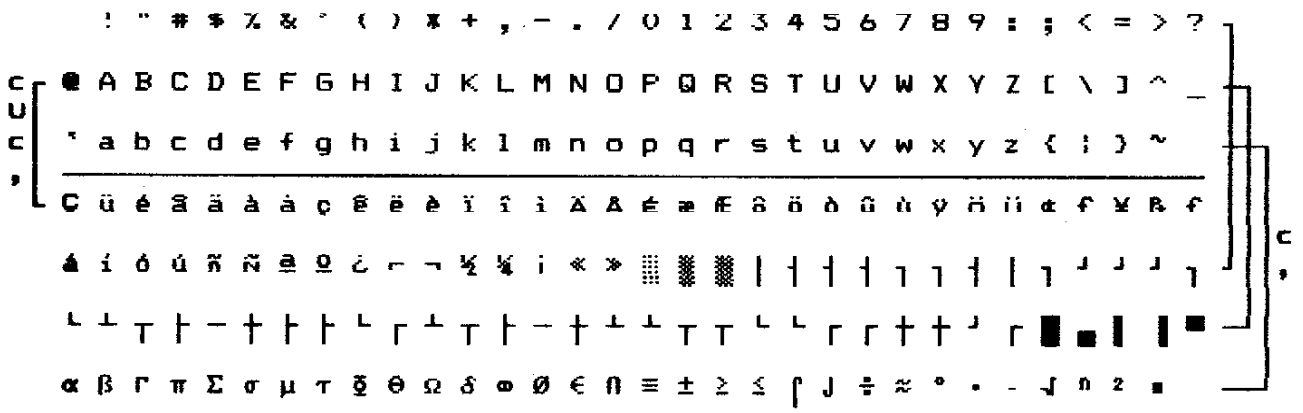
better on a modern printer. Most printers, including the SG10 allow you to create custom characters as described in this article.)

With Funnelweb Editor Vn 5.00 in ALL CHAR mode you can print characters 128 to 254 by keying in Ctrl ',' or Ctrl 'U,'. Switching to IBM mode on many printers will let you print a full character set from character 32 to 254 as follows:

EXAMPLE OF ALL-CHAR PRINTING ON STAR SG10 (IBM mode)



The FX-80 does not have an IBM mode but has provision to create your own loadable characters. Once loaded these characters remain in the printer as long as the printer is not turned off or the Master reset code (<ESC>"@") is not invoked. These characters can be entered and sent to the printer from a Basic program. This program is fairly long as it contains 127 DATA statements, one for each character which is created. I have supplied Charles Good with a disk which contains the full program along with some other goodies. The key elements of the program are as follows:

```
100 ! SAVE DSK9.IBMFONTS
110 CALL CLEAR :: CALL BLUE :: DISPLAY AT(10,6):"Turn On Printer!" ::
    OPEN #1:"PIO.CR" :: PRINT #1:CHR$(0):: CLOSE #1 :: CALL CLEAR
120 OPEN #1:"PIO.CRLF"
130 DISPLAY AT(4,7):"IBM FONT LOADER": :" By Jacques Groslouis": :"
    Transferring ROM to RAM"
140 PRINT #1:CHR$(27);":";CHR$(0);CHR$(0);CHR$(0);
150 DISPLAY AT(10,3):"Creating Char 128 to 254"
160 PRINT #1:CHR$(27);"%";CHR$(1);CHR$(0);
170 PRINT #1:CHR$(27);"&";CHR$(0);CHR$(128);CHR$(254);
180 FOR Y=1 TO 127 :: PRINT #1:CHR$(0);
190 FOR X=1 TO 11 :: READ C :: PRINT #1:CHR$(C);:: NEXT X
200 READ C :: DISPLAY AT(12,7):"Creating #";C :: NEXT Y
210 CLOSE #1 :: STOP ! DELETE "MENU"
220 DATA 56,68,1,132,1,134,0,72,0,0,0,128
230 DATA 0,60,128,2,0,2,128,60,2,0,0,129
240 DATA 28,34,8,98,136,34,8,34,24,0,0,130
250 DATA 4,10,96,10,160,10,96,28,2,0,0,131
260 DATA 4,10,160,10,32,10,160,28,2,0,0,132
```

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Only five of the data statements have been listed and the subprogram BLUE has not been listed. This sub program by Jerry Stern turns all characters white on blue. If you do not have this subprogram delete CALL BLUE in line 110. Line 110 checks to see that printer is turned on. Line 120 opens the printer for printing. It is important that '.CRLF' appear after the printer name. This extension ensures that all carriage returns and line feeds are suppressed during the rest of the program. Since we are working with a printer in DV80 mode a CR and a LF is sent to the printer after every 80 characters are printed and your character definitions will be messed up.

