Volume 5, Issue 12 December, 1983

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TRS-80® Microcomputer News

Fort Worth Scene

Orchestra-90 Note

Radio Shack's stereo music synthesizer Orchestra-90™ (26-1922) will be available after the beginning of 1984. When Orchestra-90 was reviewed in our November issue, we thought it would be available at that time. We apologize for the early review, and hope it has not inconvenienced you.

The Reorganization of Computer Customer Service

To those of you who have been loyal to the TRS-80 computer since the "good old days," we are sure you are aware of how this department has grown by giant leaps since its inception several years ago.

From a few employees, dedicated to providing timely information in response to your telephone inquiries, our Computer Customer Service Department has repeatedly expanded to meet the needs of our customers.

Traditionally, we have set up our support groups within Customer Service along hardware lines. This approach stemmed from the fact that in the beginning there were only a few pieces of hardware and equally few software packages. A division by computer model or type seemed logical and was easy to administer. Thus, our support function was divided into groups such as Model 1/3/4 and Model 2/12/16, Color and Pocket Computers, and with two groups whose function spanned all machines, Language Support and Hardware/Communications Support.

Now, due to the ever expanding range of products and to serve the need for specializing our support, we have reorganized the department along software application lines rather than the traditional hardware divisions.

Now, one Accounting Support Group is devoted solely to the support of all Business Accounting packages, no matter which hardware they are designed for.

Our Operating Systems/Languages/Compilers Support Group will be divided into two groups. Group Number 1 will cover those Operating Systems, Languages, and Compilers used by Models 2, 12, 16, and 16B. Group Number 2 will support Operating Systems, Languages, and Compilers for Models 1, 3, and 4; as well as Color Computer, Pocket Computers and our popular Model 100.

The Educational Software Support Group is dedicated to educational software, regardless of the hardware the particular package runs on.

The Productivity Group encompasses popular packages such as VisiCalc, Multiplan, Profile, Scripsit, and SuperScripsit.

The Special Applications Support Group fields inquiries on packages such as Medical Office Systems, Time Accounting, Job Costing, and other software which is "specific job" related.

We will continue to maintain a group specializing in Hardware and Communications related questions covering all computers and peripherals in use, and the many combinations of computers and peripherals.

In addition to all of the preceding groups, we will also have a new group which we entitle the Home Software Support Group, for support of those packages which are typically used in a home environment. This group also supports our vast library of games for all machines, and books which are carried in Radio Shack stores.

In order to make the changeover to this new structure as "clean" as possible, we replaced all existing, previously listed telephone numbers with new, sequentially numbered phone lines. For the sake of convenience, we have combined only the Productivity and Special Applications Groups on one phone number.

The new **Computer Customer Service Phone numbers** and groups are:

Productivity/Special Applications	**(817) 338-2390**
Accounting Software	**(817) 338-2391**
O/S and Languages, Group No. 1	**(817) 338-2392**
O/S and Languages, Group No. 2	**(817) 338-2393**
Hardware and Communications	**(817) 338-2394**
Home Software	**(817) 338-2395**
Educational Software	**(817) 338-2396**

We think the reorganization of our Computer Customer Service Department, as outlined above, will serve to improve our assistance to you. These changes are in effect now, and we ask that you begin using the new phone numbers.

Computer Customer Service hours continue to be:
8 AM to 5PM Central Time
and the address is still:
Computer Customer Services
400 Atrium, One Tandy Center
Fort Worth, Texas 76102

If you have problems with your *TRS-80 Microcomputer News* subscription, please continue to use the old number which is:
(817) 870-0407.

TRS-80 Microcomputer News
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TRS-80 Microcomputer News is published monthly by Radio Shack, a division of Tandy Corporation. A single six month subscription is available free to purchasers of new full size TRS-80 Microcomputer systems with addresses in the United States, Puerto Rico, Canada and APO or FPO addresses. Certain smaller TRS-80 Microcomputers will not include this free subscription. Subscriptions to other addresses are not available.

The subscription rate for renewals and other interested persons with U.S., APO or FPO addresses is twelve dollars ($12.00) per year, check or money order. Single copies of the Microcomputer News may be purchased from Radio Shack Computer Centers or Computer Departments for $1.50 suggested retail each.

The subscription rate for renewals and other interested persons with Canadian addresses is Fifteen dollars ($15.00) per year, check or money order in U.S. funds. All correspondence related to subscriptions should be sent to: Microcomputer News, P.O. Box 2910, Fort Worth, Texas 76113-2910.

Retail Prices in this newsletter may vary at individual stores and dealers. The company cannot be liable for pictorial and typographical inaccuracies.

Back issues of Microcomputer News prior to January, 1981 are available through your local Radio Shack store as stock number 26-2115 (Suggested Retail Price $4.95 for the set). Back issues of 1981 copies are available as stock number 26-2240 (Suggested Retail Price $9.95 for the set).

The TRS-80 Newsletter welcomes the receipt of computer programs, or other material which you would like to make available to users of TRS-80 Microcomputer systems. In order for us to reprint your submission, you must specifically request that your material be considered for reprinting in the newsletter and provide no notice that you retain copyrights or other exclusive rights in the material. This assures that our readers may be permitted to recopy and use your material without creating any legal hassles.

Material for publication should be submitted on magnetic media (tape, disk, or CompuServe). If you submit material on tape or disk, and it is accepted for publication, we will send you two cassettes or diskettes for each one you sent us. Cassettes will come from our box of mixed blank cassettes. If you submit material on CompuServe, and we think we may use the material, we will extend your Microcomputer News subscription by six months for each article accepted. If you are submitting material over CompuServe, please include your name and address or your subscription number so we can find you. If the material is very short, send it to us in E-Mail. If you have more than a few lines, you need to place the material in the ACCESS area of CompuServe and then let us know it is there by leaving a message on E-Mail.

Material may be submitted by mail to P.O. Box 2910, Fort Worth, Texas 76113-2910, or through CompuServe. The Microcomputer News' CompuServe user ID number is 70007,535.

TRS-80® Microcomputer News

Contents:

Prices shown in TRS-80 MICROCOMPUTER NEWS are in U.S. Funds.

Model 100 File Lengths

Richard A. Robinson
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I wrote the following program to allow determination of the length of the files in the MODEL 100's memory. I hope others will be able to use the program to help them enjoy their MODEL 100's as much as I enjoy mine.

PROGRAM USAGE

When the program is run it will display the filenames and their lengths. Pressing any key will return to the menu or another page of information (if it would not all fit on one page). The programs in ROM (BASIC, TEXT, TELCOM, ADDRESS and SCHEDL) are not listed, but two that are not seen on the menu are. NONAME.BA is the program you see when you enter directly into BASIC and list without loading anything. PASTE .BF is the PASTE buffer which is stored in memory and uses available memory as a file does.

TECHNIQUE

I make a parallel set of arrays which hold the filenames and starting addresses of the files. I also include what I believe to be an address just past the end of the last file to the addresses array. I then sort the arrays based on the addresses and as the files are contiguous in memory, the length of any file is it's starting address subtracted from the starting address of the next file.

VARIABLES

AD! . . . . . .ADdress array
CC . . . . . .Current Comparison (in sort)
CL . . . . . .Character Loop counter while reading filename
FD . . . . . .Files Done
FL . . . . . .File Loop counter
FN$ . . . . . .File Name array
HO! . . . . . .HOlds address during swap
HO$ . . . . .HOlds file name during swap
NF . . . . . .Number of active Files
PL . . . . . .Print Loop counter
PT . . . . . .PoinTer into memory where the information is stored
SL . . . . . .Sort Loop counter
SO . . . . . .Sort offset
WT$ . . . . .used while WaiTing for key to be pressed

```
1 REM    *** MOD 1ØØ FILE LENGTHS ***
2 REM    *** BY RICHARD ROBINSON ***
3 REM
1ØØ DEFINT A-Z              'INITIALIZATION
11Ø DIM FN$(21),AD!(21)
2ØØ FN$(Ø) = "NONAMEBA"        'NONAME POINTER AT
21Ø PT = -1639              '-1639
22Ø GOSUB 1ØØØ              'GET ADDRESS
3ØØ FN$(1) = "PASTE BF"        'PASTE POINTER AT
31Ø PT = -1628              '-1628
32Ø GOSUB 1ØØØ              'GET ADDRESS
4ØØ PT = -11Ø5              'NOFILE POINTER AT -11Ø5
41Ø GOSUB 1ØØØ              'GET ADDRESS
5ØØ FOR FL = Ø TO 18           '19 POSSIBLE FILES
51Ø PT = FL * 11 - 16Ø6        'COMPUTE POINTER LOC
53Ø IF PEEK(PT) = Ø       THEN GOTO 58Ø        'DON'T
    WANT KILLED FILES
54Ø FOR CL = Ø TO 7          '8 CHARACTERS IN NAME
55Ø FN$(NF) = FN$(NF)     + CHR$(PEEK(PT + 3 + CL))
    'BUILD FILE NAME
56Ø NEXT CL                'NEXT CHARACTER
57Ø GOSUB 1ØØØ              'GET ASSOC ADDRESS
58Ø NEXT FL                'NEXT FILE
6ØØ NF = NF - 1             'CORRECT # OF FILES
61Ø SO = NF\2              'STARTING SORT OFFSET
62Ø FOR SL = Ø TO NF - SO      'BEGIN SORT LOOP
63Ø CC = SL                'BEGInNING COMPARISON
64Ø IF AD!(CC) <= AD!(CC + SO)       THEN GOTO 73Ø
    'DON'T SWAP IF IN ORDER
65Ø HO! = AD!(CC)           'SWAP ADDRESSES
66Ø AD!(CC) = AD!(CC + SO)
67Ø AD!(CC + SO) = HO!
68Ø HO$ = FN$(CC)           'SWAP FILE NAMES
69Ø FN$(CC) = FN$(CC + SO)
7ØØ FN$(CC + SO) = HO$
71Ø CC = CC - SO            'DECREMENT CUR. COMPAR
72Ø IF CC > -1       THEN GOTO 64Ø        'LOOP IF
    VALID COMPAR
73Ø NEXT SL              'NEXT SORT LOOP
74Ø SO = SO\2             'HALF SORT OFFSET
75Ø IF SO       THEN GOTO 62Ø        'LOOP IF VALID
    OFFSET
8ØØ FD = Ø                'SET TO FIRST 'PAGE'
81Ø CLS
82Ø FOR PL = FD TO 15 + FD      'START OF PRINT LOOP
83Ø PRINT @ (PL - FD) * 2Ø,      LEFT$(FN$(PL),6);
    ".";      RIGHT$(FN$(PL),2);     'PRINT FILE
    NAME
84Ø PRINT USING " #####";      AD!(PL + 1) - AD!(PL);
    'PRINT FILE LENGTH
85Ø IF PL + 1 = NF       THEN PL = 98        'SET EXIT
    FLAG IF DONE
86Ø NEXT PL              'NEXT FILE TO PRINT
87Ø WT$ = INPUT$(1)          'ANY KEY TO CONTINUE
88Ø FD=PL               'OFFSET FOR SECOND PAGE
89Ø IF PL = 99       THEN MENU          'DONE IF NO
    MORE
9ØØ GOTO 81Ø             'NEXT PAGE
1ØØØ AD!(NF) = PEEK(PT + 2) * 256          + PEEK(PT
    + 1)  'GET LSB/MSB ADDRESS
1Ø1Ø NF = NF + 1           'INCREMENT # OF FILES
1Ø2Ø RETURN
```

The listing above is useful for understanding the program but would use 2383 bytes, almost half the available memory in an 8K MODEL 100. The following program uses

only 467 bytes, needs less available memory to run, and the only difference in execution is that it is a bit faster.

```
1Ø DEFSNGA-C
     : DEFINTG-Z
     : DEFSTRD-F
     : DIMF(21), A(21)
     : F(Ø)="NONAMEBA "
     : X=-1639
     : GOSUB 7Ø
     : F(1)="PASTE BF"
     : X=-1628
     : GOSUB 7Ø
     : X=-11Ø5
     : GOSUB 7Ø
     : FOR W=Ø TO 18
     : X=W*11-16Ø6
     : IF PEEK(X) THEN FOR Z=Ø TO 7
     : F(Y)=F(Y)+CHR$(PEEK(X+3+Z))
     : NEXT
     : GOSUB 7Ø
2Ø NEXT
     : Y=Y-1
     : X=Y\2
3Ø FOR Z=Ø TO Y-X
     : W=Z
4Ø IF A(W)>A(W+X) THEN B=A(W)
     : A(W)=A(W+X)
     : A(W+X)=B
     : E=F(W)
     : F(W)=F(W+X)
     : F(W+X)=E
     : W=W-X
     : IF W>-1 THEN 4Ø
5Ø NEXT
     : X=X\2
     : IF X THEN 3Ø ELSE Z=Ø
55 CLS
     : FOR W=Z TO 15+Z
     : PRINT @(W-Z)*2Ø, LEFT$(F(W), 6)"."RIGHT$(F(W)
     , 2);
     : PRINT USING" #####";A(W+1)-A(W);
     : IF W+1=Y THEN W=98
6Ø NEXT
     : E=INPUT$(1)
     : Z=W
     : IF W=99 THEN MENU ELSE 55
7Ø A(Y)=PEEK(X+2)*256+PEEK(X+1)
     : Y=Y+1
     : RETURN
```

The Talking Program

The Talking Program
J.C. Cramer/Ron Hutchinson
P.O. Box 28355
Columbus, OH 43228-0355

Imagine a computer room with no lights. Your Model II has a brightness control, but no matter how much you adjust the control you cannot get an image on the display. You know that the computer is running because you can hear the fan. Your job is to use the computer to create a working, debugged program. Your income depends on your ability to produce an error free program in a reasonable length of time.

It was the thought, and the reality, of this type situation which spurred program author Ron Hutchinson to create his talking program. Ron is blind and works as a commercial programmer.

What Ron needed was a program which would serve him just as the video display serves a sighted person. He needed to be able to read any line on the display, he needed to know how words were spelled, what punctuation was used, and even where on the screen a particular word or letter was located. To solve these needs, Ron created his talking program.

The talking program turns your Model II into a talking computer, capable of working with many existing programs. This program is for anyone who is tired of staring at the screen all day, or who has a use for a computer which can respond audibly.

The talking program for the Model II uses ten control keys and 24 ESC sequences to give Ron the information he needs about what is on his Model II display.

Control U is used to turn the computer voice (provided by a Votrax Type'n'Talk or Personal Speech System) on or off.

Control V tells the talking program whether it is to speak each word or if it is to spell each word. In the spell mode, the program tells you whether the letters are in upper or lower case.

Control A tells the program whether or not it is to speak any punctuation marks that are encountered in the text.

Control E turns on (or off) a mode which speaks words that are in lower case, and spells words that are combinations of upper case letters (e.g. USA or EPA).

These four control keys (U, V, A, and E) work together to set the basic form of how the computer will talk to you. These keys work as toggle switches to turn the appropriate function on if it was off, or off if it was on.

The next six control keys control secondary functions to tell the computer where it is to read, and how much it is to read.

Control Y tells the computer to read the current line.

Control S reads the material on the current line which is to the right of the cursor.

Control D reads the character directly under the cursor.

Control T sends the cursor to the top of the screen and lets you read the content of the screen one line at a time.

Control B tells you the current line and column position of the cursor.

Control Z is used to control the speed of the Votrax Personal Speech System.

Using these six control keys, you can read anything on the screen, and know where you are on the screen.

Since it is not always convenient to have to read the entire screen when you only want the twentieth line, 24 ESC codes (a - x) allow you to read any of the 24 lines on a Model II screen directly.

Ron's talking program is available for TRS-80 Models I, II, III, 4, 12, and 16. For details on how to get this program, or any of the programs under the Radio Shack Software Support Program, contact your nearest Radio Shack Computer Center or expanded Computer Department. Ask the salesperson to show you the Directory of Reviewed Software.

Usrlead

Fred Roeber
W. 1316 Cliffwood Ct.
Spokane, Wa. 99218

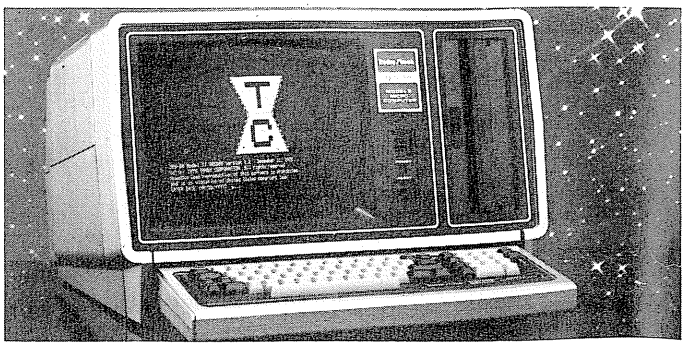
I have noticed that you have programs to convert the TRS-80 II to conform to the Line Printer II, printers capable of backspacing, and 50 hertz power supplies. The programs are the DO files LPII, PRTBKSP, and HERZ50. However, you have no programs to reverse these patches if you wish to. Therefore I have BUILT the programs UNLPII, UNPRTBKS, and UNHERZ50. They may be useful to your readers.

Here is a program that can be a 'hook' for machine language programs. Unlike the simple USRx command, this can pass on values to all the registers at once. It is simple to use. Set the variable EA in line 5 to the hex address of the machine language's error routine. If an error occurs, this program will pass on the number of the applicable error message in the A reg., like the SVC's. Set the variable JA to the starting address of your ML subroutine. When setting these variables, remember to swap the left and right halves of the address. For example, if the error address is 81FF and the jump address is AE54, EA should equal &HFF81 and JA should equal &H54AE. To call the subroutine, set the EA and JA to the respective addresses of the desired subroutine and set RE$ to the values you want the registers to be: the order of the registers is A, F, B, C, D, E, H, L, IX, IY, A', F', B', C', D', E', H', L'. All registers are represented by two places in the string except for the IX and IY registers, which use four. Set the two or four digits to the hex value you want the registers to contain at the beginning of your subroutine. When set, use the command RE$ = USR0(RE$). By the way, you can access several subroutines with this one command by changing the EA and JA values each time to different values. Once this BASIC program is run, you may delete lines 1-4 and 8. DO NOT, however, alter the array FR% or redefine USR0. You may renumber line 7 to conform your program, if you want to use several subroutines with this function. Upon exiting the subroutine, RE$ will equal the memory location pointed to last by HL. (HL) will be the length and the string will be the next (HL) bytes following HL. When calling this function again, be sure to set RE$ to 0's with the command RE$ = STRING$(40,"0"). The USR functions # 1-9 are not affected. The assembly language program follows.

```
        NOP             'to take up space to make
        CP 3            ' the EA and JA come out
        JRZ, OK         ' in one integer.
        LD A,48d        'not string.
        JP ERROR        'EA
OK      LD A,(DE)
        CP 4Ød          '4Ø char in string?
        JRZ OK2         'yes.
        LD A,9          'no.
        JP ERROR
OK2     INC DE
        PUSH DE
        POP HL
        NOP             'see nop above
        LD C,1Ød
CYCLE   LD B,1
        LD A,24d
        RST 8
        JPNZ ERROR
        PUSH DE
        INC HL
        INC HL
        INC HL
        INC HL          'it's the fastest way.
        DEC C
        JRNZ, CYCLE
        NOP
        POP HL
        POP DE
        POP BC
        EXX
        POP AF
        EX AF,AF'
        POP IY
        POP IX
        POP HL
        POP DE
        POP BC
        POP AF
        JP PROGRAM
```

P.S. When I was all ready to mail this disk to you, I asked myself, how do I mail it? I asked several people, including postal workers, and their best idea was to put the disk inside two squares of 1/4" or 1/2" styrofoam cut to the size of the disk and securely tape and package. This would protect the disk from bending and magnetic fields (we hope!) and also be light enough and thin enough to be inexpensive to mail. Finding this out, however, would have been a lot easier had you explained how to mail disks in your magazine. Please consider this idea for an article. If you would ask around about how to mail a disk and publish your answer, it might help your readers who want to contribute. Thank you.

EDITOR'S NOTE: An excellent wasy to mail diskettes is to use Radio Shack's Diskette mailers. 26-1317 for 5 1/4" and 26-4954 for 8" diskettes.



Stocking Stuffers from Profile

The small Computer Company
P.O. Box 2910
Fort Worth, TX 76113-2910
By Ivan Sygoda, Director, Pentacl

As you already know, these articles have a long lead time because of printing and mailing deadlines. Although I'm about to wish you all a happy holiday season and make gift suggestions for the computerists on your list, it's a sweltering day in late August as I write this! Maybe this is what Christmas is like in Southern California.

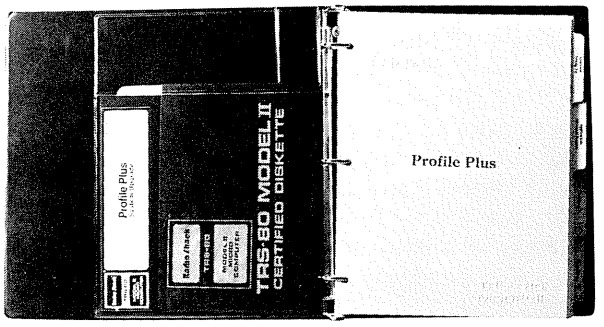
THE PROFILE SYSTEM

Profile, of course, is Radio Shack's very popular data base management program. I've often made the point that it is also a **system**, a structure of integrated components the whole of which is greater than the sum of its parts. Users who read the back of the manual can see the list of its various modules—the screen, report and label format, and storage programs, the sort utilities, the menu generating program, and so forth. Each of these files or programs has a function to perform, which it does efficiently, and almost invisibly when your menu choices call it into play.

Profile's modular structure makes it possible for the programming artists at The small Computer Company to create enhancements that increase its power, flexibility, and usefulness even further. The programming may be sophisticated, but the principles involved are quite simple. The Profile enhancements listed below each consist of a new program or two, an installation program that automatically adds the new program(s) to your existing Profile system and to its menus, and a manual that explains how to use it. Every enhancement is compatible with the foundation programs and with each other. (Yes! You can buy 'em all.) Your existing data is not compromised in any way. You'll simply be able to use your system more imaginatively. Who says there isn't a Santa Claus?

PROFILE PLUS

To build a structure, you need a solid foundation. For Model II/12 users, this is Profile Plus (26-4515, $299). Owners of Profile II (26-4512, $179) can easily upgrade to Profile Plus by purchasing and installing Profile Upgrade (26-4517, $120). This upgrade adds new features to the original program. For example, it lets you do math, customize user menus, and index your files. I recommend it highly as a Christmas gift. You might even buy it for yourself!



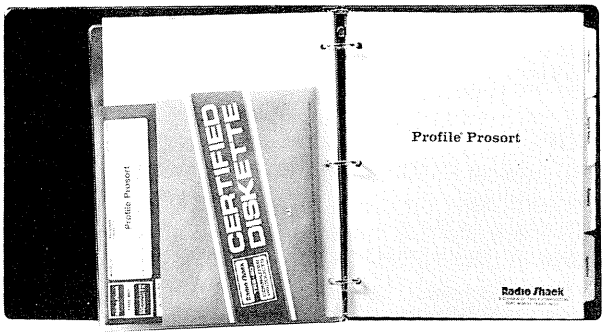
PROSORT

Prosort (26-4558, $149) is the Cadillac of Profile enhancements. I described it at length in the September 1983 Newsletter—there are probably copies still available at a local Radio Shack Computer Center (if not, write to us for a reprint).

Prosort enormously increases your power to sort and select data. First, you can perform these operations using fields from any segment, instead of only on the key segment. You can sort by up to five fields, the "major" field and up to four "minor" fields, which can be in ascending or descending order. You can also select by up to 16 fields, including ranges. But the key to Prosort's usefulness is that you can **store** these indexes (one inquiry index and five print indexes).

Prosort lets you print reports, labels and forms (see below), and perform mass operations directly from your indexes, which saves much time and effort and makes interesting kinds of automation possible.

Plus, you can make an index using another index as the base, which means you can bridge data segments when manipulating your records. Finally, Prosort increases your sorting capacity because it can use disk space as well as available memory while it does its thing. Once you use Prosort, you can't imagine how you ever lived without it.



FORMS

Profile Forms (26-4556, $125) lets you print information from each record on its own page, instead of in one or two lines on a multi-record report. Each page or form can be up to 132 columns wide and 66 lines long. The program can store five such formats in the same way it stores five report and five

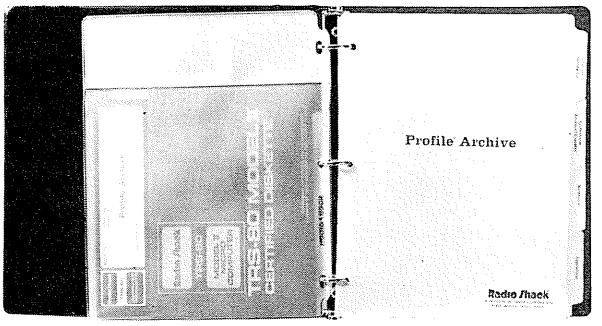
label formats. Which reminds me of a user tip I've been meaning to share: Profile can only call up to five screen, report, label, and form formats. But you can create and keep as many of each as you like. Just name them userfile/PR6 . . . , etc., and then, when you want to use one, give them one of the "legal" extensions by renaming them at TRSDOS.

Forms also allows you to access your printer's type fonts, special characters and features (you simply place the appropriate printer control codes on the formatting screen). You can intermingle text and data.

At Pentacle, we use Forms for many purposes. Billing our dancers for group Blue Cross/Blue Shield payments is a cinch with an invoice I designed to show each dancer's address through a window envelope. We also use Forms to acknowledge contributions. The letters look good because Forms tells our printer to use its correspondence quality proportional font. It's perfect for form letters of any sort.

ARCHIVE

Is disk space getting to be a problem? Data bases have a way of growing like Topsy. Archive (26-4557, $49) offers a rational way out of your bind. It allows you to purge or even reorganize your records. First, you can use Prosort or your existing sort and select capabilities to reorder and choose the records to be involved. This might be inactive customers (date-of-last-update before a certain cutoff point), clients in New England (zip code equals 0= = = =), or anything at all. You can either delete these records from the file, optionally creating a paper audit trail on your printer, or move them to a new or existing archive file. With Archive,you can go so far as to completely revamp your data base. You can rewrite or shorten files, or split them into logical parts, based on criteria such as sales regions, or fields of interest. Archived records can also be put back in the main file using the same procedures.



LOOKUP

The newest Profile enhancement (26-4559, $199) is an amazing program, the one that I consider the crowning touch to the Profile system. It takes computerdom's best electronic filing system and turns it into a relational data base. "Relational" is an over-used buzz word that refers to the ability of a data base program to establish links among various files. This is exactly what Lookup does. It lets you pull data from up to five files (up to 90 fields) into a sixth. Here's an example: at Pentacle, I have a data base called TOURHIST, which is my record of where and when my dance companies have appeared. I also have a data base called SPONSTAT which contains all the particulars about sponsors or presenters of dance companies. Lookup lets me collate information from both files at once. I don't need to waste space in TOURHIST storing the presenters's contact name, address and phone number. Lookup fetches these for me from SPONSTAT automatically.

BASIC TRAINING

Does wading through user manuals drive you up a wall? Does reading these articles induce yawns? Well, we have one more card up our sleeve, one more means of making you comfortable at the Profile steering wheel. It's Profile Training (26-4516, $69), a hands-on tutorial that guides the user through the capabilities of the basic Profile II system. The package includes a disk, a manual, and four audio cassettes. It may not be the Rolling Stones, but the dulcet-toned narrator is guaranteed to hold your interest.

A GIFT FOR ALL GENERATIONS

Here's a great stocking stuffer for the Model II/12 user who doesn't happen to own Profile. (There are reportedly a handful of you out there.) It's inexpensive, too. Menu Generator (26-4555, $39) is a separately packaged version of Profile's menu generating module. With this program, it's easy to construct professional-looking menus that run at machine language speed. For instance, you can make a menu that appears automatically at boot-up, giving the operator a choice of application programs. Menus can call BASIC and COBOL programs, TRSDOS utilities, even other menus. You can initialize your printer, automate backup procedures, and set communications parameters. In short, you can do anything from a menu that you can do from TRSDOS, BASIC, or a DO file. Menu Generator makes it easy.

THREE INTO TWO WON'T GO

Model III Profile users who have read this far shouldn't be depressed. It's true that many of the enhancements listed above take up too much room to fit efficiently on floppy-based Model III systems. But Santa does have something just for you—the new Hard Disk Version of Profile III Plus (26-1593,$299), which includes Prosort. If it's the Model III Hard Disk you need, (26-1130, $1999), Santa's address is North Pole, Earth, Solar System, Milky Way Galaxy, Universe.

