INTRODUCTION TO THE UCSD P-SYSTEM

BY RON WILLIAMS

The first thing I would like to say is after doing some assembly
programming in the p-system environment I have to conclude that the p-system
is not very kind to assembly programmers. Without a debugger the task of
assembly programming is tenfold. The system was designed to call assembly
code with a Pascal program and this is done by calling a procedure or
function that is declared external. I have at the end of this article a
program that calls a external assembly program that gets the volume names
of three disk drives from memory. I have worked out a method of programming
with assembly that makes it easier but not easy. First create the assembly
program in the editor saving as SYSTEM.WRK.TEXT and then assemble the file
by pressing the "A" key at the main command prompt. The assembler like the
compiler recognizes SYSTEM.WRK.TEXT as the default file name. If you have no
errors the assembler will save the code file as SYSTEM.WRK.CODE. If you
choose to produce an assembled listing it will also produce this file with
the file name you gave it make sure that you put the .TEXT extension of the
file name when you are prompted for a file name the file produced is a text
file. After all is assembled go into the filer and change the name of the
file SYSTEM.LIBRARY to a another name I called it LIB. It is much easier to
work with the assembler and compiler by putting the assembly code in the
SYSTEM.LIBRARY. I also have found that it is easier working with an empty
SYSTEM.LIBRARY. But we have just changed its name so the file is still on
the disk we didn't delete it. Next go out to the main command prompt and
run the LIBRARY.CODE file to add a file to the SYSTEM.LIBRARY. Type the
file SYSTEM.LIBRARY. as the output file and SYSTEM.WRK.CODE as the input
file after this press the "E" key to put the assembled code in the output
file. Then press "Q" to quit type anything you want at the notice prompt I
put the date. Go to the filer once again and press the "S" key to save the
assembly file under a different name and then press the "N" key to clear
the workfile. Exit the filer again and go to the editor type in the Pascal
program that will call the assembly program and save under the "U" command
to save as SYSTEM.WRK.TEXT. When at the main command prompt press "C" to
compile the Pascal code. After this step is complete press "R" to run the
code file you will see that before the code is run it must be linked and so
the p-system run command will call the linker to link the assembly code to
the Pascal code file. The default files for the linker are SYSTEM.LIBRARY

and SYSTEM.WRK.CODE so by using the method I just described default names
are used. If the assembly code is not working go into the filer again and
save the Pascal code with the filer save command pressing "S" and then
clear the workfile. After this press "G" to get the assembly text file type
in the name you gave it before without the file extensions like .CODE and
.TEXT. The get command will not need them. Exit the filer and go back to
the editor to change the assembly text file. Save using the "W" command
when exiting the editor press "$" to save under the same name. Assemble
again and the file code that will be created will be SYSTEM.WRK.CODE once
again put this code it the library file SYSTEM.LIBRARY just as before. Go
to the filer and press "S" to save and "N" to clear the workfile. Get the
Pascal file next and if it is ok just compile it and then run it pressing
"C" to compile and "R" to run, do these in two steps you can't just press
the "R" command as the Pascal file will not be recompiled and linked with
the new assembly code in the SYSTEM.LIBRARY. After you have the assembly code
working the way you want it put it in the file that was SYSTEM.LIBRARY and
rename the file back to SYSTEM.LIBRARY so other programs that need the units
in SYSTEM.LIBRARY can find them. I don't do much assembly-Pascal programs but
if I was to I would keep a boot up disk with a SYSTEM.LIBRARY that is not very
full to be used for testing assembly code. Well I hope this was useful
information and I hope that you do try to link some assembly programs to
your Pascal files. Some of the best programs for the p-system where made
this way. In the next months I will go into some detail on the how you code
the assembly and Pascal programs.

the left hand box are the opional c-Tag will tag all
the files; c-Utag will untag all the files; "T" or "U"
will tag or untag only the file the cursor is on. Tag
Total (at the bottom of the window) shows the total
number of sectors which are tagged.

c-Actn is used to set the left window for action on the
tagged files; they may be <C>opy (copied); <P>rot
(protected); <U>npt (unprotected); <D>el (deleted);
<R>nom (renamed). f9 will return to the previous left
window. <P> for Prn Dir will print the directory either
to disk or to the printer in two columns.

