APRIL 1980
ISSUE NUMBER 21

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THE ORIGINAL MAGAZINE FOR TRS-80™* OWNERS

H&E COMPUTRONICS INC.

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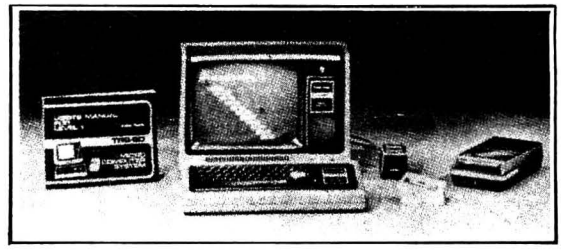
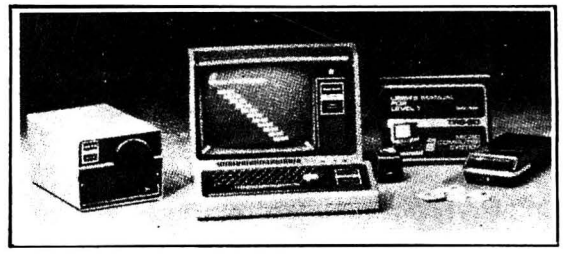
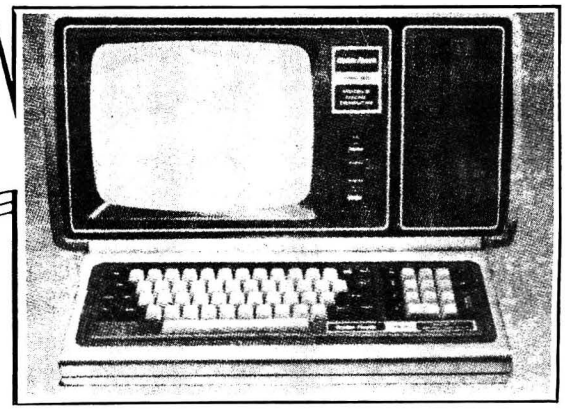
- NEW 77-TRACK DRIVES FROM RADIO SHACK
- COMING OF THE TRS-90
- DISK SORT/MERGE
- TRS-80™ BASIC — A SELF-TEACHING GUIDE
- LOWER CASE MOD UPDATE
- TEXT: A NEW BASIC TEXT EDITOR







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MATHEMATICAL APPLICATIONS SERVICE™

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NEWSLETTER INFORMATION

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THE PURPOSE OF THE **H&E COMPUTRONICS INC. MONTHLY NEWS MAGAZINE** IS TO PROVIDE AND EXCHANGE INFORMATION RELATED TO THE CARE, USE AND APPLICATION OF THE TRS-80 COMPUTER SYSTEM.

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THE **H&E COMPUTRONICS INC. MONTHLY NEWS MAGAZINE** ENCOURAGES COMMENTS, QUESTIONS AND SUGGESTIONS. WE PUBLISH ARTICLES AND PROGRAMS WRITTEN BY OUR READERS. COMPUTRONICS, INC. WILL PAY CONTRIBUTORS FOR ARTICLES AND PROGRAMS PUBLISHED IN THE NEWS MAGAZINE.

SUBSCRIPTIONS ARE $24 PER YEAR ($30 PER YEAR–CANADA AND MEXICO, $36 PER YEAR OUTSIDE OF THE UNITED STATES, CANADA AND MEXICO — AIR MAIL). BACK ISSUES ARE AVAILABLE ($2 PER ISSUE).

HAVE ANY URGENT QUESTIONS? WE HAVE TELEPHONE HOURS — 9 A.M.–5 P.M. OTHER TIMES, LEAVE A MESSAGE ON OUR ANSWERING MACHINE. WE WILL PROMPTLY RETURN ALL CALLS (COLLECT).

***ADDITIONAL WORD PROCESSOR INSTRUCTIONS APPEAR IN THE APRIL, 1979 EDITION.

***ADDITIONAL MEMORY TEST INSTRUCTIONS APPEAR IN THE JULY, 1979 EDITION.

LOCAL TRS-80 CLUBS

THE COMPUTER CLUB OF ORLANDO (FLORIDA) — Contact M. Scott Adams — (305) 862-6917.

TRS-80 USER'S GROUP OF CHICAGO (ILLINOIS) — Contact John C. Longstreet, 1201 W. Chase Avenue, Chicago, Illinois 60626 or call 761-2742

THE SOLANO TRS-80 USER'S CLUB — Fairfield, California — Contact Dave or Steve Irwin — (707) 422-3347.

TRS-80 USER'S GROUP OF WALNUT CREEK (CALIFORNIA) — Contact John Snyder, 712-C Country Wood, Walnut Creek, California 94598 or call (415) 938-9669.

INLAND COMPUTER SOCIETY — Contact Sandy Sparks, 3359 Second Street, Riverside, California 92501 or call (714) 256-5319 or (714) 784-3499

TRS-80 USER'S GROUP OF SANTA ANA — Contact Arnold Vags, 3713 S. Parton Street, Santa Ana, California 92707 or call (714) 784-0456.

TRS-80 BUG INC. OF FLORIDA — Contact Larry J. Harrell, 2100 N. Atlantic Avenue-402, Cocoa Beach, Florida 32931 or call (305) 784-0456.

MONTEREY BAY USERS' GROUP FOR TRS-80 USERS — Contact William S. Pitt, P.O. Box GH, Pacific Grove, CA 93950.

ALABAMA TRS-80 USERS' GROUP — Contact Errol Kyzer, Phone 281-2107.

WYOMING VALLEY COMPUTER CLUB — Contact Art Prutzman, 302 Wyoming Avenue, Kingston, PA 18704 or call (717) 287-1014.

VENTURA COUNTY TRS-80 COMPUTER CLUB — Contact Nick Sharp, 2534 North Temple Avenue, Camarillo CA 93010.

CRESCENT CITY COMPUTER CLUB — write to P.O. Box 1097, University of New Orleans, New Orleans LA 70122.

WITCHITA VALLEY TRS-80 USERS GROUP, P.O. Box 1384, Witchita Falls TX 76307.

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BITS AND PIECES

by
HOWARD Y. GOSMAN

YOUR SUBSCRIPTION HAS EXPIRED IF...THE NUMBER ABOVE YOUR NAME AFTER THE DASH ON YOUR MAILING LABEL IS 21 (OR LESS). THE NUMBER FOLLOWING THE DASH TELLS YOU THE LAST ISSUE THAT YOU WILL RECEIVE. For example, if your subscription number is 16429-21, your subscription expires with this issue (ISSUE #21).

ON TIME?
Yes you have been receiving many issues in a short period of time. Hopefully, this issue should reach you before April 15 (and maybe even sooner). This is the earliest we have ever gotten an issue out. Who knows...maybe you'll get the May issue in April!!

MORE ON OUR FREE CASSETTE
The latest version of our FREE CASSETTE contains four programs. The WORD PROCESSOR, DATABASE MANAGEMENT, MEMORY TEST and CLEANUP. We have two additions in the works (both should be available in 30-90 days).

The 5th program on our cassette will be ADVENTURE #0 by SCOTT ADAMS. If you open any of the major computer magazines, you very likely to see full page ads for ADVENTURE INTERNATIONAL. Scott Adams of ADVENTURE INTERNATIONAL has written 8 ADVENTURE PROGRAMS for the TRS-80 (ADVENTURE is a popular computer game played on many of the full sized computers). Now all COMPUTRONICS subscribers who haven't already been temped to buy ADVENTURE can try it out.

The 6th program on our FREE CASSETTE will be a calculator program written by Ken Brown (writer of BATTLESHIP). This program isn't an ordinary calculator program...it is outstanding. The program simulates the TEXAS INSTRUMENTS TI-51 scientific calculator. It gives your TRS-80 all the calculating power found on the TI-51. It gives 16-digit accuracy on all calculations (including SIN, COS, +, -, X, /, mean, standard deviation, LOG, LN...and all other functions found on the TI-51).

Both of these programs will be available shortly. The programs are FREE when you renew your subscription. If you are a current subscriber and are not ready to renew...send $2 for the new cassette. The programs can also be purchased on diskette for $5. The price includes postage. Please wait for the next issue before requesting the new cassette or diskette. Hopefully...we will be able to announce the availability of the new cassette in the next issue.

CATALOG #4
CATALOG #4 is now available. The CATALOG is FREE to subscribers ($2 for non-subscribers). If you are a subscriber to the COMPUTRONICS MONTHLY NEWSMAGAZINE and have not received a copy of CATALOG #4...send us a post card along with your subscription number...and we'll send one right out to you.

There are several changes and corrections that should be noted:

(1) The new price for DISK AND OTHER MYSTERIES is $22.50. The price in our catalog is $22.95. The correct price is $22.50.

(2) There is no charge for postage on any item in the catalog (with the exeption of the SOFTWARE SOURCE) if the order is shipped by U.P.S. Add $3 for all orders

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that are shipped by any method other than U.P.S.

(3) We can now ship orders by FEDERAL EXPRESS or EMERY AIR FREIGHT. That means overnight delivery. Of course, you must pay the shipping charge on EXPRESS SERVICE.

(4) CHECKBOOK II is now available on CASSETTE or DISKETTE. If you already have the cassette version...send $10 for the DISK VERSION (the DISK VERSION is available for $29.95 if you don't already own the cassette version). If you own two disk drives...you should consider buying the CHECK REGISTER ACCOUNTING SYSTEM rather the CHECKBOOK II.