HOLIDAY CHEER

This is where I get to wish you a happy holiday season and to thank you for being such faithful readers all year. Next year will bring many new Profile goodies. Meanwhile, keep sending in your questions and comments. We read them all and answer them as soon as possible.

I'd also like to tip my hat to the bright and friendly folks at The small Computer Company. They're the unsung wizards who always manage to have something interesting in their little corporate blackbag. Happy New Year from me to them and from them to all of you.

PROFILE Editor's Note: This is Mr. Sygoda's fourteenth article in a series of 'how-to' Profile articles. Other articles in the series will be published over the next few issues in this column. We hope that you enjoy this feature, and we look forward to your comments and questions on Profile.

Pentacle is a New York City-based non-profit service organization specializing in administrative services for performing art groups.

CompuServe

Editor's Note: The CompuServe Information Service is one of the largest information and entertainment services available to owners of personal computers and computer terminals. With each issue of TRS-80 Microcomputer News, *various features of CompuServe will be discussed. The CompuServe Information Service is sold at Radio Shack stores nationwide and in Canada.*

THE ALTERTEXT REPORT: THEY HAVE THE INFORMATION YOU NEED

Altertext. One of the Christmas movies depicting life in the futuristic computer-oriented worlds. Right?

Wrong. The Altertext Report is one of the newest and most comprehensive offerings on the CompuServe Information Service. Take a peek into Altertext and find out the most interesting things.

Medical imaging techniques, downturn in robotics and laser powered fiber optic communications. These are just three articles summarized in the monthly review of news and business publications.

The Altertext Report provides an informative abstract of the article along with the name of the publication and the date it appeared. High technology, communications innovation, and computer development are the subjects covered in Altertext's fast-paced, easy-to-read format.

Some of the recent abstracts include the 256K Memory Chip from *Fortune* magazine, electrical muscle stimulation and microcomputers from the *Wall Street Journal* and the future of the software retailing industry from *Business Week*.

There are a variety of topics covered in Altertext. When trying the GO command with a random page number, you'll find yourself exploring the *Wall Street Journal*'s excerpt on Disney Productions' new pay-TV channel, the Disney Channel. Going to another page, you'll find some fascinating information on the legal profession and its slow acceptance of computers. *Forbes* magazine reported that the hesitation was due to the fact that computers can highlight certain facts about the business that not all lawyers want to see.

In another area, I found that Digital Equipment Corporation (DEC) is now offering a "total solutions" center to the small business and professional markets. According to *Business Week*, the centers will have private consulting rooms, hands-on demonstration rooms, servicing areas, and offices.

This is just a small glimpse of some comprehensive, informative facts presented to you on line for easy viewing. But where does it originate? The Altertext Report is a product of Altertext Inc., of Boston, Mass. Altertext is a communications company providing services and products. Some of the Altertext services include typesetting, word processing, and optical character recognition scanning.

Doug Corcoran, editor-in-chief for Altertext explained that Altertext provides the Altertext Diskreader, "a system which converts information from one system to another.

"In other words," Corcoran replied, "we convert IBM information into Wang information. What was only readable on an IBM is now readable on a Wang." Altertext also provides the printed Altertext Report available for subscription on a monthly basis. The Altertext Report Electronic Edition is available at normal connect rates.

Enjoy comprehensive knowledge at your fingertips. To view the Altertext Report, access the Personal Computing area, "Reference Library," or type GO ALT from any prompt in the CompuServe Information Service.

ACADEMIC AMERICAN ENCYCLOPEDIA—AS CONTEMPORARY AS THE MEDIUM IT USES

You'd expect to find Socrates, the American Revolution and coal mining in any general encyclopedia. You'll find them in *Grolier's Academic American Encyclopedia*, too—along with coverage of such events as the death of Leonid Brezhnev and the rise of Yury Andropov, martial law in Poland, 1983 Super Bowl and Stanley Cup results, and hundreds of thousands of other facts.

But they are only part of the latest update to Grolier's 9 million word database that can help you solve all aspects of your information needs while acting as the nucleus of an electronic home library.

The intent of this article is to introduce you to just some of these new articles and to help you start thinking of using the AAE as a tool of ready reference to provide answers to specific questions. It is also an excellent browsing and serendipitous discovery of information on a broad range of subjects such as science, technology, the arts, geography, social sciences, music, sports and much, much more.

CONTEMPORARY BIOGRAPHIES

One of the features of the *AAE* for which it has received great praise from the critics, has been its biographical entries. In addition to the coverage of individuals whose place in history is assured, the *AAE* includes people in the news, politics and popular culture whose biography may be of current but only short-lived interest.

MUSIC

The addition of 100 new articles on musical groups and individual performers, as well as musical styles such as punk rock, is recognition of the central role that music plays as both an expression and a reflection of popular culture. Articles on pop musicians Pat Benatar, Christopher Cross, Jennifer Holliday, Bob Seger and The Police, and articles on jazz greats George Benson and Alberta Hunter are representative of the breadth of coverage of popular music. Such classical performers as Rudolf Firkusny and Leonard Slatkin round out the coverage.

SPORTS

Biographies of Larry Bird, "Marvelous" Marvin Hagler, Bobby Knight, Ivan Lendl, Mary Decker Tabb, and Herschel Walker are among the more than 40 new sports articles added to the electronic *AAE*. Another 20 existing articles were brought up to date including the results of the 1983 Indianapolis 500.

FAST FACTS

Approximately 50 new tables and lists have been added to take advantage of the unlimited space and relatively easy updating procedure. These table fill various function; some are "archival," listing all the U.S. Open and Wimbledon champions, or all the prime ministers of Great Britain since Sir Robert Walpole (1721-42). Other are designed to satisfy the curiosity of "What are the 10 or 15 largest _____ " —for example, tallest buildings, largest financial institutions, highest-circulation magazines.

Yet others provide comparative vital statistics, pulling together information otherwise distributed among many different articles. In a few cases, the new tables provide the information that in a print version would be conveyed by illustration. Thus, the breeds of dogs recognized by the American Kennel Club are listed in a table appended to the dog article.

POLITICS AND ECONOMICS

In addition to updating articles on the various branches of the U.S. government, new articles have been added on all the current members of the cabinet and other figures prominent in the U.S. political scene. These articles focus on President Reagan, government regulation, social security and the presidential nomination in 1984. New articles on such subjects as dioxin, school prayer, nuclear freeze movement, and supply-side economics also address current issues of public concern in the United States.

Public affairs abroad are covered in the updates to numerous country articles and existing articles on national leaders. New biographies have been added on such leaders as Lieut. Jerry Rawlings of Ghana, Reynaldo Bignone of Argentina, and many others. The new fact boxes list the political leadership as well as the latest economic and demographic statistics for every country in the world.

In all, in the areas of politics, government, economics and geography, 250 articles are new or have been revised specifically for this on-line update. Of these, 95 are new biographies.

SCIENCES/TECHNOLOGY

New developments in such areas as astronomy, particle physics, and health are covered in an array of new and revised articles. New articles include IRAS (Infrared Astronomy Satellite); nuclear magnetic resonance imaging; AIDS; Alzheimer's disease, and several other diseases of major concern; and Barney Clark and Robert Jarvik, the recipient and designer of the first artificial heart.

In these area, about 160 articles were revised or added for the on-line *AAE*.

LITERATURE AND JOURNALISM

A particular effort has been made to broaden the *AAE*'s coverage of contemporary writers. Thus, articles have been added to the on-line encyclopedia on Ken Follett, Robert Coover, Cynthia Ozick, Barbara Pym, and D. M. Thomas. Forty-five new literary biographies are included in this revision of the on-line *AAE*, and almost 100 existing biographies have been updated.

The field of journalism (print and broadcast) is covered in approximately 30 new articles, including biographies of such highly visible figures as Dan Rather and Tom Brokaw, and in updates to articles such as that on Stern, the German weekly news and photo-feature magazine where the curious episode of "Hitler's Diaries" was reported.

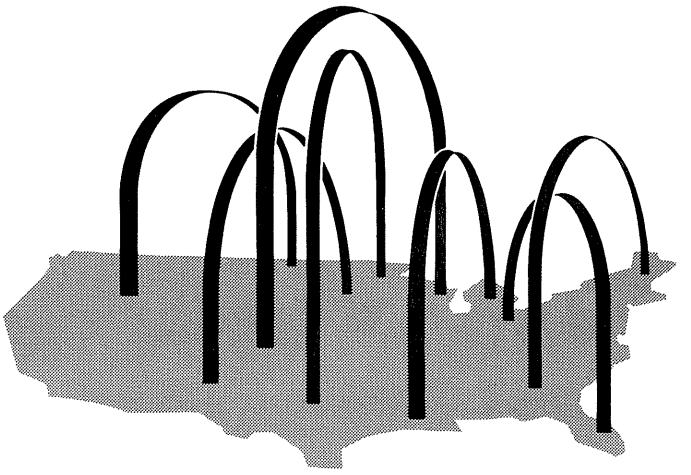
THEATER AND FILM

The theater and film industry also received much attention. Some 60 new biographies include pieces on Brian De Palma, Robert Duvall, George Lucas, Steven Speilberg, Steve Martin, Dudley Moore, Meryle Streep, Tommy Tune, Peter Weir, and E.T.

In summary, this latest revision of the electronic *AAE* includes a total of approximately 1,900 new and revised articles. This does not cover the hundreds of articles—those on countries, for example—that were brought even further up to date to reflect major developments through the middle of this year.

Currency, accuracy, and breadth of coverage all make Grolier's the encyclopedia that can help you solve all aspects of your information needs. The *Academic American Encyclopedia* is available on the Home Education menu or by entering GO AAE at any prompt.

Questions and comments about the CompuServe Information Service can be sent to Richard A. Baker, editorial director, or Jacqueline A. Farthing, assistant editorial director, CompuServe Information Service, 5000 Arlington Centre Boulevard, P. O. Box 20212, Columbus, Ohio 43220 or through Feedback, main menu item 5, CompuServe User Information.

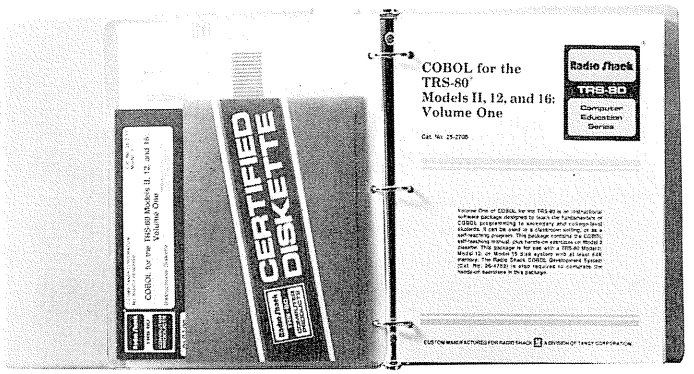


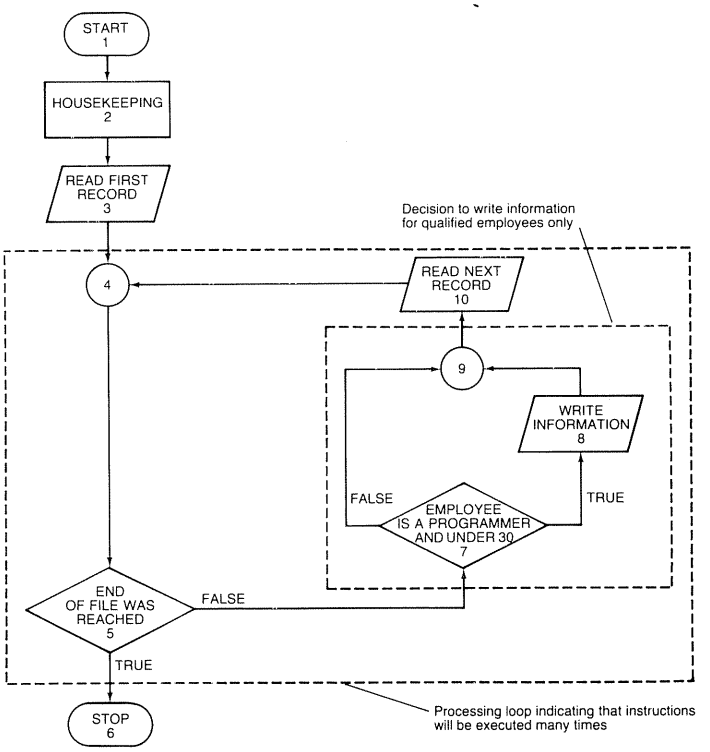
COBOL Instruction on the TRS-80 Models II, 12, and 16

A new courseware package from Radio Shack is designed to help secondary students and adults learn the fundamentals of COBOL programming. COBOL is a computer language widely used in business programming applications, and the demand for COBOL programmers is currently high.

COBOL for the TRS-80 Models II, 12, and 16: Volume One, is a self-instructive course written by Professor Robert T. Grauer of the University of Miami, Florida. The course includes a comprehensive self-teaching text and an instructional diskette with hands-on activities and quizzes keyed to the text.

The seven-chapter instructional text explains COBOL fundamentals and discusses numerous example programs that illustrate the language's features. All programs from the text are included on the instructional diskette to allow for further practice and exploration.





Chapter Four, *The COBOL Language*, presents the fundamental COBOL language statements, including verbs for Input/Output, for performing arithmetic, for implementing decisions, for looping, for transferring and editing data, and finally for terminating a program.

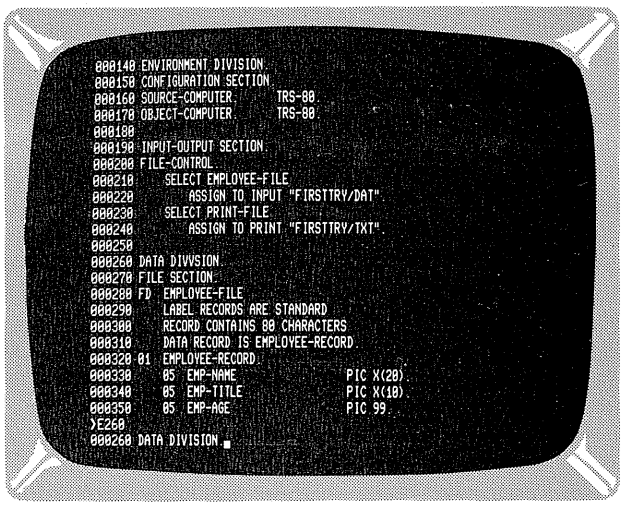
CONTENTS OF THE COURSE

The COBOL text, exercises, and hands-on activities in the Volume One package were designed for secondary or post-secondary students, or for adults who want to teach themselves the fundamentals of COBOL.

Chapter One, *Introduction to COBOL*, introduces the COBOL program's four divisions and six language elements. An example program demonstrates the roles these elements play. Students gain hands-on experience in running a COBOL program.

Chapter Two, *File Processing*, presents the COBOL statements used in file processing. Students learn how to write programs and to use flowcharts and pseudocode.

Chapter Three, *COBOL on the TRS-80 Microcomputer*, leads students through hands-on exercises in creating, modifying, and compiling a COBOL program, using CEDIT, the TRS-80 COBOL editor..



ADD

The ADD verb has two basic formats:

```
ADD {identifier-1} [identifier-2] ... TO identifier-n
    {literal-1   } [literal-2   ]
```

and

```
ADD {identifier-1} {identifier-2} [identifier-3] ... GIVING identifier-n
    {literal-1   } {literal-2   } [literal-3   ]
```

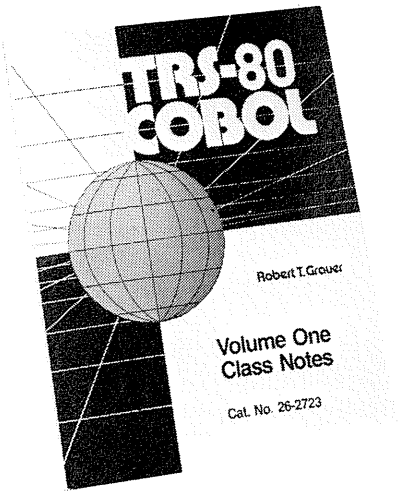
Chapter Five, *Debugging*, shows students how to avoid and correct the two kinds of errors in COBOL—compilation (syntax) errors and execution (logic) errors.

Chapter Six, *Advanced Features*, covers advanced forms of already-introduced COBOL statements, and introduces some new statements.

Chapter Seven, *Programming Style*, presents guidelines for writing COBOL programs that are easy to understand and maintain.

CLASS NOTES

The TRS-80 COBOL Volume One Class Notes (Cat. No. 26-2723), also by Professor Grauer, is a set of lecture notes available separately in paperback for teachers who want to teach Volume One COBOL in a classroom setting. These notes are in outline form and in large print, and can be reproduced by the teacher to make overhead transparencies for classroom use.



ABOUT THE COURSE'S AUTHOR

Robert T. Grauer, Ph.D., is Associate Professor in the Department of Management Science and Computer Information Systems at the University of Miami, Florida. For the past twelve years he has taught college-level courses in COBOL, Systems Analysis, Assembly Language, and Special Projects.

Among the textbooks on COBOL programming that Grauer has authored and co-authored are the following:

Structured COBOL: A Pragmatic Approach, Prentice-Hall, Inc., 1981.

COBOL: A Vehicle for Information Systems, 1981.

A COBOL Book of Practice and Reference, Prentice-Hall, 1981.

Structured Methods Through COBOL, Prentice-Hall, 1983.

The IBM COBOL Environment, Prentice-Hall, 1984.

HOW YOU CAN USE THE COBOL COURSE

COBOL for the TRS-80 Models II, 12, and 16 (Cat. No. 26-2706) is available through your local Radio Shack store or Computer Center. The suggested retail price, including text and instructional diskette, is $49.95. (Prices may vary at individual stores and dealers.)

To use the instructional diskette, you also need the Radio Shack COBOL Development System (Cat. No. 26-4603). The diskette provided with the COBOL Development System contains the COBOL editor, compiler, and "run-time" programs that you need in order to write, edit, compile, and run COBOL programs.

The instructional diskette provided with the course can be used on a TRS-80 Model II computer, or on a Model 12 or Model 16 computer in Model II mode.

The TRS-80 COBOL Volume One Class Notes (Cat. No. 26-2723) are sold separately, at a suggested retail price of $9.95.

For more information, contact your local Radio Shack store or Computer Center, or contact the Radio Shack Regional Educational Coordinator in your area. A list of Radio Shack's 25 Regional Coordinators is printed every few months in the Education pages of this newsletter.

MAGAZINES

Below are five magazines of special interest to TRS-80 owners that we believe have editorial content of high quality and will be of use to our customers.

Basic Computing—The TRS-80 User Journal
3838 South Warner Street
Tacoma, WA 98409
(206)475-2219

Color Computer Magazine
Highland Hill
Camden, ME 04843
(207)236-9621

Rainbow (Covers the TRS-80 Color Computer)
5803 Timber Ridge Dr.
Prospect KY 40059
(502)228-4492

two/sixteen magazine
P.O. Box 1216
Lancaster, PA 17603
(717)397-3364

Portable 100—The Magazine for
Model 100 Users
P.O. Box 468
Hasbrouck Heights, NJ 07604

Medford Forum-80 Bulletin Board

The Medford Forum-80 Computer Bulletin Board Service is available 24 hours a day and can be accessed at 1-503-535-6883.

AGRI-STAR Assists Agribusinesses

by Tom Deffke

What do a bank, insurance company, grain elevator, feed store, and flying service have in common?

They all use AGRI-STAR to obtain information required to manage their businesses better. AGRI-STAR is an electronic, two-way dial-up information service designed to assist farmers and other agribusinesses.

Take, for example, Missouri Farmers Bank of Maitland, Missouri. It accesses pricing information on AGRI-STAR each day from commodity markets in Kansas City, St. Joseph, and Chicago, according to Pam Warner, Controller.

The information received from AGRI-STAR is reviewed daily by bank loan officers. Besides monitoring corn, soybean and livestock prices, loan officers examine closely key news stories affecting the farm economy. Why?

"Farmers are our main customers," said Warner, "and we have to show them that we are more knowledgeable about farming than our competitors."

Prior to subscribing to AGRI-STAR, bank employees sifted through newspaper and magazine articles to obtain information.

A NECESSITY FOR FEED STORES

Hulme Feed and Supply, Cairo, Nebraska determines its feed purchase decisions on information accessed from AGRI-STAR, according to Steven Hulme, Manager.

Hulme Feed and Supply contracts for 20 to 40 tons of hog and cattle concentrate per month, said Hulme. Soybean meal is a key ingredient of the concentrate, which is sold as livestock feed to area farmers. That means if the cost of soybean meal rises, so will the cost of the concentrate.

So, Hulme bases his buying decisions on pricing information from the Chicago Board of Trade (corn and soybean futures), Chicago Mercantile Exchange (livestock future), and Omaha market (cash livestock prices).

If Hulme sees that prices are in an uptrend, he contracts ahead for his feed to "lock in" a lower price. Conversely, if prices are falling, he tries to avoid contracting for a large supply.

"If prices drop 20% after I make my contract, I cannot ask my customers to make up the difference," Hulme said.

Hulme said the information is also critical to his customers. "If prices are rising, and a farmer needs feed, he should buy as early as possible," Hulme said.

Hulme posts the prices in his store after the markets close so his customers can analyze them while they are waiting.

"I even keep the sheets from several months ago posted so they can check back on them," Hulme noted.

NEGOTIATING TOOL FOR GRAIN ELEVATORS

AGRI-STAR helps another operator, Jack Schultz, President of Deer Creek Elevator in Rolling Fork, Mississippi, negotiate prices with his wholesaler in New Orleans.

Before he calls New Orleans to find out what the "basis" is, Schultz accesses soybean prices from the Chicago Board of Trade (CBT) on AGRI-STAR. (Basis is the difference between the futures market price and local cash price.) Since the basis tends to parallel CBT prices, it's critical for Schultz to know the market before he negotiates the basis. In the past, Schultz had to place long distance calls to obtain pricing information.

An Indiana insurance company is also utilizing AGRI-STAR.

One of the first steps in estate planning is to determine how much an individual is worth. Mid-Continent Insurance Company of South Bend subscribes to AGRI-STAR so it can determine the value of farmers' crops and livestock, according to Susan Antisdel, Administrative Assistant of Mid-Continent. "We used to review the Wall Street Journal for prices," she said.

WEATHER REPORTS CRITICAL TO CROPDUSTERS

Finally, businesses engaged in cropdusting or aerial application of fertilizers and chemicals can even find important uses for AGRI-STAR.

Archie Sung, President of Vaughn Flying Service in Vaughn, Mississippi, obtains weather forecasts before taking off on a job.

Weather on AGRI-STAR is available by climatic divisions (groups of counties within each state). Sung utilizes two-day forecasts for planning and current weather reports before take-off. Weather information provided by AGRI-STAR includes: visibility, wind direction and velocity, probability of precipitation and precipitation amounts. These are all critical factors to someone who makes a living as a cropduster.

"I also check cotton futures prices on the New York Board of Trade twice daily," Sung said. "My customers even stop in to obtain current prices, so it's good public relations, too!"

AGRI-STAR is available at Radio Shack computer stores. Stop by your nearest Radio Shack for a demonstration and see how AGRI-STAR might help you in your business.

Communications Corner

By Al and Dru Simon

Happy Holidays! This time of year is always fun, and in the spirit of the season we wanted to become completely unglued and drop the serious tone of our column just for once.

At the same time we didn't want to end the year without giving you some useful information about communications, so we racked our brains for hours for a suitable subject to expound upon! At last Al reminded me of how tired he is of people not understanding the complex computer terminology he always uses, so as our holiday gift to you we've written up a small glossary of terms that every computer user should know.

We feel that this list will either make clear to you some of the mystery of computers and communications, or at least put a smile on your face. Herewith is a list from us to you of definitive terms for the world of computers. Happy Holidays!

ADDRESS —Clothing worn in sales flyers.
ASCII —A small mule.
BACKUP —What ASCIIs do when you want them to go forward.
BAUD —Uninterested and lethargic as in "I'm so BAUD I could just . . . "
BAUD RATE —How fast it takes you to become BAUD.
BBS —Tiny pellets that get shot out of small-caliber guns.
BISYNCH —What you say when your ship capsizes.
BIT —A CHIP or other small quantity of food.
BUFFER —A tool you use to shine your BBS.
BYTE —A mouthsize portion of a CHIP or other edible substance.
CABLE —A special television service.
CARRIER —What you put your ASCII into to transport it.
CASSETTE —A Miniature cass.
CHIP —A little chewy thing made of chocolate.
CLOAD —Drinking in front of a mirror.
CSAVE —A coast guard rescue.
COCO —Hot drink served in cold weather.(see LINEFEED).
COMPUTER —An enigmatic and bottomless pit into which you unconsciously pour money.
CONFIGURATION —Starting a diet and exercise program.
CONNECTOR —Electronic device used to collect juice from apricots. (see LINEFEED).
CONTROLLER —What you use to keep your ASCII well behaved.
CURSOR —What you become when your ASCII eats all your CHIPS and does a BACKUP.
CPU —University where students are taught about CONNECTORS and COMPUTERS. Located in a swamp.
CRT —Carefully Retailed Terminal.
CTS —Can't Type Syndrome. Common to BBS users.
DISK —Part of the spinal column.
DISKETTE —An underdeveloped DISK.
DOWNLOAD —Stuff a pillow with feathers.
DRIVE —Operate a CARRIER.
DUPLEX —A swanky place to live; usually in Beverly Hills.
ECHO —Better than "Yucko"; worse than "Neato".
FILE TRANSFER —Escape mechanism inserted in a prisoner's cake.
FLIPPY —A computerized pancake.
FLOPPY —A FLIPPY that fell out of the pan.
FORMAT —A label on a Christmas present for Matthew.
FULL DUPLEX —The Penthouse apartment in Beverly Hills.
GIGABYTE —BYTEing off more than you can chew.
GRAPHICS —Repairing a transplanted bud on your Rhododendron.
HALF-DUPLEX —A cold water flat right outside Beverly Hills.
HARD DISK —Calcification of the spine. (See DISK).
HARDWARE —Armor, shoulder pads, army boots, etc.
HEAD —Bathroom on a boat.
INTERFACE —Where you get a custard pie. (SEE BYTE).
KEYBOARD —When you wish the pianist would stop with the Mozart already. (see BAUD).
KILOBYTE —A fatal overdose of food at the LINEFEED.
LANGUAGE —What you're likely to use when your ASCII won't behave. (see CURSOR).
LATCHES —Little metal things used to lock CARRIERS.
LCOMM —Word often used on doormats.
LINEFEED —The formal name for a soup kitchen.
MEGABYTE —What Margaret feeds you to eat at the LINEFEED.
MENU —What they hand you at the LINEFEED.
MODEM —Ice cream on a dessert, such as pie ala MODEM.
NIBBLES —Small BYTES of FLIPPY off the MENU at the LINEFEED.
NULL —Not interesting. Giving rise to being BAUD.
ONLINE —Waiting for a MENU at the LINEFEED.
PINS —Holds the shoulders against the mat for three seconds. (see LCOMM).

PERIPHERALS —Things to stack on the side of a bottomless pit. (see COMPUTER).
PRINTER —One who cannot write in script.
PROGRAM —What you can't tell the players without.
PROMPT —A springtime dance attended by high school students.
PROTOCOL —A collect telephone conversation.
RAM —An animal your ASCII will not get along with.
RD —Full of health; as in feeling hale and RD.
REGISTER —What you do with your ASCII or RAM if you want to enter it in a county fair to keep from getting BAUD.
ROM —A city in Italy that wasn't built in a day.
RS232 —Somewhat like Fahrenheit 451, but closer to C3PO.
SCREEN —A loud, piercing shout.
SIGNAL GROUND —The place where football players go to huddle.
SOFTWARE —Chiffon, silk, lace etc.
STOP BIT —Choking on a small piece of FLIPPY.
TD —Touchdown, of course. (see SIGNAL GROUND).
TERMINAL PROGRAM —A fatal condition which causes death upon sight of your telephone bill.
UART —The present pluperfect informal tense of "Thou Art".
UPLOAD —Stuff a pillow with helium.
UTILITIES —What you buy when you never land on Boardwalk or Park Place.
VIDEO —An electronic gathering of broncos, bulls, and riders.
VIDTEX —A VIDEO from Dallas/Fort Worth.
WETWARE —What you need to go swimming.

Well, there it is. We certainly hope that the technical terms we use here will now be completely clear to you! Glad to have been of service!

