VOLUME 2 NUMBER 5 MARCH/APRIL 1984

ADVANCED COMPUTING™

FORMERLY TWO/SIXTEEN

The journal for business, professional, and scientific members of the TRS-80 community

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NOTES&COMMENT NOTES&COMMENT

What's up?

Our change of name from two/sixteen to Advanced Computing has been well received. Total active subscribership is approaching 6000, and membership in the Advanced Computing Service is about 300. While these numbers remain below our financial break-even point, we expect that planned promotions and other activities will get us there this year. Meanwhile, our cash flow is satisfactory.

We had indicated that Advanced Computing would cover the Tandy 2000. However, further reflection indicated that (1) the 2000 is not much like the II, 12, and 16, (2) there does not seem to be a magazine for Intel-chip based machines that is (a la Advanced Computing) primarily intended for business, professional, and scientific users, and (3) the better (than IBM) machines are getting short shrift in the Intel-chip mags that do exist. Therefor, this summer we are launching a new magazine, titled Intelligent Computing, to serve that market. There'll also be an advanced service available for more involved users.

There will be a little overlap between Advanced Computing and Intelligent Computing, and we will recognize this by offering a special lower subscription rate for those who subscribe to both magazines. A similar discount will be available to those who take both advanced services.

Because of this new publication, and because of the considerable additional work required for the Advanced Computing Service, we've been adding quite a few members to staff. It has been difficult to locate technical help here in Lancaster (computers have been a little slower to catch on in this area than in some others), but we have finally succeeded in hiring four additional technical personnel. Our total staff is now about fourteen, and we expect this number to reach about fifty this year. To house this staff, we are planning to purchase a building for office use about mid-year. In the meantime, we've rented another small office nearby to handle the immediate overflow, although parking will continue to be a major problem until we move.

It has been our avowed intention not to allow more than 40% total advertising pages (in Intelligent Computing we'll set the limit at 50%), and we've never approached this limit due to our small circulation and the fact that we've never pushed advertising as a primary support for the magazine. Some magazines have become impaired due to inordinate dependence on advertising instead of subscriber support.

Advanced Computing Service

Due to delays in locating additional staff, the Advanced Computing Service is late in getting off the ground. Our original intent was that the service be on a calendar year basis. However, due to the late start, we will consider all initial subscriptions to be on an April-March basis. The initial newsletter will be mailed in March. Binders, reprints, diskettes, indexes, and software directory research are all under way, and specific schedules will be included in an early newsletter. Based on early results, I'm convinced that members of the Advanced Computing Service are going to be very pleased with the usefulness of the material they receive. We've offered the service to Tandy at a special very low price (about marginal cost) if they are willing to order it for each Computer Center. We believe that this service would be a great help in selling Model 12 and 16 micros.

We need Model IIs

Due to the expansion of our staff, we need several more Model II micros. We'll pay $1200 each for used machines in good working condition shipped in original cartons only. Please contact me or Mark Ingoglia at (717) 397-3364. We will also consider secondary 12 meg hard disks at $1100, primary 12 meg hard disks at $1700, and Model 16As at $3000.

New York City area consultant

One of our more prolific editorial contributors, Arnold Fischthal, offers custom software and software modification for all TRS-80 business micros, both floppy and hard disk. He is now specializing in Xenix systems as well. Contact him at Advanced Data Design, 184-08 Tudor Road, Jamaica Estates, NY 11432, or call (212) 380-0124.

Sit in comfort on one of our superb chairs

As a sideline, we have been offering Data-Mate furniture in the magazine. Our main reason for doing so is to make available this first-class line of furniture to subscribers who may not otherwise be aware of it, but we haven't sold very much of it. We use only Data-Mate furniture for all uses to which it applies. In fact, all of our office chairs, except one older one, are Data-Mate. This type chair, which can be adjusted four ways while one is seated in it, significantly increases the comfort and productivity of office staff. We like the chair so much that we will offer it in The New Yorker soon, at the following prices (including delivery in 48 states):

Quantity	Chair	Add-on arms
1	$400	$75
2-9	375	65
10 up	350	55

For a limited time, we are offering these chairs to Advanced Computing subscribers in single quantities at the 10-up price. Available in anthracite or mocha. Usual delivery within two weeks of order. Fourteen day money-back satisfaction guarantee. Ninety day warranty against defects. Call (717) 397-3364 to order. You have nothing to lose but your backache!

Tandy 2000

At the Softcon Show in New Orleans, Tandy announced two new spreadsheet-based programs for the 2000. They are SuperCalc 3 and Lotus 1-2-3. As with Multiplan on the 2000, these programs make use of additional installed memory (which is not the case with Multiplan on Model 16 Xenix). SuperCalc 3 is $395 while Lotus 1-2-3 is $495. Both will be available later in 1984.

80 Micro has announced that it will introduce in its May, 1984, issue a new monthly section devoted to the Tandy 2000.

Xenix books

We've mentioned them before, but here they are again. If you have a XENIX system, you probably need some more books on UNIX (we can always use more, anyway). For a single copy or quantity purchases, most UNIX books are available from:

Gene Hansch
The Cucumber Bookshop
5611 Kraft Drive
Rockville, MD 20852
(301) 881-2722

We continue with Xenix

We're currently testing Scripsit 16, Profile 16, and Multiplan on our Xenix maximum system (16A, one meg RAM, nine user capability, two 12 meg RS hard disks). Two non-Shack Xenix products have also been obtained for review. They are EMACS, a full screen editor, and LEX68, a word processor. Versions of these two programs have long been used on larger computers.

Profile 16 has an odd omission: it is not possible t load ASCII files in SDF (standard data file, that is with data organized into fixed columns) format directly into Profile. This is essential if existing data files are to be loaded, as from purchased mailing lists or dBase II, for example. We called the Small Computer Company (Profile's authors) to ask if there was some way to do this. They responded that there wasn't but that it seemed like a good

idea. From my viewpoint, Profile 16 is next to useless until such a feature is added. We're certainly not going to re-key tens of thousands of entries to get them into Profile.

We should be able to reach opinions about some of these packages by the next issue. In the meantime, we'd like to hear from others who are using these and other Xenix programs. Also, please let us know about any other non-Shack Xenix programs that you use or hear about.

High speed (300+ LPM) printers

We're getting more calls than ever these days from people who need faster printing than is available with the typical micro "line" (really character) printer. If lines average 60 characters, a 120 cps printer can produce 120 lines per minute flat out. At 132 characters per line, as in 4-up mailing labels, a 120 cps printer will produce only 54 lines per minute. Printing 50,000 labels would take over four hours. However, envision a "true" line printer (one that prints an entire line, rather than a single character, in each printer cycle). A 300 line per minute printer would print 50,000 labels in less than 42 minutes (or a 600 lpm printer, just over 20 minutes). Printers of such speeds are now readily interfaced with just about any micro. At higher print speeds, prices for dot matrix or fully formed characters are about the same ($4000-$6000 for 300 lpm; $6000-$8000 for 600 lpm).

Data Products printers are (in my opinion) among the most reliable fully formed character printers available. (One of our subscribers bought a 300 lpm Data Products printer last year and connected it to a Model II with floppies. I understand that the II drives it at full speed.) They are available from:

Computer Maintenance Corporation
22 Fifth Street
Stamford, CT 06905
(203) 325-3514

or

Printer Warehouse, Inc.
P. O. Box 2120
Westport, CT 06880
(800) 243-3160

One of our readers recommends Printronix P300 and P600 dot matrix printers. You can obtain the name of your local distributor from:

Printronix
17500 Cartwright Road
Irvine, CA 92713
(714) 863-1900

BASTOC

We have been promised a "pre-release" review copy of this BASIC to C language translator, and hope to be able to develop a preliminary opinion about it by late April. If it turns out to be efficient and easy to use, it may be the salvation of the many who went to XENIX MBASIC only to find much slower performance than even the TRSDOS BASIC interpreter provided.

CP/M developments

Both Aton and Pickles & Trout have recently announced new versions of their respective CP/M operating systems which support the 15 meg Radio Shack hard drive. Both systems feature programmable function keys, translatable keys, screen print, better documentation, and numerous other improvements. In general, both of these CP/Ms are similarly enhanced, but each has some unique attributes.

Aton CP/M 2.25 includes a new utility which allows bi-directional transfers between CP/M and TRSDOS 2.0 diskettes. Also, bank switching is available to increase processing speed significantly in machines with at least 96K of available memory. Top of the line version is available for $374 from:

Aton International, Inc.
1765 Scott Boulevard, Suite 119
Santa Clara, CA 95050
(408) 554-9922

Pickles & Trout CP/M 2.2mH-RSHD comes with the VEDIT full screen editor. It also has a comprehensive menu system which can be invoked automatically for the neophyte or ignored altogether by the sophisticate. It is available for $250 from:

Pickles & Trout
P. O. Box 1206
Goleta, CA 93116
(805) 685-4641

Model 100 Disk/Video interface

Many of our readers own Model 100 portable micros as adjuncts to their Models II, 12, or 16. Radio Shack has just announced a Disk/Video (What is the quotient of Disk divided by Video, anyway? Why can't we just use the simple English "and" instead of the cute but obfuscating "/"?) interface which includes the following functions:

1. Floppy disk drive (5 1/4") interface, which can control up to two disk drives.
2. Floppy disk drive unit for single-sided double density diskettes allowing maximum storage of 184K per diskette.
3. Video interface for use with a standard video monitor to display 25 lines of copy by either 40 or 80 characters per line, as selected by the user.
4. RF converter to permit connecting the Model 100 to any standard TV, displaying 25 lines by 40 characters.

Screens can display all Model 100 characters, but dot graphics are not supported.

The Disk/Video Interface (26-3806) sells for $799 and the optional second Floppy Disk Drive Unit (26-3807) is $239.95.

Tandy Computer Business Users Group

The second annual Tandy Computer Business Users Group Conference will be held on April 2-4 at the Americana Hotel (in the Tandy Center) in Fort Worth, Texas. The pre-registration fee is $90 for members, $120 for non-members (at the door, $100 and $140). By the time this reaches you, it will probably be too late to attend. If not, and you wish to attend, get particulars from:

Carroll Reeves
Director Special Markets
1400 One Tandy Center
Fort Worth, TX 76102
(817) 390-2766

Yours truly plans to attend, although I must say in candor that the TCBUG has been conspicuously dormant since the last annual meeting and is managing a convincing imitation of a Tandy-controlled group (though I'm sure that none of the members really want it that way). The problem seems to be that the senior positions in TCBUG are filled with people who like the titles but simply can't spare the time to make TCBUG useful. We offered to provide space for a TCBUG column, but only a single one has been forthcoming in the last year. The current "editor" won't even return our calls. It seems appropriate to replace all of the existing TCBUG officers with others who will take a public oath (notarized copy to their boss at their regular job) to fulfill their responsibilities and not expect Tandy to do it for them.

Friendly Menu is an effective tool to combat computer language-induced frustration and aggravation. It allows you to translate "computerese" into your own words and easily access your TRSDOS programs.

ARE YOUR MENUS FRIENDLY

BY BRUCE V. BATES

Much has been said about user friendly programs and user friendly computers, but what does this mean? Since I know of no formal definition of user friendly, I will supply my own: "User friendly is that quality which makes an object, process, or program sufficiently easy to use so it is simple, uncomplicated, and understandable to the person of average intelligence."

Friendly Menu, by Custom Computing Company, Inc., is just such a program for TRSDOS users. It was written especially for computer operators, not computer programmers. Computer operators can now assign more meaningful, logical alternate names to programs on the system than those assigned originally.

Certainly there is nothing wrong with having the main payroll program named "PY101001/BAS.PSWD". But it is not the kind of name that would tend to stick in one's mind. Wouldn't it be easier to select the name "WEEKLY PAYROLL STARTUP" from the menu which, in turn, invoked "PY101001/BAS:PSWD"? Friendly Menu is the program to do just that.

Friendly Menu allows you to create your own menus and assign alias names for any program you wish. It works equally well with BASIC programs, machine language programs, and DO files.

The power within Friendly Menu is a feisty little editor built into the program. A blank menu is provided for the program names and their respective aliases. The editor requires little effort to use, and recognizes all its commands from single keystroke entries.

The on-screen cursor is controlled by the arrow keys, allowing you to position the cursor on any entry in the menu. Other functions are controlled by the <F1>, <F2>, and <ESC> sequence keys. A status indicator on the menu screen constantly indicates which mode Friendly Menu is in. Auxiliary functions of the editor include the ability to sort the menu in alphanumeric sequence and examine the directory of any diskette that is currently on-line (without leaving the editor).

Program passwords are well within the scope of Friendly Menu. If passwords are required, Friendly Menu will ask you to enter them. Friendly Menu also looks for the program to be invoked and indicates if it cannot be found.

Another feature of Friendly Menu is a backup reminder facility. You tell Friendly Menu when you want to do your regular backups, and it will remind you when that time has come. Even if you choose not to use the backup facility, you must still give Friendly Menu a day for backups. To defeat the backup reminder, use the editor's "Change Disk/Days" facility to change the day previously entered to blanks.

Friendly Menu gives a program an alias instead of renaming it. To my knowledge there is no other way for one program to have more than one name. Another unusual feature of Friendly Menu is the ability to write dummy modules and test existing modules within the same system simultaneously. For example, if three modules within a six module system have actually been written and are being tested, the remaining three modules could be written as dummy modules which return to the menu automatically. As additional modules become available, the entries can be changed to reflect their completed status.

If it appears that Star Wars has taken over your machine while using Friendly Menu, don't panic! Constant display of any image on a CRT causes a burning of the phosphors on the inside face of the tube and a loss of resolution. Therefore, if Friendly Menu gets no user response for 60 seconds, it reverts to displaying a random pattern of blinking characters to let you know it is still alive. To return to the menu screen, press any key except <Enter> or <Break> and processing will resume exactly where you left off.

Being a programmer myself, I was not initially excited about the concept of Friendly Menu. However, I soon realized it would eliminate the menu driver program in a small system I was developing.

Friendly Menu gives the computer operator with no programming skills the opportunity to interface with the system. This consideration should be kept in mind by others who wish to write utility type programs in the future. Make it easy on the operator, and he will make it easy on you!

Friendly Menu meets all its published and documented expectations, and then some. I am certain that creative people will find additional uses for this powerful menu processor.

Friendly Menu is available for the TRS-80 Models II/12/16 from

Custom Computing Company
34 Scenic Hills Drive
Poughkeepsie, NY 12603
914/471-9318
Floppy Version: $69.95
Hard Disk Version: $89.95

ANNOUNCEMENT

In an effort to bring the publication date of *Advanced Computing Magazine* more into line with other bi-monthly magazines and to accommodate the requests of our many subscribers who have asked us to do so, we are changing our deadlines. This change will result in the magazine reaching our subscribers during the first week of the first month of the cover date; i.e., the May/June, 1984 issue of *Advanced Computing Magazine* will be in the mail before the end of April.

Up until now, our schedule was arranged so that the magazine was mailed before the last day of the first month of the cover date; i.e., this issue (March/April) of the magazine is scheduled to be mailed before March 31.

For those of you who write for and those of you who advertise with *Advanced Computing*, this will mean some important changes regarding deadline dates. Starting with the July/August 1984 issue, the deadline for submitting articles and reserving ad space will be the 15th of the second month preceding issue date. This means the deadline for the July/August 1984 issue will be May 15; deadline for September/October will be July 15; and deadline for November/December will be September 15.

As a result of this schedule change, the deadline for the May/June issue has already passed (it was March 15). To our repeat advertisers, this change will not affect you in any way. To any new advertisers interested in the opportunities provided by advertising in *Advanced Computing Magazine*, you can contact Bill Holland, our Director of Advertising and Circulation (717/397-3365), for any further information you may need regarding this next issue.

ADVANCED COMPUTING DEADLINES FOR THE REMAINDER OF 1984

Jul/Aug issue	Deadline: May 15
Sept/Oct issue	Deadline: July 15
Nov/Dec issue	Deadline: September 15

What Will The Future Bring?

COMING UP

Future issues of *Advanced Computing Magazine* will include reviews of the following products. These software offerings are either being evaluated here in our editorial offices by technical support staff, or they have been sent out to competent reviewers "in the field."

Look for reviews of these products in upcoming issues.

EMACS, from UniPress Software, a full-screen, multi-window text editor.

LEX68, also from UniPress Software, is a menu-driven, interactive word processor with full screen editing and scrolling.

SPOOLUTIL and USERMENU, XENIX utilities both from Software One. SPOOLUTIL allows the manipulation of reports waiting for printing in the spool queue. USERMENU allows the user to perform XENIX functions by making menu selections.

SNAPP BASIC for XENIX.

P.M.S., a Project Management System from Piccoli & Sons, Inc. in Esmond, RI.

BIBLIOGRAPHY, from Digital Marketing, compares citations in a manuscript with the keynames of entries in a library file and constructs a bibliograph of all entries cited.

FORTRAN 77 From TriSoft.

FOOTNOTE and PAIR, a dual package from Digital Marketing. FOOTNOTE numbers and formats notes in a WordStar text file. PAIR checks a WordStar file to assure that print control characters, quotation marks, parentheses, and brackets are properly terminated.

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M/C VISA ACCEPTED.

If you use one of the XENIX editors, like ed or vi, in combination with nroff, the automatic file formatter, you'll be able to perform powerful and sophisticated text processing on XENIX. You may like these capabilities so well that you decide to pass up SCRIPSIT 16 when it appears in favor of this built-in combo.

THE SCENERY IN XENIX

BY JOHN ESAK

I delayed completion of this article for as long as possible, hoping that Scripsit for XENIX would be released before deadline (February 15). Unfortunately, it wasn't.

At the January UNIFORUM conference on UNIX in Washington, I tried out Scripsit 16, and it looks super. I used it in single-user mode, and I've been told by John Roach, President, Chief Execuive Officer, and Chairman of the Board of the Tandy Corporation, that three users can use it simultaneously with no noticeable delay. I needed a little coaching to run the package since the commands are not really similar to single user Scripsit, and I needed to adjust my expectation of the usual scrolling mode, but it seemed I could get used to this new program.

However, multi-user Scripsit isn't here yet, so let's look at some of the real, here, and now features of XENIX.

XENIX might have been more aptly named "Scenix" since it is not only the tree structure of organization that everyone knows as the root file system, but whole forests of unexplored territories, as well. I'll be your guide to lead you down some of the paths I've discovered in XENIX.

These explanations are only meant to direct and inspire you to experiment yourself; they are not intended as a solid step-by-step tutorial.

A trip to the word processing region is most necessary. Many people have not journeyed there because they're waiting for Scripsit to be delivered. That's too much waiting for me, so I plunged on.

The Editor

Let me give a brief rundown of some of the more useful commands for the line editor, ed, so this area of the XENIX environment will look more like a word processor to you than it might at present.

If you invoke ed with a filename, for instance

ed test

it will grab the file named "test," display how many characters are in the file, and await instructions. If you want to change the filename, type

f newname

The file name has been changed from "test" to "newname". Now when you issue a w command, the file will be written to "newname."

If you forget the name of the file you are working on, use the f by itself; ed will respond with the filename currently in the buffer.

If you have finished editing and writing a file and want to get another file into the buffer, the command

e filename

will do it. This clears the buffer and brings in the requested file.

The command

r filename

will grab the specified file and place it into your buffer at the line you requested. The data from "filename" will not appear on the screen, but it will be there. For example, if you have a 5 line file and are currently on line 6 in the command mode (not entering text), and you issue

r filename

ed will take "filename" and put it in the buffer starting at line 6. If you use the command

1,$p

to see what is there, ed will show you your first 5 lines; then the requested "filename" will begin at line 6.

Aside from the necessary a, i, and d commands, ed has several other utilities which make it a pleasure to work with. One I use often is the "switch" command:

s/oldstuff/newstuff/

Switch finds the string "oldstuff" on the current line and replaces it with the string "newstuff".