(5) There are several programs advertised on our MASTER PAC 100 ad. Only the MASTER PAC 100 is available. All the other programs on the ad are no longer available.

(6) DON'T ORDER THE B-17 LOADER UNLESS YOU READ THE DESCRIPTION CONTAINED IN THIS ISSUE (BELOW).

(7) The new price for MON-3 is $39.95 (reduced from $49.95). The new price for MON-4 is $49.95 (reduced from $59.95).

LOWER CASE MODIFICATIONS
As you know...RS is now installing a lower case modification especially for use with RS's new word processor called SCRIPSIT. YOU CAN NOT USE THE ELECTRIC PENCIL ALONG WITH RADIO SHACK'S LOWER CASE MODIFICATION. When RS puts in the modification they do not install a control key which is used with the ELECTRIC PENCIL. If you have installed a lower case modification (such as the modification given in Issue #6 of COMPUTRONICS), both SCRIPSIT and the ELECTRIC PENCIL can be used.

Some more to remember. RS installs the lower case modification for $99.95. If you have a soldering iron, $5 and issue #6 of the Newsletter (and know how to use a soldering iron), you can easily install the modification. The actual parts can be obtained from RS for less than $5. This modification works with both the ELECTRIC PENCIL and SCRIPSIT. H & E COMPUTRONICS, INC. sells a lower case modification kit along with a lower case driver program for $19.95. We can also have someone install your lower case modification right before your eyes (in less than 10 minutes). We have someone here on Saturdays that can do the installation (please call for an appointment).

SCRIPSIT THE NEW WORD PROCESSOR...DOES IT REPLACE THE ELECTRIC PENCIL?
SCRIPSIT is good, but does it replace the ELECTRIC PENCIL?
Well, it's about a toss up. The ELECTRIC PENCIL is easier to learn how to use. You can learn to use the ELECTRIC PENCIL in just a few minutes. On the other hand...to use SCRIPSIT you must listen to several hours of cassette tape instructions and read a fairly long manual. I've been using the ELECTRIC PENCIL for over a year nkw...and refuse to take the time to learn to use SCRIPSIT. I know several heavy ELECTRIC PENCIL users who have learned how to use SCRIPSIT. Some give it up and go back to the ELECTRIC PENCIL...others say that SCRIPSIT is superior and that they will no lojger use the ELECTRIC PENCIL. In short...SCRIPSIT is excellent...just as the ELECTRIC PENCIL is excellent. Either choice will satisfy most users. I'm still using the ELECTRIC PENCIL but will try to learn how to use SCRIPSIT so we can give you a full review next month.

LOWER CASE MODIFICATIONS AND YOUR GUARANTEE

Up until last month...RS would not fix any CPU that contained a non-RS lower case modification. In order to get your CPU fixed you had to pay RS to remove the lower case modification. Once removed, RS would fix your computer. Now, RS has agreed to end this practice. They have agreed to fix any of their computers...with the RS modification or with non-RS modifications. This is good news for those who have chosen to add the less expensive lower case modification (or any other modification).

COMPUTER/TYPEWRITER MECHANICAL INTERFACE

On page 484 from the NEWSMAGAZINE we reviewed the ROBOTYPE 2001. The ROBOTYPE is supposed to turn any typewriter into a quality output printer. The ROBOTYPE can easily be attached to any typewriter such as the IBM SELECTRIC (at least according to the ads). The ROBOTYPE, as the name implies, is a device that fits over your typewriter. It actually has little ROBOTLIKE fingers that press the keys on your typewriter. So, for example, if you are using the ELECTRIC PENCIL...you type your text on the video display...then your TRS-80 instructs the ROBOTYPE to hit the proper keys to duplicate the text within the memory of your TRS-80. In our review...we stated that we are very skeptical about its merits. A Douglas Werbeck of Ruskin Florida has another opinion...

..."Page 484...describes ROBOTYPE for $1000. I saw this demonstrated at a booth during PC'79 in Philadelphia. I asked many questions and they were all answered very satisfactorily by the demonstration team. I currently use a CENTRONICS 779 for print-outs, but I do plan a purchase of the Rochester gizmo for letter writing, to be attached to the machine on which this is being written.

"It is truly weird to see all those little plunger "fingers" whacking away at the keys at 15 cps! Fits any standard keyboard American typewriter! Hope I have been of some help!"

The ROBOTYPE sells for about $500 complete. If it works as well as Mr. Werbeck says...it may be a good alternative for high quality print for those who already own an IBM SELECTRIC or other high quality printer. For more information, contact ROCHESTER DATA INC., 3100 Monroe Avenue, Rochester NY 14618 or call (716) 385-4336.

SAVING ASCII DISK FILES

The following information was submitted by: Edward Wolff, 51 E 21th Street, New York NY 10010.

In your January issue you printed a letter from a Mr. Kneece about problems loading an ASCII SAVED program and getting an error message "DIRECT STATEMENT IN FILE." I have had the same problem.

I found the cause to be as follows...

When you type in a program line, the machine will accept about 230 characters...not 256. If this is saved ASCII format everything is fine.

If you have used "?" for PRINT then the line is really longer by 4 characters.

If you type in a full line...ENTER it and then edit the line. An additional 20 or so characters can be added.

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In both of these cases...load after ASCII gives you the error message.

In DOS this program can both be listed and printed.

On one occasion I found the program loaded up to the affected line. I only had to re-enter the affected line and those that followed. I never double checked this.

LOWER CASE MODIFICATION FOR THE WORD PROCESSOR
Sumbitted by John P. Abraham, Medical Laboratory Consulting Service, 2820 Hibiscus, McAllen TX 78501...Phone 687-2329.

"I was pleased to see the lowercase modification subroutine published in your December issue for your word processor. I tried this modification, and as you had predicted, the printer is very slow.

"I had made a slight modification to the program to handle the lowercase as each string is inpqt. This makes the time required for input a bit longer, but you can't really notice it. With this modification, in the edit mode, you have to use upper case letters for commands (such as shift D for delete, shift I to insert, etc.). By adopting this minor modification, the text can be stored in upper and lower case on the disk or tape and there is no delay in the printing.

"If you had to print the same text several times, then this modification can save you a lot of time. On the other hand, if you only need to print the text only once or twice, but would like to save time in the input phase then the modification appearing in the December issue would be better."

Here is the modification:

```
592 IF A<65 THEN GOTO 600
594 IF A<91 THEN A=A+32:A$=CHR$(A):GOTO$600
596 IF A<128 THEN A=A-32:A$=CHR$(A)
2520 PRINT@C,CC$;:A$=INKEY$:IFA$<>""THEN2535
2535 A=ASC(A$):IF A<65 THEN GOTO 2540
2536 IF A<91 THEN A=A+32:A$=CHR$(A):GOTO2540
2537 IF A<128 THEN A=A-32:A$=CHR$(A)
```

COMMENTS ON THE RADIO SHACK LINE PRINTER III
Submitted by Bruno M. Larsell, Colonel, USAF (Ret)9, GIANCO, 10708 Santa Fe Drive, Sun City AZ 85351...(602) 977-5511.

"I am a subscriber to your fine magazine TRS-80 MONTHLY NEWS MAGAZINE. It is excellent.

Software with Manual / Manual Alone

☐ **XYBASIC** Interactive Process Control BASIC – Full disk BASIC features plus unique commands to handle bytes, rotate and shift, and to test and set bits. Available in Integer, Extended and ROMable versions. Integer Disk or Integer ROMable ..... $295/$25. Extended Disk or Extended ROMable ..... $395/$25

☐ **SMAL/80** Structured Macro Assembled Language – Package of powerful general purpose text macro processor and SMAL structured language compiler. SMAL is an assembler language with IF-THEN-ELSE, LOOP-REPEAT-WHILE, DO-END, BEGIN-END constructs ..... $75/$15

☐ Ⓜ †† **SELECTOR III-C2** – Data Base Processor to create and maintain multi Key data bases. Prints formatted sorted reports with numerical summaries or mailing labels. Comes with sample applications, including Sales Activity, Inventory, Payables, Receivables, Check Register, and Client/Patient Appointments, etc. Requires CBASIC-2. Supplied in source ... $295/$20

Lower Price

☐ **GLECTOR** – General Ledger option to SELECTOR III-C2. Interactive system provides for customized COA. Unique chart of transaction types insure proper double entry bookkeeping. Generates balance sheets, P&L statements and journals. Two year record allows for statement of changes in financial position report. Supplied in source. Requires SELECTOR III-C2, CBASIC-2 and 52K system ..... $250/$25

☐ **CPM/374X** – Has full range of functions to create or re-name an IBM 3741 volume, display directory information and edit the data set contents. Provides full file transfer facilities between 3741 volume data sets and CP/M files ..... $195/$10

☐ Ⓜ **BASIC UTILITY DISK** – Consists of: (1) *CRUNCH-14* – Compacting utility to reduce the size and increase the speed of programs in *Microsoft BASIC and TRS-80 BASIC*. (2) DPFUN – Double precision subroutines for computing nineteen transcendental functions including square root, natural log, log base 10, sin, arc sin, hyperbolic sin, hyperbolic arc sin, etc. Furnished in source on diskette and documentation ... $50/$35

☐ Ⓜ **STRING/80** – Character string handling plus routines for direct CP/M BDOS calls from FORTRAN and other compatible Microsoft languages. The utility library contains routines that enable programs to chain to a COM file, retrieve command line parameters, and search file directories with full wild card facilities. Supplied as linkable modules in Microsoft format. ..... $95/$20

STRING/80 source code available separately $295/n.a.