The News From PLUMB

Here, once more, are a few delicious tidbits of news for your holiday table from our friends at *PLUMB:*

GAMES—Mines of Moria Aids Adventurers

Still stuck in the Wizard's cave? Got a pesky dwarf that won't leave you alone? You say your magic ring won't work? Maybe the folks at the Mines of Moria can help . . . the Houston-based system . . . consists of 31 separate boards for TRS, Apple, Atari, IBM, and Commodore computer users; a variety of adventure games sections, (and much more) . . . According to John, The Warlord, an online adventure game is coming soon. A West Coast version of the board recently went online, and a version in New York is in the planning stage . . . the Houston number is 713-871-8577; the West Coast number is 408-688-9629.

The Family Historian's Network, a Fairfax, VA board devoted to genealogical research, is no longer free. Callers to 703-978-7561 are told they need a password that comes with a subscription of Genealogoical Computing magazine. If you're interested, write to Data Transfer Associates, Inc., 5102 Pomeroy Dr., Fairfax, VA 22032.

Computer users looking for an Italian restaurant, a database program, or a quick movie review in the West L.A. area can use a new form of electronic "Yellow Pages." Buy-Phone 213-474-0270 is an electronic listing of more than 10,000 providers of products and services. Callers are shown how to narrow the computer's search to specific communities in order to show products closest to home. Once the geography is taken care of, type in a category, such as "software" or "Italian" to call up a list of choices. Once you get more familar with the way the system works, Buy-Phone lets you move to apprentice or pro status to skip many of the menus.

That's just a sampling of the latest PLUMB. As usual there is a long listing of Bulletin Boards which the caller may wish to try. Our thanks of course to Ric Manning for his permission to use these tidbits. PLUMB may be contacted by writing to Riverside Data Inc. P.O. Box 300, Harrods Creek, KY 40027; or through CompuServe account 72715,210; or through The Source account STQ007.

THE CORNER MAILBOX

Dear Al & Dru:

I read a letter about a person who was interested in running a BBS on a TRS-80 Model II. I am running such a board here in Milwaukee . . . The Big-Top . . . runs under the Model II host routine. . . . If . . . any Model II owner is interested in contacting me, they may call Big Top at 414-259-9475 or write to . . . N. Patrick, 2011 N 53 St. Milwaukee, Wi 53208.

Neal Patrick
"Ringmaster" of Big-Top

Dear Neal:

Thanks very much for writing! I'm sure there are lots of Model II owners who will be contacting you in short order!

+ +

Dear Al & Dru:

I am thinking of getting VIDTEX . . . and I was wondering what the special features were.

Ken Vanous
Atlanta, Ga

Dear Ken:

For your answer, please read the following letter!

+ +

Dear Mr. Simon:

I was glad to see your "Communications Corner" column advocate the use of the Vidtex conventions, but I question whether MOUSENET was truly the first to support Vidtex cursor addressing. CompuServe developed Vidtex in early 1980, and licensed it to Radio Shack, amongst others. (Incidentally, Vidtex is a trademark of CompuServe, Inc.) We wrote Vidtex for the Model II, III (and many non-Tandy machines), while Tandy wrote the version for the Color Computer internally, using a subset of the Vidtex standard.

There are actually three portions of the Vidtex convention: 1) the extended VT52 cursor addressing you men-

tioned; 2) two graphics modes; and 3) error correcting "B" protocol for file transfers and binary loading. CompuServe actively supports all of these features.

For example, to use cursor addressing, specify your terminal type as VIDTEX (or VT100, as applicable) during initial sign up on CompuServe, or change it later with the DEFALT program (GO CIS-9). In Vidtex mode, menus are paged rather than scrolled, and transmission time is minimized by use of cursor addressing.

CompuServe uses the eight color semi-graphics four Vidtex mode (ESC G4) to graph stock prices and volumes (GO FIN-6, then type VIDPLT at the PROGRAM: prompt). Unfortunately, many people are unaware of this useful feature because so many articles have erroneously stated that CompuServe does not support graphics. Please take a look! CompuServe also uses Vidtex graphics in a demo (GO CIS99) and in a fantastic new multi-player space battle game to be released later this fall.

Error free transfers, perhaps the most important feature of Vidtex, is supported primarily with the FILTRN (file transfer) utility.

One other important item: . . . you stated that registering your modem with the phone company will not increase your monthly bill. In general this is true, but Oklahoma Bell has started charging some residential customers full business line rates ($35.00/month additional!) after registering their modem. Note that CompuServe feels this is unauthorized, and is taking vigorous steps to oppose such actions by the phone companies. Meanwhile, note that the FCC requires registration of direct connect modems, but NOT acoustic couplers.

Alexander B Trevor
Executive Vice President
CompuServe

Dear Mr. Trevor:

We are very grateful for your timely and informative letter. According to our sources MOUSENET was credited with being the first Non-Commercial public bulletin board to use VIDTEX. We appreciate your information and would never try to minimize the importance of the contributions CompuServe has made in trying to standardize computer communications. The lack of such definitive standards, along with myriad protocols in use tend to hamper both business and personal communications. It almost seems as though one has to own four modems and six terminal packages to be able to "talk" to all the different computer types available today.

CompuServe should be congratulated on VIDTEX and all its efforts at standardization in this young industry where it seems as though every computer type on the market has its own protocol. Thank you again for writing!

+ +

Dear Al & Dru:

. . . You make it sound so easy. I've been trying to get my Color Computer (32K Ext Basic, No Disks) and Model III, (2 DR, 48K, RS232) to talk to each other for weeks—no luck. I have Radio Shack's Comm Package (26-1149) for the Model III to act like a terminal . . . I have re-assembled Color Basic 1.1 into RAM with its I/O reconfigured—$A38C changed from BMI to BNE, and $A1C8 changed from LDU to JMP$8DBC. The interface cable is per 26-1149 appendix F recommendation. In this configuration (with both computers on 600 baud, 8 bit word, 1 stop bit, disabled parity WAIT the only thing the Model III will put up are 'f', 'x', and '". Several different keys will put up these characters on the Model III display, but most keys do nothing. Can you help me?
Wm. R. Orr
US Embassy,
APO, NY, NY

Dear Bill:

The best way for you to proceed is to read a communications program into the color computer (such as VIDTEX) - move to disk if you have to use your terminal program for the Model III, *and prepare a cable as follows:*

Use a 4-pin DIN connector on one side and a DB25 on the other.

Pins 6,8,and 20 tied together from DB25 should go to pin 1 of the 4-pin DIN connector.

Pins 4 and 5 on the DB25 should be tied together.

Pin 7 from the DB25 should go to pin 3 of the 4-pin DIN.

Pin 2 of the DB25 should go to pin 2 on the 4-pin DIN.

Pin 3 on the DB25 should go to pin 4 on the 4-pin DIN.

The wires going to pins 2,3, and 4 of the 4-pin DIN connector should be twisted together.

If you have re-assigned your output ports, you must go into your software package and substitute that address for the correct one which exists now. Reference your manual; it will give you the needed address and bits. Hope this helps!

+ +

Well that was a lot of fun for us this month! Thank you for all the letters and comments we've received during the past year. We look forward to hearing from more of you in the coming year as well!

We wish for you to have a lovely holiday and a safe and Happy New Year! Happy Communicating!

Language Editors

Madison K. Finley
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Pine Plains, NY

MODEL III LANGUAGE EDITORS, AND AN OLD FRIEND REVISITED

The Fort Worth Scene, in the November 1981 issue of the TRS-80 Microcomputer News, mentioned an axiom worth reexamining: "Never overlook a program just because you don't see an immediate use for it." The editor was referring to the versatility of the Model II Text Editor package on language development packages. I would like to discuss some possibilities using the Model III BASIC, COBOL, BASIC COMPILER, FORTRAN, and EDITOR/ASSEMBLER editors, and uses of our old (and still champ) text editor, DISK SCRIPSIT.

The TRS-80 Model III BASIC editor is extremely powerful, but some limitations may be easily overcome by the use of DISK SCRIPSIT. If your BASIC program were written for video display output only, how would you change each occurrence of 'PRINT' to 'LPRINT'? Using the Model III BASIC editor could be very tedious, and you might overlook one or more changes deeply hidden within a multi-statement line. Enter DISK SCRIPSIT. Save the BASIC program to disk in ASCII format, load it into SCRIPSIT, and make the necessary changes via the global FIND or REPLACE commands. Anywhere from one to 255 changes of 'PRINT' to 'LPRINT' are made for you in seconds!

EDITOR'S NOTE: Be certain you don't also change PRINT #1 to LPRINT #1!

As a prerequisite, the BASIC source program must be stored in ASCII format, a simple procedure. But, did you know that your source programs created in COBOL, FORTRAN, BASIC COMPILER, and even EDITOR/ASSEMBLER may be loaded into DISK SCRIPSIT? This adds a new versatility to your program development; these language development packages save your source file to disk in ASCII format, directly. There are several immediate benefits to this. Not only are files easily edited, but they are in the format required for transmission over telephone lines, and may be corrected by the new SCRIPSIT DICTIONARY! Imagine - no more FATAL ERRORS because you 'missspelt' a command!

I use a multi-purpose data entry and sort routine on my Model III that I wrote in COBOL. Those of you who use COBOL know that the strength of COBOL is also its greatest liability: all variables, disk file types, output display formats, and intermediate procedures must be strictly defined before any logic is coded. This makes COBOL easy to read and debug, but any error causes the program to fail totally, and error-correction requires editing and time-consuming recompiling. Hence, to be useful, my multi-purpose program must be easily changeable with a minimum possibility of errors being introduced. SCRIPSIT makes this possible.

Let's say that I wish to change a particular COBOL variable from 'WEEKLY-PAYROLL-HOURS' to 'AMOUNT-PURCHASED'. Global REPLACE makes this easy. In addition, I will probably have to change the 'PICTURE', or display format, for a variable. 'PICTURE X(9)' or nine alphanumeric characters, might become 'PICTURE 999B99B9999' or three numbers, a blank space, two numbers, space, and four numbers; this is how a social security number might be displayed. In the event my program contained more than one variable with the same 'PICTURE' description, I could at least use the FIND command in DISK SCRIPSIT to be certain I did not overlook any required changes.

EDITOR'S NOTE: Always work from backups, not from your original document files.

The same procedure is useful in FORTRAN, EDITOR/ASSEMBLER, and BASIC COMPILER source files. The device assignment in a 'WRITE' statement could be changed in FORTRAN, or 'SET' in BASIC could be changed to BASIC COMPILER's 'CRT'. How about finding each occurrence of a particular hexadecimal address in an EDITOR/ASSEMBLER listing?

By experimenting with different combinations of editors on a source file of another language, I found some interesting possibilities for development of source files, and for 'pretty printing'. The FORTRAN, COBOL, BASIC COMPILER, and EDITOR/ASSEMBLER editors are remarkably interchangeable. One need only be careful to save a source file with the appropriate extension, or the editor supplies its own for that language. Because of the differences in the way line numbers are created and displayed, and the way tabs are handled (visible on the coding forms for each particular language), some combinations do not work, or yield errors. For example, to reload into CEDIT, a file that has been edited and saved under SCRIPSIT, you must go into DEBUG and insert the character for CEDIT to recognize the EOF marker. The following are some that do work: EDITOR/ASSEMBLER and FORTRAN source files loaded into the CEDIT COBOL editor produce a compressed but very readable listing. This could be useful in the preparation of an article in column format. BASIC COMPILER's BEDIT handles files similarly to CEDIT, except BEDIT renumbers COBOL source files by increments of one. EDITOR/ASSEMBLER does the same.

My experience is primarily with COBOL, and I invite you to try other possibilities. Just save your original copy, and only perform experiments on a backup of your file. If you jump between language development packages often enough to become confused, try writing all your programs with your favorite editor, regardless of language; it often works. And don't forget about DISK SCRIPSIT, the text editor that looks like it was designed to be used with all these languages!

Manually Configuring the Hard Disk Drive

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Editor's Note: Always take care of your startup disks. Your disk is the only one which will boot your particular configuraton. NEVER be without multiple copies of it.

The ordinary method of formatting a Model III hard disk drive left us with too few bytes on each drive. The usual configuration instructions of the START UP manual for the hard disk drive result in 4 logical drives (0-3) on the hard disk drive, each with 1.25 megabytes. Since one of our files was 1.5 megabytes, we preferred three logical drives (0-2) on the hard disk drive, drive #1 configured with two heads or 2.5 megabytes. A call to Logical Systems produced the following procedure.

1. Start or reset the Model III with a BACKUP of the Initialization Diskette in Floppy drive 0. (Later, "drive 0" will be switched to one of the hard disk drives.)
2. Carefully follow the instructions on pages 84-85 of the START UP manual to configure the hard drives as you wish. (We assigned logical drive 1 with heads #2 and #3, logical drive 2 with head #4, and logical drive 3 with head #1.)
3. The command SYSTEM (SYSGEN) will store this configuration information on the Initialization Diskette in drive 0 in a file called CONFIG/SYS.
4. These logical drives are formatted using the program described on page 86, using the logical drive numbers just assigned. (When this program asks for the password, if Radio Shack has left a test program on your hard disk you may need to type PASSWORD; otherwise, type the password you have just assigned.)
5. Remove the initialization diskette from Floppy drive 0, insert the hard disk Operating System diskette and BACKUP this diskette onto one of your logical drives on the hard disk. (Since this will soon become the new drive 0, we put a backup of this diskette on drive 3, using BACKUP :0 :3. Of course, the operating system should be on the drive that will end up as your drive 0!)
6. Return the Initialization Diskette to Floppy drive 0.
7. Now, assign one of your hard disk drives (the one with the operating system from instruction #5 above) to be the new drive 0 by using SYSTEM (SYSTEM = n). (We assigned n = 3 so that the hard drive we called #3 in step 2 would become drive 0, and the Floppy drive that was drive 0 would become drive 3.)
8. Again, use SYSTEM (SYSGEN), to store this new configuration on drive 0, now one of the hard drives.
9. Finally, move this new configuration file onto the Initialization diskette with the COPY command. (We used COPY CONFIG/SYS.CCC:0 :3, since the floppy drive with the Initialization Diskette is now drive 3.)
10. Label the Initialization Diskette: START UP and make copies.

NOTE: If one of your floppy drives has been left out of your system, use:

SYSTEM (DRIVE = n,DISABLE,DRIVER = "MOD3")

to reinstate it. (In the statement above, n = its logical drive number; we used #4.)

Then use steps #8-#10 above to create the new configuration file and store it on the START UP diskette.

Information about all of these commands can be found in the LDOS HARD DISK OPERATING SYSTEM binder.

SCRIPSIT to SuperSCRIPSIT File Conversions

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I have developed a means of converting SCRIPSIT 1.0 files to SuperSCRIPSIT. It involves changing the 0C in the ASCII file generated by SCRIPSIT 1.0 into a recognizable, but not often used, SuperSCRIPSIT character. The character I chose was 7C, whatever it might be. This character appears only when you press SHIFT-DOWN in search- and open document-type prompts in SuperSCRIPSIT. That's where I need it because I need to search for it and replace it with the SuperSCRIPSIT new page marker.

I accomplished this by creating two things. First, I created a Z-80 program (created on the Series 1 Disk Editor-Assembler) to search for the 0C's and replace them with 7C's. Second, I created a function key function that would search for 7C's in the new SuperSCRIPSIT document and replace them with new page markers. I also threw in another function key function that takes out SCRIPSIT's comments that are obviously not supported on SuperSCRIPSIT.

I am including some hints on using the ROM SET-RESET-POINT function.

```
7000          00100          ORG    7000H
7032          00110 DCB      DEFS   50
7100          00120 BUFF     DEFS   256
              00130 ;SCRIPSIT ASCII FILE CONVERTER 1.0
              00150 ;BY BARNES SOFTWARE SYSTEMS
7132 CDC901   00170 START    CALL   01C9H ;CLEAR SCREEN
7135 3E3F     00180          LD     A,'?'
7137 CD3300   00190          CALL   33H ;PRINT '?'
713A 0617     00240          LD     B,23
713C 210070   00250          LD     HL,DCB
713F CD4000   00260          CALL   40H ;GET UP TO 23 CHARACTERS FOR DCB
7142 213270   00270          LD     HL,BUFF
7145 110070   00280          LD     DE,DCB
7148 0600     00290          LD     B,0
714A CD2444   00300          CALL   4424H ;OPEN FILE
714D CD8D71   00310          CALL   EHAND
7150 110070   00320 LOOP     LD     DE,DCB
7153 CD3644   00330          CALL   4436H ;READ RECORD
7156 CD8D71   00340          CALL   EHAND
7159 CB7F     00350          BIT    7,A
715B C28471   00360          JP     NZ,WRAPUP
715E 110070   00370          LD     DE,DCB
7161 CD4544   00380          CALL   4445H ;BACKSPACE ONE RECORD
7164 3E0C     00390          LD     A,0CH
7166 213270   00400          LD     HL,BUFF
7169 010001   00410          LD     BC,256
716C EDB1     00420 LOOP2    CPIR
716E C27871   00430          JP     NZ,CONT
7171 2B       00440          DEC    HL
7172 367C     00450          LD     (HL),7CH
7174 23       00460          INC    HL
7175 C36C71   00470          JP     LOOP2
7178 110070   00480 CONT     LD     DE,DCB
717B CD3944   00490          CALL   4439H ;WRITE RECORD
717E CD8D71   00500          CALL   EHAND
```

```
7181 C35071   00510       JP      LOOP
7184 110070   00520 WRAPUP LD     DE,DCB
7187 CD2844   00530       CALL    4428H ;CLOSE FILE
718A C32D40   00540       JP      402DH ;JUMP TO TRSDOS READY
718D FE00     00570 EHAND CP      0
718F C8       00580       RET     Z
7190 FE1D     00590       CP      29
7192 CBFF     00600       SET     7,A
7194 C8       00610       RET     Z
7195 CBF7     00620       SET     6,A
7197 CD0944   00630       CALL    4409H ;DISPLAY ERROR
719A CD2844   00640       CALL    4428H ;CLOSE FILE
719D E1       00650       POP     HL
719E C32D40   00660       JP      402DH ;JUMP TO TRSDOS READY
71A1 110070   00670       LD      DE,DCB
7132          01420       END     START
00000 Total Errors
```

ASSEMBLY LISTING FOR Z-80 PROGRAM

CONT 7178
LOOP2 716C
WRAPUP 7184
LOOP 7150
EHAND 718D
START 7132

REPLACE CONVERTED CHARACTER ROUTINE

The following replace-converted-character-with-new-page-marker-routine only repeats itself when the converted character is not found. You will notice the rapid movement back-and-forth to the top and bottom of the document when this occurs.

UP,>S,LE,CL,DO,en,@D,@I,ne,@N,br,@8

DELETE SCRIPSIT ROUTINE

This is the routine to delete all the SCRIPSIT comments for any user key:

UP,>S,LE,CL,>,*,en,@X,g,b,d,y

This routine DOES NOT destroy format lines and DOES NOT repeat itself due to the fact that repetition could result in destruction of data you may have with the greater-than sign. You will have to destroy format lines by going into the global command and searching for >'s and then cancelling and deleting the paragraphs they are in.

SET-RESET-POINT ROM SUBROUTINE HINTS

Instead of fiddling with subroutines that set, reset, and test a block graphics character on the TRS-80, why not just use the subroutine that BASIC uses—sitting pretty right there in ROM. The listing is EDTASM compatible. The buffer contains the DECIMAL representation of the point to be acted upon. Should you want to vary the point to be acted upon, you must first make a hex to ASCII decimal converter. The code to be put into register A for a RESET is 1 and for a POINT (test) is 0. In the case of a POINT, the Z flag is set if the point is off, reset if it is on. Below is the subroutine.

```
START   LD      HL,BUFF
        LD      A,80H ;INTERNAL CODE FOR SET
        CALL    013AH ;SET BLOCK AT 127,47
BUFF    DEFM    '(127,47)'
        DEFB    13
```

Have fun!

Sort with CMD"O"

Donald A. Stafford
The MANAGEMENT
P.O. Box 521
Aberdeen, NC 28315-0521

The Radio Shack Accounts Receivable (26-1555) for the TRS-80 Models I/III is a fairly good program. The only real problem with it is waiting and waiting for a customer sort, only to realize you forgot to add one other account.

A sort of 300 customers can take as long as 25 minutes.

For a business, this time is too long. Then my Model III arrived. I decided to use the built-in machine language sort that can be called from BASIC-CMD"O".

I have to really hand it to the folks at Radio Shack on this one. It is super fast! The only drawback is you cannot sort numeric arrays (so they think!), and you cannot sort an array that has more than one dimension.

I took ARSORT and with a little work, got the CMD"O" function to work like a champ. A sort of 300 customers takes less than 3 seconds. How is that for a speed-up?

The version below will work with either version of the Accounts Receivable. I did renumber the lines to make it more readable, and too allow certain statements on the same line.

EDITOR'S NOTE: If you make this change, please test it thoroughly and run both versions of the sort to ensure that the program continues to function properly.

```
10 REM ** ACCOUNTS RECEIVABLE SORT **
20 REM COPYRIGHT (C) 1980, TANDY CORP.
30 REM ** MODIFIED BY DON STAFFORD
     :  PO BOX 521
     :  ABERDEEN, NC
40 CLEAR 22000
     : DEFINTA-Z
50 DIM A$(500), B$(500), C$(500), B(500), P(500,2)
60 OPEN "I", 1, "TRANSFER"
     : LINEINPUT #1, PI$
     : LINEINPUT #1, PD$
     : LINEINPUT #1, PS$
     : LINEINPUT #1, PT$
     : LINEINPUT #1, PG$
     : CLOSE 1
70 OPEN "I", 1, PI$
     : OPEN "R", 2, PD$
     : INPUT #1, TI, TN, F, U, UT, UN, EP, R0, R 1,
     R2, R3, R4, R5, R6, R7, CV#
     : N=TN-1
     : FOR X=1 TO N
     : INPUT #1, P(X, 0), P(X, 1), P(X, 2)
     : NEXT
     : CLOSE 1
     : FOR J=1 TO N
     : GOSUB 120
     : Z9=B(J)
     : GOSUB 270
     : B$(J)=B$
     : Z9=J
     : GOSUB 270
80 B$(J)=B$(J)+B$
     : A$(J)=A$(J)+B$
     : C$(J)=C$(J)+B$
     : NEXT J
     : CLOSE 2
90 CLS
     : PRINT @472, "Sort Is In Progress"
     : GOSUB 130
```

```
100 CLS
    : PRINT @466, "Sort Complete. Saving Files"
    : OPEN "O", 1, PI$
    : PRINT #1, TI; TN; F; U; UT; UN; EP; R0; R1;
    R2; R3; R4; R5; R6; R7; STR$(CV#)+"D0"
    : FOR X=1 TO N
    : PRINT #1, P(X, 0); P(X, 1) ; P(X, 2)
    : NEXT
    : CLOSE 1
    : GOSUB 230
110 CLS
    : PRINT @468, "Returning To Main Menu"
    : CLEAR 50
    : RUN "ARS"
120 JR=INT((J-1)/2)+1
    : JD=J-2*INT((J-1)/2)-1
    : FIELD2, JD*128ASD$, 11ASD0$, 13ASD1$, 28ASD2$,
    9ASD4$, 56ASD5$, 2ASDD$, 8ASDE$
    : GET2, JR
    : A$(J)=D0$
    : C$(J)=D4$
    : B(J)=CVI(DD$)
    : RETURN
130 CMD"O", N, A$(1)
140 CMD"O", N, B$(1)
150 CMD"O", N, C$(1)
160 CLS
    : PRINT @466, "Sort Complete. Preparing for
    Save."
170 FOR J=1 TO N
180 P(J, 0)=VAL(RIGHT$(B$(J), 4))
190 P(J, 1)=VAL(RIGHT$(A$(J), 4))
200 P(J, 2)=VAL(RIGHT$(C$(J), 4))
210 NEXT J
220 RETURN
230 CLS
    : PRINT "CHECKING FOR DUPLICATE ACCOUNTS": XF=0
    : FOR X=2 TO TN-1
    : IF B(ABS(P(X, 0)))<>B(ABS(P(X-1, 0 ))) THEN
    240 ELSE IF SGN(P(X, 0))=-1 OR SGN(P(X-1, 0))=-1
    THEN 240 ELSE PRINT "ACCOUNT #"; B(P(X, 0)); "IS
    A DUPLICATE"
    : XF=1
240 NEXT
    : IF XF=0 THEN PRINT "NO DUPLICATES"
250 PRINT
    : PRINT "PRESS <ENTER> TO CONTINUE""
260 EN$=INKEY$
    : IF EN$<>CHR$(13) THEN 260 ELSE RETURN
270 IF Z9<10 THEN B$="000" + RIGHT$(STR$(Z9), 1)
    : RETURN
280 IF Z9<100 THEN B$="00" + RIGHT$(STR$(Z9), 2)
    : RETURN
290 IF Z9<1000 THEN B$="0" + RIGHT$(STR$(Z9), 3)
    : RETURN
300 B$=RIGHT$(STR$(Z9), 4)
    : RETURN
```

Extended Multiplication

Howard Potvin
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Rowland Heights, CA 91748

I looked around and could not find any information on a program for extended multiplication, so I decided to write one.

This program will multiply two numbers of any length up to 240 digits, the result of which would be 480 digits.

Following is a line description of the program.

Line 1050 and 1060 input numbers into N1 and N2 strings.

Lines 1070 to 1140 pick off the numbers in multiples of six and store them in N1( ) and N2( ) arrays.

Line 1150 sets up an N(I,J) array to hold interim results and a B(I + J) array to hold the sums of the N(I < J) arrays.

Lines 1160 to 1180 multiply the N1( ) and N2( ) arrays and store the results in the N(I,J) array.

Lines 1190 to 1220 take the numbers in the N(I,J) array pick them off six at a time and sum them to the proper B( ) array.

Lines 1230 to 1250 check the B( ) totals and carry the excess over six digits to the next B( ) array.

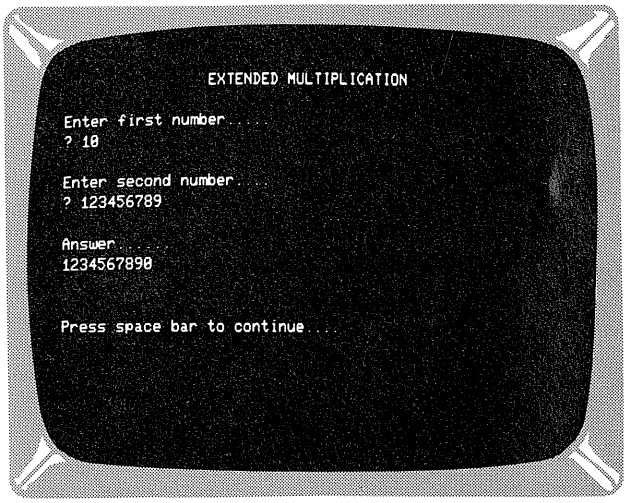
Lines 1260 to 1290 and lines 1350 to 1370 do three things. First, put the B( ) array into the final strings. Second, delete the space normally reserved for the minus sign. Third check line length and replace leading zeros that were lost in the numerical arrays.

Line 1300 deletes leading zeros from the answer which may have been picked up from an empty array. If the answer is two strings long, line 1380 does this instead.