Then there is the "change" command which replaces any number of lines with any number of new lines. A file containing names and addresses might contain a typical entry:

Person's name
Street address
City, State Zip
Phone number

If you need to replace lines 2 through 4 with a new address and phone number, here's the command to make the change:

```
2,4c
New street address
New apartment number
New City, State Zip
New phone number
```

Note that you've replaced two lines in the file with three lines of new data. The change command will replace the specified lines with any number of new lines until it encounters the . (period) at the beginning of a line, ed's signal to end a command. The new file now reads:

```
Person's name
Street address
Apartment number
City, State Zip
Phone number
```

In other words, c puts you in an "append/insert" mode. You can, of course, enter a number of lines less than the number of lines you're replacing. Ed will renumber the new lines and all others accordingly.

Ed has a one line option that allows you to say, for example, 3,3c and only line 3 would be removed, with additions starting at line 3.

Also, c by itself replaces the current line and goes from there.

The most often used command is the "move" command. It is used much as the others.

3,12m26

will move the text from lines 3 through 12 to after line 26. It also has all the "text-scaping" variations of one line moves, current line moves, etc.

Vi

The best shortcut through the text processing woods is a full screen editor which allows you to see what you are working with rather than having it hidden in the buffer until you summon it. The XENIX offering in this area is "vi".

The vi editor, in combination with nroff and troff, is the way most of the documentation for UNIX/XENIX was created. (troff is similar to nroff except that it can directly control typesetting equipment, with font changes, etc.) The average UNIX user feels naked without vi/nroff.

The vi editor is actually very well documented by Radio Shack and can be learned by patient practice. I cannot presume to give you a better tutorial than the one in the XENIX Fundamentals manual.

To see some of the options available to you as startup parameters for vi, invoke vi and type

:set all

This will present you with an interesting list of switch type functions for default formatting (plus various aids for the vi user). These options are used in either of two ways. They may be put either into the .exrc file which is read by vi as it is invoked, or they may be entered as commands after a : (the colon invokes ex command mode).

The vi editor, in combination with nroff and troff, is the way most of the documentation for UNIX/XENIX was created.

Use "set option" to turn on the functions and add the prefix "no" to the option to turn it off, e.g., :set wrapscan and :set nowrapscan.

Study pages 6-48 to 6-53 in the TRS-XENIX Fundamentals manual for a better understanding of what is going on here, but there are better books available on the vi editor (see book list at the end of this article).

NROFF

The combination of nroff, the file formatter which resides in XENIX, and one of the editors, like ed or vi, makes a very powerful word processing system. In general, nroff takes any file you give it as input and filters it according to your specifications. It can take what may look like a garbled mess of words, sentences, and commands and turn them into perfectly formatted pages with proper spacing, justified right margin, tab settings, etc. How does it do this? By following commands or requests you insert into the text.

The most important thing you can do to begin using nroff correctly is to start each sentence on a new line. Also, do not hyphenate. You don't have to insert the formatting commands while typing, either. They can be added after the fact. This procedure may sound a little strange at first, but you will see why it's the best approach to this type of word processing.

Nroff determines that something is a "request" and not text to be printed when it finds a "." (period) at the beginning of a line, followed by the named request with arguments, if any. For instance

```
.ll 50
```

would be interpreted by nroff as a request and not text. .ll 50 tells nroff that everything from that point on should have a line length of 50 characters (65 is the defaulted line length).

Usually the requests have names which represent in some way what they do, i.e., .pl 55 signifies a page length setting of 50 lines per page; .po 10 indicates a page offset (left margin) of ten characters.

Nroff has a tab request that works like this:

```
.ta 8 17 23 35
```

This command will put tab stops wherever you specify, in this case 8, 17, 23, 35. You may request as many stops as you like; just press the tab key as normal to use them.

The more useful tab types are provided by nroff. There are tabs to center text about a point and tabs to decimal align tabs. Decimal aligning is actually done with a right justifying tab whose format tab request is:

```
.ta 8 20R 40C
```

This gives you a right adjusting tab at 20 and a centering tab at 40 (8 is a regular tab).

Do not assign all your tabs at the beginning of a document! This removes the real flexibility provided by nroff of positioning different tabs for different tables, etc.

Once you have tabs set, you can fill the intervening space between columns of figures with a series of periods by inserting a <CTRL> A instead of a tab. This is used mostly for price lists, tables of contents, etc.

All nroff requests do a specific de
They may be inserted anywhere in
document as long as they come before the text you want affected. Commands such as these can be grouped together provided there is only one command per line.

.ll 60
.pl 50
.po 10

These requests would cause nroff to format a document with a line length of 60 characters, a page length of 50 lines, and a left margin of 10 spaces, giving you a fairly standard page layout.

When a series of formatting requests, like this one, is given a name and stored as a group, it's called a "macro." Macros provide the real power of nroff. There are some macros that will, in one sweep, format your files with everything they need, including chapter headings, page numbers, alternating footers, indented paragraphs, corrected spelling, and much more.

But for now let's slow down and get a few more simple requests under our belt.

Now would be a good time to log in and try some of these commands as we go along. To begin, edit a file named "test" to read as follows:

This is a very long and cumbersome line of data which I am going to put together into an 'nroffed' article test sequence.
I will try and manipulate it as much as possible.
There will be lots of other stuff put in here such as requests and macros and if there isn't a wrap around, I will go crazy.

Be sure each of these three sentences begins on its own line; don't break any words at the end of a line; don't hyphenate; don't indent; and don't use the <CR> except when you begin a new sentence (let vi wrap the lines).

Cat the file to see what it looks like; you should see a group of three sentences with ragged right side. Now type

nroff test

and watch what happens. It jumped off the screen! That's because nroff didn't see any requests and defaulted the output to 66 lines per page. To remedy the situation and to see it on your screen, edit the file to have the following as the first line:

.pl 22

Save the file and return to your $ prompt. Now if you type

nroff test

you will see the file on the screen as it would be printed if you directed it to the printer. Pretty slick huh? Now go into the file and insert the following before line 1:

.ll 22

Line 2 will become .pl 22. But watch what happens when you go back to the $ prompt and type

nroff test

The new line length is now in effect. Of course you haven't re-typed your file; you've just formatted it differently! Nroff formatting commands can be placed anywhere in a document so that each paragraph is treated differently when it gets printed out.

But what has actually happened here? Why did it justify the right margin? We didn't tell it to do that. This is the result of two of nroff's defaults: "filling" and "adjusting." The first thing it did is called filling; i.e., it tried to fit 22 characters per line, as we asked it to.

The second thing it did was insert spaces to adjust or justify the right margin. If you do not want adjusting to take place, use the request .na just before the material you do not want justified and .ad when you want it back again.

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Similarly, if you do not want filling to occur, you would type .nf before the designated place in the text and .fi after the last line you want treated literally (i.e., do not fill to meet the line length specification.)

Try inserting .na before the first line of the test file. When you enter

nroff test

at the $ prompt, it will print out the file with a ragged right margin.

You can mix justified and ragged right margins within a document by specifying .na for ragged (no adjusting) and .ad for adjusting before and after any paragraphs you like. Also by putting new .ll commands before and after paragraphs, you can put smaller block paragraphs within bigger ragged ones, an often used style.

If you request no adjusting, nroff will not put spaces between the words to even up the right column. However, it will still try to fill the characters to fit the requested or defaulted line length. This filling is useful, but sometimes unwanted. For instance, at the beginning of a letter, you would not want it to fill the inside address.

Mr. Fred Smith
123 Story Road
Erie, PA 19600

would come out as

Mr. Fred Smith 123 Story Road Erie, PA 19600

This wouldn't do at all, so before such things as inside addresses, lists, etc., you must issue the .nf (no fill) request, and start the filling again with .fi when you want it back.

There may be times when you do not want spaces added or phrases broken at the end of a line. A hard space will guarantee the integrity of your text; to get a hard space, type a / (backslash) just before the desired space. For instance, you would type something like

Miss/ J.H./ Smith

to have the name printed out correctly, no matter how the paragraph is filled or justified.

You can also control if and when your lines of text will be hyphenated. The default is hyphenation on. If you have a particular word that should not be hyphenated, instruct nroff to leave it the way it is by typing .nh (no hyphen). Turn the automatic hyphenation back on with .hy.

How do you get the good stuff secretaries go for like centering and underlining? Very easy, just different requests. For centering, use the .ce request before whatever you wish centered. It will center the next line of text.

If you want more than one line centered, add what is called an argument to the request. That is, if you wanted 4 lines of text centered you would type them like this:

```
.ce 4
IMPORTANT PAPER
by
Fred C. Smith
Director of Xenixology
```

All of these lines will appear centered within the line length you had either specified or defaulted to; it will ignore indents.

When a series of formatting requests is given a name and stored as a group, it's called a "macro." Macros provide the real power of nroff.

Underlining is accomplished the same way, using the .ul request. It will underline the line immediately following the command line. If you want just one word underlined, put it on a line by itself with a .ul immediately above it.

```
"It is about time that you started
.ul
earning
your keep around here!" Mr.
Smith said to Mr. Barney.
```

This example will produce text with only the word "earning" underlined.

Underlining can also have an argument, as can most requests; you can underline the next n number of lines after the request by typing

.ul n

The underline command underlines only words and characters, not punctuation and spaces. If you wish to underline everything, including spaces, you would use the .cu (continuous underline) request instead. Whoever thought up nroff had his act together.

Underlining is one of the few things that does not show up on the screen when you nroff the file. However, it will show on the actual printouts.

What about blank lines? Suppose you are putting several blank lines between sections of a long document. If you actually put the blank lines into the document (using <ENTER> at the beginning of the lines) the following terrible thing may happen. The file is printing out beautifully until it gets to a section end where there are several blank lines. Simultaneously, it arrives at the end of a page. Dutifully, nroff puts the blank lines at the top of the next page which is, of course, unacceptable.

How do we combat this nefarious act of computer stupidity? Simple, by giving it requests for blank space with the .sp command. If, for example, we have .sp n at or near the bottom of a page, nroff will either advance the paper by n lines or go to the top of the next page, whichever is shorter.

While we are on the subject, double spacing is accomplished with the .ls 2 command. Or triple with .ls 3, etc. When you want single space again, use .ls 1.

To begin a new page, you guessed it, use the .bp request.

Just a reminder: each nroff command/request must go on a line by itself, immediately before the point you want it to take effect.

The .so (source filespec) request is one of the most useful facilities of nroff. If you have a piece of text you use often, like a price list, you may read it into any file by using the .so request.

When nroff encounters the .so <filename> request, it will get the file you asked for and insert it in the text just as if you had typed it in by hand. A document might read

```
.ll 50
.pl 50
.po 10
.nf
Dear Mr. Smith,
.fi
I am pleased to offer the following pr
schedule for your perusal.
.so pricelist
I hope it meets with your approval.
.nf
Very truly yours,
Joe Jones
```

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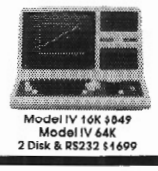
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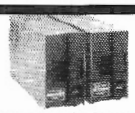
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The .so pricelist command will automatically insert the price list into the body of the letter at the location you indicated.

Did I tell you how to indent yet? You probably can guess; it's

```
.in n
```

where n = the number of characters you wish to indent a line. At the beginning of a paragraph you would put .in 5, right? No, .in indents everything that comes after it by n characters, so you need a request that only indents the first line. Use .ti n (tab index); it works. Before every paragraph, you might put

```
.sp
.ti 5
```

which would give you a blank line and then a first line indented 5 spaces.

Are you going to remember all this? It does get a bit cumbersome having to remember 500 little requests and string them all together to do the simplest things. Well cheer up, the requests I've shown you are basically the most useful ones, and there is help on the way just over that ridge.

Macros

The cavalry arrives under the name of "macros". These are little groupings of requests that you can easily build using the .de (define) command to start and .. (double dot) to end the definition. The following commands

```
.de P
.sp
.ti 5
..
```

will build a macro named P which you can call at the beginning of every paragraph. At the top of the document you would define the macro and then during the document, you would only need to type

```
.P
```

to get an indented paragraph.

Here's better news yet: you can store the macros you have defined in this document and use them in documents you will write in the future. Macro libraries are found everywhere throughout the UNIX/XENIX world. Getting a good macro library is better than getting a birthday present!

Once you have one (either created by yourself or by some XENIX guru) here's how you use it. Instead of defining the macros you want at the top of your document one by one, insert

```
.so macrolibrary
```

or whatever filename it has been given.

The power of nroff can make using a macrolibrary even easier. Nroff has the ability to format more than one document at once, so the command

```
nroff filename1 filename2
```

is valid and will give you each file in order of choice. Instead of putting the request .so macrolibrary at the beginning of your file, you can say

```
nroff macrolibrary filename
```

Nroff isn't able to distinguish between a macro file and a text file, so it will first process the commands in the macrolibrary and then apply them to the text file.

Remember when defining macros, nothing will happen if you forget the .. (double period) at the end of the definition.

A defined macro file (in this example named DOC) must look something like this:

```
.de DOC
.ll 50
.pl 50
.po 10
..
```

Of course, nothing will happen if you don't call .DOC (using the .so command) at some point in the text.

Let me give you a few more quickee hints for using the nroff utility. If you remember, adjust (.ad) is the term used to justify the right margin. .ad r will justify the left margin; .ad c will give symmetrically ragged margins. To return to normal justification, use .ad n.

The .sp request is really a request to advance the paper. Even if you are in a double spacing mode, .sp 6 wll give 6 blank lines, not 12.

Nroff is not useful for anything unless you eventually print out the document. The output of nroff must be redirected to the printer instead of the crt. There are a variety of ways to do this; some are more elegant than others. Here are two alternatives. The first and simplest is to give the command

```
nroff filename|lpr
```

If the file is under 64k characters long, this will work fine. But this type of redirection is temporary, and nroff has to go through its processing each time you want a printout.

The alternative is to have nroff dump its output into a file with the same name with a .n (or whatever) extension as in

```
nroff filename >filename.n
```

Now you have a permanently formatted version of the file that you can print as many times as you need using only the lpr filename command; this metho eliminates the need to use nroff to format the file every time you want to print out a copy.

You're on your own now in the nroff wilderness. I call it this because many of the macros provided from Ft. Worth are not clearly explained. The following is a list of some that aren't too bad. Experiment with them and others which can be found in the Text Processing manual supplied with the full XENIX Development System.

```
.PP   paragraph
.1C   Return to single column mode
.2C   Start double column format
. B   Begin boldface
.DA   Provide the date on each page.
```

The format for using these macros provided by Radio Shack is:

```
nroff -ms filename
```

My suggestion is to get quite familiar with the process before exploring these macros. Your life will be much easier.

Acknowledgements

Everyone tells you which books to g I'm telling you to get *A UNIX Primer* by Lomuto and Lomuto (Prentice-Hall). This is the one to buy for the new user with no UNIX background. I found it to be the best written and chock full of help. Another good reference and tutorial is *Introducing The UNIX System* by McGilton and Morgan (McGraw-Hill).

For those of you who want to learn C, the absolute first book to read is *The C Primer* by Hancock and Krieger (McGraw-Hill). Then tackle *The C Programming Language* by Kernighan and Ritchie (Prentice-Hall).

Invaluable assistance was gained from Mr. Frank Dupree of LCL Systems, Washington, D.C. and Mr. Jorge Gardos of Radio Shack, Paramus, N.J.

This concludes the first section of Mr. Esak's guided tour through "The Scenery in XENIX." Next time he'll give us a look at "Permissions" and "The Shell" and provide the answers to "The Three Most Asked Questions About XENIX."

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In this third and final installment of Dr. Naitoh's guided tour through CompuServe, he tells us how to UPload programs into the CompuServe data base, plus a few other things we should know.

COMPUSERVE

Become A Frontiersman In The Land Of Nighttime

BY PAUL NAITOH

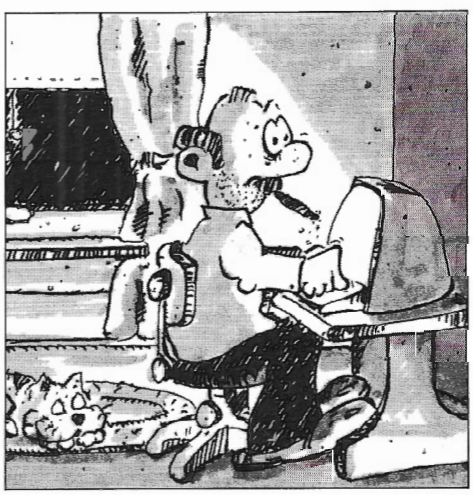
Now can a CompuServe subscriber UPload his program so it will be available either for everyone who cares to take a look or only for friends? What is meant by UPloading, anyway?

UPloading is a process whereby a program from one computer's disk file is transferred to another computer's memory through a modem so that the original program becomes available for users of other computers, such as CompuServe.

The process of UPloading your program is very simple once you know how. When UPloading, first of all, check your program carefully to insure that it is error free. Once you have UPloaded your program into CompuServe's computer, you no longer have access to it. You can delete your program from CompuServe, but you cannot copy (DOWNload) it, and you cannot modify it. Access to your own program is denied!

Why? Because CompuServe keeps a tally of how often your program is copied by other users. Once CompuServe has determined that your program is no longer being accessed by others, it will be purged to make computer space available for other programs.

Back to UPloading. Let's say you wish to UPload a program named PROGRAM/BAS. Copy PROGRAM/BAS to a disk containing VIDTEX, and then boot this disk. Use VIDTEX to call CompuServe; wait till you get the prompt, (!). In response to (!), type GO PCS-71 to take yourself into the Personal Computing Area. Eventually you will get a new prompt, <OK>.



A caution: When UPloading, your file must be in ASCII, and each line can be no longer than 128 characters.

Hit <HOLD> and <M> to get the VIDTEX "META Key Functions" menu. To load the program on your diskette into your computer memory, hit <L>. In response to the message asking which program you wish to load into your computer memory, type in PROGRAM/BAS <ENTER>. This will result in a rapid transfer of the program on your disk into your computer memory.

After a successful transfer, you will be back in the Personal Computing Area. Hit <HOLD> and <V> to transmit the program stored in your computer memory to your Personal Computing Area, a memory space of 128K set aside by CompuServe for your exclusive use. Upon completion of the transmission, you type /EX and get the prompt <OK>.

You can verify transmission as it occurs because program lines are shown one by one as they are transferred. If you wish to check on your program after the transfer is terminated, type <DIR> at the <OK> prompt. The directory of your personal computing area will be displayed, and it should now show the name of the program you just transmitted: PROGRAM.BAS. Now your program is in CompuServe's computer.

After your program has been successfully UPloaded, you want to make it available to other users of CompuServe. As long as you keep your program in your Personal Computing Area, no one can access it (unless somehow other users discover your password and break in). To make your program available to anyone who is interested, type in:

R ACCESS

where R stands for R(equest). A message will appear explaining that you are in a computer area accessible by every subscriber of CompuServe, and what public access will mean to you. For example, you are not supposed to offer someone else's copyrighted programs. Now, you type in

SUBMIT PROGRAM.BAS

to make your program available to all subscribers of CompuServe.

If you wish to make your program available for your friends only, type in:

SUBMIT PROGRAM.BAS/INV

which will make PROGRAM.BAS "invisible" to all but your friends (more about Invisible program submission later).

t takes about 24 hours to see your program copied into the Public Access Area. If you wish to know whether you really have succeeded in submitting the program, give CompuServe a day or two. Then, type:

GO PCS-46.

Once on the page PCS-46, type in:

CAT[your USER ID].

CAT gives you a catalog of your programs in the Personal Computing Area. If you have successfully submitted your program to the Public Access Area, you should see PROGRAM.BAS listed.

How can your friend download your program into his computer? Simple! Type in:

COP PROGRAM.BAS

if the program is "visible." If the program is invisible, you have to tell your friend the name of the program and your USER ID#. Then, your friend will type

COP PROGRAM.BAS [USER ID #].

For VIDTEX, your friend can use the DOW command instead of COP to download your program from CompuServe into his computer.