☐ Ⓜ **THE STRING BIT** – FORTRAN character string handling. Routines to find, fill, pack, move, separate, concatenate and compare character strings. This package completely eliminates the problems associated with character string handling in FORTRAN. Supplied with source ..... $45/$15

☐ Ⓜ **BSTAM** – Utility to link one computer to another also equipped with BSTAM. Allows file transfers at full data speed (no conversion to hex), with CRC block control check for very reliable error detection and automatic retry. We use it! It's great! Full wildcard expansion to send ★.COM, etc. 9600 baud with wire. 300 baud with phone connection. **Both** ends need one. Standard and Ⓜ versions can talk to one another. ..... $150/$5

★★★★★★★★

SUNDRIES & NOTIONS

☐ **HEAD CLEANING DISKETTE**–Cleans the drive Read/Write head in 30 seconds. Diskette absorbs loose oxide particles, fingerprints, and other foreign particles that might hinder the performance of the drive head. Lasts at least 3 months with daily use. Specify 5" or 8" ..... $20 ea./$45 for 3

☐ **FLIPPY DISK KIT** – Template and instructions to modify single sided 5¼" diskettes for use of second side in single sided drives $12.50

☐ **FLOPPY SAVER** Protection for center holes of 5¼" floppy disks. Only 1 needed per diskette. Kit contains centering post, pressure tool, tough 7-mil mylar reinforcing rings. Installation tools and rings for 25 diskettes $14.95
Re-orders of rings only $7.95

☐ **PASCAL USER MANUAL AND REPORT** – By Jensen and Wirth. The standard textbook on the language. Recommended for use by Pascal/Z, Pascal/M and Pascal/MT users $8

☐ **THE C PROGRAMMING LANGUAGE** – By Kernighan and Ritchie. The standard textbook on the language. Recommended for use by BDS C, tiny C, and Whitesmiths C users $12

★★★★★★★★

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Z80 is a trademark of Zilog, Inc.
UNIX is a trademark of Bell Laboratories.
WHATSIT? is a trademark of Computer Headware.
Electric Pencil is a trademark of Michael Shrayer Software.
TRS-80 is a trademark of Tandy Corp.
Pascal/M is a trademark of Sorcim.

†CP/M for Heath and TRS-80 Model I are modified and must use specially compiled versions of system and applications software.

††Recommended system configuration consists of 48K CP/M, 2 full size disk drives, 24 x 80 CRT and 132 column printer.

Ⓜ Modified version available for use with CP/M as implemented on Heath and TRS-80 Model I computers.

Ⓛ User license agreement for this product must be signed and returned to Lifeboat Associates before shipment may be made.

Ⓘ Ⓧ This product Includes/eXcludes the language manual recommended in Sundries and Notions.

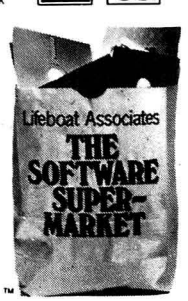
VISA

Orders must specify disk systems and formats: e.g. North Star single, double or quad density. IBM single or 2D/256. Altair, Helios II, Micropolis Mod I or II, 5¼" soft sector (Micro ¡COM/SD Systems Dynabyte), etc.

Prices F.O.B. New York. Shipping, handling and C.O.D. charges extra.

Manual cost applicable against price of subsequent software purchase.

The sale of each proprietary software package conveys a license for use on one system only.



™*The Software Supermarket is a trademark of Lifeboat Associates*

CP/M* VERSION 2 FOR TRS-80* MODEL II NOW AVAILABLE

Prices reflect distribution on 8" single density diskettes. If a format is requested which requires additional diskettes, a surcharge of $8. per additional diskette will be added.

All Lifeboat programs require CP/M, unless otherwise stated.

Software with Manual / Manual Alone

☐ **CP/M FLOPPY DISKETTE OPERATING SYSTEM** — Packages supplied on diskette complete with 8080 assembler, text editor, 8080 debugger and various utilities plus full documentation. CP/M available configured for most popular computer/disk systems including: North Star Single, Double or Quad density, Altair 8" disks, Helios II, Exidy Sorcerer, Vector MZ, Heath H17† or H89†, TRS-80†, ICOM 3712 and ICOM Micro Disk plus many other configurations available off the shelf ..... $145/$25

☐ **CP/M version 2** (not all formats available immediately) ..... $170/$25

☐ **MP/M*** ..... $300/$50

All Microsoft prices are discounted!

MICROSOFT

☐ **BASIC-80** — Disk Extended BASIC, ANSI compatible with long variable names, WHILE/WEND, chaining, variable length file records ..... $300/$25

☐ **BASIC COMPILER** — Language compatible with BASIC-80 and 3-10 times faster execution. Produces standard Microsoft relocatable binary output. Includes MACRO-80 Also linkable to FORTRAN-80 or COBOL-80 code modules ..... $350/$25

☐ **FORTRAN-80** — ANSI 66 (except for COMPLEX) plus many extensions. Includes relocatable object compiler, linking loader, library with manager. Also includes MACRO-80 (see below) ..... $400/$25

☐ **COBOL-80** — Level 1 ANSI '74 standard COBOL plus most of Level 2. Full sequential, relative, and indexed file support with variable file names. STRING, UNSTRING, COMPUTE, VARYING/UNTIL, EXTEND, CALL, COPY, SEARCH, 3-dimensional arrays, compound and abbreviated conditions, nested IF. Powerful interactive screen-handling extensions. Includes compatible assembler, linking loader, and relocatable library manager as described under MACRO-80 ..... $625/$25

☐ **MACRO-80** — 8080/Z80* Macro Assembler. Intel and Zilog mnemonics supported. Relocatable linkable output. Loader, Library Manager and Cross Reference List utilities included ..... $149/$15

☐ **XMACRO-86** — 8086 cross assembler. All Macro and utility features of MACRO-80 package. Mnemonics slightly modified from Intel ASM86. Compatibility data sheet available ..... $275/$25

☐ **EDIT-80** — Very fast random access text editor for text with or without line numbers. Global and intra-line commands supported. File compare utility included. ..... $89/$15

DIGITAL RESEARCH

☐ **MAC** — 8080 Macro Assembler. Full Intel macro definitions. Pseudo Ops include RPC, IRP, REPT, TITLE, PAGE, and MACLIB. Z80 library included. Produces Intel absolute hex output plus symbols file for use by SID (see below) ..... $120/$15

☐ **SID** — 8080 symbolic debugger. Full trace, pass count and break-point program testing system with backtrace and histogram utilities. When used with MAC, provides full symbolic display of memory labels and equated values ..... $105/$15

☐ **ZSID** — As above for Z80. Requires Z80 CPU $130/$25

☐ **TEX** — Text formatter to create paginated, page-numbered and justified copy from source text files, directable to disk or printer ..... $105/$15

☐ **DESPOOL** — Program to permit simultaneous printing of data from disk while user executes another program from the console ..... $80/$5

MICRO FOCUS

☐ **STANDARD CIS COBOL** — ANSI '74 COBOL standard compiler fully validated by U.S. Navy tests to ANSI level 1. Supports many features to level 2 including dynamic loading of COBOL modules and a full ISAM file facility. Also, program segmentation, interactive debug and powerful interactive extensions to support protected and unprotected CRT screen formatting from COBOL programs used with any dumb terminal ..... $850/$50

☐ **FORMS 2** — CRT screen editor. Output is COBOL data descriptions for copying into CIS COBOL programs. Automatically creates a query and update program of indexed files using CRT protected and unprotected screen formats. No programming experience needed. Output program directly compiled by CIS COBOL (standard) ..... $200/$20

☐ **HDBS** — Hierarchical Data Base System. CODASYL oriented with FILEs, SETs, RECORDs and ITEMs which are all user defined. ADD, DELETE, UPDATE, SEARCH, and TRAVERSE commands supported. SET ordering is sorted, FIFO, LIFO, next or prior. One to many set relationship supported. Read/Write protection at the FILE level. Supports FILEs which extend over multiple floppy or hard disk devices.

☐ **MDBS** — Micro Data Base System. Full network data base with all features of HDBS plus multi-level Read/Write protection for FILE, SET, RECORD and ITEM. Explicit representation of one to one, one to many, many to many, and many to one SET relationships. Supports multiple owner and multiple record types within SETs. HDBS files are fully compatible.

☐ **MDBS-DRS** — MDBS with Dynamic Restructuring System option which allows altering MDBS data bases when new ITEMs, RECORDs, or SETs are needed without changing existing data.

HDBS-Z80 version ..... $250/$35
MDBS-Z80 version ..... $750/$35
MDBS-DRS-Z80 version ..... $850/$40
8080 Version available at $75. extra.

NOTE: Z80 version requires 20K RAM. 8080 version requires 24K RAM. (Memory requirements are additional to CP/M and application program.)

When ordering HDBS or MDBS please specify if the version required is for 1) Microsoft L80 i.e. FORTRAN-80, COBOL-80, BASIC COMPILER, 2) MBASIC 4. XX, or 3) BASIC-80 5.0.

Prices and specifications subject to change without notice.