Line 1310 adds a single zero to a null answer string if the result was zero.

```
1000 'Howard Potvin / 2527 Los Padres Drive
1010 'Rowland Heights, CA  91748 / Public Domain
1020 CLEAR 1000
    : DEFDBLB, N
    : M=1E6
1030 DIMN1(40), N2(40)
1040 CLS
    : PRINT TAB(16)"EXTENDED MULTIPLICATION"
1050 PRINT
    : PRINT "Enter first number..... "
    : INPUT N1$
1060 PRINT
    : PRINT "Enter second number.... "
    : INPUT N2$
1070 IF LEN(N1$)<7 THEN 1100
1080 I=I+1
    : N1(I)=VAL(RIGHT$(N1$, 6))
1090 N1$=LEFT$(N1$, LEN(N1$)-6)
    : GOTO 1070
1100 I=I+1
    : N1(I)=VAL(N1$)
1110 IF LEN(N2$)<7 THEN 1140
1120 J=J+1
    : N2(J)=VAL(RIGHT$(N2$, 6))
1130 N2$=LEFT$(N2$, LEN(N2$)-6)
    : GOTO 1110
1140 J=J+1
    : N2(J)=VAL(N2$)
1150 DIMN(I, J), B(I+J+1)
1160 FOR X=1 TO I
    : FOR Y=1 TO J
1170 N(X, Y)=N1(X)*N2(Y)
1180 NEXT
    : NEXT
1190 FOR X=1 TO I
    : FOR Y=1 TO J
1200 N=INT(N(X, Y)/M)
    : B(X+Y)=B(X+Y)+N
1210 B(X+Y-1)=B(X+Y-1)+(N(X, Y)-N*M)
1220 NEXT
    : NEXT
1230 FOR Z=1 TO I+J
1240 N=INT((B(Z))/M)
    : B(Z)=B(Z)-N*M
1250 B(Z+1)=B(Z+1)+N
    : NEXT
1260 FOR Z=1 TO I+J
1265 IF LEN(N$)=240 THEN 1350
1270 N$=STR$(B(Z))+N$
    : N$=RIGHT$(N$, LEN(N$)-1)
```

```
128Ø IF LEN(N$)<Z*6 THEN N$="Ø"+N$
     : GOTO 128Ø
129Ø NEXT
13ØØ IF LEFT$(N$, 1)="Ø" THEN N$=RIGHT$(N$,
     LEN(N$)-1)
     : GOTO 13ØØ
131Ø IF N$="" THEN N$="Ø"
132Ø PRINT
     : PRINT "Answer....."
     : PRINT M$;N$
133Ø PRINT
     : PRINT
     : PRINT "Press space bar to continue...."
134Ø IF PEEK(144ØØ)=128 THEN RUN ELSE 134Ø
135Ø M$=STR$(B(Z))+M$
     : M$=RIGHT$(M$, LEN(M$)-1)
136Ø IF LEN(M$)<(Z*6-24Ø) THEN M$="Ø"+M$
     : GOTO 136Ø
137Ø NEXT
138Ø IF LEFT$(M$, 1)="Ø" THEN M$=RIGHT$(M$,
     LEN(M$)-1)
     : GOTO 138Ø
139Ø GOTO 132Ø
```



Prime Numbers

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From time to time I enjoy browsing through past issues of the *NEWS* and just recently discovered that none of the several contributions over the years purporting to generate prime numbers by the Method of Eratosthenes are attributable to the master! They all involve trial divisions in one way or another.

The truth, according to the Greek, simply involves writing all the integers from 2 to N and then crossing out multiples of 2, then 3, then 4, etc. until finally only the primes remain.

Presented here in its elementary form, the Sieve is very fast. I have not seen a trial divisor method yet that can match its speed when written in BASIC.

```
1ØØ 'PRIME NUMBER GENERATOR - SIEVE OF ERATOSTHENES
11Ø '
12Ø DEFINT A-Z
13Ø CLS
14Ø INPUT "ENTER A NUMBER"; N
15Ø DIM A(N)
16Ø PRINT "The primes less than or equal to" N "are:"

17Ø '
18Ø 'CROSS OUT MULTIPLES
19Ø ROOT = SQR(N)
2ØØ FOR I = 2 TO ROOT
21Ø FOR J = 2*I TO N STEP I
22Ø LET A(J) = 1
23Ø NEXT J
24Ø NEXT I
25Ø '
26Ø 'PRINT SUBSCRIPTS OF ELEMENTS NOT CROSSED OUT
27Ø FOR I = 2 TO N
28Ø IF A(I) = Ø THEN PRINT I;
29Ø NEXT I
3ØØ GOTO 3ØØ
```

Enhancement for Cassette Mailing List (26-1503)

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The Cassette Mailing List program (26-1503) is a versatile and useful tool, an inexpensive program that most tape-driven TRS-80 Model III owners will use frequently.

However, it does not allow printing of double-width labels or variations in type face. The first problem can cause major inconvenience to many users. Both the Line Printer VII and Line Printer VIII, popular printers with Model I/III owners, require the use of double-width, dry gum mailing labels (26-1456).

As a neophyte programmer, I hacked away for several hours before solving this problem. Listed below is an enhancement to the original program that allows the user to specify single or double, side-by-side, printing of labels. Selecting the double printing will yield a duplicate label on the right side, very handy for mass mailing or as a backup.

Also, the Line Printer VIII can print a number of varied type styles. The 10 CPI Ordinary Normal style that the Mailing List program yields is not as large or quickly legible as might be desired on a mailing label. Therefore, in line 19000 below, I have selected the 8.3 Condensed Elongated type style. (Depending on your printer and the type face you wish, you may omit or vary the Hex and Dec instructions to the printer in line 19000.)

To select single or double-width labels, add:

```
2ØØ5  PRINT@ 128, "SINCE THE MAILING LABELS ARE
      DOUBLE-WIDTH, YOU MAY CHOOSE TO"
2ØØ6  PRINT "PRINT DUPLICATE LABELS, ONE ON EACH
     SIDE."
2ØØ7  PRINT "DO YOU WANT TO PRINT DUPLICATE LABELS,
      SIDE-BY-SIDE (Y/N)";
      : INPUT Z$
2ØØ8  CLS
```

Change printing subroutine and add lines as follows:

```
19ØØØ  K=1
     : LPRINT CHR$(27);CHR$(14);CHR$(27);CHR$(2Ø)
19ØØ1 IF MID$(FI$(I,Ø),K,1)=";" THEN IF K=1 THEN
     RETURN
```

```
     : ELSE LPRINT TAB(2) MID$(FI$(I,Ø),K+1);" ";
     LEFT$(FI$(I,Ø),K-1);
     : IF Z$="Y" THEN GOSUB 19Ø4Ø ELSE LPRINT
     : GOTO 19ØØ5
19ØØ2 K=K+1
     : IF K<=LEN(FI$(I,Ø)) THEN 19ØØ1
19ØØ5 IF E=1 THEN LPRINT TAB(2) FI$(I,1);
     : IF Z$="Y" THEN LPRINT TAB(38) FI$(I,1) ELSE
     LPRINT
19Ø1Ø LPRINT TAB(2) FI$(I,2);
     : IF Z$="Y" THEN LPRINT TAB(38) FI$(I,2) ELSE
     LPRINT
19Ø11 LPRINT TAB(2) FI$(I,3); ","; FI$(I,4); "
     ";FI$(I,5);
     : IF Z$="Y" THEN LPRINT TAB(38) FI$(I,3); ",";
     FI$(I,4); " ";FI$(I,5) ELSE LPRINT
19Ø12 IF E=1 THEN LPRINT
19Ø15 IF E=Ø THEN LPRINT CHR$(138)
     : ELSE IF FI$(I,1)="" THEN LPRINT CHR$(138)
19Ø2Ø RETURN
19Ø3Ø GOTO 2ØØØØ
19Ø4Ø LPRINT TAB(38) MID$(FI$(I,Ø),K+1); "";
     LEFT$(FI$(I, Ø), K-1)
     : RETURN
2ØØØØ DATA A, R, S, L, P, W
2ØØØ1 END
```

Bugs, Errors, and Fixes

NOTE TO USERS:

The following changes and corrections are provided for your information. If you have an applications program which is working correctly, you should probably NOT make any changes to it, unless we specifically direct you to by mail. All Customer Service Bulletins will contain the phrase "This is a Required Modification" or "This is an Optional Modification." It is up to you to decide whether or not to apply an optional modification; however, you should always implement a required modification regardless of your past experience with a package. The error it prevents may be just around the corner and the modification could save you many hours of frustration.

If you feel that changes should be made, but you do not feel qualified to make the change yourself, please contact your local Radio Shack Computer Center or Expanded Computer Department for assistance. If you do not have access to one of these stores, then you may want to call Computer Customer Service in Fort Worth for assistance.

MODEL 100

MODEL 100 OWNER'S MANUAL (26-3801)

There is no mention in the manual of how to use reverse video. To enable reverse video:

RV$ = CHR$(27) + "p"

NV$ = CHR$(27) + "q"

On page 64 of the Model 100 manual, the example on TIME$ function incorrectly shows a space between the TIME$ and the equal sign. Please note, when using the ON TIME$ function, the equal sign MUST immediately follow the $.

Model 4 Disk Owner's Manual (26-1069)

On page 2-105 the error string command is misspelled. It should be spelled "ERRS$". The command "ERR$" returns the last basic error. This command was omitted from the manual completely and should be added.

PC-2

GETTING STARTED ON THE PC-2 (26-3620)

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Be advised that it is NOT possible to CSAVE just one program, if there is more than one in the PC-2 (Ref. pages 177-179). CSAVE"TOM" will CSAVE Tom, Dick, Mary, Bob, and all others present—until you run out of tape. Also, users should be aware that the PC-2 MUST be attached to the printer while programming for the printer. If one has a brain storm on the commuter bus and enters a printer program in the PC-2 (and the printer is not attached), it will not run! The best one could get would be an LLIST to copy over—which is one way to make the PC-2 a notebook.

Programming Hints & Tips

POCKET COMPUTER 2

INCREASING MEMORY

L. L. Timmerman
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Liberty, KS 67351

Even without the memory module, I run out of definable keys. Therefore, with my programs I use only one DEF key (space).

```
2Ø5 : " ":INPUT "PRO";B$.
21Ø : IF B$="SUB" THEN 5
```

Continuing in this manner so that the permutations using 2-3-4 letters is 375050 programs - if you can furnish me a memory module big enough!

MODEL 4

WRITE COMMAND

David E. Whitney
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Oklahoma City, OK 73139

I have discovered one obscure bug which can occur in sequential disk access. If you print information to the disk using the PRINT#N statement, data is printed as it appears in either the string or numeric form. This brings up the possibility of a comma or colon, messing up the data being read, causing INPUT PAST END errors to occur. To cure this, the new BASIC includes a WRITE command, which places all data to disk in quotes, as a "certain delimiter." This is fine for curing the possibility of reading a stray comma, and limiting errors on incorrectly read numbers. But this can cause a totally new kind of problem if data written to disk was initially input with the LINE INPUT command.

LINE INPUT recognizes only the [ENTER] key as the delimiter; thus, all other keyboard characters are legitimate, including the quote mark. If you input a string which includes a quote, and subsequently write it to disk with the WRITE command, the image to disk will include the input quote, which will be interpreted by an INPUT#N command as a false delimiter, thus throwing all input off by one. The LINE INPUT# command will not overcome this error either, as the WRITE command does not issue a CR at the end of a data image.

COLOR COMPUTER

INCREASING MEMORY

Stephane Lamy
1882 Carrier
Shawinigan, Quebec
G9N 6E4

Here is a tip for other Color Computer users: CLEAR X. CLEAR X reserves X characters for string variables work space. This gives you more memory: 200-X bytes. Thus, if you "CLEAR 5", you would be adding 195 (200-5) bytes. There is only one problem. The cassette file name cannot be longer than X (reserved memory); therefore, I suggest that you clear at least 9 or more to have enough room for a file.

MODEL 100

CONVERTING COLOR COMPUTER PROGRAMS

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Having recently changed from a Color Computer to a Model 100, I wanted to change my programs over. I have a direct connect modem for the Color Computer, but had no facility for uploading from the Color Computer to the modem. The following procedure did the job perfectly.

1. Connect the direct connect modem to the Color Computer.
2. Connect the phone line plug of the modem to the beige connector of the Model 100 modem harness. (That is the phone line plug.)
3. On the Color Computer, POKE 150,180. This sets the RS232 to 300 baud rate, compatible with the modem.
4. CLOAD the program on the Color Computer.
5. Set the Model 100 to TERM (Originate).
6. Set the modem to "Answer."
7. When the Model 100 recognizes the signal from the Color Computer, it will respond by going into terminal mode and displaying the terminal label line. Set the Model 100 for "DOWNLOAD" to a file.
8. LLIST the Color Computer program, sending it to the RS232.
9. Press "CONTROL C" on the Model 100. This sends a "ready" signal that the Color Computer will read as "printer ready."

The "CONTROL" key can be released, but the [C] must be held until the program is read into the download file. When the operation is complete, follow the disconnect procedure and turn the modem to "off."

Editing the Color Computer programs for the Model 100 is simple, mostly just file name changes. Use the search routine to find the necessary changes. When editing is complete, go to BASIC and load the text file as "XX.DO."

Quick and easy. The key factors are POKE 150,180 and [CONTROL] [C].

Good Luck!

DOWNLOADING MODEL I PROGRAMS

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New York, NY 10016

Here is a quick and easy way to download disk files from your Model I to your Model 100.

If you have the RS232 board installed on your Model I and want to transmit a disk file to your Model 100, this simple BASIC program will do the trick.

First, remove the Expansion Interface panel which covers the RS232 board and set the comm/term switch (S1) to COMM. Then, turn on the Model 100, run TELCOM, push function key F3 (Stat), and type in 97I1D. (This selects 19200 baud and RS232 input rather than modem.)

Then on the Model I, run the following program.

```
10  CLEAR 5000
20  OUT 232,0
     : OUT 234,125
     : OUT 233,255
     REM Resets UART, selects 19200 baud
30  PRINT "File to upload?";
     : LINE INPUT I$
     : OPEN "I",1,I$
40  LINE INPUT #1,A$
     : A$=A$+CHR$(13)+CHR$(10)
60  IF LEN(A$)>0 THEN 70^J ELSE IF EOF(1)=0 THEN 40^J
     ELSE CLOSE 1
     : GOTO 30
70  OUT 235,ASC(A$)
     : A$=MID$(A$,2)
     : GOTO 60
80  END
```

Note that the program does not rely on the positions of the sense switches. If you want to select a slower baud rate or different word lengths, change line 20 and reconfigure the Model 100 with the Stat command.

WORD PROCESSORS AND PROGRAMMING

Davy L. Barron
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Troy, Al 36081

When people think of word processors, they think it is for reports and letters only. But it is for programmers, too. Most word processors save their text in ASCII format or have a utility program to convert their text to ASCII and back, for proofreading. To use this tool to edit programs, all that needs to be done is to follow these simple directions.

1. Save your program in the ASCII format. In most cases it would be save like this: Save "program", A.
2. Load and run the word processor.
3. Load program or text into the word processor.
4. You are now ready to edit your program.

Save A Screen

Keith Alphonso
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Chalmette, LA 70043

This program for the Extended BASIC Color Computer will establish a subroutine that allows a person to control two text screens. With this program, you will be able to "save" a screen in memory to be called up later in the program. In order to use this subroutine, it should be stored on tape; however, this isn't absolutely necessary.

The first program will store the screen subroutine on tape.

```
10 CLEAR 627,15836
20 FOR Z=15836 TO 15869
30 READ A:POKE Z,A
40 NEXT Z
50 INPUT "PREPARE CASSETTE AND PRESS ENTER";A$
60 CSAVEM "SCREEN",15836,15869,15836
70 DATA 142,4,0,16,142,61,255,166,128,167
80 DATA 160,140,6,0,38,247,57,142,4,0,16,142
90 DATA 61,255,166,160,167,128,140,6,0,38,247,57
```

After the screen subroutine is on tape, these lines must be added to the program that uses the routines.

```
CLEAR 627,15836
CLOADM "SCREEN"
DEFUSR1 = 15836
DEFUSR2 = 15853
```

To use these subroutines is simple, if you want to save a screen, use X = USR1(0), and to get the screen back use X = USR2(0). In both of these cases X is a dummy variable and 0 is a dummy argument.

Computer Clubs

MORRISTOWN COMPUTER CLUB
c/o Jim Palmer, Secretary
Rt. 8, Box 94
Morristown, TN 37814
(615) 587-6609
71445,1035

CITRUS COLOR COMPUTER CLUB (CCCC or 4C's)
c/o Personal Relations Chairman
18227 Muriel Avenue
San Bernardino, CA 92407

NORTHWEST FLORIDA COCO-NUTS
c/o Jim Waits
P.O. Box 937
Destin, Florida 32541
Jim Waits (904) 837-6538
Bill Lamb (904) 244-5281

NOTE: The JACKSON AMATEUR COMPUTER SOCIETY has been renamed to JEFFERSON STATE COMPUTER USERS GROUP.

Poems

Mike Shadick
Dwelling 414—'E
Cedar Square West, Minn. 55454

WHISTLING A NEW MICRO TUNE?

For many years, a friend of mine
(An avid micro fan)
Has thought the sun both rose and set
Through programs which he ran!
In praise of his computer, he'd
Expound, with no relief.
He saw it solving all our planet's
Problems—to be brief!

But then one day, it broke a chip
. . . And never been the same.
This nearly broke my good friend's heart!
It made him change his game.
He went and bought a brand he'd claimed
Was just a piece of . . . shim.
I think he did it out of spite.
My heart went out to him!

But not for long. By now, my friend's
Forgotten all his grief.
His new computer's talents do
(He sez) defy belief!
At first, I was relieved that he'd
Recovered, none the worse.
But now he claims his new machine
Could run the universe!

WE ARE THE MICRO-POLITANS!

by Mike Shadick

We're MICRO-POLITANS! And we're
a very special breed.
Just fun and games, for us? No, we're
COMPUTING! Thus, we're freed
From merely zapping aliens.
We know there's so much more,
In personal computing, than
There's ever been before!

We're honing our computer skills
At home? So much the better!
We're finding micro WORK at home
—Through data, and through letter.
We're seeking SELF-employment—no more
Unemployment checks!
Computing skills, we've learned, don't hinge
on race, or creed, or sex!

Indeed, we MICRO-POLITANS
Are using our computers
As processors in countless ways
—From breadwinners, to tutors!
There's so much more than playing games,
To personal computing.
We're putting what we learn, to work!
(And converts we're recruiting!)

Our role as MICRO-POLITANS
In future times and places?

We've only just begun to take
Our micros through their paces!
Indeed, we are creating new
American life-styles.
Surviving? No, we're THRIVING! We're
The ones with micro smiles!

Game Scores

From time to time we receive information regarding high scores on Radio Shack games or games which have been published in *TRS-80 Microcomputer News.* We will be glad to consider all submissions for publication; however, we would prefer that a Polaroid print showing the score on the TV screen accompany the reports. Only scores achieved on games sold by Radio Shack or on games which have been published in *TRS-80 Microcomputer News* will be considered.

ASTEROIDS	(Richard Zepp, July/August, 1982)
8,443	(Screen #284) Steven Nudelman
11,445	Tina Antigiovanni
20,830	(Screen #635) Jody Spooner
13,693	Dennis Kuo

Dennis Kuo also sent a modification which he says will make "Asteroids" faster for those who do not have Extended Color Basic. (The change will eliminate the sound.)

Delete ELSE SOUND 1,1 from line 205
Delete line 250

Field Sort

D.G. Musil
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Sioux Falls, SD 57106

I wonder if you would consider publishing another string sort for the Color Computer? This one is written in BASIC, and is field oriented. While it cannot hold a candle to a machine language sort, it is substantially faster than the bubble sort on page 11 of the May issue.

The routine is field oriented because the program it is a part of was developed around a data base residing in a string array (A1$(n)) with elements all 80 characters in length (for efficient use of an 80 column printer). Each array element might represent for example an inventory entry containing pertinent fields of information such as part number, description, dates, or what ever. Each field begins at a certain displacement from the first character in the array element, and each field has a set length. These two pieces of information (the start position and the length), along with the array element, can be fed to the MID$ function to return the substring that is the desired field. In my program then, A4(n) is an array which contains the length of each of (n) fields.

On to the sort! The trouble with the bubble sort is that its speed is dependant on not only the number of items to sort, but also on how far its elements are displaced from their ordered positions. True, as the elements become more and more ordered, fewer elements require transposition, and the sort speeds up, however, the bubble sort still has to turn over every rock to see if it is bigger or smaller than its neighbor. The one really good thing about the bubble sort is that it does not mess around with an already ordered file. Only one pass is required to verify if a file is in order.

This sort is based on the concept of simply finding the smallest (or largest depending on which way you want to order) element in the file. A quick definition of variables: MAX = the last element of array A1$(n): The pointer MIN is dual purpose; it points to the location in A1$(n) at which to stash the next lowest ASCII value, and it limits the scope of the search to those elements which are not already ordered. Given ascending order, on the first pass, the first element in the field is tested against the string B2$ which equals "ZZZZZZZZZZZZZZ", the worst case compare. As soon as the program finds a field which is less than B2$, that field becomes B2$, and the rest continues through all the elements of the array feeding B2$ the smaller of each compare. At the end of the first pass, B2$ contains the substring with the lowest ASCII value of the sorted field in the array, and B = the subscript of the element of array A1$ which contains that field. The next step is, to swap A1$(B) with A1$(MIN). At this point MIN = 1, so now A1$(1) is the element which contains the lowest ASCII value for the sorted field. Each iteration of the sort has 1/MAX fewer elements to sort, and things really speed along.

The speed of this sort is based then only on the number of items to be sorted. I have found that for a file of 80 items the sort takes about 90 seconds. A comparable bubble sort took 12 minutes to order the same file. The major draw back to this approach is that the sort will burn 90 seconds ordering an already ordered file as well! Now, if someone with EDTASM + will code this program in assembly language . . .

```
100 POKE 65495, 0
     : INPUT "ENTER FIELD NUMBER"; F
     : MIN=1
110 B2$="ZZZZZZZZZZZZZZ"
120 FOR X=MIN TO MAX-1
130 B1$=MID$(A1$(X), A4(F), A3(F))
140 IF B1$<B2$ THEN B2$=B1$
     : B=X
150 NEXT
160 IF MIN=MAX-1 THEN 180
170 B3$=A1$(MIN)
     : A1$(MIN)=A1$(B)
     : A1$(B)=B3$
     : MIN=MIN+1
     : GOTO 120
180 POKE 65494, 0
```

Assembly

Paul Kline
8/9 Shneior Street
Beer Sheva, ISRAEL

Here is a program written for the TRS-80 16K Extended Color Computer. It written to make assembly programming almost as easy as BASIC. The first time you RUN this program the computer will write ?SN ERROR just RUN the program again.

```
1Ø 'FOR INSTRUCTIONS TYPE  HELP"
2Ø PMODE 1, 1
     : PCLEAR 2
3Ø CLS
4Ø POKE 65495, 4
5Ø DIM NM$(256), NM(256)
6Ø DATA 2NEG, NUL, NUL, COM, LSR, NUL, ROR, ASR, LSL,
     ROL, DEC, NUL, INC, TST, JMP, CLR
7Ø DATA 1P2, P3, NOP, SYNC, NUL, NUL, LBRA, LBSR,
     NUL, DAA, ORCC, NUL, ANDCC, SEX, EXG, TRF
8Ø DATA 2BRA, BRN, BHI, BLS, BCC, BCS, BNE, BEQ, BVC,
     BVS, BPL, BMI, BGE, BLT, BGT, BLE
9Ø DATA 1LEAX, LEAY, LEAS, LEAU, PSHS, PULS, PSHU,
     PULU, NUL, RTS, ABX, RTI, CWAI, MUL, NUL, SWI
1ØØ DATA 1NEGA, NUL, NUL, COMA, LSRA, NUL, RORA,
     ASRA, LSLA, ROLA, DECA, NUL, INCA, TSTA, NUL,
     CLRA
11Ø DATA NEGB, NUL, NUL, COMB, LSRB, NUL, RORB, ASRB,
     LSLB, ROLB, DECB, NUL, INCB, TSTB, NUL, CLRB
12Ø DATA 2NEG, NUL, NUL, COM, LSR, NUL, ROR, ASR,
     LSL, ROL, DEC, NUL, INC, TST, JMP, CLR
13Ø DATA 3NEG, NUL, NUL, COM, LSR, NUL, ROR, ASR,
     LSL, ROL, DEC, NUL, INC, TST, JMP, CLR
14Ø DATA 2SUBA, CMPA, SBCA, 3SUBD, 2ANDA, BITA, LDA,
     NUL, EORA, ADCA, ORA, ADDA, 3CMPX, BSR, LDX, NUL
15Ø DATA SUBA, CMPA, SBCA, SUBD, ANDA, BITA, LDA,
     STA, EORA, ADCA, ORA, ADDA, 2CMPX, JSR, LDX, STX
16Ø DATA SUBA, CMPA, SBCA, SUBD, ANDA, BITA, LDA,
     STA, EORA, ADCA, ORA, ADDA, CMPX, JSR, LDX, STX
17Ø DATA 3SUBA, CMPA, SBCA, SUBD, ANDA, BITA, LDA,
     STA, EORA, ADCA, ORA, ADDA, CMPX, JSR, LDX, STX
18Ø DATA 2SUBB, CMPB, SBCB, 3ADDD, 2ANDB, BITB, LDB,
     NUL, EORB, ADCB, ORB, ADDB, 3LDD, NUL, LDU, NUL
19Ø DATA 2SUBB, CMPB, SBCB, ADDD, ANDB, BITB, LDB,
     STB, EORB, ADCB, ORB, ADDB, LDD, STD, LDU, STU
2ØØ DATA SUBB, CMPB, SBCB, ADDD, ANDB, BITB, LDB,
     STB, EORB, ADCB, ORB, ADDB, LDD, STD, LDU, STU
21Ø DATA 3SUBB, CMPB, SBCB, ADDD, ANDB, BITB, LDB,
     STB, EORB, ADCB, ORB, ADDB, LDD, STD, LDU, STU
22Ø FOR K=Ø TO 255
23Ø READ NM$(K)
24Ø IF VAL(NM$(K))=Ø THEN 26Ø
25Ø N=VAL(NM$(K))
     : NM$(K)=RIGHT$(NM$(K), LEN(NM$(K))-1)
26Ø NM(K)=N
27Ø NEXT
28Ø PRINT "WELCOME TO TRS-8Ø COCO ASSMBLY"
29Ø PRINT "PROGRAMED 4/4/83 BY P.KLINE"
3ØØ PLAY "L255CA"
31Ø PRINT "READY"
     : LINEINPUT A$
32Ø ADR=VAL("&H"+LEFT$(A$, 4))
33Ø IF A$="HELP" THEN 78Ø
34Ø IF A$="END" THEN POKE  65494, 4
     : PRINT
     : PRINT "GOOD BYE!!!!"
     : PRINT "YOU HAVE "MEM" BYTES OF STORAGEMEMORY
     LEFT TO WORK WITH"
     : END
35Ø IF LEFT$(A$, 4)="EXEC" THEN  S$=RIGHT$(A$,
     LEN(A$)-4)
     : S=VAL("&H"+S$)
     : DEF USR2=S
     : H=USR2(Ø)
     : PRINT
     : GOTO 3ØØ
36Ø IF LEFT$(A$, 5)="CLEAR" THEN CLEAR 2ØØ,
     VAL("&H"+RIGHT$(A$, LEN(A$)-5))
     : RUN
37Ø IF LEFT$(A$, 1)="?" THEN PRINT
     HEX$(PEEK(VAL("&H"+RIGHT$(A$, LEN(A$)-1))))
     : GOTO 3ØØ
38Ø IF LEFT$(A$, 4)="LIST" THEN I=INSTR(1, A$, "-")
     : B$=RIGHT$(A$, LEN(A$)-I)
     : A$=RIGHT$(A$, LEN(A$)-4)
     : A$=LEFT$(A$, LEN(A$)-LEN(B$)-1)
     : GOTO 65Ø
39Ø IF LEN(A$)<5  THEN PRINT
     : PRINT "?SN ERROR"
     : GOTO 3ØØ
4ØØ A$=RIGHT$(A$, LEN(A$)-5)
41Ø I=INSTR(1, A$, " ")
     : C$=RIGHT$(A$, LEN(A$)-I)
42Ø IF I=Ø THEN B$=A$
     : GOTO 43Ø ELSE B$=LEFT$(A$, I-1)
43Ø R$=LEFT$(C$, 1)
44Ø IF R$="#" OR R$="X" THEN C$=RIGHT$(C$, LEN(C$)-1)
45Ø O=Ø
46Ø IF I=Ø THEN 48Ø
47Ø IF R$="#" THEN N=4 ELSE IF R$="X" THEN N=2 ELSE
     IF LEN(C$)=4 THEN N=1 ELSE IF LEN(C$)=2 THEN N=3
     ELSE 54Ø
48Ø IF B$="BREAK" THEN PRINT
     : GOTO 3ØØ
49Ø IF I=Ø THEN 64Ø
5ØØ IF LEFT$(B$, 1)="B" AND LEFT$(B$, 3)<>"BIT" THEN
     N=1
     : V$=RIGHT$(A$, 4)
     : C$=STR$(VAL("&H"+V$)-(ADR+2))
     : IF VAL(C$)>Ø THEN C$=HEX$(VAL(C$)) ELSE
     C$=STR$(VAL(C$)+256)
     : C$=HEX$(VAL(C$))
51Ø FOR K=255 TO Ø STEP -1
     : IF NM$(K)=B$  THEN O=O+1 ELSE 53Ø
52Ø IF O=N THEN 55Ø ELSE K=K-15
53Ø NEXT
54Ø PRINT
     : PRINT "?SN ERROR"
     : GOTO 3ØØ
55Ø POKE  ADR, K
56Ø ADR=ADR+1
57Ø IF LEN(C$)<3 THEN POKE  ADR, VAL("&H"+C$)
     : GOTO 61Ø
58Ø E$=RIGHT$(C$, 2)
     : C$=LEFT$(C$, 2)
59Ø POKE ADR, VAL("&H"+C$)
6ØØ ADR=ADR+1
     : POKE ADR, VAL("&H"+E$)
61Ø ADR=ADR+1
62Ø PRINT HEX$(ADR)" ";
     : LINE INPUT A$
63Ø GOTO 41Ø
64Ø FOR K=Ø TO 255
     : IF NM$(K)=B$ THEN IF NM(K)<>1 THEN 77Ø ELSE
     POKE ADR, K
     : GOTO 61Ø ELSE NEXT
     : PRINT
     : PRINT "?SN ERROR"
     : GOTO 3ØØ
65Ø FOR T=VAL("&H"+A$) TO VAL("&H"+B$)-1
66Ø PRINT HEX$(T)"   "NM$(PEEK(T))" ";
67Ø IF NM(PEEK(T))=1 THEN PRINT
     : NEXT
     : GOTO3ØØ
68Ø PE$=HEX$(PEEK(T))
```

(Continued on page 31)

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Assembly (From page 26)

```
     : IF LEFT$(PE$, 1)="8" OR LEFT$(PE$, 1)="C" THEN
     PRINT "#";
69Ø IF LEFT$(PE$, 1)="E" OR LEFT$(PE$, 1)="A" OR
     LEFT$(PE$, 1)="6"  THEN PRINT "X";
7ØØ FOR W=T+1 TO T+NM(PEEK(T))-1
71Ø PRINT HEX$(PEEK(W))" ";
72Ø NEXT
73Ø PRINT
74Ø T=W-1
     : NEXT
75Ø PRINT
76Ø GOTO 3ØØ
77Ø PRINT
     : PRINT "?OPRAND IS MISSING ERROR"
     : GOTO 31Ø
78Ø CLS
     : PRINT"   ****      H E L P      ****"
79Ø PRINT " ALL ADDRESSES & NUMBERS ARE IN"
     : PRINT "BINARY."
8ØØ PRINT
81Ø PRINT "? LOCATION-RETURNS THE CONTANTS"
     : PRINT "OF A SPECIFIED MEMORY LOCATION."
82Ø PRINT
83Ø PRINT "LIST ADDRESS1-ADDRESS2 - LISTS"
     : PRINT "SPECIFIED ADDRESSES IN ASSEMBLEY"
84Ø PRINT "END - RETURNS SYSTEM TO BASIC."
85Ø PRINT
     : PRINT "BREAK - GOES OUT OF PROGRAM"
     : PRINT "WRITTING MODE."
86Ø PRINT "HIT ANY KEY TO CONTINUE"
87Ø II$=INKEY$
     : IF II$="" THEN 87Ø
88Ø CLS
     : PRINT "CLEAR ADDRESS - RESERVES MEMORY"
     : PRINT "FROM THE ADDRESS SPECIFIED"
     : PRINT "TO THE END OF THE RAM MEMORY."
89Ø PRINT
     : PRINT "EXEC ADDRESS- TRANSFERS CONTROL"
     : PRINT "TO MACHINE-LANGUAGE PROGRAMS AT"
     : PRINT "SPECIFIED ADDRESS."
895 PRINT
     : PRINT "HIT ANY KEY TO CONTINUE"
9ØØ II$=INKEY$
     : IF II$="" THEN 9ØØ
91Ø CLS
     : PRINT
     : PRINT "ADDRESSING MODES-"
     : PRINT "IMMEDIATE = #      INDEX = X"
     : PRINT "PROGRAM FOR EXAMPLE:"
     : PRINT "3ØØØ LDA #2Ø"
     : PRINT "3ØØ2 LDB X2Ø"
     : PRINT "3ØØ4 STA 2ØØØ"
     : PRINT "3ØØ7 STB 3Ø"
     : PRINT "3ØØ9 RTS"
     : PRINT "3ØØA BREAK"
92Ø GOTO 3ØØ
```

Scroll

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Scroll is written on a 16K Color Computer, however, it should work for any Color Computer with Extended BASIC.