When CompuServe is your intermediary, you can communicate and share programs with friends who have different computers. Your friend using an Apple IIE can access CompuServe as easily as you can with your TRS-80 Model II.

Serious But Expensive Uses Of CompuServe

Many of CompuServe's services are inexpensive, but not all. For example, if you want current information about stocks and bonds, or if you wish to gain access to large statistical analysis packages, such as BMDP and SPSS, or if you want to access the large bibliographic database offered by Dialog (IOD), you're going to have to pay a high price.

Typing GO IOD-4 will place you in a database for scientists, inventors, foreign traders, and other business people. You can, for example, search information about software for your computer by asking IOD to use the International Software Database. Or you can ask for a scan of its 21 plus microcomputer magazines to find out what has been written about your computer or about your favorite software.

Interesting? Yes, but it is rather expensive. IOD is talking about $200 - $300 per search.

If you are really interested in access to bibliographic databases, I suggest that you try a direct modem link to DIALOG's KNOWLEDGE INDEX, or BRS/After Dark service.

In Case Of Emergency

In case of emergency, hit these keys!

BYE or OFF: Typing BYE or OFF at any (!) prompt will disconnect you from CompuServe.

T: If you are completely lost, type T at any (!) prompt to get back to Page 1 of CompuServe.

<CTRL><C>: If you want to get out of whatever you are doing quickly and unconditionally, hold down <CTRL> <C>. This will take you back to a menu.

R DISPLA: When you are working in a computer area with an (OK) prompt (MicroNET) and you wish to leave, type R DISPLA. You will get a menu. Respond to the menu properly to leave a MicroNET area.

/EX: To get out of the ACCESS area (after DOWNloading a program) and the FILGE text writing area (for example, when you are through writing Electronic Mail and want to get out of the text writing mode so you can send out this EMA), type in /EX.

<HOLD><A>: You are in the Personal Computing Area and transmitting a program to CompuServe, but you wish to stop sending right now as you are sending a wrong program. To stop transmission, hit <HOLD> and <A>.

This concludes Dr. Naitoh's series about his telecommunicating experiences with CompuServe. ■

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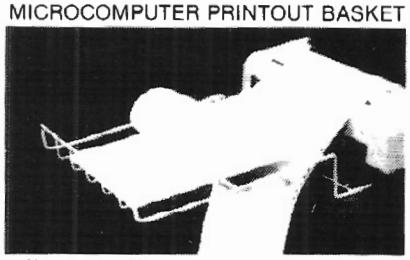

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REVIEW OF MICRO LINK II AND LYNC 3.0

BY MARK A. INGOGLIA

Bulletin boards and other services of the CompuServe genre have opened up immense data bases to the business micro user. The introduction of multi-user operating systems for micros now allows the use of older Model II, 12, and 16s to access files residing on XENIX hard drives; a communication package eliminates the need for difficult or inconvenient hard-wire interconnect. College students now have the opportunity to work on program development at home, using the speed and power of a mini or mainframe miles away on campus.

Having recognized these increasing demands for micro communication, we offer the following overview of two CP/M communication software packages, Micro Link II from Digital Marketing Corporation, and LYNC 3.0 from Pickles and Trout.

Micro Link II

When Micro Link II is first loaded, you are greeted with the usual nameplate and copyright information, and the phrase "Press any key to continue." This isn't quite true because this is your early opportunity to enter the "Setup module" without having to re-select this function from the main menus. Fundamental lesson learned: read the documentation first! To enter the Setup module, type "S" in response to the first prompt.

Once inside the Setup module, customization is menu-driven and easily accomplished. The "write phrase" option allows storage of up to nine phrases, including any instructions to a "smart" modem for automatic dialing. By incorporating the available delay sequences, the most complex sign-on codes (including control characters!) can be stored on your disk and sent with a single keystroke. Other options available from the setup menu allow changing keyboard parameters, re-programming up to four different keys, and changing the prompt character.

Exiting from the Setup module requires writing the "customization" to the disk (by selecting option "H"), or exiting to the system. If you have forgotten the assigned number of one of your stored phrases, or you want to review the contents of the phrases (and you are not currently in the Setup module), you must exit to the system, re-load the program, and re-enter Setup.

Once beyond setup, you are prompted to confirm program defaults for word size, parity, and baud rate by pressing <ENTER>. Changes from these pre-set values are made simply and quickly with single character keystrokes. These changes are not written to disk and no provision exists for storing them permanently; they must be entered each time you use the program. If your communication is limited to one type of host system, this may become inconvenient. But if you communicate with multiple host systems with varying communication requirements, this procedure is a relatively painless way to change these settings.

Micro Link II is divided into two operating modes: Command mode and Terminal mode. In the Command mode, keyboard entries go only to Micro Link II, and in the Terminal mode, you are communicating with the other end of the line. One notable exception is the <ESC> key, which is used to switch from the Terminal mode back to the Command mode. Another exception is the <BREAK> key, used to toggle the "Copy" feature on and off from the Terminal mode. The key used to initiate these functions may be re-defined if you have the need to send the <ESC> or <BREAK> characters (for example, you might need to send <ESC> when

using the "EMACS" program on a host computer).

The Command mode is used to initiate the program functions, such as "Enter Conversation Mode," "Copy," "Send File," etc. All commands are selected by number from the various displayed menus.

The four main menus are organized in a "ring" and can be viewed in sequence by successively pressing the <ENTER> key, or a specific menu may be viewed by entering "6.n" where "6" is the command "Display Menu" and "n" is the menu number. All selections are available from any of the menus, whether they are currently displayed or not, and the current values of user-selected parameters and switches are indicated to the right of each command.

Downloading data and files to your host computer is not difficult, but it does require some pre-planning. File sending options are presented on the fourth main menu, and the documentation clearly explains the meaning of each option and the method of changing them. These options include block transfer, line by line transfer, delays after characters, and carriage returns. Setting these options ahead of time saves connect time expenses.

When your host is ready to receive your data, all you have to do is type a "5" from the Command mode. Micro Link II asks if you have everything set to go, and if your response is "Y", you are prompted for the name of the file to be sent. Once the file is found, it prompts "Send Now?" Try to restrain your immediate sarcastic response and type "Y" to get things started. When the sending is complete, you are automatically placed in the Terminal mode to continue conversation with your host.

Uploading data from the host is even easier, and the only pre- planning required is to make sure you have room on your disk for the incoming data. The "Copy" toggle in the Terminal mode is the <BREAK> key, and turning Copy ON causes Micro Link II to capture all the incoming data that you see on your screen to a buffer. When you are finished receiving data, toggle the Copy OFF, return to the Command mode, and select "4" ("Close Copy File"). This evokes a prompt to allow you to name the disk file being created. Should the buffer fill up before all the data is received, Micro Link II signals the host to stop sending, unloads the buffer to disk, and prompts you to resume.

Despite an all-too-brief "tutorial," the documentation that accompanies Micro Link II is nothing less than excellent. Contained in its 88 5"x8" pages are well written, logically sequenced explanations of all the commands and features of the program. In addition, the user is provided with an ASCII-hex chart, a brief glossary, and a comprehensive topic and command index. The whole package resides in a vinyl coated plastic container, making shelftop storage very convenient.

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LYNC 3.0

Before running LYNC for the first time, it is necessary to perform an installation procedure through an accompanying file called "Patch." By typing "PATCH LYNC" you gain access to a menu driven program that allows you to easily customize the LYNC package for your specific computer. In addition to the initial installation, you may decide to make several "different" versions of the setup, changing options like the resident drive, baud rate, modem type, and duplex. By copying the original LYNC under another name (LYNC-1, for example), and pairing it with a specially configured PATCH, you would not need to change the operating parameters every time you dealt with a different host computer with unique requirements.

Once you have customized your installation in PATCH, LYNC can be invoked without concern for operating parameters by typing "LYNC."

LYNC is divided into three main modes: LYNC, REMOTE, and TERM. The LYNC mode is only used when communicating with another computer also running LYNC. The REMOTE mode is used to allow operation of your computer from a remote location. The most commonly used mode is TERM, which is used to access timeshare or other computers not running LYNC. The TERM mode causes your microcomputer to act as a terminal.

TERM is subdivided into Command and Conversation modes. The prompt "@:" indicates that you are in the Command mode. To enter the Conversation mode, press <ENTER>. (Some commands automatically place you in the Conversation mode upon their completion.) To get back to the Command mode, press <ESC>.

The commands available in the TERM mode may be displayed on the screen by issuing the command "HELP," but you must refer to the documentation for help in using the commands properly. The Command library consists of single words, some that require arguments, and some that require external files to have been previously created with the text editor. The format for these files is given in appendices in the documentation. Although the initial creation of these files takes about five minutes, it is time well spent in terms of shorter connect times.

For example, you can issue the command "CALL NM" (where "NM" is a name in your external file) and LYNC will look up the phone number, wake up your modem, and automatically dial your host. Another time-saver is available with the "LOG XX" command, where "XX" is a file name for a file that contains a log-on sequence for a given host.

File sending and saving is accomplished for different types of files (ASCII or binary) by using discrete commands dependent upon the file type and the way in which you want a file transferred. For instance, "SEND" sends a file without line feeds, "FSEND" sends a file in a continuous stream without waiting for a prompt from the host, and "XSEND" converts a file to ASCII as it is being sent out.

By typing the "PRINT ON" command, everything that reaches the display screen can be simultaneously sent to your printer without creating an intermediate disk file. Depending on your printer's capabilities, this may slow down your communication process. Extensive experimentation appears to be the only reliable way to evaluate some commands, especially when you consider that there are usually many ways to achieve the same end result, some being more efficient than others.

The "User's Manual" that accompanies LYNC is logically separated into three sections corresponding to the three main operating modes. Instead of a subject index, an appendix named "Quick Reference Guide" lists (alphabetically) the available commands in each mode, gives a brief description of their function, and then references a page number for a more detailed discussion. With a little luck, the next printing will be set in larger type.

Comparison

After much deliberation, I sill find it difficult to recommend one of these communication packages over the other. Judgment has to be made with your intended application in mind.

In terms of price Micro Link II has the edge: it sells for $99 as compared with LYNC 3.0 which sells for $155. But LYNC offers some features for the extra $56 that may prove it superior, depending upon its intended use. For example, Micro Link II offers a limited selection of baud rates, those being the most popular (300, 1200, 4800, and 9600). If you would like the option of 2400 baud, which we have found to be the optimum rate when using a Model II as an added "user terminal" on our XENIX system, you need LYNC instead. LYNC also allows output to a serial printer from within the program without creating an intermediate disk file; Micro Link II does not.

Micro Link II is available from:
Digital Marketing
2363 Boulevard Circle
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800/826-2222
Contact: Hal Miller, Sales

LYNC 3.0 is available from:
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Review Of Radio Shack's Flatbed Color Plotter And Tandy-Graph

You can use the Color Plotter from Radio Shack to create color graphics for business and personal entertainment. Pie charts, tables, maps, and bar graphs are generated using simple BASIC ASCII commands contained in the Tandy-Graph program.

BY R. CLIFFORD BLAIR

The complexities of data gathered in the course of scientific inquiries often obscure significant patterns that are best revealed through some form of graphical analysis. Since this is the case, and since the computer facilities at the university where I am employed seem to close for more holidays than the U.S. Postal Service, I decided that my research efforts would prove more fruitful if I purchased a plotter to use in conjunction with my TRS-80 Model II.

Although I knew a little about the Radio Shack TRS-80 Multi-Pen Plotter and liked what I knew, its price tag of $1,995 seemed hard to justify for my purposes. After all, the plotting facilities at the university were inconvenient, not impossible.

It was at this point in my thinking that the new RS catalog arrived in the mail. There on page 2, in living color, was a picture of the Multi-Pen plotter along with a sale price of $997.50. I quickly realized that providence wanted me to have that plotter and, after all, who am I to argue with fate?

Some two hours later I began attaching the plotter to the Model II. This turned out to be a trivial task consisting of nothing more than connecting one end of the RS-232C cable (sold separately) to the computer's serial port A and the other end to the plotter. I was ready to start plotting...almost.

Tandy-Graph

The diskette supplied with the plotter contains the operating system and a BASIC program called Tandy-Graph; loading and executing Tandy-Graph was a very simple matter.

Tandy-Graph is a menu driven program that does line graphs, pie charts, and bar charts via easy to follow prompts. It also provides a means for manual control of the plotter. Provision is also made for storing your created graphics on disk.

While the programs that make up Tandy-Graph are fairly flexible in some regards, they seem unduly restrictive in others. For example, while the line graph program allows the user to choose from nine different line types, it, like the other programs, allows for little flexibility insofar as size and positioning of labels and titles are concerned. Thus, the line graph program provides for a graph title that may contain as many as 38 characters, but fixes the size of these characters at approximately 5/16". It should be noted that the plotter has the built-in ability to produce 93 characters in 9 different sizes at 4 different angles of rotation.

The line graph program also provides for labeling of the x axis (up to 52 characters at a fixed size of approximately 1/5") and the y axis (up to 38 characters which are also fixed at 1/5"). This program also permits the user to specify the number of units to be marked off on the x and y axes and the values to be assigned to each. The plotted lines may also be labeled with the labels being placed, optionally, above or below the line.

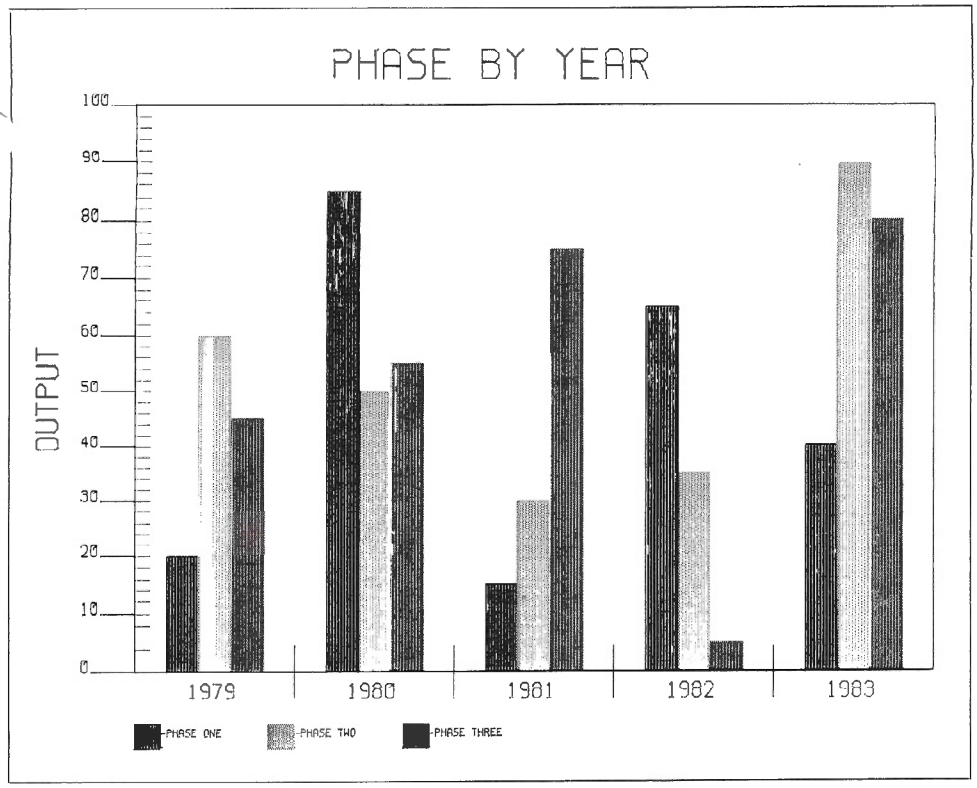
Line color is also user determined. Data are entered pairwise and may be listed after entry and corrected if necessary. As with the other programs, line graph may be stored on disk by simply answering in the affirmative when the prompt appears and then supplying a file name in response to a second prompt.

The pie chart program produces a chart with as many as 15 divisions with the size and color of each being user specified. Each section may be labeled with a maximum of 12 characters.

The bar chart program can produce as many as 20 groups of bars with each group consisting of from one to six bars. Labeling for each group of bars, as well as for individual bars within groups, is provided. The user also determines the number of units to be marked off on the y axis, the values to be assigned to these units, and, if desired, a label for this axis. This program, as does the line graph program, produces, at the user's option, a grid overlay. Coloring of the bars is also provided.

Annoying Bugs

To this point in time, I have discovered two minor but annoying bugs in Tandy-Graph. Depending upon the particular configuration of the plotted lines, the line labels produced by the line graph program sometimes overlap which not only makes them difficult to read, but



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also makes for a cluttered looking graph.

A second problem arises in connection with the section labels generated by the pie chart program. While both the program prompts and the manual state that these labels may consist of as many as 12 characters, this does not always appear to be the case.

Although it is probably better classified as a poor programming technique rather than as a bug, another annoying trait of Tandy-Graph has emerged. When the program requires a user response, it sometimes reacts immediately to the response without waiting for <ENTER>. At other times, the program reacts to an entry only when <ENTER> is pressed. Thus the user easily gets into the habit of pressing <ENTER> after each response only to find at some point that the <ENTER> command has inadvertently disabled the program.

I have experienced only one mechanical problem, even though I have used the plotter rather extensively. It has recently developed a tendency to skip over one small area on the plotting surface. The remedies recommended in the manual didn't help but putting two extra sheets of paper under the sheet being plotted on seems to have rectified the problem.

Customized Graphics

For serious researchers and others with specialized graphics needs, the real potential for this plotter lies in the user's ability to create his/her own customized programs to perform functions not available with current graphics software. Herein lies a problem. Although the manual provides a brief but adequate tutorial on plotter commands and assures the reader that these commands "are compatible with computer languages such as BASIC, PASCAL, FORTRAN and other high-level computer languages," there is no instruction as to how these commands can be employed in a program.

It may be that this is an entirely obvious matter for more sophisticated programmers, but for a relative newcomer to microcomputing such as myself, it was a real problem. I knew I couldn't simply place a plotter command such as "D" (pendown) in the midst of a BASIC or FORTRAN program and expect it to be executed. How then does one get the command from the program to the plotter?

The manual did provide several BASIC driver routines that eventually provided the clues I needed. These driver routines are built around a "LINE INPUT" statement which allows the user to input a plotter command from the keyboard which is then executed by the plotter. The program then loops back to the LINE INPUT statement and is ready for the next entry. This keyboard entry feature of the driver routine greatly limits its usefulness. For example, my immediate need was for a program that I could run as needed, which would automatically draw several repetitive configurations, access several specified data files stored on disk, perform numerous calculations and then plot out the results.

Quite apart from its professional uses, the plotter is just a lot of fun to operate.

By carefully studying the driver routine and the Model II owners manual I finally solved (to the degree necessary) the mysteries of "SETCOM", "LOAD NEWSUB64", and "DEF USRd = &HEF 80". Once I understood their roles and how the driver routine was passing the commands to the plotter, I was able to create my own customized set of BASIC programs that work just beautifully. Just one or two paragraphs of explanation in the manual along with a simple example could have saved me days of work.

Owner's Manual

With the major exception noted above, the Owner's Manual is easy to read and generally helpful. I find it just a bit odd that the manual for a color plotter would be done entirely in black and white, including its graphics illustrations!

Overall Impressions

In spite of the minor criticisms I've mentioned, my overall impressions of Tandy-Graph are favorable. It is easy to use and produce colorful, attractive graphics. I am not sure that I agree with its advertised description which is "...high-level graphics software...", but what does or does not constitute "high-level" software must rest in large measure in the eye of the beholder.

I would strongly recommend that anyone planning to buy the Multi-Pen plotter solely for use with Tandy-Graph thoroughly test this package before buying. While Tandy-Graph may fulfill the graphics needs of many users, others are likely to find it too limited.

While my original intent was to take output from the plotter to the graphics department at the university so they could use it as the base for creating camera ready graphics for publication, I find that the plots are of sufficient quality to meet the requirements of most research journals.