Lower prices!

EIDOS SYSTEMS

☐ **KISS** — Keyed Index Sequential Search. Offers complete Multi-Keyed Index Sequential and Direct Access file management. Includes built-in utility functions for 16 or 32 bit arithmetic, string/integer conversion and string compare. Delivered as a relocatable linkable module in Microsoft format for use with FORTRAN-80 or COBOL-80, etc. ..... $335/$23

☐ **KBASIC** — Microsoft Disk Extended BASIC with all KISS facilities, integrated by implementation of nine additional commands in language. Package includes KISS. REL as described above, and a sample mail list program ..... $585/$45
To licensed users of Microsoft BASIC-80 (MBASIC) ..... $435/$45

All Micropro prices are discounted!

MICROPRO

☐ **SUPER-SORT I** — Sort, merge, extract utility as absolute executable program or linkable module in Microsoft format. Sorts fixed or variable records with data in binary, BCD, Packed Decimal, EBCDIC, ASCII, floating, fixed point, exponential, field justified, etc. Even variable number of fields per record! ..... $225/$25

☐ **SUPER-SORT II** — Above available as absolute program only ..... $175/$25

☐ **SUPER-SORT III** — As II without SELECT/EXCLUDE ..... $125/$25

☐ **WORD-STAR** — Menu driven visual word processing system for use with standard terminals. Text formatting performed on screen. Facilities for text paginate, page number, justify, center and underscore. User can print one document while simultaneously editing a second. Edit facilities include global search and replace, Read/Write to other text files, block move, etc. Requires CRT terminal with addressable cursor positioning ..... $445/$40

☐ **WORD-STAR/MAIL-MERGE** — As above with option for production mailing of personalized documents with mail list from Datastar or NAD ..... $575/$25

☐ **WORD-STAR Customization Notes** — For sophisticated users who do not have one of the many standard terminal or printer configurations in the distribution version of WORD-STAR ..... NA/$95

☐ **WORD-MASTER** Text Editor — In one mode has superset of CP/M's ED commands including global searching and replacing, forwards and backwards in file in video mode, provides full screen editor for users with serial addressable-cursor terminal ..... $125/$25

☐ **DATASTAR** — Professional forms control entry and display system for key-to-disk data capture. Menu driven with built-in learning aids. Input field verification by length, mask, attribute (i.e. uppercase, lowercase, numeric, auto dup., etc.). Built-in arithmetic capabilities using keyed data, constants and derived values. Visual feedback for ease of forms design. Files compatible with all CP/M-MP/M supported languages. Requires 32K CP/M ..... $350/$35

☐ **CBASIC-2** Disk Extended BASIC — Non-interactive BASIC with pseudo-code compiler and runtime interpreter. Supports full file control, chaining, integer and extended precision variables, etc. ..... $109/$15

☐ **PASCAL/M*** — Compiler generates P code from extended language, implementation of standard PASCAL. Supports overlay structure through additional procedure calls and the SEGMENT procedure type. Provides convenient string handling capability with the added variable type STRING. Untyped files allow memory image I/O. Requires 56K CP/M ..... $350/$30

☐ **PASCAL/Z** — Z80 native code PASCAL compiler. Produces optimized, ROMable re-entrant code. All interfacing to CP/M is through the support library. The package includes compiler, companion macro-assembler and source for the library. Requires 56K and Z80 CPU.
Version 2 includes all of Jensen/Wirth except variant records ..... $275/$25
Version 3 with variant records and strings expected 3/80 ..... $395/$25

☐ **PASCAL/MT** — Subset of standard PASCAL. Generates ROMable 8080 machine code. Symbolic debugger included. Supports interrupt procedures, CP/M file I/O and assembly language interface. Real variables can be BCD, software floating point, or AMD 9511 hardware floating point. Version 3 includes Sets, Enumeration and Record data types. Manual explains BASIC to PASCAL conversion. Source for the run time package requires MAC (See under Digital Research). Requires 32K ..... $250/$30

New Version New Features

STRUCTURED SYSTEMS GROUP

☐ **GENERAL LEDGER** — Interactive and flexible system providing proof and report outputs. Customization of COA created interactively. Multiple branch accounting centers. Extensive checking performed at data entry for proof, COA correctness, etc. Journal entries may be batched prior to posting. Closing procedure automatically backs up input files. Now includes Statement of Changes in Financial Position. Requires CBASIC-2 ..... $1250/$25

☐ **ACCOUNTS RECEIVABLE** — Open item system with output for interim and aged reports and customer-oriented statement and billing purposes. On-Line Enquiry permits information for Customer Service and Credit departments. Interface to General Ledger provided if both systems used. Requires CBASIC-2. ..... $1250/$25

☐ **ACCOUNTS PAYABLE** — Provides aged statements of accounts by vendor with check writing for selected invoices. Can be used alone or with General Ledger and/or with NAD. Requires CBASIC-2 ..... $1250/$25

☐ **PAYROLL** — Flexible payroll system handles weekly, bi-weekly, semi-monthly and monthly payroll periods. Tips, bonuses, re-imbursements, advances, sick pay, vacation pay, and compensation time are all part of the payroll records. Prints government required periodic reports and will post to multiple SSG General Ledger accounts. Requires CBASIC-2 and 54K of memory ..... $1250/$25

Software with Manual / Manual Alone

☐ **INVENTORY CONTROL SYSTEM** — Performs control functions of adding and depleting stock items, adding new items and deleting old items. Tracks quantity of items on hand, on order and back-ordered. Optional hard copy audit trail is available. Reports include Master Item List, Stock Activity, Stock Valuation and Re-order List. Requires CBASIC-2 $1250/$25

☐ **ANALYST** — Customized data entry and reporting system. User specifies up to 75 data items per record. Interactive data entry, retrieval, and update facility makes information management easy. Sophisticated report generator provides customized reports using selected records with multiple level break-points for summarization. Requires CBASIC-2 ..... $250/$15

☐ **LETTERIGHT** — Program to create, edit and type letters or other documents. Has facilities to enter, display, delete and move text, with good video screen presentation. Designed to integrate with NAD for form letter mailings. Requires CBASIC-2 ..$200/$25

☐ **NAD** Name and Address selection system — interactive mail list creation and maintenance program with output as full reports with reference data or restricted information for mail labels. Transfer system for extraction and transfer of selected records to create new files. Requires CBASIC-2 ..... $100/$20

☐ **QSORT** — Fast sort/merge program for files with fixed record length, variable field length information. Up to five ascending or descending keys. Full back-up of input files created ..... $100/$20

New applications software for Microsoft's BASIC interpreter!

PEACHTREE SOFTWARE

☐ **GENERAL LEDGER** — Records details of all financial transactions. Generates a balance sheet and an income statement. Flexible and adaptable design for both small businesses and firms performing client writeup services. Produces reports as follows: Trial Balance, Transaction Registers, Balance Sheet, Prior Year Comparative Balance Sheet, Income Statement, Prior Year Comparative Income Statement and Department Income Statements. Interactive with other PEACHTREE accounting packages. Supplied in source code for Microsoft BASIC ..... $990/$30

☐ **ACCOUNTS PAYABLE** — Tracks current and aged payables and incorporates a check writing feature. Maintains a complete vendor file with information on purchase orders and discount terms as well as active account status. Produces reports as follows: Open Voucher Report, Accounts Payable Ageing Report and Cash Requirements. Provides input to PEACHTREE General Ledger. Supplied in source code for Microsoft BASIC ..... $990/$30

☐ **ACCOUNTS RECEIVABLE** — Generates invoice register and complete monthly statements. Tracks current and aged receivables. Maintains customer file including credit information and account status. The current status of any customer account is instantly available. Produces reports as follows: Aged Accounts Receivable, Invoice Register, Payment and Adjustment Register and Customer Account Status Report. Provides input to PEACHTREE General Ledger. Supplied in source code for Microsoft BASIC . $990/$30

☐ **PAYROLL** — Prepares payroll for hourly, salaried and commissioned employees. Generates monthly, quarterly and annual returns. Prepares employee W-2's. Includes tables for federal withholding and FICA as well as withholding for 50 states plus up to 20 cities from pre-supplied or user generated tables. Will print checks, Payroll Register, Monthly Summary and Unemployment Tax Report. Provides input to PEACHTREE General Ledger. Supplied in source code for Microsoft BASIC ..... $990/$30

☐ **INVENTORY** — Maintains detailed information on each inventory item including part number, description, unit of measure, vendor and reorder data, item activity and complete information on current item costs, pricing and sales. Produces reports as follows: Physical Inventory Worksheet, Inventory Price List, Departmental Summary Report, Inventory Status Report, The Reorder Report and the Period-to-Date and Year-to-Date reports. Supplied in source code for Microsoft BASIC ..... $1,190/$30

☐ **MAILING ADDRESS** — Keeps track of name and address information and allows the selective printing of this information in the form of mailing lists or address labels. Allows the user to tailor the system to his own particular requirements. User-defined format and print-out system uses a special format file which tells program how to print the mailing list or address labels. Standard format files are included with system. Automatic sorting of data uses indexed file management routines which allow the name and address information to be sequentially retrieved and printed without file sorting. Supplied in source code for Microsoft BASIC ..... $790/$30