When executed from BASIC, Scroll (a machine language routine), shifts the graphics screen up 32 bytes. I have found this routine very helpful in writing BASIC games, and think your readers may find it similarly helpful.

```
1Ø 'SCROLL DEMO
2Ø CLEAR 5ØØ, &H3FØØ
3Ø PRINT "HAVE YOU CLOADED 'SCROLL' YET?"
4Ø INPUT "<Y>ES OR <N>O"; YN$
5Ø IF YN$<>"Y" THEN GOSUB 1ØØØ
6Ø DEF USR1=&H3FØØ
7Ø FOR M=Ø TO 4
8Ø PMODE M, 1
     :  PCLS
     :  SCREEN 1, 1
9Ø CIRCLE (128, 96), 96
1ØØ FOR N=1 TO 96
     :  Y=USR1(Ø)
     :  NEXT N
11Ø NEXT M
12Ø GOTO 7Ø
1ØØØ PRINT "REWIND TAPE"
1Ø1Ø MOTORON
1Ø2Ø INPUT "<ENTER> WHEN THE TAPE IS AT THE
     BEGINNING"; YN$
1Ø3Ø CLOADM"SCROLL"
1Ø4Ø RETURN
```

Carols

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Last Christmas your readers were treated to a Christmas tree. I thought that this Christmas they might like some carols for their Color Computers.

```
1Ø PCLS Ø
     : SCREEN 1, 1
     : PCLS Ø
     : SCREEN 1, Ø
     : FOR T=1 TO 1Ø
     : NEXT T
2Ø CLS(4)
3Ø PRINT @16Ø, "  MOSES ENGINEERING PRESENTS
     CHRISTMAS CAROLS"
4Ø FOR T=1 TO 2ØØØ
     : NEXT T
43 PMODE 3, 1
45 PCLS 4
     : SCREEN 1, Ø
5Ø FOR N=3Ø TO 12Ø
     : CIRCLE (128, N), 1+N/2-1Ø, 1
     : NEXT N
6Ø COLOR 3, 3
7Ø LINE (128, 16Ø)-(128, 184), PSET
8Ø FOR N=1 TO 4
85 PSET (128, 15, RND(4))
9Ø SOUND 1Ø8, 8
     : SOUND 147, 8
     : SOUND 147, 4
     : SOUND 159, 4
     : SOUND 147, 4
     : SOUND 14Ø, 4
     : SOUND 125, 8
     : SOUND 125, 8
     : SOUND 125, 8
     : SOUND 159, 8
     : SOUND 159, 4
     : SOUND 17Ø, 4
1ØØ SOUND 159, 4
     : SOUND 147, 4
     : SOUND 14Ø, 8
     : SOUND 1Ø8, 8
     : SOUND 1Ø8, 8
```

```
      : SOUND 17Ø, 8
      : SOUND 17Ø, 4
      : SOUND 176, 4
      : SOUND 17Ø, 4
      : SOUND 159, 4
      : SOUND 147, 8
      : SOUND 125, 8
      : SOUND 1Ø8, 4
      : SOUND 1Ø8, 4
      : SOUND 125, 8
      : SOUND 159, 8
      : SOUND 14Ø, 8
      : SOUND 147, 16
11Ø CIRCLE (128, 15), 1+RND(8), RND(4)
115 GOSUB 1ØØØ
12Ø NEXT N
13Ø FOR N=1 TO 3
14Ø GOSUB 1ØØØ
15Ø SOUND 17Ø, 8
      : SOUND 17Ø, 8
      : SOUND 17Ø, 16
      : SOUND 17Ø, 8
      : SOUND 17Ø, 8
      : SOUND 17Ø, 16
      : SOUND 17Ø, 8
      : SOUND 185, 8
      : SOUND 147, 8
      : SOUND 159, 8
      : SOUND 17Ø, 24
      : SOUND 176, 8
      : SOUND 176, 8
      : SOUND 176, 8
      : SOUND 176, 8
      : SOUND 176, 8
      : SOUND 17Ø, 8
155 SOUND 17Ø, 8
      : SOUND 17Ø, 8
      : SOUND 17Ø, 8
      : SOUND 159, 8
      : SOUND 159, 8
      : SOUND 17Ø, 8
      : SOUND 159, 16
      : SOUND 185, 16
      : SOUND 17Ø, 8
      : SOUND 17Ø, 8
      : SOUND 17Ø, 16
      : SOUND 17Ø, 8
      : SOUND 17Ø, 8
      : SOUND 17Ø, 16
      : SOUND 17Ø, 8
      : SOUND 185, 8
      : SOUND 147, 8
      : SOUND 159, 8
      : SOUND 17Ø, 24
16Ø SOUND 176, 8
      : SOUND 176, 8
      : SOUND 176, 8
      : SOUND 176, 8
      : SOUND 176, 8
      : SOUND 17Ø, 8
      : SOUND 17Ø, 8
      : SOUND 17Ø, 8
      : SOUND 185, 8
      : SOUND 185, 8
      : SOUND 176, 8
      : SOUND 159, 8
      : SOUND 147, 32
165 GOSUB 1ØØØ
167 NEXT N
17Ø FOR N=1 TO 3
175 GOSUB 1ØØØ
18Ø SOUND 17Ø, 4
      : SOUND 17Ø, 4
      : SOUND 17Ø, 4
      : SOUND 17Ø, 4
      : SOUND 159, 4
      : SOUND 159, 4
      : SOUND 159, 8
      : SOUND 147, 4
      : SOUND 147, 4
      : SOUND 147, 4
      : SOUND 147, 4
      : SOUND 17Ø, 16
      : SOUND 125, 4
      : SOUND 125, 4
      : SOUND 125, 4
      : SOUND 125, 4
      : SOUND 1Ø8, 4
      : SOUND 1Ø8, 4
      : SOUND 147, 8
      : SOUND 14Ø, 4
      : SOUND 147, 4
      : SOUND 159, 4
185 SOUND 17Ø, 4
      : SOUND 159, 16
      : SOUND 17Ø, 4
      : SOUND 17Ø, 4
      : SOUND 17Ø, 4
      : SOUND 17Ø, 4
      : SOUND 159, 4
      : SOUND 159, 4
      : SOUND 159, 8
      : SOUND 147, 4
      : SOUND 147, 4
      : SOUND 147, 4
      : SOUND 147, 4
      : SOUND 17Ø, 16
19Ø SOUND 125, 4
      : SOUND 125, 4
      : SOUND 125, 4
      : SOUND 125, 4
      : SOUND 1Ø8, 4
      : SOUND 1Ø8, 4
      : SOUND 147, 8
      : SOUND 159, 4
      : SOUND 147, 4
      : SOUND 159, 4
      : SOUND 17Ø, 4
      : SOUND 147, 16
193 GOSUB 1ØØØ
195 NEXT N
2ØØ FOR N=1 TO 3
2Ø3 GOSUB 1ØØØ
21Ø SOUND 89, 8
      : SOUND 89, 8
      : SOUND 89, 8
      : SOUND 1Ø8, 8
      : SOUND 89, 8
      : SOUND 89, 8
      : SOUND 32, 16
      : SOUND 58, 8
      : SOUND 32, 8
      : SOUND 58, 8
      : SOUND 78, 8
      : SOUND 89, 16
      : SOUND 89, 16
215 SOUND 89, 8
      : SOUND 89, 8
      : SOUND 89, 8
      : SOUND 1Ø8, 8
      : SOUND 89, 8
      : SOUND 89, 8
      : SOUND 32, 16
      : SOUND 58, 8
      : SOUND 32, 8
      : SOUND 58, 8
      : SOUND 78, 8
22Ø SOUND 89, 16
      : SOUND 89, 16
      : SOUND 147, 8
      : SOUND 133, 8
      : SOUND 125, 8
```

```
      : SOUND 108, 8
      : SOUND 125, 8
      : SOUND 108, 8
      : SOUND 89, 16
      : SOUND 58, 8
      : SOUND 32, 8
      : SOUND 58, 8
      : SOUND 78, 8
      : SOUND 89, 16
      : SOUND 89, 16
      : SOUND 32, 8
222 SOUND 32, 8
      : SOUND 58, 8
      : SOUND 78, 8
      : SOUND 89, 8
      : SOUND 89, 8
      : SOUND 108, 16
      : SOUND 147, 8
      : SOUND 133, 8
      : SOUND 125, 8
      : SOUND 108, 8
      : SOUND 89, 16
      : SOUND 133, 16
      : SOUND 89, 12
225 GOSUB 1000
230 NEXT N
250 FOR N=1 TO 4
255 GOSUB 1000
260 SOUND 125, 12
      : SOUND 159, 12
      : SOUND 153, 12
      : SOUND 153, 18
      : SOUND 140, 6
      : SOUND 140, 12
      : SOUND 153, 12
      : SOUND 140, 12
      : SOUND 125, 12
      : SOUND 180, 32
      : SOUND 180, 12
      : SOUND 185, 12
      : SOUND 180, 12
265 SOUND 170, 18
      : SOUND 140, 6
      : SOUND 140, 12
      : SOUND 153, 12
      : SOUND 140, 12
      : SOUND 125, 12
      : SOUND 159, 32
270 GOSUB 1000
280 NEXT N
790 PCLS 3
      : SCREEN 1, 0
800 FOR N=1 TO 30
      : PSET (RND(255), RND(191), RND(4))
      : NEXT N
810 FOR N=1 TO 4
820 SOUND 147, 8
      : SOUND 159, 4
      : SOUND 147, 8
      : SOUND 125, 24
      : SOUND 147, 8
      : SOUND 159, 4
      : SOUND 147, 8
      : SOUND 125, 24
      : SOUND 185, 16
      : SOUND 185, 8
      : SOUND 170, 24
      : SOUND 176, 16
      : SOUND 176, 8
      : SOUND 147, 24
830 SOUND 159, 16
      : SOUND 159, 8
      : SOUND 176, 8
      : SOUND 170, 4
      : SOUND 159, 8
      : SOUND 147, 10
      : SOUND 159, 4
      : SOUND 147, 8
      : SOUND 125, 24
      : SOUND 159, 16
      : SOUND 159, 8
      : SOUND 176, 10
      : SOUND 170, 4
      : SOUND 159, 8
      : SOUND 147, 10
      : SOUND 159, 4
      : SOUND 147, 8
      : SOUND 125, 24
840 SOUND 185, 16
      : SOUND 185, 8
      : SOUND 197, 10
      : SOUND 185, 4
      : SOUND 170, 8
      : SOUND 176, 24
      : SOUND 193, 16
      : SOUND 176, 10
      : SOUND 147, 4
850 SOUND 125, 8
860 PSET (RND(255), RND(191), RND(4))
890 A=50 +RND(150)
      : B=50+RND(40)
900 IF N=4 THEN FOR M=1 TO 50
      : SCREEN 1, 0
      : CIRCLE (A, B), M, 1
      : NEXT M
910 SOUND 147, 10
      : SOUND 133, 4
      : SOUND 108, 8
      : SOUND 89, 30
990 NEXT N
992 CLS(4)
994 PRINT @160, "       MERRY CHRISTMAS"
999 END
1000 REM CHRISTMAS TREE LIGHTS
1010 A=30+RND(90)
1020 B=RND(A/2)
1030 C=RND(3)-2
1032 IF C=0 THEN 1030
1040 PSET (128+(B*C), A, RND(4))
1042 CIRCLE (128+(B*C), A), 1+RND(3), RND(4)
1045 CIRCLE (128, 15), 1+RND(8), RND(4)
1050 RETURN
```

PC-2 Communications

by Peter Levy

In my last article, I introduced you to the PC-2's RS-232 accessory. This month, we're going to get some use out of the little black box and talk to CompuServe with it. I'm going to cover hardware hookup, configuration of the PC-2's RS-232, entry into terminal mode, conversation with CIS, and (after logoff) review of the PC-2's text buffer. The CompuServe account number and password used as an example in this article are fictitious, of course.

STEP ONE

Hook up all the hardware. Plug the RS-232 accessory into the PC-2, then hook up the needed transformers, if your batteries aren't freshly charged. (You really don't want to run out of battery power while online with CIS.) Next, make sure your modem is connected to your phone line correctly. Now, run an appropriate cable (generally a male-male DB-25W ribbon cable like R/S stock number 26-1408, which works for the Modem I and II and probably most others) from the RS-232 accessory to the modem. Your hardware is now ready to go.

STEP TWO

Fire up the PC-2 and get it ready to talk to CIS. First turn on the RS-232, then the PC-2. Remember that you need around 600 bytes of free memory to use terminal mode on the PC-2, so check this before proceeding. If you don't have enough—and I'd recommend having several Kbytes free—use CLEAR or NEW to free up enough space to work with. Next, configure the RS-232 for logon to CompuServe. During logon CIS uses 300 baud, 7 bit words, even parity, and 1 stop bit; so you tell the PC-2:

SETCOM 300,7,E,1 (ENTER)

Now type TERMINAL (ENTER) to get into terminal mode, and the PC-2 will display:

—-ENTER MENU SELECTION

. . . and then:

Terminal: Ent Aut Quit

Now, CIS uses "full duplex" protocol, which means that whenever you send them a character, they send it right back. This means that the PC-2 should not "echo" your keyboard input to the display, because if it did it would display both the echo of your keystrokes and also CIS's own echo, and each character would wind up being displayed twice. You make sure the PC-2's echo protocol is OFF by pressing the up- or down-arrow key until the "Protocol" menu is displayed:

Protocol: XO/O Echo

Now press (F5) (right under the displayed word "Echo"), and the PC-2 displays:

ECHO OFF ?(Y/N) if echo is already off,

or

ECHO ON ?(Y/N) if echo is already on.

If echo is on, you want it off. Press (N), then (ENTER), and the PC-2 will return to the Protocol menu. Echo is now off, although the PC-2 didn't say so. You can check it, if you like, by pressing (F5) again.

If echo is already off, leave it that way by pressing (Y) and then (ENTER). The PC-2 returns to the Protocol menu.

Now use the up- and down-arrow keys until the Terminal menu is displayed again:

Terminal: Ent Aut Quit

You are now ready to enter terminal mode, so press (F4) (under Ent, for "Enter"). This places the PC-2 in terminal mode. Your printer (if you have one) will feed one line, the PC-2's LCD will clear, and an underline cursor will appear.

As a last detail, press the up/down arrow key until the Roman numerals "III" appear near the top right of the display. This makes (F1) an XON/XOFF key, (F2) a backspace, and (F6) a CONTROL key, all of which will make later things easier.

The PC-2 is now ready to talk to CIS.

STEP THREE

Call CIS and get your modem on line. Just how you do this, depends on your equipment.

STEP FOUR

Log on to CIS. Send CIS the regular control-C (press (F6) and then (C)) to get their attention, and they reply:

User ID:

Type your account number and press (ENTER):

76543,210 (ENTER)

CIS replies:

Password:

You reply:

MYPASSWORD (ENTER)

At this point, the PC-2's display may start filling with all sorts of garbage. DON'T PANIC. If you have set your terminal defaults with CIS to anything other than the 300 baud/7 bit words/even parity/1 stop bit with which you logged on, CompuServe will switch over to whatever you've specified. You never see this change when using VIDTEX because it switches automatically, but the PC-2 doesn't. If this happens, you have to change the PC-2's protocol yourself, as follows:

Press (BREAK) to display the Terminal menu.

Use the up- and down-arrow keys to display the Setup menu:

Setup: Aut Fnc Com

Press (F6) (under "Com") to alter the PC-2's communications protocol.

The PC-2 will display:

BUFFER LENGTH=0000 ?(Y/N)

Press the down-arrow key, and the PC-2 displays:

BAUD=300 ?(Y/N)

Press the down-arrow key again, and the PC-2 displays:

WORD = 7 ?(Y/N)

If your protocol uses 7 bit words, press (Y) and (ENTER). If not, reset the word length by pressing (N), (ENTER), your word length, and (ENTER) again. The PC-2 displays the new word length:

WORD = x ?(Y/N)

Press (Y) (ENTER) to continue. The PC-2 goes through similar prompts for parity and number of stop bits, then returns to the Setup menu. Press the down-arrow until you get back to the Terminal menu, then press (F4) to reenter terminal mode. All fixed. Whew!

If you plan to use the PC-2 to talk to CIS regularly, I'd recommend that you set your terminal defaults to 300 baud, 7 bit words, even parity, and 1 stop bit that so you don't have to change the PC-2's settings while on line.

STEP FIVE

Have fun, you're on line.

Remember that with the PC-2 in terminal mode, the left-arrow key is NOT, repeat NOT, a backspace. Use either (F2) or control-H ((F6), (H)) for backspace.

If you inadvertently (or deliberately) press any arrow key in terminal mode, the BUSY sign will appear over the LCD, and some old text will appear on the display. This is because the arrow keys display the text in the PC-2's buffer area. If you get into the buffer accidentally—and you will the first time you instinctively try to use left-arrow for a backspace—just press (F1) to get out of the buffer and back to normal terminal mode.

STEP SIX

Review text in buffer after logging off.

Once offline, your entire conversation with CIS (or at least as much as will fit in the PC-2's unused memory area) is stored in a text buffer. You can examine this by pressing an arrow key, which will cause part of the text buffer to be displayed. Once in the buffer, you can use the arrow keys to move through the text:

right-arrow advances the display one word
left-arrow backs up one word
down-arrow advances one line
up-arrow backs up one line
shift-up-arrow displays the first line of text in the buffer
shift-down-arrow displays the last line of text in the buffer

You can also copy the buffer contents to the PC-2's printer. Just press (F3) when in terminal mode to start printing. To stop it, just press (F3) again.

The PC-2 RS-232 has a lot of good features I haven't had space to go into here. Once you're comfortable with using the RS-232, re-read your manual a time or two to learn the finer points of its operation. It will be well worth your time.

Next month, I'll describe how to hook up a serial printer to the PC-2 through the RS-232.

Converting ML to AL

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Here are two BASIC programs that convert machine language subroutines in the memory of the TRS-80 PC-2 pocket computer into the assembly language recently published in the *TRS-80 Microcomputer News* (Vol. 5, Issues 3-5) by Bruce Elliott. Please note that while the shorter program is written for the PC-2 itself, the longer one is written for a Model III.