Next in the left hand box are the File options; c-View
will view the marked file if it is the right type.
f-Renom. f-Copy will do just those things for the marked
files. Run Pgm is too obvious to need mentioning.
Inspct is the Sector Editor which will allow rewriting
or searching in each sector.

The two boxes at the bottom are those mentioned above,
but the large box in the upper right is the directory.
The top line shows - Filename - size - type - rec - and
whether protected or not.

Pressing the <ENTER> key will open a new window which
covers parts of the bottom boxes and which asks for a
selection of the drive number. Once the number is
entered, the directory is read and appears in the upper
window. The 'working' box will show where a file is
copied to and is where new names are entered etc.

Leave the program by using <c->. Note that throughout
the program there are defaults written into the program
itself. These may be changed using the "Configure"
program included with the funnelweb files.

Til next time, HERB.

UNDER THE PALM TREE...

by Lucie Dorais
(Reprinted from The Newsletter of the Ottawa User Group)

When was it when you last read about some exciting new stuff for our Tex? If you don't read MICROpendium, you haven't, unless you are also, or alternatively, reading Barry Traver's column in COMPUTER MONTHLY.

In the January 1991 issue, the featured company is Canadian-based SOASIS PENSIVE ABACUTORS, or OPA, owned and operated (as sole programmer and developer?) by Torontonian Gary Bowser. Gary has been a member of the Ottawa Group for a while, and has made the trip to our Fest more than once. Not only is he Canadian, but his products are making big waves. Here are some of them, as I copy from Barry's article, as unfortunately I don't own any of them myself yet. One reason being that I am one of the few PEB-less people left in this world, but I might look for one after I read that article!

RAMBO, not the muscle man, but his cousin the Random Access Memory Bank Operator, has been around for a while: it is an upgrade for the Horizon Ramdisk, that allows you to use the HRD for both RD space and program space (by bank-switching); if you also have OPA's new RDS 8.14 for the HRD, the bank-switching is easy to program.

But, that is nothing besides the next item: you might want the 9938 video chip capabilities, but do not want to invest in a Geneve, or cannot get a DIJIT card because you don't have a PEB (my problem), or cannot get the Mechatronic 80-column device: or you can, but they are too expensive. Now read that: Gary offers you not the 9938, but the fastest 9958 chip, which he calls TIM (TI-IMAGE-MAKER), with a full 192K of video mem on board, for only $150 US!!! And where do you put the beauty? Right inside the console, to replace the present video chip, so no PEB, no daisy device! The only drawback is that to see the improvement you will need an RGB monitor, but apparently those who have tried TIM and splurged for a new monitor are more than happy with the results. You have to install it yourself, but apparently it is easy (if you know how to solder, which I don't, but then I am only a woman...). Also included: some software and full docs, including a new GIF viewer... Nudies for the men, the tiger for Jane and me. :All the present programs that use the 80-column capabilities of TI, such as FUNNELWEB, TELCO, and Asgard's new paint program YAPP, which can use only 80 columns, are all reported to work very well with TIM.

TIM alone would put OPA on the map, but this is just the tip of an iceberg. The article also mentions that Gary Bowser is working on all kinds of hardware that will do things that were never done before: a Speech package ($40 US) that comes on 10 disks plus a tutorial book, which allows Tex to speak (and sing?) like never before. GIZMO is an 8-slot module expander, sort of a big

WIDGET, BUT you can take advantage of more than one cartridge at the same time! Run an XB program, store your data in the Minimemory! Also in the talks, and hopefully in the works! a Z-80 emulator, a digitizer, and more. Software side, OPA markets Gary's own programs IH55 (a TI-Artist Slide Show) and DISKODEX, a disk-organizing program that can read the comments you have put in with John Birdwell's DISKU manager. (Sad to say, John left us a few weeks ago after a long illness! he will be missed.).