New Features

GRAHAM-DORIAN SOFTWARE SYSTEMS

☐ **GENERAL LEDGER** — An on-line system; no batching is required. Entries to other GRAHAM-DORIAN accounting packages are automatically posted. User establishes customized C.O.A. Provides transaction register, record of journal entries, trial balances and monthly closings. Keeps 14 month history and provides comparison of current year with previous year. Requires CBASIC-2. Supplied in source ... $995/$35

☐ **ACCOUNTS PAYABLE** — Maintains vendor list and check register. Performs cash flow analysis. Flexible — writes checks to specific vendor for certain invoices or can make partial payments. Automatically posts to GRAHAM-DORIAN General Ledger or runs as stand alone system. Requires CBASIC-2. Supplied in source ..... $995/$35

☐ **ACCOUNTS RECEIVABLE** — Creates trial balance reports, prepares statements, ages accounts and records invoices. Provides complete information describing customer payment activity. Receipts can be posted to different ledger accounts. Entries automatically update GRAHAM-DORIAN General Ledger or runs as stand alone system. Requires CBASIC-2. Supplied in source ..... $995/$35

Software with Manual / Manual Alone

☐ **PAYROLL SYSTEM** — Maintains employee master file. Computes payroll withholding for FICA, Federal and State taxes. Prints payroll register, checks, quarterly reports and W-2 forms. Can generate ad hoc reports and employee form letters with mail labels. Requires CBASIC-2. Supplied in source ..... $590/$35

☐ **INVENTORY SYSTEM** — Captures stock levels, costs, sources, sales, ages, turnover, markup, etc. Transaction information may be entered for reporting by salesman, type of sale, date of sale, etc. Reports available both for accounting and decision making. Requires CBASIC-2. Supplied in source ... $590/$35

☐ **JOB COSTING** — Designed for general contractors. To be used interactively with other GRAHAM-DORIAN accounting packages for tracking and analysing expenses. User establishes customized cost categories and job phases. Permits comparison of actual versus estimated costs. Automatically updates GRAHAM-DORIAN General Ledger or runs as stand alone system. Requires CBASIC-2. Supplied in source $995/$35

☐ **APARTMENT MANAGEMENT SYSTEM** — Financial management system for receipts and security deposits of apartment projects. Captures data on vacancies, revenues, etc. for annual trend analysis. Daily report shows late rents, vacancy notices, vacancies, income lost through vacancies, etc. Requires CBASIC-2. Supplied in source ..... $590/$35

☐ **CASH REGISTER** — Maintains files on daily sales. Files data by sales person and item. Tracks sales, over-rings, refunds, payouts and total net deposits. Requires CBASIC-2. Supplied in source ... $590/$35

☐ **tiny C** — Interactive interpretive system for teaching structured programming techniques. Manual includes full source listings ..... $105/$40

☐ **BDS C COMPILER** — Supports most major features of language including Structures, Arrays, Pointers, recursive function evaluation, linking loader and library. Floating point function library included. Lacks data initialization and static and register class specifiers. Documentation includes "THE C PROGRAMMING LANGUAGE" by Kernighan and Ritchie. ..... $125/$15

☐ **WHITESMITHS C COMPILER** — The ultimate in systems software tools. Produces faster code than Pascal with more extensive facilities. Conforms to the full UNIX* Version 7 C language, described by Kernighan and Ritchie, and makes available over 75 functions for performing I/O, string manipulation and storage allocation. Linkable to Microsoft REL files. Requires 60K CP/M ..... $630/$30

☐ **POLYVUE/80** — Full screen editor for any CRT with XY cursor positioning. Includes vertical and horizontal scrolling, interactive search and replace, automatic text wrap around for word processing, operations for manipulating blocks of text, and comprehensive 70 page manual ..... $135/$15

☐ **POLYTEXT/80** — Text formatter for word processing applications. Justifies and paginates source text files. Will generate form letters with custom fields and conditional processing. Support for Daisy Wheel printers includes variable pitch justification and motion optimization ..... $85/$15

☐ **ALGOL-60** — Powerful block-structured language compiler featuring economical run time dynamic allocation of memory. Very compact (24K total RAM) system implementing almost all Algol 60 report features plus many powerful extensions including string handling direct disk address I/O etc. Requires Z80 CPU ..... $199/$20

☐ **Z80 DEVELOPMENT PACKAGE** — Consists of: (1) disk file line editor, with global inter and intra-line facilities; (2) Z80 relocating assembler, Zilog/Mostek mnemonics, conditional assembly and cross reference table capabilities; (3) linking loader producing absolute Intel hex disk file ..... $95/$20

☐ **ZDT** — Z80 Monitor Debugger to break and examine registers with standard Zilog/Mostek mnemonic disassembly displays. $35 when ordered with Z80 Development Package ..... $50/$10

☐ **DISTEL** — Disk based disassembler to Intel 8080 or TDL/Xitan Z80 source code, listing and cross reference files. Intel or TDL/Xitan pseudo ops optional. Runs on 8080 ..... $65/$10

☐ **DISILOG** — As DISTEL to Zilog/Mostek mnemonic files. Runs on Z80 only ..... $65/$10

☐ **XASM-68** — Non-macro cross-assembler with nested conditionals and full range of pseudo operations. As sembles from standard Motorola MC6800 mnemonics to Intel hex ..... $200/$25

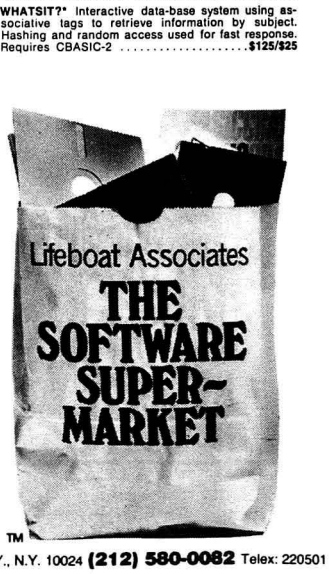
☐ **XASM-65** — As XASM-68 for MOS Technology MCS-6500 series mnemonics ..... $200/$25

☐ **TEXTWRITER III** — Text formatter to justify and paginate letters and other documents. Special features include insertion of text during execution from other disk files or console, permitting recipe documents to be created from linked fragments on other files. Has facilities for sorted index, table of contents and footnote insertions. Ideal for contracts, manuals, etc. Now compatible with Electric Pencil* prepared files. ..... $125/$20

☐ **POSTMASTER** — A comprehensive package for mail list maintenance that is completely menu driven. Features include keyed record extraction and label production. A form letter program is included which provides neat letters on single sheet or continuous forms. Compatible with NAD files. Requires CBASIC-2 ..... $150/$15

☐ **WHATSIT?*** Interactive data-base system using associative tags to retrieve information by subject. Hashing and random access used for fast response. Requires CBASIC-2 ..... $125/$25

New Features



Shopping List No.11

Software for most popular 8080/Z80 computer disk systems including ***NORTH STAR, iCOM, MICROPOLIS, DYNABYTE DB8/2 & DB8/4, EXIDY SORCERER, SD SYSTEMS, ALTAIR, VECTOR MZ, MECA, 8" IBM, HEATH H17 & H89, HELIOS, IMSAI VDP-42 & 44, REX, NYLAC, INTERTEC, VISTA V80 and V200, TRS-80 MODEL I and MODEL II, ALTOS, OHIO SCIENTIFIC DIGI-LOG, KONTRON PSI80*** *and* ***IMS 5000*** *formats.*

Everything on Shopping List #11 runs on 64K TRS-80 Model II

Lifeboat Associates, 2248 Broadway, N.Y., N.Y. 10024 **(212) 580-0082** Telex: 220501

"...This letter is to comment on your evaluation of the LINE PRINTER III. I have been using one for about three months now with my MODEL I system. I have a 48K system with three disk drives. I find the printer excellent; although I am not as pleased with the lower case printing as I was with the printing of the LINE PRINTER II which I traded in for the III.

"I have three comments to add to yours about the LINE PRINTER III. First, RS advertises an UNDERLINING capability. Unfortunately, neither RS or I have been able to find a control character which will permit carriage return without line feed. Consequently, you cannot use the underline (CHR$95) as a programmable feature. They have advised me that I can have the RS service center remove the auto line feed feature but then I would have to program a line feed at the end of each line of print. This would be a bother. Second, RS advertises a capability to use 4 inch tractor feed labels or paper. You can; however, you must use it in the middle of the printer carriage because of the permanent roller installed. This means that you must tape down the "end of paper" sensor and print in the middle of the carriage. Third, you mentioned that you could not get STRING$(10,138) to work. The reason is that 138 is not a recognized control character by the LINE PRINTER III. I have talked to RS about 138 and they refuse to admit (on the phone at least) that it is accepted for the LP III. It actually provides a 1/2 line feed which has great utility. If you try STRING$(10,10) you will find that it works fine. CHR$(10) is the recognized line feed character (on the LINE PRINTER III).

"Keep up the good work. You have a fine publication. I have approximately 3000 disk based programs and use the TRS exclusively for business purposes. I am a self-taught Basic programmer who uses the machine for business and not games."

EDITORS NOTE...WE GIVE THE RADIO SHACK LINE PRINTER III a rating of 10 (out of 10). It is a real work horse. The lower case is outstanding (in comparison to other dot-matrix printers). The lower case does not equal the IBM SELECTRIC but can be used for many purposes not requiring SELECTRIC quality print. Reliability is outstanding. The price for ribbons is also outstanding (that is to say very high prices...)! If you are considering the LINE PRINTER III...we give it high marks. If you are considering the LINE PRINTER II...think twice.