Some subroutines addresses are given by Mr. Elliott on Page 26 in Vol. 5, Issue 3.

```
1 REM    PC-2 DISASSEMBLER
2 REM    DAVE PARSONS
3 REM
1Ø DATA ØØ SBC XL,Ø1 SBC (X),Ø2 ADC XL,Ø3 ADC (X),Ø4
    LDA XL
11 DATA Ø5 LDA (X),Ø6 CPA XL,Ø7 CPA (X) ,Ø8 STA XH,Ø9
    AND (X)
12 DATA ØA STA XL,ØB ORA (X),ØC DCS (X),ØD EOR (X),ØE
    STA (X)
13 DATA ØF BIT (X),1Ø SBC YL,11 SBC (Y),12 ADC YL,13
    ADC (Y)
14 DATA 14 LDA YL,15 LDA (Y),16 CPA YL,17 CPA (Y)
15 DATA 18 STA YH,19 AND (Y)
16 DATA 1A STA YL,1B ORA (Y),1D DCS (Y),1D EOR (Y),1E
    STA (Y)
17 DATA 1F BIT (Y),2Ø SBC UL, 21 SBC (U),22 ADC UL,23
    ADC (U)
18 DATA 24 LDA UL,25 LDA (U),26 CPA UL,27 CPA (U)
19 DATA 28 STA UH,29 AND (U)
2Ø DATA 2A STA UL,2B ORA (U),2C DCS (U),2D EOR (U),2E
    STA (U)
21 DATA 2F BIT (U),38 NOP,4Ø INC XL,41 SIN X,42 DEC
    XL,43 SDE X
22 DATA 44 INC X,45 LIN X,46 DEC X,47 LDE X,48ILDI
    XH.
23 DATA 49IANI (X).,4AILDI XL.,4BIORI (X).,4CICPI XH.
24 DATA 4DIBII (X).,4EICPI XL.,4FIADI (X).,5Ø INC
    YL,51 SIN Y
25 DATA 52 DEC YL,53 SDE Y,54 INC Y,55 LIN Y,56 DEC Y
26 DATA 57 LDE Y,58ILDI YH.,59IANI (Y).,5AILDI
    YL.,5BIORI (Y).
27 DATA 5CICPI YH.,5DIBII (Y).,5EICPI YL.,5FIADI (Y).
28 DATA 6Ø INC UL,61 SIN U,62 DEC UL,63 SDE U,64 INC
    U,65 LIN U
29 DATA 66 DEC U,67 LDE U,68ILDI UH.,69IANI (U).
3Ø DATA 6AILDI UL.,6BIORI (U).,6CICPI UH.,6DIBII (U).
31 DATA 6EICPI UL.,6FIADI (U).,8Ø SBC XH,81IBCR+,82
    ADC XH
32 DATA 83IBCS+,84 LDA XH,85IBHR+,86 CPA XH,87IBHS+
33 DATA 88ILOP UL.,89IBZR+,8A RTI,8BIBZS+,8C DCA (X)
34 DATA 8DIBVR+,8EIBCH+,8FIBVS+,9Ø SBC YH,91IBCR-,92
    ADC YH
35 DATA 93IBCR-,94 LDA YH,95IBHR-,96 CPA
    YH,97IBHS-,99IBZR-
36 DATA 9A RTN,9BIBZS-,9C DCA
    (Y),9DIBVR-,9EIBCH-,9FIBVS-
37 DATA AØ SBC UH,A1BSBC (,A2 ADC UH,A3BADC (,A4 LDA
    UH
38 DATA A5BLDA (,A6 CPA UH,A7BCPA (,A8 SPV,A9BAND (
39 DATA AAJLDI S.,ABBORA (,AC DCA (U),ADBEOR (
4Ø DATA AEBSTA (,AFBBIT (,B1ISBI A.,B3IADI A.,B5ILDI
    A.
41 DATA B7ICPI A.,B8 RPV,B9IANI A.,BAJJMP ,BBIORI A.
42 DATA BDIEAI ,BEJSJP ,BFIBII A.,CØ VEJ (CØ),C1IVCR
```

```
43 DATA C2 VEJ (C2),C3IVCS ,C4 VEJ (C4),C5IVHR ,C6
     VEJ (C6)
44 DATA C7IVHS ,C8 VEJ (C8),C9IVZR ,CA VEJ
     (CA),CBIVZS
45 DATA CC VEJ (CC),CDIVMJ ,CE VEJ (CE),CFIVVS ,DØ
     VEJ (DØ)
46 DATA D1 ROR,D2 VEJ (D2),D3 DRR (X),D4 VEJ (D4),D5
     SHR
47 DATA D6 VEJ (D6),D7 DRL (X),D8 VEJ (D8),D9 SHL,DA
     VEJ (DA)
48 DATA DB ROL,DC VEJ (DC),DD INC A,DE VEJ (DE),DF
     DEC A
49 DATA EØ VEJ (EØ),E1 SPU,E2 VEJ (E2),E3 RPU,E4 VEJ
     (E4)
5Ø DATA E6 VEJ (E6),E8 VEJ (E8),E9AANI (,EA VEJ (EA)
51 DATA EBAORI (,EC VEJ (EC),EDABII (,EE VEJ
     (EE),EFAADI (
52 DATA FØ VEJ (FØ),F1 AEX,F2 VEJ (F2),F4 VEJ (F4)
53 DATA F5 TIN,F6 VEJ (F6),F7 CIN,F9 REC,FB SEC
54 DATA FDØ1 SBC #(X),FDØ3 ADC #(X),FDØ5 LDA
     #(X),FDØ7 CPA #(X)
55 DATA FDØ8 LDX X,FDØ9 AND #(X),FDØA POP X,FDØB ORA
     #(X)
56 DATA FDØC DCS #(X),FDØD EOR #(X),FDØE STA #(X)
57 DATA FDØF BIT #(X),FD11 SBC #(Y),FD13 ADC #(Y)
58 DATA FD15 LDA #(Y),FD17 CPA #(Y),FD18 LDX Y,FD19
     AND #(Y)
59 DATA FD1A POP Y,FD1B ORA #(Y),FD1C DCS #(Y),FD1D
     EOR #(Y)
6Ø DATA FD1E STA #(Y),FD1F BIT #(Y),FD21 SBC #(U)
61 DATA FD23 ADC #(U),FD25 LDA #(U),FD27 CPA
     #(U),FD28 LDX U
62 DATA FD29 AND #(U),FD2A POP U,FD2B ORA #(U),FD2C
     DCS #(U)
63 DATA FD2D EOR #(U),FD2E STA #(U),FD2F BIT #(U)
64 DATA FD4Ø INC XH,FD42 DEC XH,FD48 LDX S,FD49IANI
     #(X).
65 DATA FD4A STX X,FD4BIORI #(X).,FD4C OFF,FD4DIBII
     #(X).
66 DATA FD4E STX S,FD4FIADI #(X).,FD5Ø INC YH,FD52
     DEC YH
67 DATA FD58 LDX P,FD59IANI #(Y).,FD5A STX Y,FD5BIORI
     #(Y).
68 DATA FD5DIBII #(Y).,FD5E STX P,FD5FIADI #(Y).,FD6Ø
     INC UH
69 DATA FD62 DEC UH,FD69IANI #(U).,FD6A STX
     U,FD6BIORI #(U).
7Ø DATA FD6DIBII #(U).,FD6FIADI #(U).,FD81 SIE,FD88
     PSH X
71 DATA FD8A POP A,FD8C DCA #(X),FD8E DCV,FD98 PSH Y
72 DATA FD9C DCA #(Y),FDA1BSBC #(,FDA3BADC #(
73 DATA FDA5BLDA #(,FDA7BCPA #(,FDA8 PSH U,FDA9BAND
     #(
74 DATA FDAA TTA,FDABBORA #(,FDAC DCA #(U),FDADBEOR
     #(
75 DATA FDAEBSTA #(,FDAFBBIT #(,FDB1 HLT,FDBA ITA
76 DATA FDBE RIE,FDCØ RDP,FDC1 SDP,FDC8 PSH A,FDCA
     ADR X
77 DATA FDCC ATP,FDCE AMØ,FDD3 DRR #(X),FDD7 DRL #(X)
78 DATA FDDA ADR Y,FDDE AM1,FDE9AANI #(,FDEA ADR U
79 DATA FDEBAORI #(,FDEC ATT,FDEDABII #(,FDEFAADI #(
2ØØ DIM I$(31Ø)
21Ø REM
22Ø REM   THE NEXT SECTION OF CODE FORMS THE TABLE OF

23Ø REM   OP CODES, INSTRUCTION FORMATS, AND
     MNEMONICS
24Ø REM
25Ø CLS
26Ø PRINT @ 64*15 + 23, "PC-2 DISASSEMBLER"
27Ø PRINT
28Ø PRINT "PRESS THE LETTER 'T' IF YOU WISH TO SEE
     THE TABLE OF OP CODES, INSTRUCTION FORMATS, AND
     MNEMONICS; OTHERWISE PRESS THE 'ENTER' KEY:  "
29Ø FOR K = 1 TO 31Ø
3ØØ   READ I$(K)
31Ø   NEXT K
32Ø REM   THE FOLLOWING SECTION ACCEPTS DECIMAL ASCII
     BYTES
33Ø REM   FROM THE PC-2'S MEMORY, WHICH ARE READ FROM
     THE
34Ø REM   PC-2'S SCREEN AND ENTERED INTO THE MODEL
     III VIA
35Ø REM   THE KEYBOARD.
36Ø PRINT
37Ø INPUT Q$
38Ø IF Q$ >< "T" THEN 53Ø
39Ø PRINT
4ØØ PRINT
41Ø PRINT "THE FIRST TWO DIGITS OF THE STRINGS WHICH
     FOLLOW, OR THE FIRST  FOUR DIGITS IF THE FIRST
     TWO ARE 'FD,' ARE THE OP CODE; THE NEXTDIGIT, OR
     BLANK, SPECIFIES THE INSTRUCTION FORMAT; THE
     NEXT    THREE DIGITS ARE THE MNEMONIC; AND ";
42Ø PRINT "WHAT FOLLOWS IS THE INVARIANTPART OF THE
     OPERANDS."
43Ø PRINT
44Ø K1 = 2Ø
45Ø FOR K = 1 TO 31Ø
46Ø   PRINT I$(K),
47Ø   K1 = K1 + 1
48Ø   IF K1 = 48 THEN K1 = Ø
     :  PRINT
     :  INPUT "PUSH 'ENTER' TO CONTINUE";QQ
     :  ELSE
49Ø   NEXT K
5ØØ PRINT
51Ø PRINT
52Ø PRINT
53Ø PRINT
54Ø PRINT
55Ø INPUT "ENTER THE DECIMAL ADDRESS OF THE FIRST
     BYTE:   ";A
56Ø PRINT
57Ø INPUT "ENTER THE NUMBER OF BYTES TO BE LOOKED
     AT";N
58Ø DIM B(N)
59Ø PRINT
6ØØ PRINT
61Ø PRINT "ENTER THE ASCII DECIMAL CONTENTS OF THE
     SUCCESSIVE BYTES, HITTING THE 'ENTER' BUTTON
     AFTER EACH BYTE:  "
62Ø PRINT
63Ø FOR K = 1 TO N
64Ø   INPUT B(K)
65Ø   NEXT K
66Ø PRINT "HERE IS AN ASSEMBLY-LANGUAGE
     RECONSTRUCTION OF THE SERIES OF ";N;" BYTES
     BEGINNING AT ADDRESS ";A;" IN THE PC-2'S MEMORY:
     "
67Ø PRINT
68Ø PRINT TAB(Ø) "ADDR" TAB(6) "OP CODE + " TAB(21)
     "MNEM" TAB(26) "OPERANDS"
69Ø PRINT
7ØØ K = 1
71Ø FOR K1 = 1 TO N
72Ø IF K > N THEN 144Ø
73Ø   IF B(K) = 253 THEN HI = 311
     : LO = 211
     :  L1 = 4
     : D = B(K + 1)
     :  O$ = "FD"
     :     ELSE HI = 211
     : LO = 1
     :    L1 = 2
     : D = B(K)
     :  O$ = ""
74Ø  H$ = ""
     :  GOSUB 156Ø
75Ø   O$ = O$ + H$
76Ø REM
```

```
77Ø REM    THE NEXT SECTION SEARCHES THE TABLE I$ TO
     FIND
78Ø REM    THE MATCHING OP CODE AND TO DETERMINE THE

79Ø REM    INSTRUCTION FORMAT AND THE MNEMONIC.
8ØØ REM
81Ø FOR K2 = 1 TO 8
82Ø   MD = INT((HI + LO)/2)
83Ø   IF LEFT$(I$(MD),L1) = O$ THEN 91Ø
84Ø   IF LEFT$(I$(MD),L1) > O$ THEN HI = MD ELSE LO =
     MD
85Ø   NEXT K2
86Ø PRINT "THE SEARCH HAS FAILED": STOP
87Ø REM
88Ø REM   WILL NOW BRANCH TO THE APPROPRIATE SECTION
     TO
89Ø REM   COMPLETE THE PROCESSING OF THE GIVEN
     INSTRUCTION.
9ØØ REM
91Ø D = A
     :  H$ = ""
     :  GOSUB 156Ø
92Ø IF LEN(H$) = 2 THEN H$ = "ØØ" + H$
93Ø IF LEN(H$) = 3 THEN H$ = "Ø" + H$
94Ø IF L1 = 4 THEN O$ = LEFT$(O$,2) + " " +
     RIGHT$(O$,2)
95Ø PRINT TAB(Ø) H$ TAB(6) O$;
96Ø F$ = MID$(I$(MD),L1 + 1,1)
97Ø IF F$ = " " THEN 1Ø3Ø
98Ø IF F$ = "I" THEN 1Ø7Ø
99Ø IF F$ = "A" THEN 114Ø
1ØØØ IF F$ = "B" THEN 125Ø
1Ø1Ø IF F$ = "J" THEN 134Ø
1Ø2Ø PRINT "THE BRANCHING HAS FAILED  "
     :  STOP
1Ø3Ø REM   THIS SECTION PROCESSES FOR FORMAT ' '
1Ø4Ø PRINT TAB(22) RIGHT$(I$(MD), LEN(I$(MD)) - L1 -
     1)
1Ø5Ø A = A + L1/2
     :  K = K + L1/2
1Ø6Ø GOTO 143Ø
1Ø7Ø REM   THIS SECTION PROCESSES FOR FORMAT 'I'
1Ø8Ø D = B(K + L1/2)
     :  H$ = ""
     :  GOSUB 156Ø
1Ø9Ø PRINT " ";H$;
11ØØ IF RIGHT$(I$(MD),1) = "." THEN T8$ =
     MID$(I$(MD), L1 + 2, LEN(I$(MD)) - L1 -2) + ","
     ELSE T8$ = RIGHT$(I$(MD),LEN(I$(MD)) - L1 - 1)
111Ø PRINT TAB(22) T8$ + H$
112Ø A = A + L1/2 + 1
     :   K = K + L1/2 + 1
113Ø GOTO 143Ø
114Ø REM    THIS SECTION PROCESSES FOR FORMAT 'A'
115Ø D = B(K + L1/2)
     :   H$ = ""
     :  GOSUB 156Ø
116Ø T1$ = H$
117Ø D = B(K + L1/2 + 1)
     :  H$ = ""
     :  GOSUB 156Ø
118Ø T2$ = H$
119Ø D = B(K + L1/2 + 2)
     :   H$ = ""
     :  GOSUB 156Ø
12ØØ T3$ = H$
121Ø PRINT " " +T1$ + " " + T2$ + " " + T3$;
122Ø PRINT TAB(22) RIGHT$(I$(MD),LEN(I$(MD)) - L1 -
     1); T1$;T2$;")";",";T3$
123Ø A = A + L1/2 + 3
     :   K = K + L1/2 + 3
124Ø GOTO 143Ø
125Ø REM   THIS SECTION PROCESSES FORMAT 'B'
126Ø D = B(K + L1/2)
     :   H$ = ""
     :  GOSUB 156Ø
127Ø T1$ = H$
128Ø D = B(K + L1/2 + 1)
     :   H$ = ""
     :  GOSUB 156Ø
129Ø T2$ = H$
13ØØ PRINT " " + T1$ + " " + T2$;
131Ø PRINT TAB(22) RIGHT$(I$(MD),LEN(I$(MD)) - L1 -
     1);T1$;T2$;")"
132Ø A = A + L1/2 + 2
     :   K = K + L1/2 + 2
133Ø GOTO 143Ø
134Ø REM   THIS SECTION PROCESSES FORMAT 'J'
135Ø D = B(K + L1/2)
     :   H$ = ""
     :  GOSUB 156Ø
136Ø T3$ = H$
137Ø D = B(K + L1/2 + 1)
     :  H$ = ""
     :   GOSUB 156Ø
138Ø T2$ = H$
139Ø PRINT " " + T3$ + " " + T2$;
14ØØ IF RIGHT$(I$(MD),1) = "." THEN T8$ =
     MID$(I$(MD),L1 + 2, LEN(I$(MD)) - L1 - 2) + ","
     ELSE T8$ = RIGHT$(I$(MD),LEN(I$(MD)) - L1 - 1)
141Ø PRINT TAB(22) T8$;T3$;",";T2$
142Ø A = A + L1/2 + 2
     :   K = K + L1/2 + 2
143Ø NEXT K1
144Ø PRINT
145Ø INPUT "HIT 'ENTER' TO START ANOTHER SUBROUTINE
     "; QQ
146Ø CLEAR
147Ø GOTO 2ØØ
148Ø GOSUB 155Ø
     :  REM    SUBROUTINE TO CONVERT DECIMAL TO
149Ø       REM   HEXADECIMAL
15ØØ REM
151Ø REM   THE NEXT SECTION LOOKS UP THE OP CODE IN
     THE OP$
152Ø REM   TABLE AND FINDS THE INSTRUCTION FORMAT AND
     THE
153Ø REM   MNEMONIC
154Ø REM
155Ø REM BEGIN THE DEC TO HEX SUBR HERE
156Ø FOR L = 1 TO 2Ø
157Ø   Q = INT(D/16)
158Ø   RM = D - 16*Q
159Ø   IF RM > 9 THEN X$(L)=CHR$(RM+55) ELSE
     X$(L)=CHR$(RM+48)
16ØØ   D = Q
161Ø   IF Q = Ø THEN 163Ø
162Ø   NEXT L
163Ø FOR M = L TO 1 STEP -1
164Ø   H$ = H$ + X$(M)
165Ø   NEXT M
166Ø IF LEN(H$) = 1 THEN H$ = "Ø" + H$
167Ø RETURN
168Ø END
```

```
169Ø REM     THE FOLLOWING PROGRAM IS FOR THE PC-2,
     NOT
17ØØ REM     THE MODEL III. IT PEEKS IN THE PC-2'S
     MEMORY
171Ø REM     AND DISPLAYS THE CONSECUTIVE BYTES OF
     INTEREST.
172Ø REM
173Ø CLEAR
174Ø INPUT "START WHERE?  "; A
175Ø INPUT "HOW MANY BYTES?  ";N
176Ø FOR J = Ø TO N - 1
177Ø D = PEEK(A+J)
178Ø WAIT 1ØØ
179Ø PRINT A+J,D
18ØØ NEXT J
181Ø GOTO 173Ø
182Ø END
```

Installation of XENIX

This installation procedure will be divided into two sections. The first section will deal primarily with what you need to know in order to transfer the XENIX Core System from the three floppy diskettes provided in the TRS-XENIX Operations Manual to your primary hard drive. Also included in this section will be common error messages to look for and what they mean so that you may be better equipped to diagnose potential hardware or software problems.

Section Two will include a deeper look into the XENIX Operating System to help familiarize you with some of the more powerful commands. This section is intended to give you a more in depth look into the XENIX system as it compares to TRSDOS.

BEFORE STARTING

****

Some Important things you need to know
BEFORE STARTING

****

1) When running TRS-XENIX, the hard disks are numbered hd0-hd3, where Drive hd0 is the primary hard disk.
2) The hard drives must not be write protected and the floppy diskettes must have a write enable tab. Approximately every 30 seconds TRS-XENIX will access the drives to update its files and directories. This will occur even when the system is idle.
3) TRS-XENIX utilizes the Media Error Map located on the bottom of the hard drive. Copy the contents of this map for each drive in the system and then replace the map into its sleeve on the bottom of its drive. Do this for all hard drives before beginning to initialize XENIX.
4) All commands except those specifically stipulated must be entered in **lower case** only.
5) If the hard drive to be initialized has been used previously for other data, operating systems, etc.; insure that all needed programs and data files have been SAVEd or COPYed off of it, as diskutil will wipe all information.
6) **root** is the super-user. When logged into the system under this name, the user has unlimited access to all user, system, data, and program files. In addition, only the super-user may add or delete users on the system. The super-user has complete control. When you login as root, exercise extreme caution because you could inadvertently obliterate something . . . Two months worth of payroll information, a 60,000 name mailing list, the company president's password, the . . .

****

The Super-User has unlimited access to the system. Be careful not to accidently nebulize any user data when logged in as root.

The life you save could be your own!

****

DO NOT ASSUME ANYTHING!
(Really. I kid you not)

****

AN EASY METHOD TO INSTALL THE XENIX CORE SYSTEM

Before beginning this procedure you must have the Media Error Map/s of the hard drive/s that you are going to Format. This is essential, so that the system may lock-out any known flaws during the formatting process. Be sure not to mix the maps up if you are formatting more than one drive, and remember to return each map to its proper drive when this procedure is completed.

From this point forward all commands are to be entered in lower case unless otherwise stated.

1) Power up the computer, hard drive/s, and all connected peripherals. Hold the [BREAK] and [REPEAT] keys until the "Insert Diskette" message appears on the screen.
2) Insert the **Boot Disk** into floppy drive 0 and allow the system to boot. At this time verify that the hard drive/s are not write protected.
3) When the boot message appears, type **diskutil** after the colon (:) and press the [ENTER] key. Remember, diskutil must be typed in lower case.
   TRS-XENIX Boot : **diskutil** [ENTER]
4) Answer the following prompts:
   Diskutil: hard or floppy disk (h or f)?
   Type ***h*** to format a hard drive.
   Copy or format (c or f)?
   Answer ***f*** to format.
   Hard disk unit number (0 . . . 3)?
   Answer **0** to indicate the primary hard drive.
5) The next prompts will ask how many heads and cylinders are to be formatted.
   EIGHT MEG HARD DRIVES

   How many cylinders?
   Answer **256**
   How many heads?
   Answer **4**
   TWELVE MEG HARD DRIVES

   How many cylinders?
   Answer **230**

How many heads?
Answer **6**

6) In this step you will enter into the system the flaws shown on the primary hard drive Media Error Map. Note the example below:
If the Media Error Map shows:

TRACK	HEAD	BYTE COUNT	LENGTH
133	00	01333	02
174	01	09826	05

You should type:
133,0 (ENTER)
174,1 (ENTER)
done (ENTER)
where directed. The screen will look like this:
enter numbers or "done": **133,0**
enter numbers or "done": **174,1**
enter numbers or "done": **done**
If the Media Error Map is blank, type only:
done (ENTER)
The first number above, 133, is the cylinder number where the error has been detected. The second number, 0, is the head number associated with that error. There is no need to enter a count of bad bytes or the number of blocks affected. When all the information is typed in, enter **done**. Remember, if there are no flaws reported on the Media Error Map, simply enter **done** at the prompt: "enter numbers or "done":"

****

(BREAK) may be used to abort the process at any time should you make a mistake.

****

7) The system should now display the message:
About to format hard disk drive 0.
The system will also display approximately how long the formatting process will take. You may abort the formatting process at any time, but the hard drive will remain unusable until the process has been completed. The cylinder number and the head number currently being formatted will be displayed.
8) When the formatting is complete, this message will be displayed:
Hard disk drive successfully formatted. Drive parameters and MEDIA ERROR MAP successfully written. Your hard disk is ready for the TRS-XENIX initialization.

****

At this point, the Hard Disk Formatting is complete. You are now ready to begin transferring the XENIX System over to the primary hard drive.

****

You are now ready to run **hdinit**. This program will accomplish several important tasks.
- Copy the boot track to the hard disk.
- Create a TRS-XENIX file system on the hard disk.
- Copy the contents of the Boot Disk to the hard disk.
- Perform a system shutdown.

9) With the Boot Disk still installed in floppy drive 0, press the RESET button while holding the (BREAK) and the (REPEAT) keys. The boot prompt will appear. Press (ENTER).
TRS-XENIX : (ENTER)
10) The system will respond as if you had typed the word "xenix" after the colon. You should see a message in a box which tells you that you are running TRS-XENIX from the "Installation Floppy".
11) The system will ask you:
Do you wish to initialize your hard disk?
Answer ***y*** for yes.
Has your hard disk been formatted with diskutil?
Answer ***y*** for yes.
12) You will again be prompted for the number of cylinders and heads on your hard disk. You must respond with the same numbers you indicated during the formatting of the hard disk with diskutil.
256 cylinders and 4 heads for an 8 meg hard drive
230 cylinders and 6 heads for a 12 meg hard drive
13) The system will proceed with the four steps outlined earlier: installing the boot track, making a file system, copying TRS-XENIX files from the floppy disk to the hard disk and finally shutting the system down.

****

DO NOT TOUCH THE SYSTEM UNTIL YOU SEE THE MESSAGE:
Normal System Shutdown

****

NOTE: If for some reason you are repeating this procedure, you may be warned, while the file system is being created, that "**mkfs contains data**". You will be asked whether to "overwrite". Answer ***y*** to finish installing the system.

****

Welcome to the final phase of installing the XENIX Core System. After the ***Normal System Shutdown*** message, RESET the computer and boot from the hard drive.

****

FINAL PHASE

The purpose of this final phase is to copy the contents of the remaining two XENIX floppy diskettes, Install 1 and Install 2, onto the hard drive. To do this, you will be utilizing another program named **firsttime**.
14) Reboot the system from the hard disk if you have not already done so.
15) Again, respond to the boot prompt by typing (ENTER) after the colon (:). This time the message in the box will read:
TRS-XENIX Hard Disk
Basic System
File System Installation.
16) Instructions for inserting and removing your floppy diskettes are displayed.

17) You are prompted with the question:
First Floppy?:
Insert the **Install1** floppy diskette into Drive 0. Press ***y*** and then [ENTER].

18) The system will respond with the message:
Extracting files from floppy . . .
When this is complete, you will be prompted with:
Next floppy?

19) Insert the **Install2** diskette into Drive 0. Answer the prompt with ***y*** and [ENTER]. The system will now continue to copy the files from the second diskette onto the hard drive.

20) After the transfer is completed for the Install 2 diskette, you will again be prompted with the "Next floppy?" message. Answer ***n*** and [ENTER].
You will see the message:
Setting up directories and permissions.
Installation complete.
The primary hard drive now contains a complete TRS-XENIX system and the installation procedure is complete. The next message will be:
Type control-d to proceed with normal startup
(or give root password for system maintenance):
This is the normal XENIX boot prompt you may expect whenever you boot from the hard drive.

CHECKING OUT THE SYSTEM

At this point, you are ready to try the XENIX system.
Type [CTRL] ***d***

This tells the system that you wish to engage a normal startup procedure. After a moment or two you will be prompted to enter the date and time. Although the system will accept [ENTER] in place of the date/time, you are encouraged to enter the correct information.

The screen will clear and in the upper left hand corner of the CRT the message **login:** will be displayed. Type in **root** and press [ENTER].

If you are in the process of doing the Install Procedure, you will not be prompted for a password.

After a moment, the "Welcome to TRS-XENIX" message box will appear and some seconds later the root prompt " # " will be displayed. The system is now ready for any commands that you may wish to give.

It really isn't necessary at this point to test the system with complex commands. Below will be outlined some simple commands to try along with the results that these commands should yield.

1) ***l*** [ENTER] (l = lower case L)
This command will cause a listing of the current directory contents to be displayed. This is the long form of the directory listing, much like the "DIR (S,I,A)" command used with the Model I or III. You should expect to see something like:

```
total 501
drwxr-x—2 boris      272 Apr  5  14:33     dir1
-rw-r——1 olaf        202 Apr  6  15:11     file1
. . .
```

Shown above are only two lines of an imaginary directory listing. When you perform this command you should see many such entries scroll through the screen.

****

You may halt the screen output at anytime ON A TERMINAL by utilizing two commands. These are:
[CTRL] [S] To hold video output (X-OFF)
[CTRL] [Q] To restart video output (X-ON)
At the CONSOLE, you may use the [HOLD] key.

****

2) **ps -lax** [ENTER]
This commands interrogates the system for process status. All active processes will be displayed. It is not important that you understand the information displayed, only that the system does indeed display it and returns to the **#** prompt.

3) **who am i** [ENTER]
After entering the above command the system will respond with your login name. For example, if you logged in under root, the system will return with **root**.

4) [CTRL] ***d***
When you enter control-d at the " # " prompt, the system will log you out, clear the screen and redisplay the login prompt. Try this command and insure that this is what happens.

5) Log in again as root, just as outlined above, and when the root prompt (#) appears type:
shutdown
The system will now ask "how many minutes to shutdown?". Enter a **0** for an immediate shutdown.
This will gracefully shut the system down. When the message ***Normal System shutdown*** has been displayed it is safe to turn the system off, boot TRSDOS, or whatever.

****

NEVER, NEVER Turn the system off without first performing this command: shutdown

The above command will halt the system normally. Failure to use this command will necessitate "cleaning" when the XENIX system is again brought up.

You MUST be logged in as root (or have created a special user as described in the October, 1983 TRS-80 Microcomputer News) to perform the shutdown!

****

FORMATTING ADDITIONAL HARD DRIVES

To format additional hard drives, use the XENIX utility **diskutil**. The method is much the same as when formatting the primary except the drive number to format will change. Be sure to enter the correct Media Error Map information.

NOTE: After additional hard drives are formatted, they will need to be mounted before XENIX will recognize them. Refer to section two of this article for additional information.

****

Under TRS-XENIX:
Drives hd0 through hd3 are hard disks
Drives fd0 through fd3 are floppy

****

SECTION TWO

ERROR MESSAGES AND OTHER ASSORTED GOODIES

TRS-XENIX provides a file that keeps track of error messages that have occurred while XENIX is running. It is:

/usr/adm/messages

This file contains a record of most console messages, containing typically disk related errors. If you are having problems, it will be worth your time to scan this file and provide the information to the individual who is going to service your system.

To view the file, type:

cat /usr/adm/messages

The file will be displayed on the CRT. Remember, you may halt the screen output with the HOLD key from the console. If the file is lengthy and you would prefer to work from a hard copy, enter the following command:

cat /usr/adm/messages | lpr

This will "pipeline" the file's output to the printer. Be aware that it may be several seconds before the printer activates. This is normal. The **pipeline symbol** | is generated with CTRL 0 from the console.

****

/usr/adm/messages can be a veritable wealth of information. Don't overlook this tool when trouble-shooting.

****

SETTING TERMINAL OPTIONS

The TRS-XENIX system does not automatically power up with the terminals enabled. The baud rates must be set to match those of the data terminals, and the serial channels must be enabled at least once.

For example:

You have just installed the TRS-XENIX Boot diskette and the two Install diskettes. From this point forward whenever you boot XENIX, the serial channels will NOT be enabled.

However, if you configure the serial channels once, enable them, and leave them turned on; whenever you boot the system, the serial ports WILL BE ENABLED. XENIX remembers how you last left the system.

Unfortunately, setting the baud rates with XENIX can be a little confusing. Mind you, it's not terribly difficult . . . just not easy the first time or two. Consider the following chart:

```
1hconsole
13tty01
02tty02
|| |
|| | ____ Port Name
||
|| _______ Speed
|         h = hard wired console
|         0 = 300 / 1200 / 150 / 110 baud
|         1 = 150 baud
|         2 = 9600 baud (version 1.1 only)
|         3 = 1200 / 300 baud
|         4 = Dec LA36
|         5 = 300 / 1200 baud
|         6 = 2400 baud
|         9 = 9600 baud (version 1.2 and greater)
|
|_____ Status (set by enable / disable)
          0 = disabled
          1 = enabled
```

The information:

1hconsole
13tty01
02tty02

is contained within a file called **/etc/ttys**. If you were to **cat** (short for concatenate) this file to the screen, you could see at a glance just how your communications channels were configured.

"1hconsole" means simply that the console is enabled (1hconsole), it is hardwired (1hconsole), and that the device name is console (1hconsole)

"13tty01" decodes to enabled (13tty01), the system will check for 1200 or 300 baud (13tty01), and the device name or channel is tty01 (13tty01).

"09tty02" decodes to disabled (09tty02), when enabled it will communicate at 9600 baud (09tty02), and has a device name of tty02 (09tty02).

To enable a channel, enter the following command:

enable tty0n ENTER

where n is the channel number. For example to enable channel 2 (otherwise known as serial port B) type: **enable tty02** ENTER.

****

Serial Channel A is **tty01**
Serial Channel B is **tty02**
The Model 16's keyboard is **console**

****

Conversely, to disable a channel enter:

disable tty0n ENTER

where n is the channel number. **disable tty02** would disable serial port B.

THE EDITOR

****

OK folks, buck up. You are now about to learn how to use the editor.

****

In order to change the baud rates of the serial channels, you must modify the file **/etc/ttys** to correspond to what you want. In order to make these changes, the file must be edited. This means that you must know how to use the XENIX editor. This editor is called **ed**.

ed is a fairly versatile program designed to edit files. He will do exactly what you tell him—with a minimum (really!) of cockpit error checking. Be careful; understand what you're doing before doing it. **Never Assume!**

****

ed is a versatile program designed to edit files. He will do exactly what you tell him—with a minimum of cockpit error checking.

****

To invoke ed and edit the /etc/ttys file, type:

ed /etc/ttys ENTER

After a moment of whirring and clicking, the system will respond with a number roughly corresponding to the number of bytes contained within the file. To see the file in its entirety, type:

1,$p ENTER

This command instructs the editor to print the file beginning with line one to its end. The **$** signifies the last line number and the **p** tells ed to print these lines to the screen. As an example, you should now see something like the following on your screen:

```
ed /etc/ttys
408
1,$p
1hconsole
03tty01
02tty02
```

Let's assume (yes, I know it's dangerous) that you have two DT-1 terminals. One DT-1 is to be run from a remote location over telephone lines. It will have a modem, but because of situations beyond your control, it may at times be a 1200 baud modem and at other times it may be a 300 baud device. The other DT-1 will be in the office and will run at a baud rate of 9600.

We will configure tty01 for 9600 baud and tty02 to search for 300 or 1200 baud. **It should be noted here that tty01 and tty02 can be configured to search a range of baud rates and select the one that matches the incoming data**. Reference the /etc/ttys chart.

What we need to do then, is to change the /etc/ttys file as shown below:

FROM	TO
1hconsole	1hconsole
03tty01	09tty01
02tty02	03tty02

In ed, every line has a number. Ed is a line oriented text editor and because of this, we must give him the line number we wish to change. The tricky part arises because the line numbers are not displayed so you must count them yourself. In addition to this, we must also tell ed what to do to that line.

Type the following command:

2p ENTER

You should see displayed on the screen the second line of the file. It's always a good idea to print the line you are about to change first . . . just to make sure you do indeed have the correct line number.

With the next command we will change the second line. Type in:

2s/03/09/p ENTER

You would now see on your screen:

```
09tty01
```

The above command instructed ed to get line 2 (2s/03/09/p), search it for the first occurrence of 03 (2s/03/09/p), change the 03 to a 09 (2s/03/09/p), and finally to print the line as changed (2s/03/09/p)

The **/** character is used as a delimitor between arguments of the command. If you omit one, ed will probably do something a bit strange and most likely; not at all what you intended.