For more information, write to Gary! Oasis Pensive Abacutors, 432 Jarvis Street, Suite 502, Toronto, Ont., Canada, M4Y 2H3, or phone him at (416)960-0925 or (416)960-1425, 8 a.m. to 11 p.m. Eastern time, or call his BBS at (416)921-2731, 1200/2400, 24 hrs.

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```
PROGRAM VOLUME;
VAR
   STROUT : STRING;

PROCEDURE VOLUMES(VAR OUT : STRING); EXTERNAL;

BEGIN
   STROUT:='                                    ';
   VOLUMES(STROUT);
   STROUT[1]:=' ';
   WRITELN('VOLUMES ON LINE',STROUT);
END.
           .PROC VOLUMES,1
           ; GET DRIVE VOLUME NAMES FROM MEMORY.
VOL4       .EQU    36C6H
VOL5       .EQU    36D2H
VOL9       .EQU    3702H
           MOV     *R10+,R1        ;GET STRING OFF STACK
           LI      R3,2020H        ;LOAD STRING LENGTH AND A SPACE
           MOV     R3,*R1          ;MOVE TO STRING
           INC     R1              ;INCREMENT REGISTER TO STRING
           LI      R3,VOL4         ;LOAD ADDRESS OF VOLUME 4
           CLR     R6              ;CLEAR REGISTER
#1         MOVB    *R3+,*R1+       ;MOVE BYTES TO STRING
           INC     R6              ;INCREMENT REGISTER
           CI      R6,8            ;COMPARE TO 8
           JNE     #1              ;JUMP IF NOT EQUAL
           LI      R3,VOL5         ;LOAD ADDRESS OF VOLUME 5
           CLR     R6              ;CLEAR REGISTER
           MOVB    @SPACE,*R1+     ;MOVE A SPACE TO STRING
#2         MOVB    *R3+,*R1+       ;MOVE BYTES TO STRING
           INC     R6              ;INCREMENT REGISTER
           CI      R6,8            ;COMPARE TO 8
           JNE     #2              ;JUMP IF NOT EQUAL
           LI      R3,VOL9         ;LOAD ADDRESS OF VOLUME 9
           CLR     R6              ;CLEAR REGISTER
           MOVB    @SPACE,*R1+     ;MOVE A SPACE TO STRING
#3         MOVB    *R3+,*R1+       ;MOVE BYTES TO STRING
           INC     R6              ;INCREMENT REGISTER
           CI      R6,8            ;COMPARE TO 8
           JNE     #3              ;JUMP IF NOT EQUAL
           B       *R11            ;RETURN TO PROGRAM
SPACE      .ASCII  " "
           .END
```

THIS AND THAT

by Herb Schlesinger
(Reprinted from the Newsletter of the
Great Lakes User Group, Inc.)

One of the best programs available to the TIer is found
in the Funnelweb package. It is called "DISK REVIEW".
The NAME of the files are DR and DS. If you have 80
column capability change the names of DR80 and DS80 to
DR and DS and save the original files as DR40 and DS40.
Enough of the technical stuff! Just what does this
program do for you?

First, it is a Disk Manager. That's right! you can
format, validate, rename, or sweep a disk, or recover a
file. There are some features on the right of the
screen having to do with ramdisks which we can go into
later. It also is a Disk Directory and a Sector Editor.

When the screen comes up after loading Funnelweb, select
"TIWriter", touch the spacebar to move to the
Programmer's menu and punch #8, which selects Disk
Review from the menu. You are offered a choice in the
left hand box: Dsk Dir<1-9>; Colors <0>; D-Util <D>; Fnl
Web <F>; Exit <c=>. When <D> is pressed, the
Disk/Ramdisk Utilities are offered in the main window.
Between the two columns is a cursor which looks like two
Greater-than marks, "<<-". This cursor is controlled by
the E and the X keys as indicated in the left box. Also
in the left box you are informed that to return to the
disk directory and file options you must press the <ESC>
key [f9].

In the bottom boxes you find the name of the disk, the
drive number, used and available sectors, the file count
and the page number of the directory. These are blank
unless you entered that mode with a disk in the buffer.
On the right hand side are given the WF (work file)a
drive number, the Object file (OF) drive number and the
primary file (PF) drive and file name. All this is
covered by a window which opens when <ENTER> is pressed.

To format a disk, set the cursor to "format" and press
<ENTER>. Insert the drive number to be formatted. When
<ENTER> is pressed you will have a query in the window.