A NEAT DISK TRICK
In the DOS mode (not BASIC)...type BOOT/SYS.WHO ... place one finger on the ENTER key, one finger on the "2" and one finger on the "6". Hit the ENTER key "6" and "2" simultaneously. Immediately lift your finger off the ENTER key, but leave your fingers on the "6" and "2." This works with all versions of DOS including NEW DOS and the RS DOS.

ON HARD DISK DRIVES
Contributed by David Prager, M.D., Hematology-Oncology Associates, Inc., 1730 Chew Street, Allentown PA 18104...(215) 433-6691.

"In your November, 1979, issue of your monthly news magazine on pages 412-413, you briefly commented on hard disc drives.

"I have an operating hard disc drive in my office and am writing to share some experiences with you that I have had which you might want to pass on to your readers. With the assistance of LASALLE COMPUTING INC., a PERTEC hard disc drive is operating through a controller that is attached to a TRS-80 expansion inteface attached to the BUS extension card edge. The hard disc has a ten megabyte

H&E COMPUTRONICS INC.
MATHEMATICAL APPLICATIONS SERVICE™

capacity. The CPU, CRT, and line printer are all standard TRS-80 MODEL I equipment with no internal or external changes. The whole system is very relieble and handles all of my business activities such as printing Medicare and Blue Shield billing forms, a literature reference retrieval system, and a general office billing. I will be adding a general accounting program with a check printing option in the near future.

"All in all, I found this system to be dependable and very competitive as to price. More specific information can be received by contacting LASALLE COMPUTING INC., P.O. Box 116, Blue Bell PA 19422. Their phone number is (215) 275-7058."

APRIL HINT-OF-THE-MONTH BY GORDON SPEER
When your program runs out...the screen display automatically prints the word 'READY' and pushes whatever you had on the screen up two lines. If you had a screen just chock full of goodies at the time and didn't want to lost those top lines, what you need to do is give your program something to occupy itself, so you can keep the screen still. A simple loop like:

```
1660 GOTO 1660
```

will keep it busy for hours and hours, but may be interrupted by the BREAK key anytime.

THIS MONTH
Our WORD PROCESSOR is now one year old. This month...we have an updated WORD PROCESSOR incorporating many of the suggestions we have had from readers during the last year.

Due to the length of our new WORD PROCESSOR...ASSEMBLY LANGUAGE FOR BEGINNERS and our BUSINESS COLUMN do not appear in this issue. They will appear in the May issue.

Have you tried any of Gordon Speer's programs? If not...try them. This is Gordon Speer's fourth in a series of programs written for the "average" TRS-80 owner.

MODEL I DISKETTES

VERBATIM	10/$38.00
WABASH	10/$38.00
KEYLINE	10/$29.95
MEMOREX	10/$29.95

MODEL II DISKETTES

MEMOREX	10/$49.95

AVAILABLE FROM
H&E COMPUTRONICS, INC.

For Business Systems Software Programmers Only!!
Machine Language
ISAM
FOR
TRS-80* Models I and II
ACCESS TIME ½ SECOND!!

This machine language **ISAM ROUTINE** provides file access sophistication required to implement complex business software, and is completely compatible with **TRS-80* BASIC.**

Specifications: based on 1000 record file. key length of 6. data length of 64

Access time of ½ second
Best add/delete time of 1 second
Average add/delete time of 2 seconds
Worst case add/delete time of 5 seconds
Keys up to 25 characters
Data up to 255
Provides next highest key upon each file access.
Preset range of allowable key values, set upon file creation up to 4 files held open concurrently.
No special utilities needed to "Reclaim" used record space.
Model I Routine occupies 5 K of user space (loads at top of user memory)
Model II Routine occupies 6 K of user space (loads at top of user memory)
EOF, file full, empty, key not found, INVALID key value and all **TRS DOS*** error codes supported.

TRS-80 Model I (32 K + 48 K only) $160.00
TRS-80 Model II (64 K only) $170.00

Includes: All necessary documentation, file creation program, file inspection program, machine language ISAM routine and loader.

RELIABLE COMPUTER RESOURCES
415 MILLBURY STREET
WORCESTER, MA 01607
(617) 755-8134

*TRS-80 and TRS DOS are trademark of Tandy Corporation, which has no relationship to RCR Inc.

CRYSTAL BALL DEPARTMENT
(NEW PRODUCTS FROM RADIO SHACK)

WARNING...THE INFORMATION FOUND IN OUR CRYSTAL BALL DEPARTMENT DOES NOT REPRESENT VERIFIABLE FACT. WHAT FOLLOWS ARE RUMORS FROM WHAT WE CONSIDER TO BE RELIABLE SOURCES (unless otherwise stated).

(1) Are we embarrassed? For two months we have been telling you that RS intends to stop production of the TRS-80. Now we're not too sure. If anything...our rumor has stirred a lot of controversy and a lot of phone calls from people not willing to give their names. Right now...our crystal ball is a little fuzzy as to the future existence of the TRS-80...but let's convey the latest rumors.

From one reliable source...we hear that RS is ending production of the TRS-80 on June 1, 1980. It will be replaced by a new color version...called the TRS-90. One of our sources tell us that the new TRS-90 will not be compatible with the TRS-80. Another one of our sources tells us that the new TRS-90 will be compatible with the TRS-90 and use the same MICROSOFT BASIC. More probable...the Basics will be compatible...but you will have to convert your present tapes (using some sort of conversion program) to work on the new TRS-90.

From another reliable source!!...we hear...NO! RADIO SHACK is not stopping production of the MODEL I...they are stopping production of the MODEL I...LEVEL I 4K machine only. It will be replaced by an elementary game type computer...similar to the ATARI. What you will get for $300 is a fancy keyboard. You can plug the keyboard into your present color television. You can plug joy sticks and other devices into the keyboard. The color computer will play plenty of games...but with the keyboard...you will be able to write your own games. The color computer will be equivalent to the TRS-80 MODEL-I with 4K...but will not be expandable. Users can learn to program since LEVEL-I BASIC (or something similar) will be in the ROM....It should be noted that MACY'S DEPARTMENT STORE has recently placed full page ads advertising a new MATEL COMPUTER. The MATEL COMPUTER is just a game computer. It uses cartridges similar to the ATARI VIDEO GAME COMPUTER. They do say that a keyboard will be available shortly.

AND FROM STILL ANOTHER SOURCE we hear the RADIO SHACK is stopping production of the TRS-80 in its present form. The new TRS-90 will replace the TRS-80. The TRS-90 will be an update version of the TRS-80...capable of being plugged into a color television...but completely compatible with all TRS-80 equipment.

AND FROM STILL ANOTHER SOURCE...Yes RADIO SHACK was going to cease production of the TRS-80 on June 1, 1980...but they haven't been able to get FCC approval on a color monitor. The color TRS-90 is shelved until approval can be obtained.

(2) NEW DISK DRIVES FROM RADIO SHACK...THIS IS FACT...NOT RUMOR. RADIO SHACK is now shipping 77 tracks with about 200K capacity. These drives are actually in the hands of many users. You can tell the new disk drives apart from the old ones by their weight. The new disk drives are much heavier. RADIO SHACK has not announced the new 77-track capacity and hasn't announced the appearance of new disk drives. The new drives are manufactured by TANDY CORPORATION. The new drives use the same cables and same 35-track operating system. At the present time...RADIO SHACK only supports the 35-track operating system. To use the new

disk drives as 40-track (about 110K) or 77-track (about 185K)...all you have to do is purchase a copy of a 40-track or 77-track operating system (yes...we sell it...we sell both the 40-track and 77-track of NEW DOS + ...available for $99.95). So...if you have one of the new disk drives...all you have to do is use the 77 TRACK NEW DOS + operating system...and you will have close to 200K of disk storage capacity.

There are some catches. You can mix the new RADIO SHACK disk drives with the older disk drives...but if you do mix the old drives with the new drives...you can only use the 35-track operating system. In order to use the 40-track or 77-track operating system...all the disk drives must be the newer models.

RADIO SHACK has not announced this extra storage capacity. First, RS itself does not have a 40 track or 77 track operating system available. Second...recent disk drive owners who just purchased the older drive would be a little annoyed that they didn't get the new drive. Third...in all probability...it will be a long time before RS admits that the drives have the additional capacity. They will probably state that although the capacity exists...they will not vouch for proven reliability.

(3) Early MODEL-II owners beware. If you have the expansion interface with 1, 2 or 3 disk drives...you may be having some unexplained errors. Some early units have a faulty controller card. RS knows about the problem and will replace the controller card at no charge.

(4) Early MODEL-II owners should get a copy of the new 1.2 DOS and manual from RADIO SHACK. Go down to your store of original purchase and demand the new DOS version and the new manual. As far as we know...RS has not made MODEL-II owners aware of the new manual or of the new operating system. If your local store hasn't contacted you...make sure that you contact them. The original operating system has some serious errors. The new operating system is much faster and has no serious errors.

(5) HARD DISK DRIVES will be available soom for the MODEL-II. The reason for the delay is RS's inability to find a large enough supply of the HARD DISKS.

(6) RS has come out with a STOCK PAC. This STOCK PAC has been exhibited by RS at their local exhibitions.

(7) RS now admits that it has sold more than 150,000 MODEL I computers. Also...more about 5,000 MODEL II computers have been sold.