Quite apart from its professional uses, the plotter is just a lot of fun to operate.

Though I'm a real novice in this area, I'll happily respond to any questions or concerns you might have, and I might even be of some help.

Plotter Specifications

The plotter is of the flatbed variety and holds six pens that may be selected from several colors. A set of six ball point and six felt tip pens were included with my plotter which are used for plotting on paper and overhead transparencies, respectively. Replacement pens are currently priced at $3.95 each. The plotter can change pens automatically upon command, and it operates in either manual or remote modes.

Its specifications are: paper size: 8-1/2 x 11"; plot size: 7 x 9-1/4"; speed: 2.8" per second; step size: 200 per inch; dimensions: 6 x 13-1/2 x 10-1/2"; and weight: 20 pounds. It has a Z 80 microprocessor with a 256 byte buffer, 1K of RAM and 6K ROM.

NEWSNET
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Correction To "Hacker's Guide To WordStar"

A letter received from Ralph S. Herring of Pickles & Trout Customer Support on February 27, 1984 informed us of the following:

"As a result of a typographical error in our newsletter, C:What's.New (tm), the P&T CP/M 2.2m/WordStar 3.3 patch published in the last issue of your magazine (January/February, 1984, p. 6) included two three-letter codes that were in error. These two codes have been underlined in the following corrected patch code to emphasize what should have appeared:

Line 1 --> RAC IIO ARA CIL OHR ALF

Line 2 --> CKE OOR ACK KML QAC IGM

Line 3 --> IML QAC ILN CQA CKE NJJ

Line 4 --> JQA CKK OFQ ACJ *FPP* QAJ

Line 5 --> ACK PAK AKU *FEO* GCC

We are extremely sorry for any inconvenience our error may have caused your readers."

Recovering From A SCRIPSIT Crash

BY ROBERT E. BOWLEY

My local Radio Shack Computer Center has been blessed with extremely knowledgable Technical personnel, often better than Fort Worth "Customer Service." In two and one half years of heavy use of SCRIPSIT, I experienced one serious SCRIPSIT crash of a diskette that wasn't backed up. My crash was due to a static spark from a metal copy stand (quickly retired). A "Help!" call to the Computer Center got me out of it by an interesting procedure that I've never seen published.

As a precaution against concealed damage in the Scripsit program files, load a good program disk in Drive 0, the crashed disk in Drive 1, and a newly created Scripsit disk in Drive 2. There must be a disk containing DOCUMENT/CTL in a drive following the crashed disk. If only two drives are available, it's worth the gamble to load the crashed disk in Drive 0 and a new disk in Drive 1.

Load the Scripsit Directory of the disk following the crashed disk, back into the directory of the crashed disk with the UP arrow key, and copy each document onto another disk.

Repeating this for each document on the crashed disk is a slow process if there are very many documents to copy, but it sure beats typing them in again from scratch!

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ANOTHER LOOK AT PRO 80 BASIC

PROBASIC offers the opportunity to expand the limitations found in MicroSoft BASIC as issued by Radio Shack

BY LANCE MULLER

The Jul/Aug 1982 issue of **two/sixteen magazine** *(Vol. 1, No. 2, pp. 11-13) carried a review of PRO-80 Systems' enhancements to MicroSoft's BASIC interpreter. Lance Muller has been using PROBASIC for over a year, and his findings are quite different than those of the original review.*

I've been using PROBASIC, the PRO-80 Systems' enhancements to MicroSoft's BASIC interpreter, for over a year. I believe your reviewer wasn't generous or exhaustive enough in evaluating PROBASIC and then reporting his findings to your readers. Accordingly, I've put together some additional comments concerning what I consider to be a most valuable product.

LINK Keyword

One of the most valuable features of PROBASIC is the LINK keyword. I find this enhancement to be one of the single most powerful additions I've seen available in BASIC because it (and some other keywords provided by PROBASIC) makes the entire issue of RAM space moot. With LINK, you can chain continuously from program to program without ever again having to CLEAR, reDIMension, reinitialize variables and strings, or output to a file when leaving one program and then input from a file when running the next one. You simply cut the program at a logical spot, and then LINK into the remaining part of the program. All variables and files are automatically carried along from program to program.

I find the LINK keyword to be one of the single most powerful additions I've seen available in BASIC.

Revised Keywords

The revised keywords DELETE, SAVE, MERGE, and RENUM, plus expanded editing functions, place PROBASIC into a category with more sophisticated BASIC interpreters.

Each of these keywords, and LINK, can be used as a command or a statement. You can BREAK the program while it is running, LIST any lines you want to see, *edit any lines you wish to change*, SAVE the program, and then restart the program at whatever line you want, while continuing to keep all variables and strings intact, and without closing any files.

The revised MERGE keyword can now be used with conventional parameters or with additional (GOTO xxxx) parameters. The RENUM routine in BASIC has also been fixed to leave any reference to a non-existent line number intact, which is often necessary when using LINK or MERGE.

The RENUM routine in BASIC has also been fixed to leave any reference to an unused line number intact, which is often necessary when LINKing or using MERGE.

The INBSC Keyword

INBSC can be used either as a command or as a statement, and can be used to LIST or LLIST. It can find any numeric or string variable, any expression, or any portion of a BASIC line. You can also specify the line numbers between which INBSC will search.

I use this feature to debug programs by LINKing in a utility program where INBSC LLISTs every GOSUB, GOTO, THEN, and ELSE reference in line number order. I also use it in individual cases of debugging. I may BREAK a program that seems to have run past an expected subroutine, for example, to INBSC LIST all GOSUB references to the particular line number and then see whether I remembered to add the statement where I intended. Once I have checked and edited as necessary, I then simply type GOTO xxxx to resume running the program with all variables, etc., intact.

The INSERT Statement

INSERT is a PROBASIC statement that allows the programmer to automatically maintain any reference he wishes in each program. I use the line

30000 series, for example, to always contain the following:

```
30000 INSERT STR$(30020)+
      "REM This program saved on"
      +LEFT$(DATE$,3)+", "
      +MID$(DATE$,4,3)+". "
      +MID$(DATE$,7,2)+" "
      +MID$(DATE$,9,4)
      +" at time "+TIME$+"."
30010 SAVE "XXXXXX":END
```

These two lines are used to INSERT a date/time saved reference in each program in a new line 30020 whenever I SAVE a program during writing or debugging. In this way I can maintain the same filename every time I update, but when debugging or reviewing a program LLISTing, I know exactly when it was last updated.

PRO-Modules

There are sixteen separate "PRO-Modules" which can be loaded separately or together from TRSDOS READY in a "PROBASIC [program] [-F:xx] [-P:XXXX]" command, where [program] means the BASIC program to be loaded, [-F:xx] means the number of files to be protected, and [-P:XXXX] means the specific PRO-Modules to be utilized. These PRO-Modules are: *A*ngles, *B*etter strings, *C*RT, *D*ebug, *E*dit, *F*iles, *G*raphics, *I*nput/Output, *K*eys, *L*ables, *M*achine, *S*ort, f*U*nctions, *V*ariables, *W*ords, and e*X*tensions.

These PRO-Modules are arranged into common areas of concern to the user so he or she may pick and choose what areas are to be utilized by each module. I normally boot up into BASIC/PROBASIC using modules D, E, M, and X.

Miscellaneous

PROBASIC also contains such innovative features as the elimination of parentheses, the ability to access sequential files in a direct-access fashion, and TRVAR, a variable tracing feature.

Another great enhancement, TRSTEP, is a single-step TRON which allows commands to be entered between line processings.

PROBASIC includes several other new keywords that are valuable additions for the serious BASIC programmer, such as SET, RESET, POINT, SET...USING, RESET...USING, SET...TO, and RESET...TO, used for screen manipulation; key exchange/assignment keywords, that allow all unused keys or key combinations to mimic the programmability of the <F1> and <F2> keys; and several Z80-based BASIC keywords and commands which allow expanded and direct access to machine language programs.

A Weakness

I've discovered one disconcerting and troublesome aspect of PROBASIC: the numerous misspellings in the manual. Some spellings are so fractured that it's hard to understand what has been written. Pro-80 Systems should run everything through a dictionary-checking program before again publishing the PROBASIC manual. What the manual has to say is good and complete, but its worth is impaired by poor spellings.

Recommendations

I have found the PROBASIC enhancements to be well worth the $100 price Ron Ryen at PRO-80 Systems is selling them for. Total new keywords, commands, functions, and other BASIC fixes in the PROBASIC package number about 100, which averages a delivered-to-the doorstep price to the user of only about $1.00 each!

I have also found Ron Ryen's support of the PROBASIC modules to be immediate and complete if the user has any questions.

PROBASIC offers the opportunity to expand the limitations found in Micro-Soft BASIC as issued by Radio Shack. The increased utility of the computer when the PROBASIC software enhancements are used and their low cost warrant my strong recommendation that PROBASIC be used by any serious, practicing BASIC programmers.

PROBASIC is available for TRSDOS 2.0 from:

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Using SCRIPSIT As A Database

SCRIPSIT can very simply be converted into a data base that is more powerful and, in many ways, more versatile and easier to use than PROFILE II.

BY JESS KITCHENS

The method for converting SCRIPSIT into a powerful, versatile, general data base that uses the User Defined Key and Global Search functions to quickly locate flagged key words anywhere on the disk is incredibly simple.

Here are some of the SCRIPSIT DATABASE features:

- **Variable Length Records.** A data item can consist of a few words or many pages. Disk space is not wasted.
- **Easy Access.** There is one access command for retrieving data. No multiple, circular menus.
- **Easy Data Entry.** Entering data is just as easy as using SCRIPSIT. One simple command flags as many key words as you want. You have all the features and editing power of SCRIPSIT at your command at all times.
- **Fast Searching.** The search is fast. A full SCRIPSIT DATABASE disk can be searched for a key word on the last page in 80 seconds. Most searches, of course, are much faster.
- **Versatility.** The SCRIPSIT DATABASE is versatile. After the first ten minute set up, the DATABASE can be used for any type of data. There are no custom menus or reports to generate. Data can be printed in the exact form you entered it, as you would do with any SCRIPSIT document.

How Does It Work?

The SCRIPSIT DATABASE uses a combination of User Defined Keys and the Global Search function to turn SCRIPSIT into a working data base. All of the information is stored in a single file to facilitate retrieval.

Here are the instructions for setting up the SCRIPSIT DATABASE disk:

1.) Back up a SCRIPSIT disk, using the SCRIPSIT back up utility. Change the disk name to DATABASE in the process.

2.) OPTIONAL: Get rid of the date/time entries and the TANDY logo; this is not necessary for DATABASE. (Courtesy of Bob Snapp.)

Boot the DATABASE disk. <End> SCRIPSIT and <JUMP> to TRSDOS.

Type at TRSDOS READY:

PATCH SYSRES/SYS A=2367 F=73 C=CA

PATCH SYSRES/SYS A=24D3 F=00 C=3B

3.) Re-boot the disk. SCRIPSIT should come up without time or date entries.

4.) Delete all documents from the DATABASE disk.

5.) From the DATABASE menu, type <U> for disk utilities, then <U> again for user key editing. Type <1> for User Key #1.

6.) Enter this exact sequence for User Key #1:

<CTRL G> <A> <ENTER> <CTRL Z>

7.) From the Utilities Menu, enter <U>, then <2>, for defining User Key #2.

8.) Enter this sequence for User Key #2:

<CTRL U> <G> <DOWN ARROW> <SPACE> <ENTER> <DOWN ARROW> <DOWN ARROW> <1> <UP ARROW> <UP ARROW> <UP ARROW> <^> <CTRTL Z>

9.) From the Utilities Menu, enter <U>, then <3> for defining User Key #3.

10.) Enter this sequence for User Key #3:

<CTRL U> <P> <CTRL Z>

11.) Press <BREAK> to return to the main menu.

12.) Open a new document (call it FILES). It will contain all the data you store on this disk.

13.) Put whatever instructions you want for operation of DATABASE on the first page. Your instructions will be on the screen each time you open FILES.

14.) Make a back up of the disk at this point, and put it away as a master. You can rename FILES when you start any new DATABASE.

Your copy of SCRIPSIT DATABASE is now operational. Here are the simple instructions for use:

1.) Load the DATABASE disk.

2.) Open the data file named "FILES" (the only user file on the disk). You may re-name it whatever you choose to reflect the nature of the data it contains. The first page will contain the instructions you entered for using the DATABASE.

3.) To enter data into the DATABASE, press <ESC 1>. This will retrieve the next blank page in the file for your data entry. Enter the data in any form you wish; it can consist of a few lines or several pages.

Select one key word, or as many as you like, in your entry. Place a carat (^) (that's a <Shift 6>) before the first use of each of your key words. This will later allow Global Search to find the key words, and ignore the same word when repeated.

The key word may be used as a heading, as in:

^SCRIPSIT ^DATABASE ^search

"Using SCRIPSIT DATABASE is a quick, easy way to perform a word search."

Or the key words can be embedded in the text, as in:

"Using ^SCRIPSIT ^DATABASE is a quick, easy way to perform a word ^search."

You may then either press <ESC 1> to enter another data item or <CTRL Q> to quit, or you can go on to the next step to perform a search.

4.) To retrieve data from the DATABASE, press <ESC 2>. This key will cause SCRIPSIT to return to the beginning of the data file, initiate a Global Search, set up the menu, place a carat in the first position of the "String to Find" line. Enter the key word you're searching for, and press <ESC>.

Within a modest number of seconds, the first occurrence of the key word will be found and highlighted. If it's the item you want, press <C> to cancel the search. The item you want remains on the screen (and is available to print, if desired).

If you want another match of the same key word, press <Y> to look for the next match.

5.) You can search for any word in the text by backspacing in Step 4 (above) to remove the carat; you can expect many more matches per word.

6.) To print the data you have located, note the page number at the bottom of the screen, and press <ESC 3>. This calls the print menu, with the cursor at the "Print From Page Number" position. Enter the page number and press <ESC> to print.

If you should have a mental blank at this crucial moment, just press <BREAK> and you have the same page back. Then repeat step 5.

SCRIPSIT DATABASE will, by actual test, hold from 100 to 250 data items (pages) depending on the amount of information stored on each page.

I hope it's as useful for you as it has been for me. I use SCRIPSIT DATABASE to maintain my recipe file. If any of you ever needs a recipe for ^Hoppin' John (that's fancy ^Southern ^Blackeye ^Peas, to you Yankees), just let me know. I can have it for you in a few seconds! ■

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A combination of sophisticated virtual memory architecture and multiple file buffers make Perfect Calc, the electronic spreadsheet program from Perfect Software, Inc., the most powerful, and possibly the most flexible, spreadsheet program around.

REVIEW OF PERFECT CALC

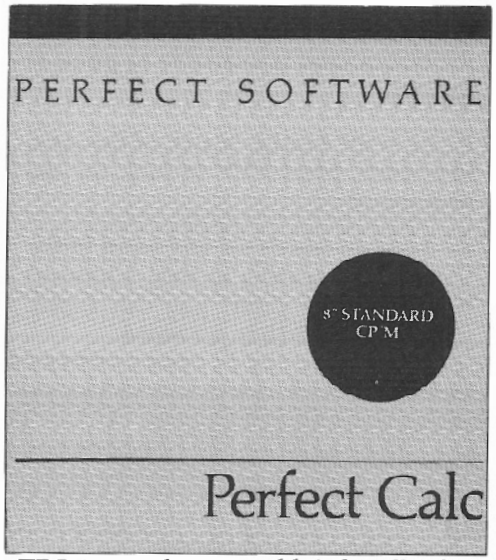
BY RICHARD JENSEN

Such beautiful notes, Mozart – and so many!" the Emperor commented on "Abduction from the Seraglio." As legend has it, the young composer shot back, "Only as many as are needed, your Highness!"

The story comes to mind while reviewing Perfect Calc, the electronic spreadsheet package from Perfect Software, Inc. It clearly stretches the 8-bit Z-80 machine to the limit, with a plethora of commands and options. Unlike opera singers, spreadsheet users do not have to memorize all the commands; they can keep the manual open, or prop up the little summary card that is included. And, after a suitable number of practice sessions, the needed commands do spring to the fingertips.

The strength of Perfect Calc comes in its provisions for multiple buffers. Seven files can be open at once, and two can be viewed at once by splitting the screen. Furthermore, specific cells in one sheet can depend on calculations made in another. Thus, an overall report can be automatically updated as each regional report is updated. Complex subroutines can be kept in special files, brought into a buffer, and used in any spreadsheet. No other spreadsheet to my knowledge has this capability, and Perfect Calc will appeal strongly to anyone with highly complex files.

Perfect Calc has all the usual spreadsheet capabilities. Unlike Multiplan, it does not sort. It has asterisk-type graphics capability, but like all other 8-bit programs, lacks the automatic graphing capability of the MS DOS superstar, Lotus 1-2-3. Of course, the



TRS-80 machines couldn't handle the graphics anyway. On the other hand, Perfect Calc does not output data in DIF format that could be used by a graphics program. There is no way to interface Perfect Calc with dBase II or a statistics program.

The program uses a clever system of virtual memory to raise the usable memory for its buffers to 64K. (That is, the total of all memory usage by the different buffers can total 64K.) If only one buffer is used, a large sheet is possible. But I am spoiled. I use a VisiCalc clone called "MagicCalc" on a Franklin with a 128K ram card. That gives me more than twice the usable memory of Perfect Calc. Although my TRS-80 Model 16 also has extra memory, Perfect Calc is unable to access it. One major reason for the popularity of the IBM machines is the ease with which the memory can be expanded to handle ever larger spreadsheets. An advantage of Perfect Calc is that it is possible to limit recalculation to just one region. Like most spreadsheets, the time it takes to recalculate can become painfully long when the sheet is large. This program allows for the recalculation of only the part where the numbers are changing.

The complex command structure of Perfect Calc involves using control and escape keys, followed by various commands. The general idea is that the command structure of Perfect Writer (Perfect Software's word processing package) is duplicated as much as possible. It does not allow the creation of macros that could simplify repetitive processes.

For example, to change the format of each row into dollars (no cents shown), giving entries like 1,234, it is necessary to type <ctl>X D L $ N for each row, and then a <ctl>N to reach the next row. Don't try using your cursor keys. The up-arrow key (the same as <ctl>K) deletes the line the cursor is on. Although deletions are saved in a buffer and can be recalled right away -- a nice feature -- all the cells that depended on the deleted line are ruined and have to be reconstructed one by one. Fortunately, it is easy to save a spreadsheet at any time (by <ctl>X <ctl>S) so that damages will not be severe.

An annoying feature of Perfect Calc is the replication mode. The idea is to define a region (a single cell, a column or row, or a rectangle of cells), then move the cursor to the cell where replication should begin. The "yankback" command (<Ctl>Y) then replicates the region, asking whether the new formulas should be absolute or relative. It

is supposed to work that way, but I often found a few cells that mysteriously had not been replicated correctly. Give me /R any day.

The program is not very forgiving of mistakes. A grammatical error buzzes the screen and gives a "bad formula!" message, but does not pinpoint where the error might be. A help screen is available, but it only duplicates the quick reference card.

The manual is adequate. (Yes, there is an index.) Overall, however, the documentation can be rated "excellent" because of an eight lesson tutorial that comes on a companion disk, together with a variety of very clear templates. They cover income statements, cashflow assessments, accounts receivable and accounts payable, payrolls, stock portfolio analysis, real estate analysis and personal income tax returns. There is even a chi-square template for statistics, but it is poor.

Perfect Calc stretches the 8-bit Z-80 machine to the limit, with a plethora of commands and options.

Perfect Calc boasts of its power and its flexibility. There can be little doubt about the power, for much more complex spreadsheets are possible with this program than with any other I have heard of. The flexibility comes at the cost of simplicity, however. The keyboard can be reconfigured, but the cursor keys do not work, and one of them (up arrow) is electrified so that touching it gives a nasty shock. A configuration program includes Pickles & Trout and Lifeboat CP/M, but not the ATON I use. It is possible to send the printer a configuration string, but the string has to be written into the program. It is not possible to choose whether to print out in 80 columns or 132 columns, for example, or to set the margins and line spacing at the time you are trying to print out a spreadsheet.