You are asked the number of sides: S or D; next the
density desired: S, D, or Q; and then a name is asked
for. It is not necessary to use a name. At <ENTER> the
program takes charge. When it is finished it asks
whether you want to verify. <c A> or <f6> will cause
the program to check every sector and list out any bad
sectors and the number of them. Pressing <ENTER> will
set things up for another disk to format. Pressing
<BACK> [f9] will return to the disk directory and file
options as previously stated.

Once the Directory Menu is reached we have a whole new
ball game. As usual the "E" and "X" keys, with or
without the <f> key will move the cursor. <cE> and <cX>
will page the listing backward or forward. Again, in

CONFIGURING FUNNELWEB
THE QUICK AND DIRTY WAY

by Patrick Powell
(Reprinted from The Newsletter of the Southwest 99ers)

First, Function 9 and Control C both act as a return mode. Second,
prompts require just a single key press and are the first letter of the
prompt name. (E for Edit, etc...). With that out of the way let's
configure away!!!!!

Loading: Load configure (filename CF) either from main Xbasic screen or
OPT #5 from E&A module. The first screen will be the Configure title
screen. Already you have 3 options to contend with: First, is ? which
pops up a help screen. This command will also work at all screans
where you must make a choice. Second, Function 7 will, display a
Disk Directory of a drive. And, finally by hitting any other key
you'll get to the next screen. (NOTE THIS IS A STEP BY STEP
INSTRUCTION. If you need more info I suggest you read the docs from
the Funnelweb package.)

Sysinfo
Next you choose between I and Edit Save. Load the info into memory.
You will be prompted for the location of the SYSCON file. After this
is filled in correctly, hit enter.

Edit.... AND NOW THE FUN STARTS !!!!!!!!

Loading this will bring up a window for changing the loading info
for Funnelweb.

Boot Loading is used if you want Funnelweb to follow the disk
drive from where you loaded Funnelweb originally. If you intend for
Funnelweb to only look for specific files on specific drives then you
B until OFF is displayed.

TI-Writer Side and EA Side. These #'s should correspond to
the drive that Funnelweb files are located on. If the TI-Writer files
are on a separate disk than the EA files then correct the # for these
drives. If both sets of files are on the same drive then use the same
for both prompts.

Working Drive. I usually leave this blank

Immediate. This tells Funnelweb how a return to Funnelweb is
wanted when coming back to the Funnelweb environment (i.e., returning
from DSKU or DM-1000). This also is how Funnelweb is entered when you
load Funnelweb from E&A (using FW or UTIL1 as the E&A loader). Hitting
I cycles through 3 choices. 1: DR reloads Disk Review
immediately. 2: UL loads the UL list that you create. 3: FW loads the
TI Writer Menu. Choose whatever you like.

Hard Disk path is if you have a Hard Drive. Now go back
(Control-C or Function-9).

Devices: This is where you set up your printer and files names.
Edit Printer sets the parameters for the PF command of the editor

as well as the P command of Disk Review. Format Printer sets the
parameters for TI Writer. (I use PIO in the Editor and PIO.LF in the
formatter.) I generally leave Object File and Program File
blank.   For Work File I enter DSK2 so that when I do SF from the
editor all I need to enter is the filename. Put whatever you like
here. After you finish here Control-C or Function-9.

Colors sets up your screen and character colors for Funnelweb.   I
like the ones that came with Funnelweb. I left mine alone.

Menu: TI Writer. This sets up the TI Writer menu screen.
You have the choices of Edit, Back, Redo,
Next is the remaining menus: Edit allows you to change the
info. Redo returns the bar to the top of the menu. Back
moves the bar up one space. Next goes down one space. Remember
these files must be E/A loaded and the actual filename should be 2
characters long. Edit title name. Then hit <enter>. Next,
enter Filename <enter>. Finally, use arrow deys to move the bar to the