(8) The new MODEL I LEVEL II ROM'S contain upper lower case drivers and serial printer drivers. There is no way to tell if you have the new ROM.

(9) The new RS WORD PROCESSING PRINTER is a DIABLO MECHANISM in a DATA POINT package. All DIABLO print wheels, ribbons and tractor mechanisms are compatible with the RS WORD PROCESSING PRINTER.

(10) RS...for the first time ever has hired a software specialist to do custom software. This new experiment will take place at a new RS COMPUTER CENTER in Paramus, New Jersey. If the experiment works...you may see it elsewhere.

Programs By
GORDON SPEER

ZIPPER

Have you ever wanted a program that could tell you how far apart two ZIP codes are on the map? Well if so, here it is, and if not, why don't you see if you can figure out how it works? To save space, only four states' data have been included. It will take about 350 lines to do all 50 states' data. In the interests of brevity, zip codes have been rounded to hundreds, so the mileages generated are subject to possible errors of about 40 miles or so.

```
100 '    ZIPPER
110 DEFINT I
120 DIM L(999)
130 CLS
140 '
        NEW CITY/SPRING VALLEY, NEW YORK
150 LET L(109)=411740
160 '
        ILLINOIS
170 FOR I=600 TO 629
180 READ L(I)
190 DATA425881,420881,420878,418880,416880,416880,418876,410878
200 DATA405877,403882,420895,421898,412904,412891,405904,404900
210 DATA405894,404887,400882,393882,390900,390900,384892,402911
220 DATA392880,394888,395900,396895,380885,372891
230 NEXT I
240 '
        MISSOURI
250 FOR I=630 TO 659
260 READ L(I)
270 DATA386903,385900,388905,393911,396915,401925,376903,378898
280 DATA366900,366902,393945,388946,388946,389946,403948,398950
290 DATA396931,383943,371945,372945,383925,390923,390922,386931
300 DATA379921,371933,370936,371923,373928,375930
310 NEXT I
320 '
        KANSAS
330 FOR I=660 TO 679
340 READ L(I)
350 DATA395951,391947,389947,390944,390965,391967,390957,377955
360 DATA383961,395977,370970,380973,377971,371955,383977,381980
370 DATA389993,393010,377000,370010
380 NEXT I
390 '
        NEBRASKA
400 FOR I=680 TO 693
410 READ L(I)
```

```
420 DATA415965,413960,413960,403969,407959,409967,415973,420975
430 DATA410983,407985,401007,410007,429005,419037
440 NEXT I
450 '
        INPUT
460 CLS:PRINT CHR$(23)
470 LET I=1
480 INPUT"YOUR ZIPCODE";Z(I)
490 IF L(Z(I)/100)=0 THEN 480
500 GOSUB 670
510 LET I=2
520 INPUT"DESTINATION ZIPCODE";Z(I)
530 IF L(Z(I)/100)=0 THEN 520
540 GOSUB 670
550 '
        CALCULATE DISTANCE
560 LET H=ABS(LO(1)-LO(2))      'HORIZ DISPL IN /10 DEG
570 LET AL=(LA(1)+LA(2))/20     'AVERAGE LATITUDE
580 LET H=H*COS(AL/57.3)        'CORRECTS FOR TAPER TOWARD POLE
590 LET V=ABS(LA(1)-LA(2))      'VERT DISPL IN /10 DEG
600 LET D=FIX(SQR(V*V+H*H))     'DISTANCE - PYTHAGOREAN THEOREM
610 LET D=D*6                   'NAUTICAL MILES
620 LET D=D*1.15                'STATUTE MILES
630 PRINT"DISTANCE ="INT(D+.5)"MI"
640 PRINT
650 PRINT
660 GOTO 520
670 '
        SUBROUTINE
680 LET Z(I)=INT(Z(I)/100)      'TRUNCATES ZIP TO 3 DIGITS
690 LET LA(I)=INT(L(Z(I))/1000)         'LATITUDE X10
700 LET LO(I)=L(Z(I))-1000*LA(I)        'LONGITUDE X10
710 IF ABS(LA(I)-370)>130 THEN 730      'ALASKA AND HAWAII
720 IF LO(I)>600 THEN 740       'EASTERN STATES
730 LET LO(I)=LO(I)+1000        'WESTERN STATES ARE OVER 100 DEG
740 RETURN
750 '
        NOTES
760 'DATA ARE FORMATTED AS FOLLOWS
770 '     POPLAR BLUFF, MO 63901
780 '         36.6 DEG NORTH LATITUDE, 90.2 DEG WEST LONGITUDE
790 '                 L(639)=366902
800 '
810 'AN ORIGINAL PROGRAM USING
820 'LEVEL-II BASIC FOR TRS-80
830 'BY: MR GORDON E. SPEER
840 '    3304 WOODLAWN ROAD
850 '    STERLING, IL 61081
860 '    PHONE(815)625-5251
```

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CENSUS

The census bureau in Washington D.C. has a population clock that gives the estimated population of the United States, based on the last census, and the average birth and death rates. When P.T. Barnum said, "There's a sucker born every minute" he was being very conservative. This clock turns faster than that, as you will see.

```
100 '    CENSUS
110 DEFDBL P 'DOUBLE PRECISION
120 CLS
130 PRINT CHR$(23)
140 INPUT"YEAR (1900-2000)";Y
150 IF Y<1900 THEN 140
160 INPUT"MONTH (1-12)";M
170 IF M>12 THEN 160
180 INPUT"DAY (1-31)";D
190 IF D>31 THEN 180
200 'THE POPULATION INCREASES ABOUT 10X IN 150 YEARS
210 'IN 1969 THE POPULATION REACHED 200 MILLION
220 'T IS THE NUMBER OF 150 YEAR INTERVALS FROM 1969
230 LET T=((Y+M/12+D/365)-1969)/150
240 LET P=2*10[(8+T)  'POPULATION
250 LET P=INT(P)
260 CLS
270 PRINT CHR$(23)
280 PRINT"      DATE:"M"/"D"/"Y
290 PRINT@256, STRING$(32,"=")
300 PRINT@320," THE UNITED STATES' POPULATION:
310 PRINT@384, STRING$(32,"=")
320 PRINT@458,P-38874;"(A WEEK AGO)"
330 PRINT@522,P-5553;"(YESTERDAY)"
340 PRINT@586,P-231;"(AN HOUR AGO)"
350 PRINT@650,P-4;"(A MINUTE AGO)"
360 PRINT@714,P;"(NOW)
370 FOR Y=1 TO 5000: NEXT Y 'TIME DELAY
380 LET P=P+1
390 GOTO 320
400 '
410 'AN ORIGINAL PROGRAM USING
420 'LEVEL-II BASIC FOR TRS-80
430 'BY: MR GORDON E. SPEER
440 '    3304 WOODLAWN ROAD
450 '    STERLING, IL 61081
460 '    PHONE(815)625-5251
```

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CARPET

One of the best business uses of the TRS-80 is in the generation of pricing and discount charts. Even without a printer you can easily make screen charts and roll them to the correct price range for reference. Here is a good example.

```
100 CLS
110 FOR R=9.95 TO 29.95 STEP 5       'CARPET RATES PER YARD
120 PRINT                            'BLANK LINE
130 PRINT"        CARPET PRICING CHART @ $"R"PER SQUARE YARD"
140 PRINT
150 PRINT,"9' WIDE","12' WIDE","15' WIDE"
160 PRINT"LENGTH"
170 FOR L=9 TO 30 STEP 3             'LENGTH OF CARPET
180 PRINT L,
190 FOR W=9 TO 15 STEP 3             'WIDTH OF CARPET
200 LET A=L*W/9                      'AREA IN SQUARE YARDS
210 LET P=A*R                        'PRICE
220 PRINT USING"####.##";P;
230 PRINT,                           'GO TO NEXT COLUMN (ZONE)
240 NEXT W
250 NEXT L
260 PRINT
270 INPUT"                <ENTER> FOR NEXT CHART";Q$
280 CLS
290 NEXT R
300 '
310 'AN ORIGINAL PROGRAM USING
320 'LEVEL-ii BASIC FOR TRS-80
330 'BY: MR GORDON E. SPEER
340 '    3304 WOODLAWN ROAD
350 '    STERLING, IL 61081
360 '    PHONE(815)625-5251
```

RADIATOR

If you don't remember your high school chemistry, you won't understand how this works. It is based on the principle that each mole of non-electrolyte dissolved in a liter of water lowers its freezing point by 1.86 CELSIUS degrees. The charge this program produces is like the one that is printed on the back of the permanent anti-freeze container, only this one is done strictly from the chemical theory. You might like to check it against the one on the container to see if they agree.

```
100 '    RADIATOR
110 '    CALCULATES FP OF PERMANENT ANTIFREEZE MIXTURES
115 CLS
120 PRINT,"      QUARTS OF ETHYLENE GLYCOL"
130 PRINT" QUARTS       2       4       6       8       10      12"
140 PRINT"OF WATER            < FREEZING POINT - DEGREES F >"
150 FOR W = 4 TO 16          'QUARTS OF WATER
160 PRINT"  "W;
170 FOR G = 2 TO 12 STEP 2   'QUARTS OF GLYCOL
180 LET VW=.946 * W          'LITERS OF WATER
190 LET VG=.946 * G          'LITERS OF GLYCOL
200 LET MG=VG * 1109         'GRAMS OF GLYCOL
210 LET MO=MG / 62.07        'MOLES OF GLYCOL
220 LET FC=MO / VW * -1.86   'FREEZING POINT, CELSIUS
230 LET FF=FC * 9/5 + 32     'FREEZING POINT, FAHRENHEIT
240 PRINT TAB(G*4+5)INT(FF);
250 NEXT G
260 IF W=16 THEN 260         'FREEZE THE DISPLAY (!)
270 PRINT                    'LINE FEED
280 NEXT W
290 '
300 'AN ORIGINAL PROGRAM USING
310 'LEVEL-II BASIC FOR TRS-80
320 'BY: MR GORDON E. SPEER
330 '    3304 WOODLAWN ROAD
340 '    STERLING, IL 61081
350 '    PHONE(815)625-5251
```