Perfect Calc is suitable for experienced spreadsheet users who are frustrated with the limitations of VisiCalc, SuperCalc, PlannerCalc, etc. I have not yet matched it against Multiplan, but Perfect Calc's specifications are more attractive. But it lacks the clean, elegant simplicity of Mozart. This is a program for people who like Wagner.

Perfect Calc is available in CP/M, MS DOS, or PC DOS formats and is marketed nationally. Cost: $249.00. Call Perfect Software's Sales Department for further information.

Perfect Software, Inc.
702 Harrison Street
Berkeley, CA 94710
800/222-4222

ADDENDUM TO T/MAKER III REVIEW

In his recent review of T/MAKER III (January/February 1984), Richard Trahan indicated that he had experienced problems installing this program correctly on Pickles & Trout CP/M 2.2. It seems that Mr. Trahan was using P&T CP/M 2.2e, a version of the system which was replaced by CP/M 2.2m in July 1983. As he indicated, there was one video display control code, line delete, that was not mentioned on the same page of our 2.2e manual as the other codes. (The line delete code, incidentally, is decimal 11.)

Those people installing T/MAKER III on a P&T CP/M 2.2m system may do a custom installation, using the video display information on pp. 10.2-10.5 of Pickles & Trout's *User's Manual*. Alternatively, they may utilize the ADM3A utility module, an addition to 2.2m which makes our console display and keyboard emulate the widely-used ADM 3A terminal. This feature was added to P&T CP/M 2.2m for customers who may have trouble custom installing a program that does not have a P&T option on its menu.

SCREENPIX

Take advantage of your Model II/16's limited graphics capability without special hardware. Screenpix is a general purpose TRSDOS Z-80 machine language utility that enables you to create, edit, and store screen images using the 256 displayable characters of your system.

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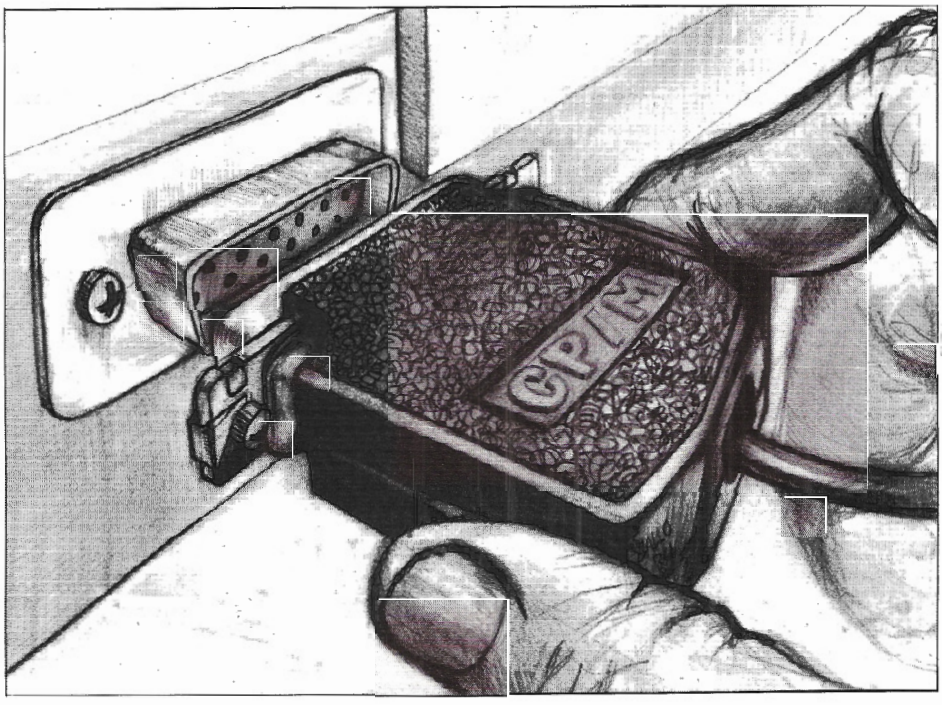
THE CP/M • MODEL 100 CONNECTION

With the power of CP/M running on a model II, 12, & 16 and the built-in TELCOM program on the Model 100, passing text files back and forth between the two computers is simplicity itself.

BY WILLIAM J. ELLIOTT



For those of you not familiar with the Tandy Model 100 or the similar NEC 8201, both are about the size of a standard three ring binder. Each has a full QWERTY keyboard and an eight line by forty character Liquid Crystal Display. The Model 100 has 32K RAM plus 32K ROM capability, while the 8201 can double that capability and has a 32K removable RAM pack with battery back up to use for external program storage. The Model 100 has a built-in modem for direct connection to telephone lines using the Tandy Model 100 Built-in Modem to Phone Jack cable. The 8201 does not. The Model 100 has a bus connection for possible future disk drive and CRT interfaces. The NEC has built in connectors specifically designed to interface with disk drives and extra memory. Both machines have RS-232 Serial and Centronics Parallel interfaces, cassette tape recorder interface, and bar code reader interface. (The 8201 and Model 100 cassette tape interfaces, however, are not compatible.) This is a heck of a lot of capability you can hold in your lap!

How To Decide?

Because I live in the Middle East, I originally thought I had no need for a modem since no bulletin boards were available here; I assumed the 8201 would fit my needs better than the Model 100. Unfortunately, the 8201 would not have been available until later in the year, and I had to settle for the Model 100.

It turned out that the modem had more uses than I had imagined, and the Model 100 has earned my respect through use.

A Complete System

I also purchased an interesting hard copy device to go along with the Model 100. Radio Shack sells a small four color plotter, the CGP-115, which happened to be on sale for under $200.00. This is connected to the Model 100 parallel port using the Tandy Model 100 to Parallel Printer cable which can also be used on most Tandy printers. I built a battery pack for this plotter-printer to make it as portable as the computer. I also purchased the Tandy Minisette-9 recorder for data storage.

The entire system, including the Model 100, Minisette-9 audio recorder, and battery powered CGP-115 plotter, fits into a standard size briefcase with room to spare. (The only problem with the plotter is that the pens dry out; they can be reactivated by soaking in hot water for a few hours.)

Shortcomings

I have found a few items missing in the Model 100 software. The text editor lacks a convenient print formatting section. This has been noted by others, and supplemental programs are now available to format text.

BASIC does not contain a renumber command, a necessity for programmers like me. I am looking for an easy way out of that one without having to write it myself.

Telecommunications

As luck would have it, a local computer club initiated a telephone bulletin board compatible with the Model 100. It was temporary and has now been shut down for some reason or another, but while on the system, I learned some of the excellent communication capabilities of the Model 100.

I developed some techniques to pass text files and source code files to and from the Model 100 and my Model 16 in Model II mode running under CP/M. With the power of CP/M and the built-in TELCOM program on the Model 100, the process was simplicity itself. In fact, I find it a lot more difficult to write about it than to do it.

Interfacing

The following is a step-by-step procedure detailing how to build a Custom CP/M disk to use as a CP/M-to-Model 100 file transfer interface.

Step 1: Build a Custom CP/M system disk containing the operating system, PIP.COM, SUBMIT.COM, COPY.COM (the disk back up program from Aton CP/M) or its equivalent, FASTCOPY.COM (from Pickles & Trout CP/M), and SYSDEF.COM (the CP/M configuration program from Aton CP/M) or its equivalent, SETUP.COM from P&T.

Step 2: Using a text editor (or the non-document mode of WordStar), name a submit program "D100.SUB". Then enter this one line:

```
PIP PUN:=A:$1
```

"PUN:" is the CP/M punch device, and "$1" is the variable used as the filename to be transferred. The name of the program, D100, stands for "DOWN to the Model 100". PIP this program to the Custom CP/M disk set up in Step 1.

Step 3: Using a text editor (or the non-document mode of WordStar), create another submit program named "U16.SUB". Then enter another one line:

```
PIP A:$1=RDR:
```

"RDR:" is the CP/M reader device, and "$1" is the variable used as the filename to be transferred. The name of the program, "U16" stands for "UP to the Model 16". Save this program to the Custom CP/M disk set up in Step 1.

Step 4: Rename SUBMIT.COM to S.COM on the Custom CP/M disk:

```
REN S.COM=SUBMIT.COM
```

This is optional, as are all the filenames. You can call the files whatever you wish, but the names used here are consistent with the rest of this article.

Step 5: To set up the CP/M configuration and the RS-232 port, direct the output of the "PUN:" device and the "RDR:" device to the required RS-232 port (for our purposes, Serial Port B). The port should be set for 9600 baud, seven bit word length, even parity, 1 stop bit, and XON-XOFF protocol. (The baud rate and other parameters may be changed but must be consistent with those parameters used to set up the Model 100 later in the article.)

MODEL-16 FORTRAN-77

TriSoft is pleased to announce the availability of SVS FORTRAN-77 under TriSoft CP/M-68K for the Radio Shack Model-16 computer. This FORTRAN implements the full ANSI-77 standard and is not the subset FORTRAN-77 available on most mircrocomputers.

Full ANSI-77 FORTRAN on a 68000 based computer gives the user the power and flexibility of a mainframe computer at a fraction of the cost. FORTRAN has been the primary language for scientific, mathematical and statistical applications for many years. A vast wealth of programs already exist for a variety of applications but require a mainframe environment. FORTRAN-77 running under TriSoft CP/M-68K provides a suitable environment to allow the user to take advantage of these programs.

In addition to supporting the full ANSI-77 standard, the FORTRAN package allows you to link in routines written in DRI 'C' and 68000 Assembly languages.

SVS FORTRAN-77 is a native code compiler. This combined with the efficiency with which it was designed provides very fast execution speeds.

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FORTRAN-77	$495.00
CP/M-68K	$395.00
68K-BASIC	$299.00
Pickles & Trout	CP/M 2.2

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This set up is accomplished by using the system configuration program, SYSDEF.COM in ATON CP/M. The "PUN:" device is configured to receive data from the Model 16 serial port B by selecting option "UP2". The "RDR:" device is configured to send data to the Model 16 serial port B by selecting option "UR2".

The "RDR:" device and the "PUN:" device will actually be the Model 100 when it is attached to the Model 16's serial port B. SYSDEF.COM is also used to set the RS-232 serial port parameters.

Save the modified configuration permanently to the Custom CP/M disk using the "8" selection on the SYSDEF.COM main menu.

If you are using Pickles & Trout's SETUP utility to configure your Custom CP/M disk, use the arrow keys to maneuver the cursor to the option you want. Both PUN and RDR should be set up for Serial Port B. Hit <ESC> when you have all paramenters set as required to return to A>.

At this point the set-up of the CP/M computer Custom disk is complete.

Step 6: Turn on the Model 100 and move the cursor to TELCOM. <ENTER> to access TELCOM, and press function key 3 <F3> to set the new STAT. Enter 87E1E to set the Model 100 serial port to the same parameters as the CP/M computer port. This setting will remain in memory until it is changed or the memory power switch is turned off.

Both the Model 100 and the CP/M computer are now set up to transfer text files.

Hardware Configuration

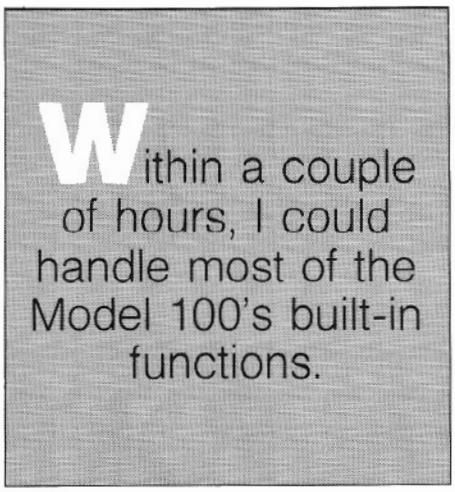
Connect the Model 100 to the CP/M computer using RS-232 ports and an RS-232 cable. For the Model 16 and other Tandy computers, it is necessary to use Radio Shack RS-232C Cable and a Radio Shack Null Modem Adapter. (Appendix A in the Model 100 Instruction Manual contains more detailed information for making this connection.)

"UP" TRANSFER PROCEDURE

Before attempting to transfer files from the Model 100 to your Custom CP/M disk, you should know that Model 100 programs to be transferred must be in ASCII format. That means files with a .DO extension, either Text files or BASIC program files SAVEd with the "A" option.

Step 1: Connect the RS-232 cable from the CP/M computer to the Model 100.

Step 2: Turn on both computers and insert the Custom CP/M disk in the Model 16. The Model 100 will display the Menu, and the Model 16 will display the CP/M prompt A>.



Step 3: Move the Model 100 cursor to TELCOM and <ENTER>. Check STAT to make sure it is "87E1E, 10 pps". Press <F4> (Term); then press <F3> (Up).

Step 4: On the Model 16, type:

A>S U16 (filename)

where filename is the name you want the file to have when saved to the Custom CP/M disk. Wait until the disk drive stops accessing. The CP/M computer is now ready to receive data. Go to the Model 100.

Step 5: After the "File to Upload?" request on the Model 100, type in the name of the file to be transferred and <ENTER>. The Model 100 will ask for the line width. You may enter the appropriate number of characters per line. (I suggest 40 characters if the file is to be brought back to the Model 100 at a later date.)

The "Up" on the Model 100 display will show in reverse video until the file is loaded.

When "Up" returns to normal, press Control-Z on the Model 100 keyboard to end the file and place the Model 16 in the CP/M prompt mode.

The transfer procedure is complete, and the file now resides both in the Model 100 RAM and on the Custom CP/M disk.

The transferred file has been placed on the Custom CP/M disk with no scrolling characters. "TYPE (filename)" will display the file, but only as a single line. To get a good look at the file, take it into a word processor where the appropriate word wrap will be added. But use only a copy of the file to do this! Word processors add characters that the Model 100 may not be able to use, and returning the file to the Model 100 in its original form can become complicated.

"DOWN" TRANSFER PROCEDURE

To download files from the Model 16 running CP/M to the Model 100, the following steps detail the procedure.*

Step 1: Connect the RS-232 cable from the CP/M computer to the Model 100.

Step 2: Turn on both computers, and insert the Custom CP/M disk. The Model 100 will display the Menu, and the CP/M computer will display the CP/M prompt "A>".

Step 3: On the Model 100, move the cursor to TELCOM and <ENTER>. Press <F4> (Term). Press <F2> (Down). The Model 100 will request a file name; enter the name you want to call the file in the Model 100 (Remember: it should have a ".DO" extension).

**Warning: We were not able to duplicate Mr. Elliott's results without first re-setting the baud rate on both computers from 9600 baud to 1200 baud. 9600 baud worked just fine when uploading files from the 100 to the 16, but this rate was too fast for the 100 to handle when the data flow was reversed. - Ed.*

The "Down" at the bottom of the Model 100 screen will display in reverse video. It's ready to receive a file sent from the Model 16.

Step 4: On the CP/M computer keyboard type:

A>S D100 (filename)

where filename is the name of the file to be transferred.

Step 5: The file will scroll on the Model 100 display during transfer. When the transfer is completed, the prompt A> will appear on the Model 16 screen. The file now resides on the Custom CP/M disk and in the Model 100 RAM.

Press the <F2> key (Down) to end the Model 100 Down program. Press <F8> (Bye), and in answer to the question "Disconnect?" type "Y <ENTER>". <F8> (Menu) will take you back to the Master Menu.

Where Do We Go From Here

The uses for these procedures are numerous. They allow the Model 100 user to give his little portable a limited disk drive capability for storing programs, text, and data. These files can then be used as back ups to the Model 100 RAM or can be PIPed to another disk for processing by WordStar, Magic Wand, or any other programs which can access CP/M formatted files.

Another possibility is to use the CP/M computer screen as a full 80 character by 24 line display for the Model 100 for full screen editing.

It may be possible to use the Model 100 as an extra terminal for time-sharing functions or for remote access to your CP/M computer through the phone lines and a modem. These same principles can also be applied to XENIX or CP/M-68K for the Model 16 user who wants to use his 68000 processor.

There are many areas left to explore using CP/M and the Model 100. Take a look and expand your computing power and portability. ■

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REVIEW OF KEYCON&NUMCON

BY ARNOLD FISCHTHAL

Two conversion utilities from <SIS> Computer Software, KEYCON (Keyword Converter) and NUMCON (Numeric Converter), will help reduce confusion when you decide to convert BASIC applications from TRSDOS to XENIX.

KEYCON

When Radio Shack finally issued XENIX, their long awaited multi-user operating system, many of us rushed to convert our single-user TRSDOS BASIC programs to the MBASIC of XENIX. Certainly we expected some syntax (SN (2)) differences, hidden bugs to be discovered, etc., etc. Certainly we did not expect that converting our files would be a monumental task, but we ended up with a task to do nonetheless.

Microsoft supplied us with "bp" which is supposed to convert a TRSDOS BASIC program into a form that would be more readily modified to work correctly under MBASIC. However, we were also supplied with bugs to stamp out. For example, it does not correctly expand the AS keyword that is part of a FIELD statement.

Another annoying feature of bp is that it inserts spaces almost EVERYWHERE. Although this does not alter the execution of the resulting code, it is an unwanted and wasteful addition to your programs. Spaces are now required around all keywords and variables since MBASIC supports long variable names. However, bp does not know when to leave well enough alone.

```
100 FORI=1TO100:AB(I)=CMOD2:PRINTAB(I):NEXT
```

becomes

```
100 FOR I=1 TO 100:AB(I)=C MOD 2:PRINT AB(I):NEXT
```

Now comes KEYCON ("**Key**word **Con**verter" from <SIS> Computer Software in Cincinnati, Ohio) to the rescue. This TRSDOS BASIC program is run before you are ready to transfer your programs over to XENIX. By using appropriate data statements in the KEYCON program, you can convert any number of compressed BASIC programs into MBASIC in only one running of the conversion program. It will take each compressed program and modify it by putting in the appropriate spaces and then storing the resulting program in ASCII format.

One very nice feature of this program allows changing a keyword from TRSDOS BASIC to a different keyword in MBASIC during the conversion process. For example, if you wanted to change the LPRINT keyword to PRINT #1, all you need to do is to change the word "LPRINT" to "PRINT #1" in the keyword table that is part of the KEYCON program.

If any lines become too long when the spaces are added, they will be flagged on the screen so you can take appropriate action to reconstruct that portion of code.

Although I came across several bugs in the KEYCON program, I received a bugfix from <SIS> even before I began writing this review. This is another benefit that makes KEYCON superior to bp. With Radio Shack, we have to wait until they decide to issue their next version of a piece of software, whereas with KEYCON you can be notified of bugs immediately as they are discovered.

The only negative thing about the KEYCON conversion process is that it is relatively time consuming. A 15K program took sixteen minutes for a complete conversion. However, if you went about removing the unnecessary spaces from a bp-ed program, then the resulting space-thrifty program produced by KEYCON is a bargain.

NUMCON

Another inconvenience associated with converting TRSDOS BASIC programs to XENIX MBASIC is the non-compatibility of compressed numeric data stored by TRSDOS BASIC with the way the same data is stored by MBASIC. Although such data can be transferred to XENIX, it must be recoded on the XENIX side. The program NUMCON ("**Numeric Converter**") from <SIS> is an excellent utility that converts integer, single and double precision variables in data files to the formats required by MBASIC.

When running NUMCON, data lines must be added to provide program names and the exact format of the data elements to be converted. Several options are available to the

user. The program can be run so that data is printed on the screen with no conversion taking place, or the option to convert can be chosen.

When converting, you can chose the newly converted data to be stored either in the same file or a different file. It might be convenient to choose to create a different file as destination of the converted data and leave the original file and its data unaltered.

The fact that single precision on the TRSDOS side was able to store seven significant digits, and single precision on the XENIX side can only store six digits represents another inconvenience. NUMCOM takes at least one step in trying to eliminate the work necessary in converting the data file to hold seven digit precision.