program type that loads your file. Then hit <enter> again. FYI
ANYTHING THAT YOU WANT TO APPEAR ON THE F COMMAND OF DISK REVIEW SHOULD
BE IN EITHER THE TI WRITER MENU OR THE E/A MENU. After you have made
the changes you desire, go back and choose E/A menu. Make
changes in the same way as above. Then go back twice to come to the
selection screen.

Main Menu. This is where you can change the Main title screen.
Also, this is where Extended Basic Programs load from. Now you are
given a couple of new options. You first should Fetch the old
menu. You will be prompted for the location of the LOAD Program for
Funnelweb. After this is loaded you can Reserve, which puts into
memory the original menu. Xchange allows you to go back and
forth between the menu you are editing and the one stored in memory.
E brings up the menu. Using the arrow keys, you can scan down
the menu and when you come to something you want to change, press
Edit. Now the first thing you need to do is to create a title
name for your file (I'll us DM-1000). Press <enter> and you need to
choose Boot tracking. If OFF, it will require you to specify
what drive the file will be located in. If ON it will boot from the
drive Funnelweb was loaded from. Hitting Reminder will cycle
between YES and NO, i.e., if you answer YES, then Funnelweb will ask
you for the disk to be inserted for this program every time you try to
load it (handy for those who have one drive or more than one Funnelweb
disk). If the answer is NO, then Funnelweb assumes that the file is
located on the disk that Funnelweb is Booted from. <Enter> moves you
to the next part.

Enter the Filename for this particular file. E.G., using DM-1000, I
would enter MG if Boot Tracking were on, or DSK#.MG where # is the
drive that the MG file is located on if Boot tracking were off.
Notice, if Boot Tracking is on, there is no need to enter the DSK
prompt. Now you use the arrow keys to move the bar to the file loading
type. When you are in the correct area (E/A Program for my MG file),
hit <enter>. Note, only in this menu can you access the XBasic Loader.
When finished, use Control-C or Function-9 to go back.

UL List: This will allow you to change the UL file as well as
create any other UL file that you wish. The directions are the same as
for the XB menu except you must Fetch each list individually and

must Save each list individually. By creating more than one UL
file and giving them different names you can string them together Using
Next list as a File and calling the next file. Again, only E/A files
can be loaded from this file. Remember to Save each list. After
you are finished with the UL and saved the UL file(s), Control-C or
Function-9 until you return to the Sysinfo Menu of Edit,
Load, Save. Now, you will want to Save the changes,
so hit Save and fill in the prompt for where the SYSCON file is
located. (Note the SYSCON file should be on the Main Funnelweb disk
but after you are through configuring you can leave off the CF and CG
files to conserve disk space). Hit <enter> and wait for the screen to
come back to the Sysinfo menu. Now Control-C or Function-9 to the
Save, Quit, and Install screen and Hit Install.
You now will be asked for XB-Load or FW/UTIL1-Load. Main XB and
enter where the LOAD file is <enter>. Then when the targetted filename
is requested hit <enter> again. When this is through, you should save
the information to either a FW or Util1 file for E/A loading of
Funnelweb. If you choose not to then Control-C or Function-9 and hit
Quit. Then reset the computer and reboot Funnelweb and see if it
all works well.

This text was written as a brief quick and dirty outline for
configuring Funnelweb 4.31 and by all means is not a complete tutorial.
Basically, I wrote this as a companion to my demoing the Configuring of
Funnelweb for our Users Group. If any other group wishes to reprint
this then go for it. All I ask is for proper credit and a copy of the
newsletter that this is printed in.

Good Luck and for more info, read the Funnelweb docs. ALSO PLEASE
SHOW SOME $$$$$ SUPPORT FOR THE AUTHORS OF FUNNELWEB: WILL AND TONY
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