In our example, to change tty02 you would enter the following command:

3s/02/03/p ENTER

Get line 3, find the first occurrence of a 02, change the 02 to a 03, and then reprint the line as edited. This completes the changes. To make absolutely sure the changes are correct, list the entire file:

1,$p ENTER

If it is correct, then you must write the file back out to disk with the **w** command:

w ENTER

Again the system will respond with a number to signify that the file has now been written. To leave the editor, type **q**:

q ENTER

The root prompt # will be displayed.

It is very important to note here that until the **w** command is entered, there is no change made to the actual file. The editor loads the file into a buffer and that's where the editing actually takes place. The **w** command simply overwrites the disk file with the information stored within the buffer. **What this means is: If you make a mistake and can't or don't know how to recover, then use the q command to quit the editor and return to the root prompt. If you have not used the w command, then the file has not been altered. Go back into ed and try again.**

NOTE: If **q** will not allow you to exit the editor, then you may be stuck in the append mode. Try the following command sequence:

. ENTER
q ENTER

****

No matter what you do while in ed, there will be no changes made to the actual file until the **w** command is used.

****

The above information about the editor should be sufficient to enable you to alter the /etc/ttys file if you need to. However, for more detailed information about the editor in general you should refer to the TRS-XENIX Operations Guide, pages X-9 through X-14.

ACCESSING ADDITIONAL HARD DRIVES WITH TRS-XENIX

Before you can access any additional secondary hard drives under XENIX, several steps must be taken. Briefly, the drive/s must have been formatted with **diskutil**, a file system must have been created on each additional hard drive with **/etc/mkfs**, and the drive/s must be **mount**ed. This procedure is really much easier than it sounds, and the steps will be discussed below.

FORMATTING SECONDARY HARD DIRVES

To format anything under XENIX, be it a hard drive or floppy diskette, the program **diskutil** must be used. The system is booted from the floppy **Boot Diskette** and at the prompt the program **diskutil** is called. This procedure is the same as when formatting the primary hard drive with the exception that the drive number will change to correspond to whichever secondary you may wish. You are directed to SECTION ONE of this article for formatting instructions.

CREATING THE FILE SYSTEM

Once all secondary hard drives are formatted and the system has been booted from the primary hard drive, you are ready to begin creating file systems. Follow the steps outlined below:

1) All hard drives should be **write enabled**.
2) Enter the appropriate command listed below:
   For an eight meg hard drive enter:
   /etc/mkfs /dev/rhdx 16966 1 17 ENTER
   For a twelve meg hard drive enter:
   /etc/mkfs /dev/rhdx 23018 1 17 ENTER
   The x should be replaced with the drive number of the secondary hard drive you wish to create the file system on. This process will need to be repeated for all secondary drives.
   The numbers "16966" and "23018" represent the total number of disk blocks on the hard drive. A block is equal to 512 bytes.

MOUNTING FILE SYSTEMS

In order to access files located within the second hard drive (or third or fourth, for that matter) it must first be **mount**ed. If this is the first time that the hard drive is to be used, an extra step is necessary. This step is to create an empty subdirectory within the root directory. Use the following commands:

cd / ENTER
mkdir h1 ENTER

The first command (**cd /**) moves the system to the root directory. The second instructs XENIX to create a directory entry named **h1**. If you also wanted to mount a second secondary hard drive, then you would need to use **mkdir** to create another directory entry called **h2**. Actually, you could call these directory entries just about anything you wanted, but h1, h2, and h3 are fairly standard.

After these directory entries are created, you will never need to use the mkdir command again to add hard drives . . . unless, of course, you are totally reinitializing the system.

MOUNTING

Before the hard drive can be accessed for anything, it must first be mounted onto the system. This must be done for each secondary hard drive in the system. Use the following command/s as applicable:

/etc/mount /dev/hd1 /h1 ENTER
(first secondary)
/etc/mount /dev/hd2 /h2 ENTER
(second secondary)
/etc/mount /dev/hd3 /h3 ENTER
(third secondary)

UNMOUNTING

If you need to remove or turn off a secondary hard drive that is mounted, you must first unmount it. Shutdown automatically unmounts all drives so when utilizing this command (shutdown), it is not necessary to do any unmounts. The unmount command is:

/etc/umount /dev/hd1 ENTER

If additional hard drives need to be unmounted, substitute the device number for **hd1**. For example: **hd1, hd2, or hd3**.

BACKING UP THE SYSTEM

At some point in time, it may be necessary for you to save the contents of a hard drive. You will need several diskettes previously formatted with **diskutil**. Ten or so double sided floppies (about 20 single sided) should be adequate for a large system. Follow the commands outlined below:

1) Log in as **root**
2) Enter the trsshell by typing:
   tsh ENTER
3) To save everything enter:
   for single sided diskettes
   save :0 -ss /[a-c]* /[e-z]* /[0-9]* /[A-Z]*
   ENTER
   or
   for double sided diskettes
   save :0 -ds /[a-c]* /[e-z]* /[0-9]* /[A-Z]*
   ENTER
   NOTE: The spaces shown in the above commands are important.
4) Follow the prompts on the screen

RESTORING THE SYSTEM

1) With diskettes in hand, enter the following command to restore the diskettes created with **save:**
   restore :0 ENTER
   NOTE: You may have to issue a restore :0 command for each diskette in the save set.
2) Follow the prompts on the screen. If the computer returns to the root prompt before it has read all of the save diskettes, simply insert the next diskette into drive zero and reissue the restore :0 command.
3) You may occasionaly see a message stating that tar can not open a particular file. This is normal and should not affect your system.
4) After you have completed the restore procedure, **shutdown** the system and reboot. This will allow Xenix to do some housecleaning that is needed after a full system restore. At the end of the housecleaning effort Xenix will probably do a normal system shutdown. Simply reboot to continue as usual.

ERROR MESSAGES

Below you will find a listing of 68000 Trap Errors. You should not normally see these errors, but if you do please make a note of them to help the service technicians.

Trap #	Assignment
2	Bus Error
3	Address Error
4	Illegal Instruction
5	Zero Divide
6	CHK Instruction
7	TRAPV Instruction
8	Privilege Violation
9	Trace
10	Line 1010 Emulator
11	Line 1111 Emulator
12-14	Unassigned, Reserved
15	Uninitialized Interrupt Vector
16-23	Unassigned, Reserved
24	Spurious Interrupt
25	Level 1 Interrupt Autovector
26	Level 2 Interrupt Autovector

27	Level 3 Interrupt Autovector
28	Level 4 Interrupt Autovector
29	Level 5 Interrupt Autovector
30	Level 6 Interrupt Autovector
31	Level 7 Interrupt Autovector
32-47	Trap Instruction Vectors
48-63	Unassigned, Reserved

Disable/Enable Break Key

Joseph P. Capalino
500 Greentree Road
Turnersville, NJ 08012

EDITOR'S NOTE: These routines should not be used with TRS-80 4.x without modifying them to load into memory below F000.

I have written many applications programs for Model II/16 in BASIC, and I find that the operator will accidentally hit the break key and then be unable to continue.

Here are two short machine language programs (DISBK & ENBK) which can be executed inside your BASIC program. DISBK will disable the break key; ENBK will enable the break key. The programs execute in very high memory so your BASIC program is not disturbed.

At TRSDOS READY, enter the Debug Program and enter the following code:

ADDRESS
F010 3E 03 21 00 00 CF C9
EXIT Debug and Type:
DUMP DISBK [START=F010 END=F016]

ENTER Debug Program again and enter the following code.

ADDRESS
F010 3E 03 21 69 60 CF C9
EXIT Debug and type:
DUMP ENBK [START=F010 END=F016]

An example of use of this program in your BASIC program:

```
10 SYSTEM "DISBK" ' To Disable Break Key
20 'Rest of Program"
and
99 'Program
100 SYSTEM "ENBK" 'To Enable Break Key
```

Microcomputers in Education Conference–1984

LITERACY PLUS+

CALL FOR PARTICIPATION

The Arizona State University College of Education will host the 4th annual Microcomputers in Education Conference, "Literacy Plus+", on Thursday, March 15th and Friday, March 16th, 1984. The two-day conference emphasizes practical, creative ideas for successful computer implementation and findings from research to guide teachers, administrators, and others in using computers effectively. For those with little computer knowledge, sequenced introductory presentations will be available.

On Tuesday, March 13th and Wednesday, March 14th, a pre-conference with the theme "Microcomputers and the Writing Process" will be offered. The pre-conference will feature symposiums, research presentations, reports of ongoing studies, discussion of actual classroom experiences, and hands-on word processing workshops. Similarly, on Wednesday, March 14th, we have scheduled a day for sharing experiences and research findings for other topics concerning microcomputers in education.

The conference organizers are soliciting papers on topics and research articles for either the conference or pre-conference. Contact Ruth Camuse, conference co-director, to obtain speaker proposal forms. Completed applications should be received by January 10, 1984.

For further information or registration materials, write or call the Conference Secretary at Arizona State University; College of Education, Payne Hall, B 47; Tempe AZ 85287; (602) 965-7363.

XENIX User Groups

Any user groups or clubs with active XENIX (Model 16 Multi-User System) sections are invited to submit their club's information to *TRS-80 Microcomputer News* for publication. We have received several inquiries from XENIX users who are interested in associating and communicating with other XENIX users.

Physical and Occupational Therapy in Geriatrics: Call for Papers

Abstracts of proposed papers are invited for a 1984 special issue of PHYSICAL & OCCUPATIONAL THERAPY IN GERIATRICS, entitled "Small Computers in Geriatrics Physical & Occupational Therapy." The special issue would focus on the clinical uses of microcomputers of physical and occupational therapists. However, papers on the administrative, educational, recreational, and research uses of microcomputers in geriatrics are also welcome.

Two powerful forces, the increasing proportion of elderly persons in our society and the growing use of microcomputers, each with the power to change our society in fundamental ways, are influencing and will continue to influence each other. The special issue will examine this mutual interaction from the vantage point of the therapist.

The average paper would be roughly 5000 words. Please send abstracts, approximately 500 words in length, of proposed papers to:
Michael P. Weber, OTR,
206 North Green Street
Tuckerton, NJ 08087.

Radio Shack Software Review Program

Exactly one year ago Radio Shack introduced a program to support software vendors who develop software for the TRS-80 computers.

The following list will give you a brief introduction to the software packages which have been reviewed by Radio Shack and included in the Directory of Reviewed Software. The two to four digit number at the end of each description is a page reference for the Directory of Reviewed Software. The independent vendors listed may be contacted through the phone number with each description.

For details on how to purchase one of these programs, contact your nearest Radio Shack Computer Center or expanded Computer Department. Ask the salesperson to show you the Directory of Reviewed Software.

Radio Shack's review of the following software programs has been limited and therefore, it makes no representations or warranties, express or implied, in connection therewith. The sole and only warranty on such software, if any, shall be that of the independent vendor shown with each software listing.

ACCOUNTING

Accountant's Time and Billing System enables an accountant to track and bill the time spent and charges incurred by clients. It addresses the major requirements of accuracy, speed, information on demand, and billing flexibility. Client reports may be run at any time.

Creative Solutions, Inc. (313) 995-8811 7-3

Time and Expense Management System is an interactive approach to time and expense management. It may be used by CPA's, lawyers, architects, and consultants for whom time spent providing services is the basis for fees.

Kenyon Computer Associates, Inc. (401) 364-3663 7-4

Accounting for Leases uses U.S. generally accepted accounting principles and current tax legislation in the accounting process of Capitalized and Operating leases. Generates reports for various periods and produces a listing of all the leases of the firm, showing the terms of every lease.

Tchel-Soft, Incorporated (416) 968-1000 1-7

BUCS (BUdgetary Control System) is designed to meet the needs and requirements of governmental and non-profit agencies. It is a fully integrated General Ledger, Accounts Payable, receipts, encumbrance accounting system oriented to Fund Accounting requirements.

Donald R. Frey & Company (606) 441-6566 1-14

Business Management System is a general purpose accounting and management package which includes sales receipts and cash disbursement journals. In addition, foreign currency exchange, Accounts Receivable, data-queued business information, telephone and mailing list features are provided.

Cobrasoft, Incorporated (213) 644-1135 1-16

Cost-Acumen™ is a cost accounting system designed for architectural, engineering firms and other similar professional groups. It provides project management and control facilities, as well as various accounting detail relating to the overall business.

Computer Applications Corporation (901) 458-8630 1-17

Expense Trac™ helps automate fund accounting procedures. It is structured to provide administrators and management with control information on expenditures in relation to budgeted targets. Fund accounting structure is user definable.

OUTPUT, Incorporated (309) 663-9396 1-18

The Client Write-Up System is a General Ledger and Payroll package. This program allows for flexible statement formats, comparative and budgetary statements, statement in changes of financial position, departmentalization and integration with payroll producing 941 worksheets, 1099 forms and W-2's.

Creative Solutions, Incorporated (313) 995-8811 1-1

Client Accounting System offers the ability to do multi-client and/or multi-company General Ledger processing. Consolidation of statements along with three year comparative income statements combines with the capacity of storing two years of historical balances to make an extremely powerful system.

Rowlette Enterprises, Incorporated (314) 392-5876 1-2

Asset Depreciation System computerizes all record keeping associated with the acquisition, depreciation, and disposal of a client's fixed assets. Reports include: depreciation summaries, property tax listing, 3468 worksheet showing investment tax credits, 4562 worksheet and a 4797.

Creative Solutions, Incorporated (313) 995-8811 1-4

SOS CPA Software is a Payroll and General Ledger package. This system helps to speed up everything from posting General Ledger transactions to the printing of W-2 forms. Program uses a standard chart of accounts to facilitate the setting up of new clients.

Superior On-Line Systems, Inc. (704) 366-4780 1-10

CertiFLEX Fixed Asset System calculates depreciation for both book and tax purposes. It provides summaries of cost, accumulated depreciation and depreciation expense by asset category to aid in General Ledger accounting. Reports detail asset additions or dispositions for the year to aid in taxes.

Computer Program Associates (214) 350-2361 1-20

Accounting Information System-General Ledger is a cassette based General Ledger program with a user-defined chart of accounts, or a standard chart of accounts. The system requires minimal knowledge of accounting and computers to operate.

Accounting Information Systems (213) 349-8349 1-6

Accounts Receivable/Inventory Invoicing is an integrated Accounts Receivable and Inventory Invoicing program. It allows updating of the quantity of inventory on hand while printing an invoice, and posting the invoice to the Accounts Receivable.

Lizcon Trading (801) 484-8179 1-12

CBook is a single-entry computerized bookkeeping system that provides Profit and Loss Statements for a small business. Data entry is simplified, such that accounting experience is not required to run the program. CBook allows the preparation and updating of monthly profit and loss figures.

Contract Services Associates (714) 635-4055 1-19

General Ledger Template provides everything necessary to maintain a 12 month ledger of business activity on a Pocket Computer 2. Included are year-to-date totals and percent of gross revenue of each item.

PocketInfo Corp. (503) 649-8145 6-11

AGRICULTURAL

Agriculture General Ledger system is designed in accordance with accepted accounting practices. This means that the statements produced by this system are in a format that will be recognized and accepted by a banker, an accountant, or other people that may require access to your financial records.

Red Wing Business System (612) 338-1106 2-1

Farmware is a General Ledger package designed specifically for the farmer. It does not require a background in accounting. All references to debits and credits are handled internally by the computer. The Transactions are entered from checkbook and deposit slips (can even handle non-cash transactions).

Southern Minnesota Software (507) 345-8096 2-3

Farm Ledger™ is a single-entry cash farm accounting system. Income and expense transactions are entered once, and then only when cash is disbursed or received. This system provides all the essential information required by the farm manager with a minimum of time spent on record keeping.

Farm Computer Systems (701) 436-5757 2-4

TRANSACTION™ is a farm management tool, based on a single-entry accounting system, which allows quick and easy entry of accounting information by non-accountants. Checks may be printed at the same time the transaction is posted. The program can generate cash and accrual income statements.

FBS Systems (309) 582-5628 2-6

MIXIT-2 is a program which stores animal feed ingredients information and calculates least-cost feed mixes for all types of animals. The program is designed for nutritionists, dairy farmers, poultry producers and managers of feed lots or feed mills, who work with many feed ingredients and nutrients.

Agricultural Software Consultants (512) 595-1937 2-2

Beef Feeding and Profits is a nutritional manager and financial projection program for feeding beef cattle of any weight or sex. Designed as a template for VisiCalc®, it automatically compares the entered projected feed against a nutrient requirement table, to report possible feed wastes.

Farm and Ranch Software (605) 386-4523 2-5

BASIC UTILITIES

Auto Run creates a machine language loader program for the Color Computer that serves to load BASIC software. A graphics editor allows a title screen to be displayed while loading the BASIC program. The audio feature may be used to announce your BASIC program over the television speaker.

Sugar Software (614) 861-0565 8-1

Full Screen Text Editor for BASIC allows the programmer to scroll through, edit, or create a BASIC program while in BASIC. Lines and blocks of source code may be inserted, deleted, or moved to a different portion of the BASIC program. Global commands allow finding and changing of strings.

Computer Applications, Unlimited (800) 354-5400 8-2

Trashman is designed to reduce the time taken by the BASIC interpreter to perform string compression operations by approximately 95%.

Prosoft (213) 764-4555 8-3

Faster is designed to help increase the execution speed of BASIC programs. Faster generates a list of all variables used in a program, as well as the number of references made to each. Using this information, your BASIC program, with slight alterations, may operate 15 to 50% faster.

Prosoft (213) 764-4555 8-4

Matrix Master adds matrix commands to BASIC. Matrix addition, subtraction, and multiplication are offered. Scalar functions, the transpose and inverse of a matrix, and identity matrix are also provided.

PAB Software, Inc. (219) 485-6980 8-8

Cross-Reference is a hybrid BASIC and machine language utility that searches for and displays (or prints) the line numbers of all references to any variable, string, or array in your Pocket Computer 2 program.

PocketInfo Corp. (503) 649-8145 8-10

Speak Up!™ is a phoneme-oriented machine language voice synthesizer program for the Color Computer. The program converts text to speech, using both the television speaker and the cassette jack for output.

Classical Computing, Inc. (606) 252-2598 8-12

NEWBASIC 2.0 adds a set of commands to Model III Disk BASIC. Many powerful yet easy to use graphic commands have been added. Non-graphic enhancements include: sound commands, a spooler, an improved tracer, RS-232 commands, definable and pre-defined keys, and more.

Modular Software Associates (714) 960-6668 8-14

LINPGM is a program designed to help solve linear programming problems. The program uses Simplex algorithm to display solution, sensitivity analysis, slack and surplus variables, and shadow prices.

Agricultural Software Consultants (512) 595-1937 8-16

RAMFILE is a general purpose program that efficiently stores, retrieves, selects and sorts information using RAM memory. RAMFILE manages records of data in memory, freeing the programmer from developing complex sort and search routines.

Individual Systems, Inc. (312) 968-2337 8-17

Bigkey modifies the Model III keyboard driver to add powerful new capabilities. It provides the ability to generate macro key expansions (for example, a simple keystroke produces the word "RUN"). Macros may be saved out to disk for future use.

Kurthal Software (215) 265-0510 8-19

BUSINESS

Customer Profile System is a database designed for manufacturers' sales representatives. It supports multi-company offices, salary or commissions, and generates reports such as Activity, Shipping Volume, Commissions, Itinerary, mailing labels, and overall profitability figures.

NMI Microprocessing (201) 227-2103 7-7

Integrated Manufacturing Operations is designed for fabricators and manufacturers with standard industrial classifications of 3400 and 3500. It provides management with the manufacturing and inventory cost data that is needed to predict the profitability of work in process and cash flow.

The M. L. McKenna Company (215) 565-3635 10-21

Stat-to-Plotter contains a collection of enhancements for the Radio Shack® Statistical Analysis program. The modules enable the user to print charts on the Multi-Pen Plotter, including Histograms, Correlation Matrices, etc.

Libra Laboratories, Inc. (201) 494-2224 9-9

Total Control System is an inventory system designed for both retail and wholesale distributors. The system is a comprehensive system, offering Inventory, Order Processing, Accounts Receivable, Accounts Payable, General Ledger, Backorder and Sales Analysis modules.

Total Control Software (218) 829-1694 1-15

CONSTRUCTION

Accounting/Job Costing package compares accounting cost against estimated cost, and gives complete status of each job. Results of the job cost report are used as the basis to calculate current earned profit, over or under bill, cash requirements, and other information.

Esccomate (402) 331-8250 1-8

Payroll/Labor Costing system is a universal construction payroll program. The system handles both union and merit shops, and allows for hourly or salaried employees. State and Local taxes are automatically figured in areas where reciprocal agreements exist.

Esccomate (402) 331-8250 1-9

Esccomate Piping Estimator is designed to help estimate the costs involved in installing a piping system. Price and labor costs may be updated instantly. MCAA or PHCC labor units are available.

Esccomate (402) 331-8250 10-6

Esccomate Sheet Metal Estimating is designed to help estimate the costs involved in installing ductwork. Program is based upon Wendes units of labor. Price and labor costs may be updated instantly.

Esccomate (402) 331-8250 10-7

Beamjois is a program designed for people involved in the construction industry. It helps to select a Douglas Fir member or a prefabricated "Trus-Joist" to take imposed loads in accordance with the "1980 Uniform Building Code".

James J. Jordan Software (916) 332-6610 10-12

Construction Job Cost Estimating is a collection of VisiCalc® templates for use by general contractors and architects. The program is designed to help estimate the cost of building a house from the building site to the roof.

Software Models (714) 338-5075 10-13

EDUCATION

ADMINISTRATION

Test Generator Program is designed for use by teachers to generate, edit, save, recall, and print questions for matching, true/false, short answer, or multiple choice exams. Answer keys can also be produced.

Big G Software (409) 732-3904 3-9

Student Grade System is designed to handle the functions of a teacher's grade book. It allows different types and schemes of user-defined grading systems, prints class lists and computes class averages.

Tinker Techniques (609) 771-1555 3-11

Library Processing System-Catalog Cards is designed to help the professional librarian cut down on catalog card processing time. It can print cards, book lists, do subject searches, edit references, and sort; or, the system can function as an online shelf list if desired.

EDUCOMP (918) 256-7183 3-14

Teacher/Student Vocabulary Access offers students on-screen practice in pre-assigned vocabulary words which the teacher has entered and chosen for the student. It also allows the Teacher to print tests covering randomly chosen vocabulary lists.

BJC's Software (617) 784-5634 3-17

MMS Student Master File System is designed to help schools manage administrative tasks. It records biographical data on students, sorts records and generates reports, homeroom lists, mailing labels, class lists, tuition lists, etc. It interfaces with other MMS modules.

Computer Resources, Inc. (603) 868-5337 3-18

MMS Attendance Reporting System interfaces with Student Master File to include additional record keeping abilities, and provides a complete attendance reporting facility. Reports such as attendance sheets and summaries, statistical matrices, and biographical data can be generated.

Computer Resources, Inc. (603) 868-5337 3-19

MMS Student Scheduling System interfaces with Student Master File to provide a complete student scheduling system. The program handles all functions for an ARENA schedule; an optional module schedules students into classes. Class lists, teacher/room lists, etc. can be generated.

Computer Resources, Inc. (603) 868-5337 3-20

Exam Builder is a test generation and storage system that helps teachers build and maintain a bank of exam questions and answers for five subject areas. The program builds ex-

ams according to teacher specifications.
A.U. Software (817) 267-5326 3-21

Vocab 1.0, co-authored by a leading reading specialist, helps teachers compile files of vocabulary words and definitions. It also is used by students as a multiple choice vocabulary quiz, utilizing the teacher's data files. It picks random word/definition pairs, keeps score and rewards users with positive reinforcement.
Computer Classroom Software (315) 733-4443 3-22

Index Preparation System is a flexible tool to aid in preparing back-of-the-book indexes and glossaries. The system creates master files to facilitate alphabetizing. Editing is minimized, and retyping is eliminated.
Foxon-Maddocks Associates (703) 476-4860 9-1

TEACHING

Better View a Zoo is an animated adventure designed for children four to eight years of age. It entertains as it teaches counting, the alphabet, directions, etc. A Storybook section acts as an animated picture book.
Storybooks of the Future (415) 386-5184 3-1

Clock is designed to help children master the art of telling time. It incorporates practice opportunities with positive reinforcement, using graphics and music to promote a feeling of accomplishment.
B5 Software (614) 276-2752 3-2

Foreign Language Baseball makes learning a foreign language fun, using sound and graphics. The user is given a word and asked to supply the corresponding translation; the computer scores each answer.
Computer Island (212) 948-2748 3-3

Money is designed to help children master the skill of counting money. Coins are shown on the screen in descending order, and the user calculates the amount shown. The program is self-correcting and uses positive reinforcement to encourage a feeling of success.
B5 Software (614) 276-2752 3-4

Borrow/Subtract helps students practice mathematical skills requiring regrouping. The concepts involved in Subtraction and Borrowing are illustrated, using graphics and self-correction as positive reinforcement.
B5 Software (614) 276-2752 3-5

Carry/Add helps students practice mathematical skills requiring regrouping. The concepts involved in Addition and Carrying are illustrated, using graphics and self-correction as positive reinforcement.
B5 Software (614) 276-2752 3-6

Mathfact helps students visualize the concepts involved in mathematical processes. Graphic blocks illustrate each Mathfact, and the program offers different levels of difficulty in requiring students to use these facts.
B5 Software (614) 276-2752 3-7

Galactic Hangman is a challenging version the spelling test and word guessing program. It uses music, graphics and a large word-phrase library to test the user's language skills.
Sugar Software (614) 861-0565 3-8

Early Childhood Software consists of programs that assist parents and teachers in the educational development of children ages three through eight. Concepts such as numbers, recognition, alphabet, perception, hand/eye coordination, etc. are developed.
Programs by Mr. Bob (213) 952-3001 3-10

Moneypack helps children practice the skills involved in counting money. The student first calculates an amount, and then determines what money is correct to equal that amount. Graphics and music provide positive rewards.
Computer Island (212) 948-2748 3-12

Fun With Mathematics is a set of programs designed to help children ages three to ten master mathematical skills including addition, subtraction, multiplication and division. Music, graphics, and personalized displays add to the program's entertaining instructional value.
Software Riches (914) 591-6470 3-13

Baseball Math is designed to test and improve skills in mental addition. Automatic score keeping, ballpark style organ music, flashing color graphics and personalized screen displays make the program fun and educational.
EDUGAMES (213) 925-4059 3-15

Krell's College Board SAT Exam Preparation Series is designed to help a student successfully prepare for the SAT exam series. It covers four major areas: Math, Vocabulary, Standard Written English and Verbal skills.
Krell Software Corp. (516) 751-5139 3-16

Globe Master USA is an educational review program which utilizes a four color high resolution map for the study of United States geography. It drills students on states and capitals, and U.S. geography general interest.
Versa Computing (805) 498-1956 3-23

Juggles' Rainbow™ is designed to help children ages preschool through six prepare for school. It helps develop reading and math readiness skills using delightful graphics and simple instructions. Concepts such as shapes and positions, opposites, symmetry, counting, etc. are explored.
Follett Library Book Company (800) 435-6170 3-24

Bumble Games™ helps children ages four to ten learn how to identify places on arrays and grids. The essentials of graphing positive numbers are taught. Colors, sound, graphics and music make learning interesting.
Follett Library Book Company (800) 435-6170 3-25

Bumble Plot™ helps children ages eight through thirteen learn and practice the essentials of graphing both positive and negative numbers. Colors, sound, graphics and music make learning about number-pair plotting interesting.
Follett Library Book Company (800) 435-6170 3-26

Moptown™ Parade helps children ages six through thirteen sharpen their thinking skills, as they explore the concepts basic to logical thinking. Colors, sound, graphics and music make learning about abstract reasoning fun.
Follett Library Book Company (800) 435-6170 3-27

Moptown™ Hotel helps children ages six through thirteen sharpen their thinking skills, as they explore the concepts basic to logical thinking. It provides a friendly environment where children use concrete examples to build logical structures using abstract ideas.
Follett Library Book Company (800) 435-6170 3-28

Snake is a computer language for drawing pictures on the

computer screen. Easy to learn, it is ideal for introducing computer programming to children and adults.
Computer Associates in Education (802) 862-1119 3-29

Black-out is a challenging and fun method to test, review and improve your mathematical skills. The object is to calculate a number that would result from performing mathematical operations on the numbers generated by computer-rolled dice. It is suitable for classroom and home use alike.
Educational Software and Design (602) 526-9582 3-30