When using the NUMCON conversion, you can specify that the destination file holds a double-precision number in the relative position that contained your TRSDOS single-precision number. In this case, your destination file cannot be the same as your source file.

During my evaluation, the operation of both KEYCON and NUMCON went very smoothly. I found the documentation more than sufficient in describing the programs' use and implementation, and the sample programs and data files supplied as illustrations proved very helpful.

These programs would prove highly beneficial to anyone converting from TRSDOS to XENIX, but be warned: they are only the first step... there are other syntax and usage changes that must be made before the resulting software can be used successfully.

NUMCON and KEYCON are available from:

<SIS>Computer Software
3669 Central Parkway
Cincinnati, OH 45223
513/559-0641

KEYCON $75
NUMCON $75
(Plus $3.00 shipping charge)

HELP WANTED

We are using SCRIPSIT on three Model 16s and two Model IIs. The problem occurs when someone uses his diskette on the Model 16 without knowing that his diskette is in version 2.0a. Yet he finished and printed out his document. A few hours later, he was asked to make some revisions using the Model II this time. After entering mm/dd/yyyy, skipping the time prompt, and proceeding to SCRIPSIT, the directory looks like a battlefield. This problem has occurred several times.

Has anyone else encountered the problem we have? What is the solution?

Does THIN and UNTHIN have anything to do with this?

Ernesto F. Quiogue, GAMA Services Ltd., P. O. Box 41726, Riyadh, Saudi Arabia 11531.

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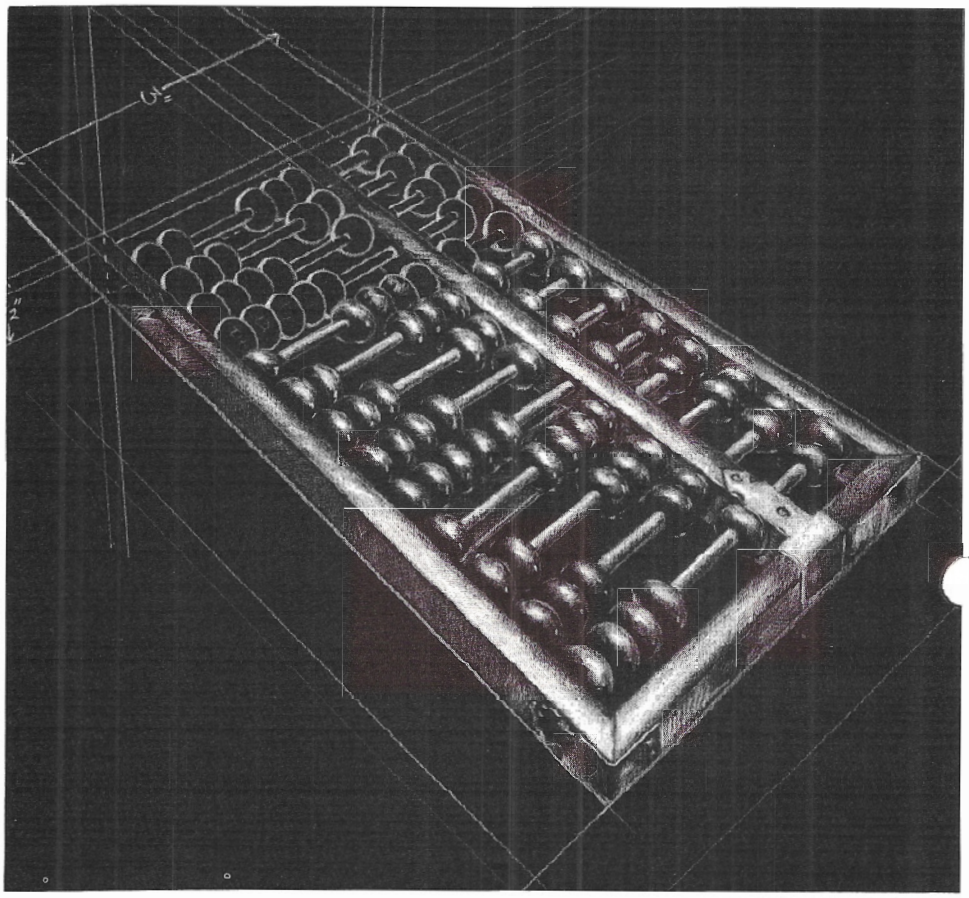
XENIX Creates A Sim

RICHARD A. BILANCIA

The relational database tools included with powerful, yet complex. Rich Bilancia has designed to demonstrate the strength and

Because of my background as an accountant, I decided to build a simple accounting system using the XENIX relational database tools to illustrate their power and versatility.



In the early 1970s Dr. E. F. Codd of IBM introduced the relational database and proposed it as an alternative to the traditional hierarchical and network database systems. It was Dr. Codd's contention that system development would be substantially easier using a relational system because the programmer could be relieved from the burdensome coding normally required for both the hierarchical and network systems. Dr. Codd also believed that for the first time, a solid, theoretical, mathematically-based foundation for data base design would be available. In February of 1982, Dr. Codd published a complete outline of his ideas in "Relational Database: A Practical Foundation for Productivity," in *Communications of the ACM*. I strongly recommend that you read the article.

My simple accounting system is written in the XENIX shell programming language, the same interactive command interpreter used to execute simple XENIX commands. And I've incorporated these XENIX relational database tools into the system:

awk pattern scanning and processing language
cat concatenate and print
echo echo arguments
join relational database operator
lpr line printer spooler
pr print file
rm remove (unlink) files
sed stream editor
sort sort or merge files

If you've done any development on your XENIX system, you've probably used most of the tools listed above, with the possible exception of "awk" and "join." Awk can best be described as a report writing program, but such a description only touches upon its potential. "Join" is a program that matches records based upon common fields.

You may have already discovered that XENIX (and UNIX) rely quite heavily on the use of field separators, with the tab character being the most common. The accounting system I developed for this article uses the tab character as the field separator.

Note: You should be able to use either of the XENIX editors, "ed" or "vi," to create the various files needed to run this accounting system.

Installing The System

The system is very easy to install and use. Only two program files (POST_ENTRIES and CLOSE_MONTH) and three data files (CHART_OF_ACCOUNTS, BALANCES, and ENTRIES) need to be created.

To install the system, follow these steps:

1.) Using either ed or vi, enter and save the two programs, POST_ENTRIES and CLOSE_MONTH, exactly as shown in Figures A and B.

Wherever you see the characters <tab>, type a single tab character using the tab key.

After creating and saving the files, type these shell commands to make the files executable:

chmod 755 POST_ENTRIES

chmod 755 CLOSE_MONTH

2.) Using either ed or vi, create a file called CHART_OF_ACCOUNTS, that has three fields: the account number, a category code, and the account description. Separate each field in each record with a single tab character.

I recommend that the account number be a three or four digit number and the category code be a single letter, i.e., A (Asset), L (Liability), I (Income), or E

ple Accounting System

the TRS-Xenix Development System are constructed a simple accounting system sophistication of their abilities.

(Expense). A suggested chart of accounts for personal use appears in Figure C.
3.) Finally, create a file named BALANCES that contains the opening balances for the asset and liability accounts.

Each record in this file must have three fields, each separated by a single tab character: account number, opening balance amount (preceded by a minus sign if a credit number), and the Julian date of the balance (i.e., the date the books were last closed). (See Figure D.)

Be sure that the total of column two equals zero and that the file is in ascending sequence by account number.

You can use the "sort" command to sequence the file by typing:

sort BALANCES > temp

mv temp BALANCES

Using The System
Using the system is easy. Just follow these steps:

1.) Every month you will need to create a file of accounting entries (or journal vouchers) named ENTRIES. Each record in this file should have four fields, each field separated by a single tab character: account number, entry amount (preceded by a minus sign if a credit number), Julian date of the transaction, and a description of the transaction. (See Figure E.)

Be sure that the total of column two (the entry amount) equals zero and that the file is in ascending sequence by account number.

2.) In order to post these entries to the previous balances, type "POST_ENTRIES", and the "POST_ENTRIES" program created previously will be executed. The result will be a report named "Trial Balance Report" and a file titled "TRIAL_BALANCE" that will be used in the final posting process.

If any errors are detected while reviewing the output of this program, make changes to either the "BALANCES" or "ENTRIES" file and rerun this program. It can be rerun as many times as you wish.

3.) When the output of step 2 is completely correct, the accounting month can be closed out by typing "CLOSE_MONTH". Be careful before executing this program as the previous month's BALANCES file will be automatically deleted.

Understanding The Code "POST_ENTRIES:"
Lines 1-3: These are comment lines. The colon prevents the line from being executed, but it is still interpreted for correct syntax. Accordingly, I have enclosed the comments within single quote marks to insure correct syntax.

Lines 4-5: An awk program. The portion enclosed within the single quotes is the actual program. 'BEGIN {FS=OFS="I"}' is executed at the beginning of the processing and sets the field separator and the output field separator to the tab character.

The portion of line 5 enclosed within braces instructs awk to print the contents of the first, second, and third columns of the input file, followed by the text in double quotes, to the standard output. The input is taken from the file BALANCES and the output is diverted through a 'pipe' to the commands on line 6.

Line 6: The 'cat' command concatenates the contents of the ENTRIES file to the end of the output of the previous pipe and redirect through a pipe to the 'sort' program. The sort program uses the '-t' option to set the tab character as the field separator and uses columns 1 and 3 as the major and minor sort fields. The output is then diverted through a pipe to the commands on line 7.

Line 7: The 'join' command matches on the first columns of the output of the previous pipe and the file CHART_OF_ACCOUNTS to create the file TRIAL_BALANCE.

The '-a1' option ensures that every line of file 1 (the output of the previous pipe indicated by the solitary '-') is written to the output file. The -t option once again sets the field separator as the tab character.

Lines 8-9: The 'echo' command creates the column headings for the Trial Balance Report that is being created in the file "TB".

Line 10: The cat command appends the contents of the file TRIAL_BALANCE created on Line 7 above to the file TB.

Line 11: The echo command appends a line of dashes (to signify that a total follows) to the file TB.

Lines 12-14: This awk program computes the sum of all transactions in the TRIAL_BALANCE file and appends that number to TB. Line 12 once again sets the field separators. Line 13 adds the values of column 2 in every record to a variable named "total".
In Line 14 the instruction within the braces following the word "END" sends a tab character, followed by the value of "total" when the input file is exhausted, to the standard output, which is finally diverted to the file TB.

Line 15: The 'pr' and 'lpr' commands are piped together to send the contents of TB to the printer as a report. The '-h' option is used to add a description to the standard pr header.

Line 16: Deletes the TB file using the 'rm' command.

Understanding The Code "CLOSE_MONTH:"
Lines 1-3: These are the comment lines.

Line 4: The echo command displays a message on the screen indicating the user should enter a date.

Line 5: The 'read' command of the Bourne shell programming language is used to retrieve the characters entered

by the user and stores that response in a shell variable named 'date.'

Line 6: The stream editor program 'sed' is now used to insert the value stored in the variable date in the beginning of every record in the file TRIAL_BALANCE.

Note that the sed program is contained within the double quotes (to allow the $ to be interpreted by the shell), and the output is redirected through a pipe to the command on the next line.

The sed program is actually a substitute command, as indicated by the 's', and is to substitute at the beginning of every line, as indicated by the '^', the value in the variable date immediately followed by a tab character. Note the convention of preceding a shell variable with a $ to indicate the value of the variable name immediately following.

Lines 7-11: The remaining lines are another awk program that takes as its input the piped output from Line 6 and sends its output to replace the file BALANCES with the new, updated balances for each account.

The awk program creates and uses two new variables: 'prev' to check for a break or change in the account number, and 'amt' to store the accumulated net balance in each account. Line 7 once again sets the field separators. In Line 8, if the account number in column 2 is not equal to the previous account number stored in the variable prev, then a record with three fields (the previous account number prev, the accumulated amount in amt, and the date from column 1) is printed.

Also on the same condition in Line 9, the value in the variable amt is reinitialized to zero. For every input record, line 10 sets the value in the variable prev with the account number from column 2, and adds the amount from column 3 to the variable amt.

And lastly, after the input file has been completely exhausted, Line 11 prints a final record with the remaining values in prev and amt, appending the value stored in the shell variable date.

FIGURE A — POST_ENTRIES

```
:<tab>'POST_ENTRIES'
:<tab>'Copyright (c) 1983 - Richard A. Bilancia'
:
awk 'BEGIN {FS=OFS="<tab>"}
<tab>{print $1,$2,$3,"OPENING BALANCE"}' < BALANCES |\
<tab>cat - ENTRIES | sort -t'\t' +0 +2 |\
<tab>join -a1 -t'<tab>' - CHART_OF_ACCOUNTS > TRIAL_BALANCE
echo "ACCOUNT<tab>AMOUNT<tab>DATE<tab>EXPLANATION<tab>CATEGORY<tab>DESCRIPTION"\
<tab>> TB
cat TRIAL_BALANCE >> TB
echo "<tab>---------" >> TB
awk 'BEGIN {FS=OFS="<tab>"}
<tab>{total += $2}
<tab>END {print "\t", total}' < TRIAL_BALANCE >> TB
pr -h "Trial Balance Report" < TB | lpr
rm TB
```

FIGURE B — CLOSE_MONTH

```
:<tab>'CLOSE_MONTH'
:<tab>'Copyright (c) 1983 - Richard A. Bilancia'
:
echo 'Enter the closing date (e.g., 831231) '
read date
sed "s/^/$date<tab>/" < TRIAL_BALANCE |awk 'BEGIN {OFS=FS="<tab>"}
<tab>prev != $2 <tab>{print prev, amt, $1}
<tab>prev != $2<tab>{amt = 0}
<tab><tab><tab>{prev = $2; amt += $3}
<tab>END<tab><tab>{print prev, amt, "'$date'"}' > BALANCES
```

FIGURE C — CHART_OF_ACCOUNTS

```
1000    A    CASH IN CURRENCY
1100    A    CHECKING A/C
1150    A    CASH FUND A/C
1300    A    A/R - MISCELLANEOUS
1350    A    CASH VALUE OF INSURANCE
1400    A    I.R.A.
1500    A    LAND
1510    A    BUILDINGS
1520    A    Improvements
1530    A    Landscaping
1549    A    Unrealized Gain on House
1600    A    Furniture & Fixtures
1705    A    Auto #1
1710    A    Auto #2
1910    A    Retirement Contributions
1960    A    Jewelry
2000    L    Personal Loan
2010    L    Loan - Auto #1
2020    L    Loan - Auto #2
2100    L    Accounts Payable
2510    L    Mortgage Payable
3900    L    Deferred Capital Gains
3999    L    Net Worth
4010    I    Gross Salary
4101    I    Dividends
4121    I    Interest Income
4205    I    Gifts received
4299    I    Miscellaneous Income
4310    I    Equity Inc/[loss]
4410    I    Capital Gains
```

4490	I	Federal Tax Refunds
6010	E	Telephone
6020	E	Water & Sewer
6030	E	Trash Collection
6040	E	Natural Gas
6050	E	Electricity
6080	E	Snow Removal
6110	E	Retirement Insurance
6120	E	Homeowner's Insurance
6130	E	Auto Insurance
6140	E	Life Insurance
6210	E	Medical: Doctors
6220	E	Medical: Dental
6230	E	Medical: Drugs
6310	E	Real Estate Taxes
6320	E	Auto Licenses
6330	E	Sales & Use Tax
6340	E	Federal Income Tax W/H
6350	E	State Tax W/H
6360	E	F.I.C.A. TAXES
6410	E	Mortgage Interest
6430	E	Credit Card Interest Exp.
6440	E	Other Interest Exp.
6530	E	Contributions
6710	E	Subscriptions
6750	E	Business Expenses
7010	E	Food & Groceries
7020	E	Alcoholic Beverages
7030	E	Milk
7040	E	Entertainment
7050	E	Clothing
7060	E	Auto Parts & Repairs
7070	E	Cleaning & Laundry
7080	E	Postage
7090	E	Gasoline
7100	E	Gift Expense
7110	E	Haircuts
7500	E	Travel & Vacation
7600	E	Education
7999	E	Miscellaneous
8299	E	Credit Card Distribution

FIGURE E — ENTRIES

ACCT	AMT	DATE	DESCRIPTION
1100	-500	840205	A/C Trip
1150	-50	840206	Flowers
1705	300	840207	Sell Hubcaps
1710	250	840208	Sold Seat

Please Note: Do not enter headings. They are displayed here for information only.

FIGURE D — BALANCES

ACCT	AMT	DATE
1000	2000	840131
1100	2000	840131
1150	2000	840131
1300	2000	840131
1350	2000	840131
1400	2000	840131
1500	2000	840131
1510	2000	840131
1520	2000	840131
1530	2000	840131
1549	2000	840131
1600	2000	840131
1705	2000	840131
1710	2000	840131
1910	2000	840131
1960	2000	840131
2000	-5000	840131
2010	-5000	840131
2020	-5000	840131
2100	-5000	840131
2510	-5000	840131
3900	-5000	840131
3999	-2000	840131

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WRITE FOR CATALOG

HOW SUPER IS SUPER

BY CHARLES D. LADEROUTE

If you've seen the ads for SUPER in the magazines, you've read that it is a "Spread Sheet Calculator." Don't construe this to mean that it has "spreadsheet program" capabilities, ala Visicalc, Multiplan, or the other Visiclones. It has no spreadsheet capabilities. What this means is that you can use its calculation capabilities to perform simple mathematical operations on data fields.

The ads also proclaim SUPER is "13 times faster than dBase II." Although I did not perform any benchmarks against dBase II, I do use dBase II occasionally, and as a result, would not compare this program with dBase II. They are worlds apart. What I would compare SUPER to is Radio Shack's Profile Plus database management system, which I use heavily.

Documentation

The documentation states that you don't need to be a programmer to use SUPER. But this system is written in "plain vanilla" Interpretive BASIC, and the documentation could use a lot more information regarding BASIC for the non-programmer. I hardly ever use BASIC. I probably knew at one time or another that when a program crashes you immediately type in "CLOSE" before anything else, but the memories are long gone.

The documentation tells you on page 1 of Section 10 that if you crash, make sure you close the files. Even after reading the documentation, I forgot this and scrambled, crunched, and mangled a number of files before I sat down for the umpteenth time and re-read the manual. Some very important information, such as CLOSING files, is scattered throughout the text. The documentation should include a one or two page table of important things you should keep in mind when using BASIC.

This is an illustration of my primary complaint with the documentation; it does not follow logically.

The documentation, the menus, and the operation of the system are all integrated very well and worked together smoothly.

SUPER's documentation has been set up to follow the main menu of the system, but the menu does not follow the logical use of a database management system. Chapter 1 and 2 contain "Background" and "Start up" information. Chapter 3 is "Add New Entries;" Chapter 4 is "Display or Correct Data." Then comes "Set Up a Database" in Chapter 5. Who adds or displays data before they set up a database?

Now for some good points about the documentation. There are 94 pages with a very good Table of Contents. Also, the Institute for Scientific Analysis (ISA) has included a pretty good Index. (Incidentally, the index tells us that SUPER created the index.)

The documentation also has a good, but all too brief, background on data base fundamentals (records, fields, files, etc.), a very useful introduction for the neophyte.

I did not find any gross errors in the documentation, and I rate it over-all as good.

Ease of Use

Usually, I don't like menu driven programs. However, SUPER is menu driven, and I found it a pleasure to work with since ISA did not put layer upon layer of menus between the user and the program.

The documentation, the menus, and the operation of the system are integrated very well and work together smoothly. In general, SUPER is a database management system that can be used without having to continually refer to the documentation.

I say "in general" because SUPER is written in BASIC. The documentation says you don't need to be a programmer to use this system, but I disagree. If you're not a programmer, you bett be a real hacker. Setting up large files, especially when they span two or more drives, is not easy for the inexperienced user. The system requires the user to insure adequate disk space is available

for file handling operations by calculating the number of free granules. Also, I don't believe a program as good as SUPER should have so much user interface with BASIC. From this perspective, I find SUPER quite unsophisticated and less than easy to use compared with the other software.