The FX-80 printer contains a ROM which has all the standard characters together with the Italics characters in characters 32 to 255. The printer also has a RAM which is where we will place the characters we design. Line 140 is the printer code which copies the ROM into the RAM section of the printer. This ensures that the regular character set from 32 to 127 is in RAM and we do not have to define them again. Line 160 is the printer to select RAM as the area into which we wish to place our new character set. Line 170 indicates that we will create character 128 to and including character 254. Character 255 is ignored because Funnelweb uses it for another purpose. You will notice that all print statements are foolowed by the print pending character ';' which creates a print statement about eight lines long and 80 characters wide.

Lines 180 to 200 reads the 127 data statements to extract the information to create each character. Each character requires 12 data items. The first data item is the attribute bit which is created in line 180 as CHR$(0). I have set this to '0' as a personal preference. This bit determines whether the character is printed by the top 8 pins of the available 9 pins or the bottom 8 pins. This bit also determines the length of the character for proportional printing. If you wish to use these features CHR$(0) in line 180 should be deleted and another data item would be added to each DATA statement. Line 190 then sends the first 11 items of each DATA statement to the printer to complete the creation of the character. The last item of each DATA statement is only sent to the screen. This is a reference for each line and ensures that each data statement contains 12 items. Line 210 closes the file opened in line 120. If you are using a HORIZON ram disk you may want to remove 'STOP !' to have the program return to MENU. Dip switch 1-4 must be OFF before running this program and to use these characters. This program takes a bit over 2 minutes to run.

Now the good news, you can set the same characters from text editor in less than 5 seconds by printing a text file created by changing line 120 to "120 OPEN #1:"DSK1.IBMDV". In order for this to work the printer must be configured to PIO.CRLF and the number 255 must not appear in any of the DATA statements, use 254 instead.

In case you decide to code your own characters the coding for character 128 is set out below as an example to follow. The only rule to watch is that bits in adjacent columns cannot be used in the same row. As mentioned earlier for a reason I don't understand a column cannot total 255 if you are going to print from the text editor.

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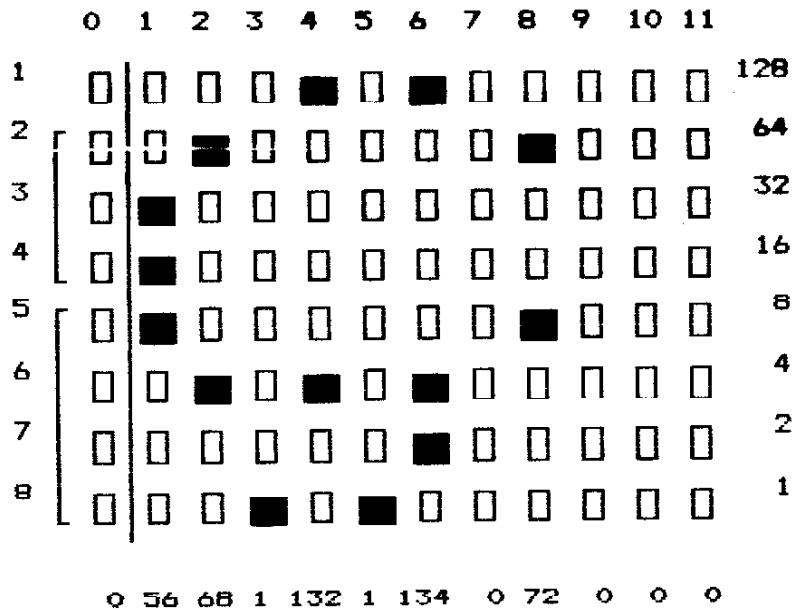

The data items are arrived at by totalling each column based on the values shown at the far right above. For example in column 1 56 is the total of 8 + 16 + 32.

A few final comments concerning the printing of the example at the beginning of this article. The first three rows are standard charcters. The fourth row is typed by first keying CTRL U CTRL , and keying in the characters contained in the second row. To print characters 128 to 159 control code <ESC>"6" must be included in the document. This can be at the start of the document and would be cancelled by <ESC>"7". The characters for the last three rows are invoked by keying CTRL , as explained in the Funnelweb documentation. When printing in the ALL CHAR mode it usually necessary to enable unidirectional printing by using control code <ESC>"U1" and <ESC>"U0" to disable. If the characters you are printing contain vertical lines it is necessary to use <ESC>"1" to set line spacing to 7/72 per inch.