Stock Market Simulation Program is designed to be used in the classroom environment. It helps teach the concepts of inflation and deflation to teams of students, via a simulated stock market experience.
Parkhurst and Koch Software (309) 925-5706 3-31

FINANCE

Finance Models is a collection of VisiCalc® templates designed for any business that needs to submit cash budget projections for loans. It may also be used when planning a cash budget. The program does Break-Even Sales analysis, a Cash Budget, Pro Forma Balance Sheet and Income Statement.
Software Models (714) 338-5075 5-9

Annuity/Amortization program handles annuity projections as well as simple interest, sinking fund, or Rule of 78's loans. Calculates interest based on either 360 or 365-day year. Payments may be monthly, bi-monthly, quarterly, semi-annual or annual. Schedules show actual payment dates.
Creative Solutions, Incorporated (313) 995-8811 1-5

Money Tree is designed to help increase efficiency in financial planning. It supports fee-only planning, or selling products for commission. The planning functions may simply be used as supplements to your work as an attorney or accountant.
Money Tree Software (800) 533-3914 5-10

PocketCalc I™ is a spreadsheet program optimized for monetary calculations on the Pocket Computer 1. You can define up to three rows of up to 13 columns (cells) each. Offers ability to add, subtract, multiply, and divide cells.
PocketInfo Corp. (503) 649-8145 6-3

PocketCalc IV™ is a business application-oriented spreadsheet program for the Pocket Computer 2. It offers the ability to do spreadsheet-type "what if" analyses. Four auto-repeating directional keys (up, down, left, right) scroll the display from cell to cell.
PocketInfo Corp. (503) 649-8145 6-9

Certificate of Deposit Calculator will keep 800 plus records on file, recording all necessary data within the year for any normal variable amounts, and interest rates for up to 365 days. The program calculates the interest cost to the bank for each record, for each month of the year.
COMPUTXR SERVIC*S (201) 697-3141 10-4

HARDWARE DIAGNOSTICS

System Diagnostic Program for TRS-80 Model III tests every component of the Model III, either separately, or in continuous cycles. Diagnostic messages are displayed on screen, but may be routed to line printer if desired.
Howe Software (914) 634-1821 8-5

System Diagnostic Program for TRS-80 Model I tests every component of the Model I, either separately, or in continuous cycles. Diagnostic messages are displayed on screen, but may be routed to line printer if desired.
Howe Software (914) 634-1821 8-6

HOME MANAGEMENT

Spenditure$™ enables the Pocket Computer 1 to keep track of where your money goes. The program tracks spending habits in eleven categories with up to seven classifications.
PocketInfo Corp. (503) 649-8145 6-7

Instant Spreadsheets™—Finance Pak consists of four preformatted, ready to use VisiCalc® templates: BUDGET, CHECKREG, AMORTIZE and WRAPARND. These templates perform budget and checkbook management, as well as simple and wraparound loan amortization.
SpreadTech (916) 432-3030 6-8

The Home Accountant is a financial management program which provides a clear, accurate picture of a person's financial condition. The program maintains monthly transactions and prints summary reports.
Arrays, Inc. (213) 417-8031 6-13

PocketFile™ provides a convenient way to store and retrieve data once kept in a card file. Information may be added, deleted, changed or sorted at any time. Directional keys offer the ability to scroll through 'cards' of information.
PocketInfo Corp. (503) 649-8145 6-2

INSURANCE

CLIC/Life Insurance Proposal (Computerized Life Insurance Calculations) is designed to aid life insurance agents, financial planners, and brokers in their overall planning approach. It prepares worksheets, individually tailored life insurance proposals, comparisons, schedules, conversions, etc.
Int'l Marketing Consult., Inc. (817) 731-4161 7-9

CLIC/Comparison prepares a report that compares any existing life insurance policy to a proposed policy. It accounts for premiums, cash values, dividends, policy loans, loan payments, side fund contributions, etc. It prepares worksheets, reports and completed state compliance forms.
Int'l Marketing Consult., Inc. (817) 731-4161 7-10

CLIC/Government Benefits Analysis provides a method of illustrating a client's current and retirement military benefits, in order to realize current and future financial goals. It generates worksheets and reports including D.I.C., Social Security, Retirement pay, conversion costs, etc.
Int'l Marketing Consult., Inc. (817) 731-4161 7-11

Agency Information Management System is an insurance agency-oriented program. It offers a completely integrated Accounts Receivable, Accounts Current, and General Ledger. Extensive client and policy inquiry capabilities are offered. Prepares and issues ACORD™ forms.
Insurance Rating Systems, Inc. (512) 658-4691 10-1

Easypost Insurance Agency System is an accounting tool and marketing aid designed for the independent property/casualty insurance agency. Offers facilities for daily and monthly accounting, customer policy information retrieval, and others.
Advanced Business Systems, Inc. (912) 472-2341 10-10

MANAGEMENT AIDS

Priority Organizer helps keep track of tasks, goals, objec-

tives, etc. in an organized and systematic fashion. It is designed to improve efficiency, and as a tool for management to delegate projects and tasks by priority.
Data Automation Services, Inc. (215) 825-3435 7-2

Businesspak + helps turn the Model 100 into a portable office system. It includes a word processor, planning spreadsheet, sort routine, screen data input, graph capabilities, and Telex program.
Portable Computer Support Group (214) 351-0564 7-12

Salary Administration System assists company management in the monitoring and planning of salary increases. It helps manage the total dollars distributed and tracks proposed, pending, and actual salary increases.
Gulf States Computer Services (713) 498-3648 7-13

Quality Circle Program orients and instructs management personnel and employees in the Quality Circle technique of participative problem solving. It is a series of computer assisted instruction with ten problem solving programs.
Circle Soft (704) 554-8315 9-2

Exec-1 is a collection of seven utilities designed to help improve office productivity. It includes a mailing list, letter/memo generator, record/inventory manager, check register, appointment keeper, etc.
Micro Architect, Inc. (617) 273-5658 9-10

PLANTRAC™ is a powerful and comprehensive tool for project planning and control. It is based on the PERT/CPM (Critical Path Method) technique of network planning.
Computerline, Limited (617) 773-0001 9-13

Time Manager helps control your time by providing a handy way to schedule and monitor appointments, meetings, and activities of all kinds. The program uses the Pocket Computer 2's beeper to indicate when the activity time approaches.
PocketInfo Corp. (503) 649-8145 6-1

Agenda is designed to assist in the planning and managing of schedules for club meetings, conferences, track meets, or other affairs where events must be preplanned with a prescribed time sequence. Supports up-to-the-minute revisions in schedule.
PocketInfo Corp. (503) 649-8145 6-18

Expense Account Template provides all of the commands necessary to track and total a typical business expense report. Included are items such as airline expense, auto rental, breakfast, and phone. Daily totals and item totals are maintained.
PocketInfo Corp. (503) 649-8145 6-10

PocketNote™ offers the ability to make notes while on-the-go on your Pocket Computer 2. Notes can be searched for by key word search criteria. Directional keys offer the ability to scroll through notes stored in-memory.
PocketInfo Corp. (503) 649-8145 6-5

Adding Machine Plus allows the Pocket Computer 1 to operate as a four function calculator. Up to eight separate memories are maintained by the program. Full audit trail option is available.
PocketInfo Corp. (503) 649-8145 6-6

Adding Machine Plus II transforms the Pocket Computer 2 into a sophisticated adding machine. The program allows an amount to be accumulated into named memories or accounts, and produces an audit trail with each amount identified on paper.
PocketInfo Corp. (503) 649-8145 6-12

MEDICAL/DENTAL

Dental Patient Financial Management System is an Accounts Receivable, Billing, and record keeping system for a dental office. It prints patient receipts, third party billing forms, production analyses, statements, and ages the Accounts Receivable.
MICRO/SYS80, Inc. (215) 355-5706 7-1

Windham Dental Office System handles Accounts Receivable, Billing, and insurance forms for a dental office of up to ten dentists. Features include procedure and complaint statistics with Morbidity indexing, full detailed statements, passwords to maintain confidentiality, etc.
Windham Software, Inc. (203) 456-3530 7-6

Programs for the House Staff is a collection of programs designed to assist physicians, especially residents in training, with the applied mathematics for clinical medicine. Programs calculate the surface area of the body based on height and weight, daily maintenance fluid requirements based on weight, estimated date of birth, and other information.
Kwasman Software (714) 796-4541 10-14

OPERATING SYSTEM UTILITIES

Log Electronic Notebook is a general information storage and retrieval program designed to emulate, on the computer, a notebook and pencil. The program may be used in conjunction with BASIC and other programs to provide on-line documentation.
KSoft (601) 992-2239 8-7

DosAside allows direct access to the operating system from an application program. All DOS library commands may be executed, after which the resident program resumes execution. DOS utilities such as FORMAT and BACKUP may also be accessed.
Philadelphia Consulting Group (215) 649-1598 8-9

PROMERGE is an enhancement designed for use with PROFILE II®, PROFILE II Plus® and SCRIPSIT™. PROMERGE offers the ability to merge with more than 16 fields from a PROFILE database to SCRIPSIT™.
Dental Office Computer Service (214) 242-3252 8-15

REAL ESTATE

Real-t-Pro™ is designed to help owner/brokers manage their real estate operations in a very efficient and professional manner. It performs both general bookkeeping functions and sales analysis/production reporting.
Real-E-Data, Inc. (214) 660-1373 7-5

Real Estate is a collection of VisiCalc® templates designed for real estate sales personnel selling investment and commercial property. It is designed in accordance with NIREB forms B, C, D, G, and I-A. It helps summarize and compare financial impact data for alternative investments.
Software Models (714) 338-5075 7-8

Appraisal Aide produces a complete FNMA 1004 form. This form is required by most appraisals when reporting to the mortgage lender. The program prints the report on standard preprinted FNMA 1004 form stock. Comparisons to similar

homes from the appraisers list of "comparables".
Computer Applications, Incorporated (207) 454-2174 5-1

INCOPROP performs a generalized and comprehensive analysis of income property. It incorporates a pro-forma first year operating statement, and return on investment for a sale of the property hypothetically occurring each year from one to ten.
E-Z Software (415) 388-1223 5-11

Buy/Sell Payment Analysis is a program designed for those interested in buying or selling a house. It calculates the buyer's payments, the seller's income, and other information.
PocketInfo Corp. (503) 649-8145 6-14

Buy a Rental is a program designed for those involved with rental properties. It calculates the amount of depreciation, taxable income, cash flow, the average annual return on investment, and other information.
PocketInfo Corp. (503) 649-8145 6-15

SCIENTIFIC

MTAP Heat Transfer Thermal Analyzer performs general purpose transient and steady state heat transfer analysis. Generates network connection table, heat input, heat transferred, and temperature distribution.
Cybertech (714) 738-1882 4-1

Survey System 1.1 helps reduce the time required to analyze survey data. It reduces traverse field data, performs the customary coordinate geometry operations, and reduces either stadia or EDM level notes.
C & G Software Systems (404) 458-5219 4-2

PocketCalc III™ is a spreadsheet program for the Pocket Computer 2, optimized for scientific and engineering applications. SIN, COS, TAN, ASN, ATN, ABS, INT, LOG, LNE, EXP, and SQR trigonometric functions are offered. Bar graphs, line graphs, and tables may be printed.
PocketInfo Corp. (503) 649-8145 4-3

Work Sampling is a statistical program which is based upon the Work Sampling technique. Observations are taken of specified events from which statistical inferences are shown in relationship to a "Normal" time reference.
Superior Software Systems (803) 269-8267 4-4

Local Stress in Vessel and Attachment is designed for engineers in the Pressure Vessel industry. The system calculates stress in the local area of nozzle-to-shell interface when under loads induced by piping thermal effects, seismic or dead load, and the effect of internal pressure.
Technical Research Services, Inc. (918) 245-6241 4-5

Surveyor computes transverses and assists Engineers and Surveyors in subdivision development. A transverse can be balanced by Compass Rule, Transit Rule, or Crandall method.
Justice Surveyor (606) 823-2651 4-6

Seismic Analysis is designed to assist engineers in the Pressure Vessel industry. The system calculates section modulus, areas of support cross section, center of gravity, moment of intertia, and others to determine whether a support design is adequate.
Technical Research Services, Inc. (918) 245-6241 4-7

Bill of Material Program for Structural Steel is designed for those who fabricate, detail, or design structural steel. The system weighs, combines, consolidates, sorts, and stores structural steel data.
Computer Detailing Corp. (215) 675-4800 4-8

Computer Aided Electronics #1 is a collection of programs to be used by amateur radio operators, engineers, and technicians to help solve problems in electronics.
Robert Jones Enterprises (416) 444-8695 4-9

SPECIAL INTEREST

Astrology Library covers the major branches of astrology: Natal, Progressions, Transits and Solar Returns, Comparative, and Hindu. It performs the calculations, allowing the user to concentrate on analysis.
Andrea Group (202) 484-0244 9-3

Astro-Scope™ casts an accurate natal horoscope, then reads it in 1500 words or more. It includes accurate planet and Placidus house cusp longitudes, and conjunction, opposition, square, trine, and sextile aspects.
AGS Software (617) 255-0510 9-5

Compu-Talk is an aid for the visually impaired and anyone desiring voice synthesization. The user can hear both what is typed and what is being displayed on the screen. It can run in conjunction with other programs.
Compu-Talk Systems (614) 279-8271 9-7

The Word Processor is an innovative Bible Study aid. It combines text manipulation, scanning, indexing, and storage capabilities to help the user search the Old and New Testaments (KJV) of the Scriptures more easily.
Bible Research Systems (512) 835-7891 9-11

Darkroom Timer Plus is specifically designed to aid photographers who develop their own black and white film. This program turns the Pocket Computer 1 into a highly accurate audible countdown timer. Stores developer, stopbath, fixer, and wash times for up to four film processes.
PocketInfo Corp. (503) 649-8145 6-16

Auto Computer is a software tool for planning automobile trips. It helps calculate the arrival time, gas costs, percentage of trip completed, miles left on the trip, and other information.
PocketInfo Corp. (503) 649-8145 6-17

VIANSOFT™ Business System for the Amway® Distributor is designed for use both by the Direct and Non-Direct Amway® distributors. Order Entry, Amway Order, Reports, Information Entry, and Index of Accounts/Mailing Labels modules are offered.
Vian Corp. (201) 537-4642 10-8

REL Distributor Ordering System is designed to help the Amway® distributor have a more reliable and speedy ordering system. The program stores PV and BV prices as well as wholesale costs and suggested retail prices for products within and without the Amway® system.
Richcal Enterprises, Ltd., Inc. (714) 528-7523 10-16

Axonometric Drawing Program is a drawing aid, for technical artists. The artist who wishes to draw an object in either three dimensional mode, the axonometric system, or subsystems thereof, may use this program to calculate all necessary data to set up the drawing.
Hutchison Software (503) 469-2657 10-17

STOCKS, BONDS AND SECURITIES

Back Office Accounting systems is designed to supply small

to medium sized Broker/Dealers with all the record-keeping and reporting capabilities required by the SEC. Features include: posting ledgers, generating Trial Balances, Customer Statements and Security Position Records.
B.O.A. Systems (312) 982-0070 1-11

STAR is a client portfolio management system designed specifically for Registered Representatives, Investment Advisors and Trust Departments.
Morningstar Technology Corp. (803) 235-8568 5-2

Stock Tracker helps in picking the right time to buy or sell stocks in order to determine whether a gain or loss will be obtained. Stock Tracker utilizes a technical analysis of volume patterns to generate buy, sell, hold, close and warning trading signals on individual securities.
H & H Trading Company (415) 672-3233 5-3

Market Tracker uses the Intermediate Composite index to provide clues as to whether one should ignore or act on the individual stock and stock option trading signals generated. Market Tracker uses six technical market indicators to produce its Intermediate Composite market index.
H & H Trading Company (415) 672-3233 5-4

Stock Option Trading System is based on the concepts of Modern Portfolio Theory, and research by Fisher Black. The program displays gain/loss curves for any contemplated spread of combination, with easily manipulated ratios for optimum profit and risk exposure.
The CALCUGRAM Company (415) 933-3708 5-5

OPTIONVUE-A is a spreadsheet program for 'what if' analysis and basic option strategy. The program can be used by beginners and experienced traders alike to quickly determine what return can be expected from hypothetical cases before money is actually invested.
Star Value Software (512) 837-5498 5-6

OPTIONVUE-B is a spreadsheet program for 'what if' analysis and basic option strategy. The program quickly determines what return can be expected from hypothetical cases before money is actually invested on combination option investments such as spreads and straddles or simple option purchase.
Star Value Software (512) 837-5498 5-7

VIS\Bridge/DJ is a specialized telecommunications program designed for use by stockbrokers and individual investors. It accesses up-to-date financial information from the Dow Jones News/Retrieval® service and communicates it directly into a VisiCalc® spreadsheet.
Solutions, Inc. (802) 229-6368 5-12

ADVANCED OPVALU helps the stock options trader assess the fair market value for puts and calls on the listed exchanges. The program displays the fair market values and hedge ratios for an entire array of listed options on a single issue.
Star Value Software (512) 837-5498 5-8

TAX PREPARATION

Federal 1040 Tax System is designed for the tax preparer who does a high volume of tax returns. To facilitate efficient data entry, the prompts coincide exactly with the input sheets provided. By performing tax computations after complete data entry, the system reduces data entry time.
Creative Solutions, Incorporated (313) 995-8811 1-3

TaxPro automatically figures minimum/maximum tax from the given client data and prints 1040 form with all related schedules. Fills in pre-printed forms or uses overlays. Automatically computes: Tax, Earned Income Credit, Minimum/Maximum Tax, Least Tax Income Method, and all fixed limitations.
Contract Services Associates (714) 635-4055 1-13

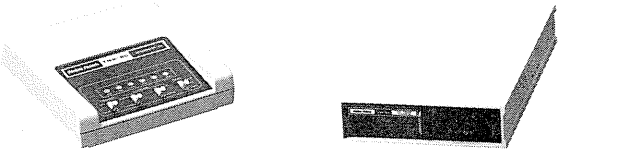
Professional Income Tax automatically computes tax from the given client data and prints 1040 form with all related schedules. Fills in pre-printed forms or uses overlays. Automatically computes: Tax, Earned Income Credit, Minimum/Maximum Tax, Least Tax Income Method, and all fixed limitations.
Datacell II, Incorporated (714) 685-6206 1-21

Tax Package is designed for the tax preparer who does a high volume of tax returns. To facilitate efficient data entry, the prompts coincide exactly with the input sheets provided. By performing tax computations after complete data entry, the system reduces data entry time.
W.L. Software, Incorporated (503) 688-7596 1-22

Tax/Budget Planner was designed to be easy to use for those who do their own taxes. Automatically calculates: federal tax liability, short term and long term capital loss/carry-forward amounts, cash and property donations, and others.
Capital Software (206) 322-7562 6-4

TERMINALS AND EMULATORS

User Communication Utility is designed to allow a BASIC program to interact with a remote terminal, a remote host computer, or other RS-232-C compatible devices. Transactions read from or sent through one of the telecommunication ports are handled through string variables.
Micro Design Computer Systems (714) 991-9533 8-11



VT52™ Emulator enables the Model II to function as an intelligent DEC VT52™ terminal. Supports both normal and keyboard application modes, as well as full cursor control.
IMPACC Associates (215) 699-7235 8-18

VERTICAL MARKETS

AACS Restaurant Inventory Control and Cost Analysis Program is designed for a full line restaurant. It helps control the flow of inventory, and monitor and reduce food cost. The program helps detect: theft, over portioning, inflation, lack of awareness of cost-items, and others.
Advanced Analytical Computer Sys.(213) 708-3917 10-5

Agency Management is a travel agency accounting system. When combined with a General Ledger and Payroll, it completely automates the back-office of a travel agency. Compatible with ASTA as well as most other accounting systems.
Cobrasoft, Inc. (213) 644-1135 10-9

Service Station Management is a program designed for the everyday bookkeeping of a typical service station. All inventory of fuels and oils can be accurately maintained along with daily, monthly, and year-to-date figures. Accounts Receivable

and credit card sales are tracked.
Software Development of Arizona (602) 385-4868 10-11

Linen and Uniform Software is designed for businesses that rent out linen and uniforms. The program controls all the inventory that the customer might have, and calculates charges.
Liniform Computer Service (216) 825-7561 10-15

Florist Information Processing System is an integrated program designed to automate most day-to-day operations of a florist shop. The system includes modules which perform Accounts Receivable, Accounts Payable, Sales Analysis, Wire Service Analysis, and General Ledger functions.
Middlesex Information Systems (617) 658-4449 10-18

Inventory Stock Management is an Inventory and Accounts Receivable system that is designed for use by auto part dealerships. Parts information, daily income summary, invoicing, statements, state sales tax statements, and part ordering are features of the program.
Hugh Johnson and Associates (501) 234-6553 10-20

Church Donations Program maintains records of total offerings by each individual member of a church in up to 15 different categories. Individual quarterly reports are generated for each member of the congregation.
Custom Data (505) 434-1096 10-2

Municipal Billing System handles virtually all functions related to utility billing for small communities. It can handle such diverse billings as water, electricity, gas, sewer, garbage, etc.
FOY, Inc. (214) 782-7282 10-3

Approxirate(C) is designed for use by truckers, motor carriers, and transportation consultants. The program is designed to calculate the distance between two points, to approximate motor carrier bureau class rates.
Transportation Resources, Inc. (617) 422-7473 10-19

VISICALC® UTILITIES

V-Utility™ is a package of five utility programs designed to expand the capabilities of VisiCalc®. It includes utilities to sort, print, plot, overlay, and perform statistical analysis.
Yucaipa Software (714) 797-6331 9-4

VIS\Bridge / SORT is a utility which sorts the rows and columns of a VisiCalc® spreadsheet into ascending or descending sequence. Both numeric and alphanumeric items and partial spreadsheets may be sorted.
Solutions, Inc. (802) 229-0368 9-6

VisiCalc® Programming: No Experience Necessary contains an easy-to-understand manual and a tutorial diskette designed to decrease the time needed to learn VisiCalc®. It also includes ready-to-run templates.
Little, Brown and Co. (800) 343-9204 9-8

CORRECTION
Business Graphics on HD

We want to thank Sam Goldberg (CompuServe I.D. 72265,416) for his contribution to the article "Install the Model III Business Graphics Package on Your 5 Meg Hard Disk" which appeared in the October, 1983 issue of *TRS-80 Microcomputer News*. Mr. Goldberg not only provided the idea for the article but also outlined the procedures to be used in the application. Our sincere apologies to Mr. Goldberg for omitting his name from the credits.

Computers in Journalism

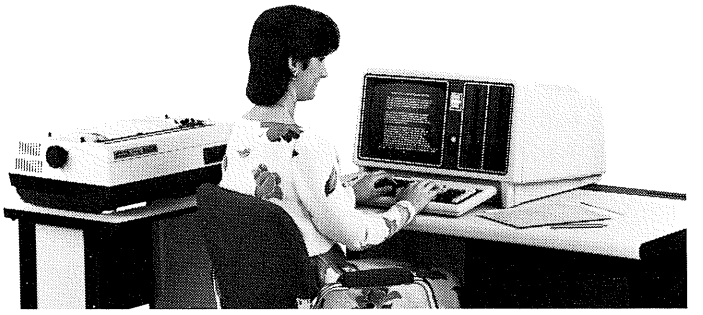
Alice Schwindt
348 Dorset Drive
Cocoa Beach, FL 32931

For several years English teachers have watched as computers have moved into science and math labs at their schools. They reasoned that surely the English department was far removed from computers, with its math-oriented 0's and 1's, so they would not have to learn about them.

Then literary terms like "word-processing" and "editing" began to crop up in discussions, and the computer was on its way to the English classroom. Are language arts teachers ready for it? After using a computer for a year as a journalism teacher and newspaper advisor, I can answer with an enthusiastic, "Yes, we are." The use of the computer in the English classroom brings the latest techniques from the outside world of business into school, and since the students are more than ready to use them, the teachers need to be just as prepared.

The newspaper staff at Cocoa Beach High and I, their advisor, knew through trips to the local newspaper and by watching reruns of LOU GRANT that the world of journalism had turned to computers to facilitate news writing. Seeing reporters type on those wonderful, fast, quiet VDT's convinced us that there were better ways to produce copy than our method of typing, correcting, retyping, correcting, and retyping. So we decided to step into high-technology with a computer that did everything we could think of. We wanted it all—word processing, bookkeeping, mailing lists, even the capability of writing our own programs. We wanted disk drives and a printer and software that could do all these things. After investigation, we selected a TRS-80 Model III from Radio Shack. It fit our criteria, and it has become an integral part of our staff, fun-loving and capricious at times, but most often a tireless, rapid and accurate worker.

Although learning to use the computer took patience and dedication, the staff quickly adjusted, becoming computer converts as they realized that the TRS-80 enabled them to type their copy only once, and that margins could be formed and reformed on command. After a year of using the computer, we wonder what we ever did without it.

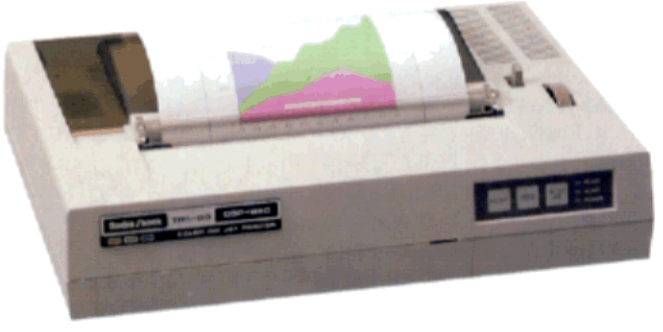


Business Graphics with the New Color Output Devices

You can now obtain the full range of business charts produced with the Business Graphics Analysis Pak on the new Ink-Jet Printer, the Color Graphics Printer, and the Single-Pen Plotter. These multicolor devices offer high-resolution graphics along with some special features not available on other printers or plotters.

INK-JET PRINTER CGP-220

This compact, economical printer produces especially attractive charts with dark and light shading in black and six vibrant colors. Color flow is exceptionally even, producing shaded areas that appear painted.



When you use Business Graphics with the Ink-Jet Printer, you can get interesting effects when you shade under two or more curves. Unlike other devices that fill each curve to the bottom axis or grid line, shading with the Ink-Jet Printer is never overlapped. The first curve you specify is shaded to the grid line. For curves 2 and 3, shading is drawn only from the curve line down to the next shaded curve, but the curve lines themselves are clearly visible. The result? Clear, true colors and distinct curves.

COLOR GRAPHICS PRINTER CGP-115

This inexpensive, pocket-sized printer/plotter does a full-sized job. You can produce four-color business charts in either vertical or horizontal format on a paper roll that is 4 1/2 inches wide. Ideal for charts that are to be inserted within a page of text, this printer offers the full range of Business Graphics capabilities, and provides both large and small character sets.

While the CGP-115 behaves like a pen plotter; in graphics mode, it can also be used to print data—unlike the pen plotters. This print capability is often a convenience for reports.

SINGLE-PEN FLATBED PLOTTER FP-215

This plotter produces four-color charts, using hard-nib pens that produce bright colors and clear outlines.

When you draw a chart, the Business Graphics program asks you to insert the needed pen. After drawing all parts of the chart that use that pen, the program pauses and asks you to insert the next pen. This process is continued until the chart is completed.

Manual pen changes make it possible to draw bar charts in which negative and positive bars are different colors—particularly useful for emphasis in variance bar charts.

CURRENT SUPPORT LEVEL

Business Graphics Analysis Pak is currently available for both TRS-80 Model II/12 and Model III microcomputers. The package can also be used with Models 4 (in Model III mode) and 16 (in Model II mode.)

The following output devices are supported:

- Dot matrix printers:
  DMP 100 (26-1253)
  DMP 120 (26-1255)
  DMP 200 (26-1254)
  DMP 400 (26-1251)
  DMP 420 (26-1267)
  DMP 500 (26-1252)
  DMP 2100 (26-1256)
- Daisy Wheel Printers:
  DWP 210 (26-1257)
  DWP 410 (26-1250)
  Daisy Wheel II (26-1158)
- Color Graphic Printers:
  CGP 115 (26-1193)
  CGP 220 (26-1268) Ink-Jet
- Flat Bed Plotters:
  FP 215 (26-1193)
  Multi-Pen Plotter (26-1191)

SEEING IS BELIEVING!

Stop by your Radio Shack Computer Center and check out these new printers and plotters.

While you are there, ask to see a demonstration of Business Graphics. Learn how easily you can obtain high-quality line charts, bar charts, pie charts, and scatter charts to add a new dimension of interest and clarity to your reports!

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MACON 1467 Eisenhower Pkwy.
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