Despite these criticisms, overall I rate "Ease of Use" very good.

Error Handling
I find SUPER's error handling to be both good and bad.

What's good? Anything the user must key in has great error handling. To test a program's capabilities here, I do a "keyboard crunch" by pounding on the keyboard as randomly as possible for three seconds in response to a program query. This test will usually indicate a well-constructed program fairly quickly. SUPER did marvelously here.

Additionally, SUPER has a lot of built in "field and/or type" data checking. For example, a nice feature is the ability to copy parts of one database to another. If you try to copy data to an improper field type, SUPER warns you. Another good example is the entry of telephone numbers. If you enter a nonsensical number, it simply rejects your input.

These fine areas of the system are offset to a large extent by some of the weak areas. For example, if you try to print a report or labels or your data format and the printer is not on line, the system crashes and puts you at BASIC's >. When the disk is full, same thing. During the first few occurrences of this, the user, no doubt closing in on total madness, will forget to CLOSE files. (I did.) You run a high probability of losing significant amounts of input. (I did.)

In many of the cases where I crashed and ended in BASIC, SUPER should have trapped the error and returned me to a reasonable place, such as an error menu that indicates what happened and what can be done to salvage the situation without a total loss.

Too much effort was put into error trapping in trivial places and not enough time was put into the areas of most importance. I can live with a program that will allow me to input an area code of 000. I can't live with a program that has no easy recovery from a "Disk Full" crash.

Overall, I can only rate "Error Trapping" as Fair.

Performance
This is a rough one; I both love it and hate it.

SUPER is easy to use, and I think it's twice as easy to use as Profile Plus. SUPER allows you to freely copy one database to another; Profile doesn't. SUPER allows you to easily add fields to an existing database; Profile doesn't. SUPER allows you to sort on **any** field in the database, and you can sort on as many fields as you want in one pass; Profile doesn't.

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If you compare SUPER feature-for-feature against Profile Plus, SUPER surely comes out the winner. However, I must state that I have never crashed Profile. In my rather intensive testing, I crashed SUPER many times.

SUPER has a spiffy feature called Auto Delete which deletes in one pass every record that meets certain (field) attributes designated by the user.

Another nice feature of SUPER is the ability to recover Deleted records. Until you Purge the file, the deleted records are merely "tagged" as being deleted.

SUPER also allows you to Post Transactions between files. This feature can be extremely useful for setting up accounting systems.

A final feature of SUPER's I really liked is the inclusion of 21 very powerful field types. Their main benefit is to allow you to store large amounts of data in a compressed manner and save (in most cases) precious disk space.

What did I hate about SUPER? I discovered that SUPER's performance has a real dark side.

My test of the system used a realistically sized database; a test of 100 mailing labels is no test of a database! The test database, containing 1,000 records, was built by setting up two databases and then using SUPER's Copy feature to alternately copy the files back and forth onto each other. It took only a few passes to create a horrendous file.

The test database only had about 35 different record entries more or less randomly spread through the 1,000 total records. SUPER allows you to sort with a Spill file to speed things up, but you are warned that you must have disk space to hold this file, as well as a temporary file created while sorting. I decided to put the system to a real test and not use a spill file. I also decided to sort on three fields (shucks, most of the data is the same; this shouldn't be too rough). One hour and 45 minutes later my disk drives had revolved 63 trillion times. It was done.

One small problem. The database started out with 1,000 records; now the system said it had 1,740 records! SUPER's Display or Correct feature revealed that my data was badly scrambled after the first couple of hundred records.

The documentation revealed that the record scrambling had been caused by the Copy process. When copying, fields without data should be zero filled. I didn't do that.

Another look at the records revealed many were blank. SUPER allows a massive Purge of deleted records so I tried this, and the system crashed with an FE Error (undefined error??). Again, a non-recoverable crash to BASIC.

I admit that I chose the most advanced features of SUPER and attempted to push them to their limits. I tried repeatedly to set up a multiple disk database and never did succeed without crashing. Granted, my two Model 16 drives contain about a megabyte of data, but that is not a large database! My current mailing list, which runs on Profile Plus, is over 700K.

Overall, I rate the performance of SUPER as Fair.

Conclusion

Would I buy or recommend this system? A guarded maybe.

For the money, it is not worth it as it exists in the version I reviewed. If the system were (1) cleaned up in terms of error recovery for important items; (2) less prone to crash when its capabilities are pushed; and (3) a bit faster, perhaps using at least compiled BASIC as opposed to interpretive BASIC, I would probably rate this product as Very Good. As it stands, it is not worth more than $75.00 and does not warrant a rating higher than an Overall Fair.

The version of SUPER reviewed for this article was TRS-80 Model 16 version 2.0 (TRSDOS 2.0b). It's also available in TRSDOS 2.0 for the Model II, and in CP/M for the Models II, 12, and 16.

SUPER is available from:
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PROFILE·16
BEGIN AT THE BEGINNING

BY WILLIAM J. CLEMO III

By the time you read this, Profile 16 will be in your hands, ready for you to tear off the plastic wrap and dive in.

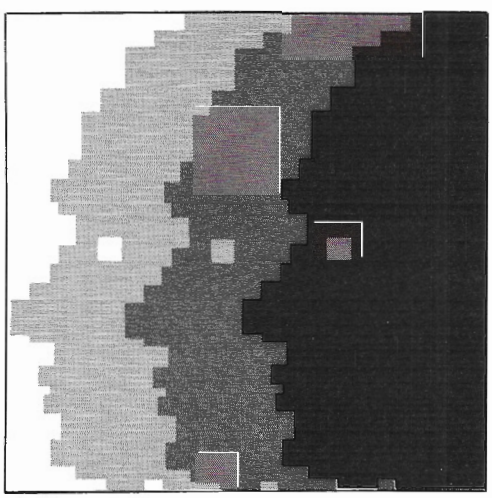
But wait. Before you go any further, you should think about what you are going to do next. Are you going to jump in and take chances and hope for the best, or are you going to plan things out, lay the groundwork, and do it the right way?

If you don't have XENIX up and running yet, I advise you to take the time to read both the XENIX and the Profile 16 manuals before hastily shoving the Profile installation diskettes into the floppy drive.

We've found from the experience of using Profile 16 in various test forms over the past six months that it's not easy to get things right the first time. Some decisions should be made before sitting down to install Profile 16 on your system.

Who's The Root?
First. If you have not decided who the system manager (root) will be, you are going to have to make the decision now. The root is the only person who can access Profile 16's special utility menu and run its six utility programs, including the backup program for Profile data files.

Tip: Our three years experience with Radio Shack micros has taught us the value of making a daily backup set and establishing a diskette rotation routine. We recommend that you implement a



backup routine *before* the system starts to get used heavily.

Calculate Swap Space
Second. If you have a Model 16B with the three user expansion board, the swap space on your hard drive will have to be increased when you install Profile 16.

Swap space is the area on the hard disk used to exchange the least used information in memory for other information requested from the hard disk. This exchange takes place when a user or users need information other than what is currently being accessed in memory.

XENIX exchanges the older information in memory for newer information from the hard disk. When the older, swapped information is needed again, it is easier to get to it in the swap space than to locate it on the hard drive.

XENIX usually requires 250K swap space per user, so three users would need 750K minimum and six users 1500K (1.5 meg) minimum. The XENIX installation routine is set up for a three user system with 1000K (1 meg) swap space automatically created.

But if you need a six user system, you must modify your XENIX installation set up and re-initialize your hard drive/XENIX system. This means making a save of all data files and programs, reformatting the hard drives, re-installing XENIX, and restoring data files.

Those of you with the new Model 16B+ will have to wait for another version of XENIX to be released before your computer will work properly when running Profile 16. The 16B+ with an internal hard drive had a change on the hard drive controller by the manufacturer which requires a modification of XENIX (Z80 ctl needs modified). If you've been having problems on your 16B+ with floppy drive errors during a trsshell "save" or with XENIX "tar" commands, you'll have to wait till the new version of XENIX gets here to make a full save of all your data. XENIX 1.3 will work properly with Profile 16 on a Model 16B+ as long as you don't try to do a data save that spans two files. We suggest that you save each Profile 16 file on a separate double-sided diskette unless your data files are bigger than 120K (1.2 meg).

Hardcopy Listings

Third. If you have more than one hard disk drive on your system, we recommend that you have a hardcopy listing of the files on each hard drive. Use the "ls -alx /dev/hd0 >> dirlist" and "ls -alx /dev/hd1 >> dirlist" and "lpr dirlist" commands to create a directory listing and send it to the spooler. For XENIX version 1.3, you can substitute "cat dirlist | lpr".

If you have more than one secondary, substitute hd2 or hd3 for hd0 and hd1 in these commands. You must have the secondary hard drives mounted to get the directory listing.

Remember to "rm dirlist" to remove the file once it has been spooled.

Notebooks

Fourth. We strongly recommend that you and each of your users keep a notebook that contains hardcopies of and comments concerning each Profile 16 file, including passwords,* file formats, screen layouts, report formats, local and global file edits, and any other information you can get a hardcopy of from within the Profile 16 program. This notebook becomes not only a place for information on present files but also a quick reference guide to setting up other data files.

Just like the system password, don't forget or lose the passwords to any of your files. If you do, you can kiss anything related to that file goodbye. The only way to get around a forgotten password is to first, make a back up of the disk, and then use "rm -fr /appl/profile/profile/filename" to remove all data, screen formats, reports, and any other related routines. Recreate the file, using the file listing in your notebook, the Profile 16 command "define files," and the trsshell "restore" command to restore all the files on your latest backup, except the map and map.temp files; only Root can bring these back. Your system manager should know how to do this just in case it happens.

To restore the map and map.temp files, Root uses the trsshell command "restore :0 /appl/profile/profile/filename/[a-1]* /appl/profile/profile/filename/[n-z]*". This command may not fit on one line depending on the length of the Profile filename. You can split it into two restore commands: "restore :0 /appl/profile/profile filename/[a-1]*" and "restore :0 /appl/profile/profile filename/[n-z]*".

Memory Requirements

Fifth. Make sure your computer has enough memory to accommodate the number of users you plan to have on the system at the same time. With a three user system using Profile 16, you need 512K. You can get fair to good speed on Profile 16 with 512K, as long as the super user stays off the system while the other users are on. The system puts his requests before ordinary users because of his high priority. With a six user system using Profile 16, the minimum memory requirement is 768K.

Unfortunately, the 16Bs can only be expanded to 768K within Radio Shack's warranty considerations. We are trying to add another 256K board to push our 16B to 1 meg of internal memory. Bob Snapp of Snappware offers a memory upgrade to greater than 768K, and the rumor mill in Fort Worth let the word slip on 512K memory boards replacing the 256K boards. You can also use a non- RS standard external card cage to upgrade your Model II/16s and 16As to more memory.

Disk Space

Sixth. You should also consider how much disk space is left before inserting the Profile 16 diskette.

The following table will show how much room is taken up by XENIX, the accounting packages, the XENIX development system, Multiplan, the COBOL development system, MBASIC, and Profile 16. Of course, these numbers do not indicate any files or programs you've created.

**NOTE: Representatives from the Small Computer Company disagree with this advice concerning passwords. They believe that writing passwords in a notebook or making printouts of passwords defeats the fundamental purpose of password protection. Root can circumvent passwords in the event of an emergency, thus eliminating the need for individual users to write down their passwords. --Ed.*

XENIX Utilities

spoolutil

SPOOL MANAGEMENT UTILITY PROGRAM

Easy to use menu driven program which allows you to manipulate the reports waiting for printing in the spool queue.

With spoolutil you can:

- suspend/restart printing
- get list of reports waiting in print queue
- view a spooled report on the screen prior to printing
- cancel printing of unnecessary reports
- print extra copies of a report (without rerunning the program)
- change the sequence that reports are printed in (get that important budget report NOW!)
- load the contents of any disk file to the spooler for printing (even add page headings)
- suppress printing of 'name banner' page
- clear jammed line printer
- restart a report from the beginning

Requires no knowledge of Xenix commands
Detailed manual is included.

SAVE TIME...SAVE PAPER... SAVE MONEY

xenixmenu

USER FRIENDLY MENU FOR XENIX SYSTEMS

Perform all frequently used Xenix functions by making menu selections. *Avoid seeing the Xenix prompt!*

With xenixmenu you can:

- add new users to the system
- change passwords
- change file protection
- remove users, files and directories
- establish group codes for more versatile file protection
- check system status:
  who is on the system
  who is authorized to use the system
  how much disk space is available
- run application software
- enable/disable remote terminals
- backup the system
- much more!

Eliminates the need to memorize and type Xenix commands.

Easy to add your application software to the menu.

Avoid having to respond to the Xenix prompt.

spoolutil $99 xenixmenu $99
or order both for just $185

SOFTWARE ONE

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Ohio residents please add sales tax
Xenix is a trademark of Microsoft Corporation

TABLE OF APPROXIMATE FILE SIZE REQUIREMENTS

1.) XENIX OPERATING SYSTEM	1,200K 1.2 meg
2.) ACCOUNTING PACKAGES	
a.) Common Programs	16K
b.) General Ledger	277K
c.) Accounts Receivable	238K
d.) Accounts Payable	384K
e.) Payroll	466.5K
f.) Order Entry	275.5K
3.) XENIX DEVELOPMENT SYSTEM	4785K 4.8 meg
a.) Software Development	2100K 2.1 meg
b.) Text Processing	900K .9 meg
c.) On-line User Manual	800K .8 meg
d.) Games	226K .23 meg
e.) Communications Software	175K .18 meg
f.) Learn Package	655K .66 meg

This listing shows the size of the full XENIX development system installed and how much space each part requires. You can chose which parts of the Development System you want to install when you use the XENIX "install" utility.

4.) MULTIPLAN	120K .12 meg
5.) COBOL Development	337K .38 meg
6.) MBASIC	130K .13 meg
7.) PROFILE 16	1500K 1.5 meg

All sizes for the programs are approximate indicators of the minimum space required per package.

Sizes are listed in 1K units.

Use the "du" (disk usage) command or the "df" (disk free) command to provide the number of blocks used and the number of blocks free, respectively. A block is equal to 512 bytes or .5K. Divide the number by 2 to get the number of K you are currently using or that is free.

You can see that if you get a combination of any of the programs above, a great deal of primary hard disk space will be used up by program space. Just a combination of XENIX and the Accounting package takes up 2.8 meg.

On a six user system with Profile 16 as the only application being used, the minimum space required is 4.2 meg (1.2 for XENIX, 1.5 for swap area, 1.5 for Profile 16). And that's before any users are added or any data is put on the system. Eight meg hard drive users have to think twice before installing any of these packages.

Profile 16 is a very useful tool, but it takes a little more time to learn than Profile Plus. This learning time can be time well spent if you use what you learn from the manuals in conjunction with the tips and procedures outlined in this article.

If you calculate the amount of disk space, swap space, and memory you'll need before loading Profile 16, if you implement a planned rotation and backup schedule for your save diskettes, and if you keep a log or notebook containing hardcopies of all directory entries and procedures you've developed while learning the system, you should be able to use Profile 16 efficiently with a minimum of frustration. You want Profile 16 to work for you as an integrated system, and not as a series of little files floating around. Proper data handling has its rewards!

Another Note: My co-worker, Jim, and I have started a XENIX/UNIX User's group called "Super User." Anyone inerested, please contact me.

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PEARLSOFT is dedicated to providing computer software that is functional, easy to use, and most importantly, operates according to the unique requirements of each computer user. Personal Pearl is their entrant in the software market.

PERSONAL PEARL

BY RICHARD TRAHAN

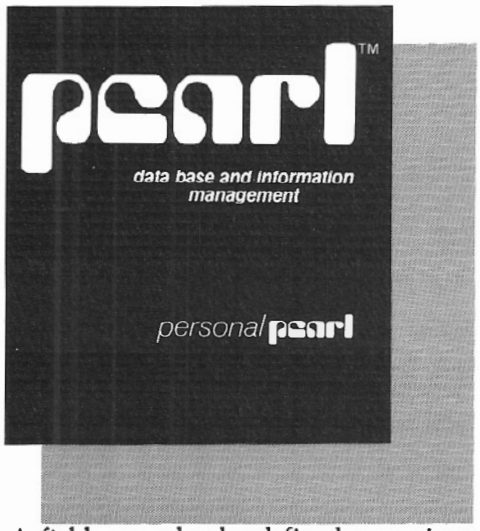
Personal Pearl is a CP/M-based, data collection and report writing information management system that is easily configured for the II/12/16.

As the user, you define forms with an interactive screen editor, and use these forms to build a data base in a dialog with the computer that includes review and editing capabilities. Then, reports are designed in a manner similar to that used for forms. Reports may combine and manipulate data from the files built from many different forms, and reports may be sent directly to the printer or to a disk file in ASCII format for manipulation by other software.

Personal Pearl is not a general data base system. You will not find an interactive data manipulation language (IDML), query and retrieval system (QRS), data definition language (DDL), or any other feature found in high power DBMSs. You cannot access Pearl's files from any computer language. Pearl is, plainly and simply, a stand alone data storage and reporting utility.

Forms and Fields

The focal point of Pearl is the form. A form is a screen layout consisting of strings and data input areas or fields. Fields are of fixed length and are defined by data type (character, numeric, or date). A field may also be optional or mandatory for data input; mandatory means that the system will not enter any of the data from the form into the database unless the user makes an entry into the field.



A field may also be defined as an index. This results in an additional data file for each index, but speeds search operations in edit mode and is required if sorting is to be done on the field. A Design Report feature will send a summary of any form or report in the system to the printer, showing how the various fields have been set up.

Form definitions are stored independently of the data that is input to them. It is possible to completely redefine a form, adding, for example, new fields. The data dictionary is sophisticated enough to avoid having to reconstruct the data file in this case; the new fields for the old data are merely null. If it is necessary to fill in the new fields for existing data, an edit mode easily steps through all the records and allows data entry or modification.

Regular data entry consists merely of calling up the name of the form and declaring onesself to be in input mode. The entire Pearl system is menu driven, even for operations that require swapping main program disks. There are no keywords and no command syntax; it is very difficult to make a mistake when stepping through the menus.

Fields may also reference data built from another form. This connection, or link, is part of the form definition process, during which time the other form need not yet be defined. Another process, Form Installation, does require the foreign form to exist so that linkages can be made into the forms definition file.

Referencing data could save you a lot of typing. There might be a field on your form that always contains one of several long strings. Instead of having to type the whole string, use a short code and let the program fetch the string by accessing a foreign form associated with a data file containing the codes and their long string referents.

Reports

Having collected data based on one or more forms, you then design a report. Each form may be associated with one or more reports. Each report is formally associated with only one form but may access data indirectly from foreign forms. Report definition is very similar to form definition. When a report is "installed," verification software insures that all fields referenced by the report definition do, in fact, exist and are of the right data type, etc. A very thorough diagnostic message system allows easy error correction for both form and report installation.

A separate Produce Reports function allows the user to direct output to printer or disk and to define paper dimensions and, for multi-up reports like labels, how many are to appear across each page.

There are three different types of reports that may be defined: fixed, list, and Super Calc. The same data file may be used to produce all three types of reports.

A fixed report is one in which each record or record subset appears on a separate page. A mailing label is a fixed report.

A list report is a summary of data from a group of records. A list of cash disbursements over a period of several days, possibly with weekly subtotals and a monthly total, is a typical list report.

The SuperCalc report takes numeric data only from a data file and converts it into cell format on disk. Other than the restriction that all data be numeric, the SuperCalc report is identical to the list type, described below.

Prior to actually printing the report, records may be sorted on up to five fields and subfields, one or more of which may be sorted in reverse order. Using the mailing list as an example, you could produce labels sorted first by zip, then by street within zip, then by house number within street. Of course, zip, street, and house number must have been defined as discrete indexed fields.