DONE

Assembler Executing . #10

By Bob Carmany

This is going to get a bit more complicated that the first programming effort. The biggest difference between the two programs is that although both use external references, the following program uses the internal routines in Tony McGovern's Funnelweb program. The result is that it functions as a Load and Run program but ONLY from Funnelweb 4.40.

The program was written to dump the DSR (Device Service Routines) from the various peripheral cards to disk. A 6 byte header was added later to enable the code to be used by my apprommer to duplicate ROM chips.

Incidently, Tony wrote this one evening at Hawks Nest in about 15 minutes while I watched -- it was amazing!

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```
*  Program to dump SINGLE 8K ROM DSRs to disk
*-------------------------------------------
*  Object file is auto-run
*  Raw dump - no EA 6 word file header
*  Change DSRLEN EQU as needed eg >1000 for 4K
*  Change CRU address as needed        <<<<<<<<<<<<<
*  Then reassemble
*  FUNNELWEB EQUS

DSRLNK EQU  >FFD4
FILENT EQU  >FFCC
FWREGS EQU  >FF7C
CMSRET EQU  >FF5C
HEXDIG EQU  >FF24

VDPPAB EQU  >1000
VDPBUF EQU  >1050
```

These are the EQUates for the F'WEB routines as they reside in memory. Since the program is written to leave F'WEB unmolested in memory, it is a simple way to do things. The program will return to F'WEB. CMSRET is the return to F'WEB, the DSRLNK doesn't require the DATA 8 like the E/A variety, and HEXDIG allows only character 0-9 and A-F to be entered. The rst of the EQUates are char retrieval (FILENT), the F'WEB workspace registers (FWREGS) and the VDP buffers and address for the PAB (Peripheral Access Block) for the DSRLNK.

```
*  Set length of DSR to be saved

DSRLEN EQU  >2000              For full 8K DSR


*  Use FW workspace

       AORG >A050

START  EQU  $
       LWPI FWREGS             Use F'WEB workspace registers
       LI   R0,>2000           Load DSR length into R0
       BLWP *R8                Access VFILL - clear screen
       DATA 0,>300
       BLWP *R9                Access VMBW - write to screen
       DATA >64                Starting address
       DATA QUERY,QUELEN       Message

       BLWP *R9                Access VMBW
       DATA >A4                Starting address
       DATA PROMPT,PRMLEN      Message
```

The program is set at an absolute origin of >A050 which is above the F'WEB mailbox and thus preserves the filenames used by the editor, etc.

We have already run into a couple of sneaky tricks. Actually, they are some very clever programming. F'WEB leaves several registers loaded and pointing to some additional routines that are accessable from auxiliary programs as long as F'WEB is left intact. R8 points to VFILL which clears the screen and R9 points to the VMBW routine for displaying text on the sceen (among other things). These were re-written from scratch by Tony to co-exist more gracefully with F'WEB.

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At this point there are two messages displayed - 'Which CRU Base' and the default '>1000'.

```
*  Set CRU base

       SETO @HEXDIG           Allow only hex digits



       BLWP @FILENT           Get character from position in next DATA
       DATA >A4+2,1
       CLR  R12
       MOVB @>8322,R12        >8322 is first byte of FILENT buffer
       ORI  R12,>1000            (else use VMBR from screen)
```

FILENT gets 1 character from the user input (ie >1x00) and stuffs it into R12. If no entry is made, >1000 is entered into R12.

```
*  Get dump file name

DDNAM  EQU  >144

       BLWP *R9               Write to screen
       DATA >104              Screen location
       DATA DSAVN,DSAVL       Message and length byte
       BLWP *R9               VMBW
       DATA DDNAM             Set up name to save
       DATA DNAME,12          Set up save filename and length
       BLWP @FILENT           Get ready to fetch character
       DATA DDNAM+3,1         Fetch the drive number char
       MOVB @>8322,@DNAME+3   Move it to DNAME

       BLWP @FILENT           Get ready to fetch character
       DATA DDNAM+11,1        Last character in filename
       MOVB @>8322,@DNAME+11  Move it to DNAME
```

This segment of code uses FILENT to fetch the character for the drive number and the last character in the filename from DDNAME and stuffs it into the DSR dump filename that you have chosen. If no key other than <ENTER> is pressed, the data is entered into DNAME using the screen characters.

Getting this far into the program has made me just a bit tired. I think I'll take a break for awhile and we'll finish this up next month.

DONE