Other Powerful Features

Based on these basic concepts of form and report definition and report production, there are many nuances that add to the power and flexibility of Pearl. These include arithmetic formulas as part of a field definition or data output area, range selection on any field of a report to capture just a subset of records, multiple record types within the same data structure, headers, footers, page numbering, and controlled cursor positioning.

Pearl also comes with an internal file maintenance program to provide statistical information on files, like number of records, disk space used, etc., to compress fragmented disks, rebuild indices, rearrange system files among working disks, and facilitate report and design updates.

Minor Problems

Pearl has its drawbacks. For example, most of the earlier RS printers, designated by the prefix LP (LP1, LP2, etc.) insert a linefeed (LF) character after every carriage return (CR), so that programs need only send a CR at the end of each line. The later DMP printers also do this, but it can be disabled with user-accessible DIP switches. If you have an LP printer, you could be in big trouble with Pearl because all of your printed output will be double spaced, making it impossible to print labels, for example.

In all fairness to Pearl, the CRLF pair is the CP/M standard, but on the other hand, the configuration menu does include Model II P&T CP/M, so the

Got a glitch? SCRIPFIX™ it!

One of the weakest points of Model II Scripsit* is the fact that if something happens to glitch one of the documents, the whole document menu is unuseable.

The only advice that Fort Worth has to offer is to make backups. That advice is certainly the best, and as long as you do it often enough you'll never need SCRIPFIX. But, what if you're like most of us and forget, or maybe you were in a hurry and just skipped the backup process the last few times and then something happens.
Disaster... Sometimes it's not even just a matter of retyping, which is bad enough, but it could be that creative work is lost.

FEAR NOT—SCRIPFIX IT!

Instead of scratching your head as to what to do next, now there's a solution to this frequent problem. SCRIPFIX restores your files to a readable state. After a Scripsit disk has been worked on by SCRIPFIX, the Scripsit menu will again be readable. Even files purposely deleted will be shown in the menu. So, if you accidentally delete a document, SCRIPFIX will get it back for you.

20 HOURS... OR 2 MINUTES?

If all the documents in a full file had to be retyped, it would take a typist 20 hours averaging 50 words a minute just to key it in, no proofreading or editing. SCRIPFIX takes about 2 minutes.
Sometimes the damage is so severe, that sectors of the diskette become unreadable (error 5—sector not found). SCRIPFIX will make several attempts to find the sector. If it cannot be read, SCRIPFIX will notify you of the damage; skip the unreadable sector and continue the restoration process. The documents containing bad sectors will of course be incomplete.

WHAT PRICE THIS MIRACLE?

SCRIPFIX pays for itself the first time you use it! Compare the cost of typing to the SCRIPFIX low price of $69.95!

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owner of such a system should reasonably expect everything to work. Experienced CP/M users should by now have a utility to filter out unwanted linefeeds from disk files; if you don't have it, contact me and I'll tell you how to obtain one.

Since Pearl allows you to divert reports to disk, the filter could strip out the LFs, and regular CP/M commands would do the rest. This is a solution for small reports, but suppose your report uses key codes to access data indirectly from many forms. The resulting report file could be much larger then the total available disk space.

For example, a mailing list report layout could contain a three character street code; at report generation time, the code is used to access the full street name from a street file built from another form. The resulting report, i.e., set of labels, is a very large file of expanded addresses, which may not fit on the disk. Well, you could always segmentize your report into smaller pieces, but you should not have to go through all that. It would be much simpler to just supply a BIOS (basic input/output system) patch from within the configuration routines. I don't recommend you try this yourself unless you're an expert on CP/M internals.

The filter program will not help you with Design reports, since these cannot be diverted to disk from within Pearl, and Pickles & Trout's SETUP utility cannot re-route data from the LST device (normally the printer) to a disk file, although other CP/Ms may have this capability.

The form and report definition designs need improvement. Data fields are defined by contiguous characters, underscores by convention, and are delimited by spaces. There is no way to define adjacent fields, either in reports or in forms. For example, suppose you want to print a symbol immediately before a value fetched from a form's data file. Too bad; it can't be done. This is not a serious drawback.

But suppose you want to access data indirectly from a second form; this situation is a little more complicated, and is best illustrated with an example. Using the same mailing list as before, let's say you have a form layout that contains a name, house number, and 3-character street code linked to a street name file. This means that the names file does not contain a full street name, but only a reference to it. Now you want to design the report layout based on the names form. To do so, you must enter, on the report layout, the name of the field containing the street code in the names form. But every field in the report layout must be either "background printing," i.e., a string which is always printed, or a data output field, e.g. data retrieved from a form's data file. Therefore, although the field name on the report will serve to get the full street name, the field name itself is treated as background by the report logic, and gets printed on every label.

Personal Pearl is a very special software package that will let you manage your information in a completely new way.

There are tricks I learned from Pearlfolk to minimize the length of these extraneous strings, but no amount of legerdemain will eliminate them altogether.

Pearl is sprinkled with design weaknesses such as this, but they are all minor, and Pearlstaff assures me that they are being corrected.

All except the linefeed, that is. This took them by surprise, so it may be a while before a solution to this is offered.

A Serious Problem

A more serious problem is what to do when data corruption occurs. The scenario goes something like this: it's the middle of the night; you're typing furiously to build your mailing list file so you can meet the deadline in the morning. Having much experience with computers, you have a triply redundant backup system with a fourth archive disk used sparingly. There isn't a hint of trouble. You've tested your forms and report logic by printing some labels from a small file. Everything works fine. Then you try to sort the names file just prior to the final report, and you get this message: DATA CORRUPTION.

You run to the manual. The message can't be found, but you know there is a utility to rebuild the index on your names file; the sorter works from the index. So you try to rebuild the index and get this message: LOST DATA INTEGRITY. OK, you've got three backups. Each one causes the same problem. Evidently, some illegal character got into the file without warning and was propogated to all the backups. But you're really stuck now because in the process of trying to rebuild the index, the original index, or what was left of it, was destroyed, and you can't enter edit mode to try to find the bad character because the editor needs the index.

There is now no chance of meeting the deadline. The next morning you call Pearl and get a heavyweight on the phone. He is anxious to help and doesn't rush you. Will he reveal the file structure so you or your programmer can use a zap-type utility to fix it yourself?

Not on your life. Data structures are proprietary in programs like this. But there is a way to convert the name file to a straight ASCII format, and then use a utility to read the ASCII file back into a structured form usuable by Pearl. Do you have the conversion utility? Try to guess before going on.

Answer: wait another month until it is released and then buy this optional package, and you'll solve your problem.

The reader should have guessed by now that the foregoing is not fantasy, but actually happened to a reviewer who should know better. The general question of recovery after data corruption involves issues that are generic to the software industry as a whole and should really be dealt with in a separate article. The need of the businessman who depends on the integrity of

his programs and data must be balanced with the right of vendors to protect legitimate secrets. PearlSoft has made an effort to protect the user's data with an assortment of file manipulation utilities and recovery procedures, and in this respect, they are among the better software providers. But as long as any event can occur which leaves the user helpless, further improvement is required.

Documentation

Documentation and customer support are as important as the program itself. The manual consists of over 300 pages, copiously illustrated and esthetically well designed, a very professional job. There are two tutorials: "easy" and "advanced." The easy tutorial takes the user through form and report design, editing, entering data, report production, and customizing. There are also instructions for running the Welcome Disk, which contains a demo and a set of disk copy utilities that will set up your working disks depending on how many drives you have.

The advanced tutorial uses sample designs for a client form, appointment calendar, labels, and invoices, to illustrate more esoteric features, like computations, data from other forms, multi-up reports (2-across labels, etc.), subtotals, headings, footings, console output, index changes, and sorting.

Both tutorials contain an actual picture of the screen after each set of keystrokes, making it easy to check your work. Only one area for improvement is worth mentioning. Many users will find the material in the easy tutorial enough to meet their needs and will begin programming after reading it. But the full complement of editing keystrokes are not to be found until the advanced tutorial; in fact, the most powerful commands are squirreled away in an obscure appendix to the reference manual, the Help Text. With only the material from the easy tutorial, editing is painful; I would suggest putting all editing keystrokes as early in the manual as possible.

Aside from this, the tutorials are well written and bug free. Having read them, you should not have to go to the reference manual for most applications.

The reference manual is typical as a depository of everything there is to know about Pearl. There is a confusing array of terms that sound alike; we have report designs and Design Reports, form designs and Design Forms, etc. The explanation of linkages among form and report layouts is especially confusing. Pearlfolk are aware of all this, and are currently revising the whole manual.

Taken as a whole, the documentation is excellent and is among the best I have seen for products of this type. Supplementing this is an equally excellent customer service system. I had occasion to call Pearlsoft several times, sometimes with problems and at other times for clarification. For problems, they did not know I was a reviewer, and I got the first echelon of service each time. The people there were pleasant, very well informed, obviously trained for that job, and seemed genuinely concerned. They did not try to give me the rush, and they called back if they needed time to consult with others. Let's hope they can maintain this level of support as they grow, and not go the way of other companies whose arrogant disdain for their customers is legendary (who can that be??).

My advice: if you collect data in a standard format and produce reports from it, you'll love Pearl. Pearls occur perfect in nature, but not in software; make sure you can solve the linefeed problem or wait for them to do it for you. You might also want to wait for the new manual. At least be sure to get the ASCII file input utility. I will do a follow up review of Pearl if any enhancements come my way.

Personal Pearl is available for $195 from:

Pearlsoft
25195 SW Parkway
P. O. Box 638
Wilsonville, OR
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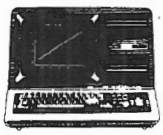

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SCRIPTSTHD For TRSDOS 4.2

BY DR. DONALD GUTKIN

It is true that hard disk SCRIPSIT (SCRIPSITHD), which runs on TRSDOS 4.1, will not run on TRSDOS 4.2. Here is the patch out of the Canadian Radio Shack head office in Barrie, Ontario. We used it, and it works fine on 4.2.

```
PATCH SCRIPSIT/CMD A=9557 F=9505 C=D605
PATCH SCRIPSIT/CMD A=955A F=B405 C=F505
PATCH SCRIPSIT/CMD A=955D F=351A C=6A1A
PATCH SCRIPSIT/CMD A=955F F=1703 C=4503
PATCH SCRIPSIT A=E07C F=9505 C=D605
PATCH SCRIPSIT A=E081 F=B405 C=F505
```

DOSFIX06 FOR TRSDOS 4.2

BY J. P. RADLEY

Bob Snapp's DOSFIXes for TRSDOS 2.0 are in the public domain and have, in fact, been published in *two/sixteen* (Vol. I, No. 2). I have not seen his corresponding set of patches for TRSDOS 4.2, but I have worked out DOSFIX06 for 4.2. This is the set of patches that disable address checking in DEBUG.

```
PATCH SYSTEM/SYS R=135 B=70   F=38F3  C=0000
PATCH SYSTEM/SYS R=135 B=78   F=30EB  C=0000
PATCH SYSTEM/SYS R=139 B=173  F=30CE  C=0000
PATCH SYSTEM/SYS R=139 B=181  F=38C6  C=0000
PATCH SYSTEM/SYS R=140 B=201  F=38    C=18
PATCH SYSTEM/SYS R=140 B=215  F=30    C=18
```


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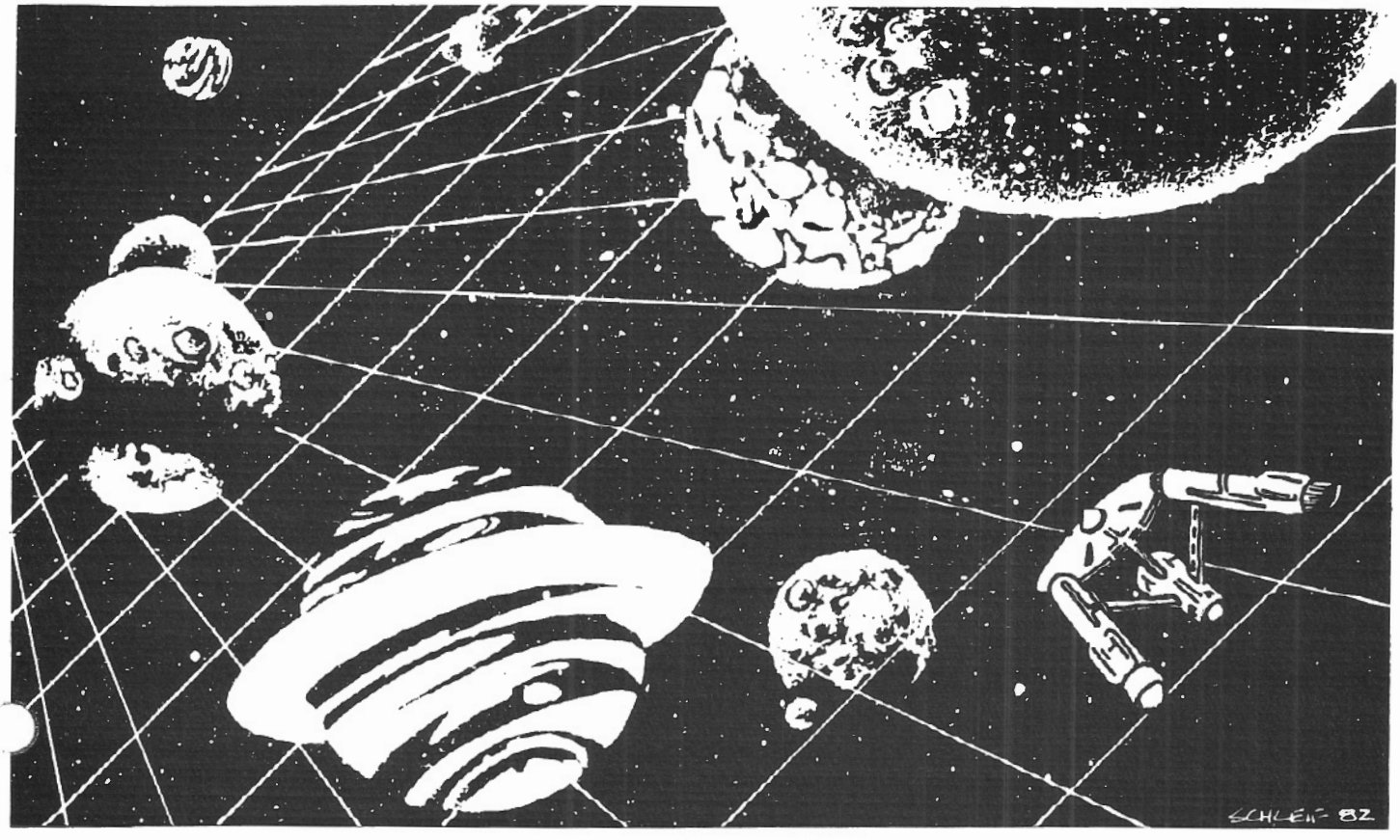
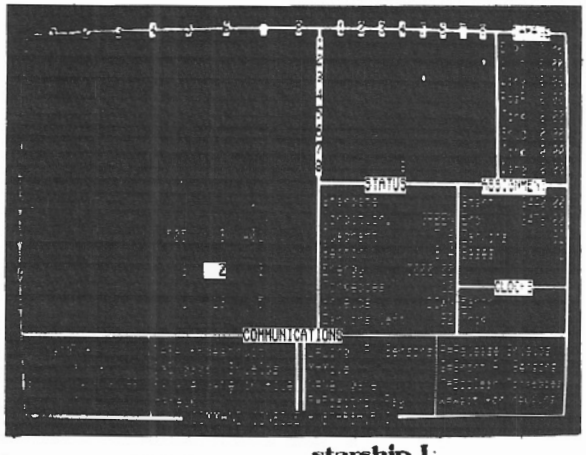
STARSHIP I



STARSHIP/I (copyright registered) is a save-the-galaxy type game based on the venerable STARTREK games which have been played on large mainframes for more than ten years. It is specifically designed for the RS Model II and features a constant console display with no scrolling. Each game begins in a randomly arranged galaxy of 64 "quadrants," each containing 64 "sectors."



starship I

STARSHIP/I is a "strategic" game (as opposed to "tactical" games which involve reflex action but little thought). However, STARSHIP requires *quick* thinking, as all events are timed. Because STARSHIP is written in the RS BASIC interpreter language, users can modify the source code or use sections of the code as models to learn techniques which can be used to produce games of their own design.

STARSHIP comes with a disk instruction file which can be listed on your printer. It can also be listed on the screen at the beginning of a session. In addition, STARSHIP contains a few undocumented "surprises" at advanced levels of play (there are ten levels of difficulty). These surprises may be analyzed by reviewing the source code, then modified or deactivated if desired.

Games may be saved in files at any point for later play or for "duplicate" games in which several players start with the same layout and position and compete for the highest ending score.

STARSHIP/I was sold for several months at $50 through leading computer magazines. It is now available to two/sixteen subscribers at the special price of $30, including air mail (anywhere) in protective Kangaroo mailer.

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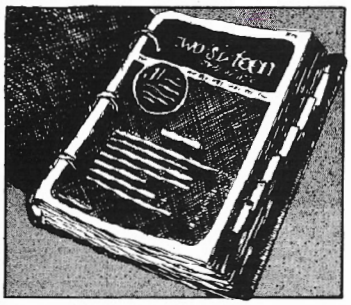
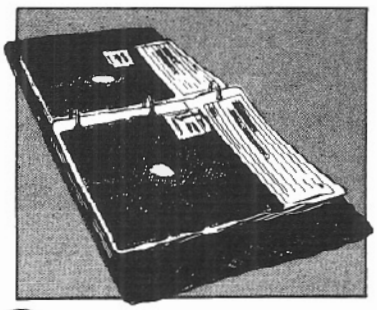
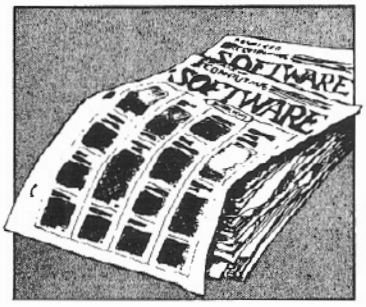


1 Three-ring binder with internal tabs containing all issues of **two/sixteen** magazine from inception through the end of 1983, including a cumulative index, and all 1984 issues of **Advanced Computing** (successor to **two/sixteen**), all in specially printed loose-leaf versions.

2 Newsletter to be published 26 times per year. It will contain product announcements, articles and correspondence outside **Advanced Computing** magazine's scope (because of time-value, large size, or specialized content), and the latest news of interest to serious users (mostly gleaned from dozens of other computer publications, and including abstracts of the more important articles).

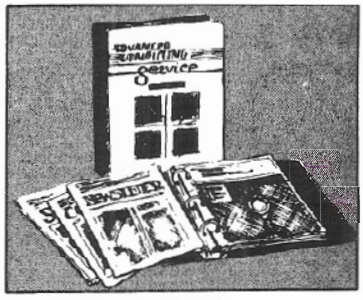


3 Diskettes with documentation (five or six per year), provided in loose-leaf sleeves. Includes all programs published in **Advanced Computing** magazine, all programs and patches that we receive and check out which are available for public distribution (along with our comments and documentation, and source code when available). At least one diskette per year will be devoted to each of the major operating systems (TRSDOS, CP/M, XENIX) used with Radio Shack II/12/16 computers.



4 Comprehensive software directory of all commercially available programs known to function correctly on II/12/16 computers under one or more of the three major operating systems. Compiling this directory is a major undertaking, but we plan to issue the first one by April, 1984, with updates at least annually.

5 Master cumulative index of all of the above. **Advanced Computing** magazine will include its own cumulative index in every third issue, beginning with Nov-Dec, 1983 (Vol. 2, No. 3). The Advanced Service index will include, in addition to the **Advanced Computing** magazine index, the newsletter, diskettes and documentation, and the software directory, all in a single comprehensive index.



6 Binder for newsletters, diskettes, comprehensive software directory, and master index.

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