TOSSER AND DICE

These two programs are very similar, and yet you might like to use both of them. TOSSER draws two randomly thrown dice at random locations on the monitor. DICE draws any number of dice from 1 to 6, and puts them in the same location on the screen each time. These programs were intended to be used by parents whose children play MONOPOLY or YATZEE, and tend to rattle the dice when the folks would like a little silence. To roll the dice in TOSSER, touch any key on the keyboard (except the BREAK key); for DICE, only the keys 1 to 6 will roll the dice.

```
100 'TOSSER - TOUCH ANY KEY TO THROW TWO DICE
110 CLS              'CLEAR SCREEN
120 PRINT CHR$(23)   'WIDE LETTERS
130 FOR D=1 TO 2     'TWO DICE
140 LET T=RND(6)     'TOSS VALUE
150 L=RND(12)*64+RND(40) 'LOCATION
160 IF L/4<>FIX(L/4) THEN 150
```

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```
170 IF ABS(L-S)<300 THEN 150
180 LET S=L          'SAVES LOCATION
190 H=128*(L/64-FIX(L/64))-4
200 V=3*FIX(L/64)-2 'DRAW THE OUTLINE
210 FOR X=H TO H+25
220 SET(X,V):SET(X,V+11)
230 NEXT X
240 FOR Y=V TO V+11
250 SET(H,Y):SET(H+25,Y)
260 NEXT Y
270 LET B$(1)="  O  "  'SPOT THE SPOTS
280 LET A$(2)="o    "
290 LET C$(2)="    O"
300 LET A$(3)="    o"
310 LET B$(3)="  O  "
320 LET C$(3)="O    "
330 LET A$(4)="O   O"
340 LET C$(4)="O   O"
350 LET A$(5)="O   O"
360 LET B$(5)="  O  "
370 LET C$(5)="O   O"
380 LET A$(6)="O   O"
390 LET B$(6)="O   O"
400 LET C$(6)="O   O"
410 PRINT@L,A$(T);
420 PRINT@L+64,B$(T);
430 PRINT@L+128,C$(T);
440 NEXT D
450 Q$=INKEY$  'ANY KEY TOSSES THEM
460 IF Q$="" THEN 450
470 RUN
480 '
490 ' AN ORIGINAL PROGRAM USING
500 ' LEVEL-II BASIC FOR TRS-80
510 ' BY: MR GORDON E. SPEER
520 '     3304 WOODLAWN ROAD
530 '     STERLING, IL 61081
540 '     PHONE(815)625-5251
```

```
100 CLS
110 PRINT CHR$(23)
120 PRINT"DICE TOSSER"
130 PRINT
140 PRINT"NUMBER OF DICE TO TOSS  (1 TO 6)"
150 CLEAR 1000       'RESET VARIABLES
160 LET Q$=INKEY$    'STROBE KEYBOARD
170 IF ABS(VAL(Q$)-3.5)<3 THEN 190
```

```
180 GOTO 160          'NOT BETWEEN 1 & 6
190 LET N=VAL(Q$)     'NUMBER OF DICE
200 CLS               'CLEAR SCREEN
210 PRINT CHR$(23)    'WIDE LETTERS
220 FOR D=1 TO N      'COUNTS THE DICE
230 LET T=RND(6)      'TOSS VALUE
240 IF D>3 THEN 270 'GOES IN BOTTOM ROW
250 LET L=194+24*(D-1) 'LOCATION OF DIE
260 GOTO 280
270 LET L=642+24*(D-4)
280 H=128*(L/64-FIX(L/64))-4
290 V=3*FIX(L/64)-2 'DRAW THE OUTLINE
300 FOR X=H TO H+25
310 SET(X,V):SET(X,V+11)
320 NEXT X
330 FOR Y=V TO V+11
340 SET(H,Y):SET(H+25,Y)
350 NEXT Y
360 LET B$(1)="  O  "  'SPOT THE SPOTS
370 LET A$(2)="o    "
380 LET C$(2)="    O"
390 LET A$(3)="    o"
400 LET B$(3)="  O  "
410 LET C$(3)="O    "
420 LET A$(4)="O   O"
430 LET C$(4)="O   O"
440 LET A$(5)="O   O"
450 LET B$(5)="  O  "
460 LET C$(5)="O   O"
470 LET A$(6)="O   O"
480 LET B$(6)="O   O"
490 LET C$(6)="O   O"
500 PRINT@L,A$(T);
510 PRINT@L+64,B$(T);
520 PRINT@L+128,C$(T);
530 NEXT D
540 GOTO 150
550 '
560 ' AN ORIGINAL PROGRAM USING
570 ' LEVEL-II BASIC FOR TRS-80
580 ' BY: MR GORDON E. SPEER
590 '     3304 WOODLAWN ROAD
600 '     STERLING, IL 61081
610 '     PHONE(815)625-5251
```

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RANDOM

After watching random numbers from RND function, I decided to set up a counter to keep track of how many times each number came up. It turned out to be so interesting to watch, I decided you might like to try it too. It generates the numbers from 1 to 52 (playing cards) and keeps a running count of how many times each one has come up.

PRESS 'S' to stop the counting, 'G' to go on without resetting and 'R' to reset all the numbers back to zero.

```
100 '    RANDOM
110 CLS
120 DEFINT A-Z
130 DIM C(52)
140 PRINT,"RANDOM NUMBER COUNTER & DISPLAY"
150 LET R=RND(52)
160 LET C(R)=C(R)+1
170 LET H=FIX((R-1)/13)   'HORIZONTAL POSITION (COLUMN 0-3)
180 LET V=R-13*H          'VERTICAL POSITION (ROW 1-13)
190 PRINT@64+64*V+18*H,USING"##";R;
200 PRINT USING"#####";C(R);
210 LET Q$=INKEY$
220 IF Q$="S" THEN LET S=1
230 IF Q$="G" THEN LET S=0
240 IF Q$="R" THEN RUN
250 IF S=1 THEN 210
260 GOTO 150
270 '
280 'AN ORIGINAL PROGRAM USING
290 'LEVEL-II BASIC FOR TRS-80
300 'BY: MR GORDON E. SPEER
310 '    3304 WOODLAWN ROAD
320 '    STERLING, IL 61081
330 '    PHONE(815)625-5251
```

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TEXT: A (NEW) BASIC TEXT EDITOR

by

HUBERT S. HOWE, JR.

Background

Readers of the TRS-80 MONTHLY NEWS MAGAZINE know that when they subscribe to the magazine they receive a free cassette with several useful programs on it. One of the most important of these programs is the Word Processor, which was originally written and described in the April 1979 issue.

Since its original publication, we have received numerous suggestions about the program. Many people have enjoyed learning more about programming by modifying this program to handle some aspects of it differently. Recently, we received one of the most extensive revisions of the program ever from Mr. Larry C. Martin of 8030 E. Ft. Lowell, Tucson, Arizona 85715. His version had so many good features in it that we decided to republish the program so that all readers could benefit from his work.

The present republication of the program is a combination of Mr. Martin's work and my own. It is as close to the earlier version of the program as possible, so that readers who are accustomed to using it will not have to learn an entirely new system. The differences between the two versions are summarized in a special section below. We are herewith publishing a revised "user's manual" for the program so that readers do not have to look up the instructions in two separate issues.

One more comment about comments and suggestions from readers: we are always happy to receive comments or complaints about the program, particularly if you find that things are not working properly -- but don't call us and complain that some other word processor like the Electric Pencil is better! The Electric Pencil costs you a minimum of $100 ($150 for the disk version). This program is FREE. It is slow and in some ways cumbersome to use because it is written entirely in Basic, but part of the reason for this is that, as with all programs which are published in this magazine, we think you will learn some useful programming tips by studying how it works.

Introduction

TEXT is a Level II Basic text editor that enables you to create files that represent documents to be printed at your TRS-80. Its main features are:

(1) It is line-oriented. This means that every line of text has a line number associated with it, whether or not the line number is printed. Line numbers are convenient references to the text. Lines can be moved, replaced, rearranged, etc.

(2) It allows entry of upper or lower case letters from your keyboard without modifications to the TRS-80. Lower case letters can be printed properly if you have a line printer with the lower case character set. Otherwise, everything is printed in upper case.

(3) Text files can be saved and loaded either on cassette tape or disk.

(4) Lines can be edited in a manner very similar to Level II Basic.

(5) Lines can be automatically right justified.

(6) There are provisions for adjustable line lengths, page lengths, line spacing, page numbering, a left margin, and a special title to be printed at the top of each page.

(7) The program itself is written entirely in Level II Basic so that you can study it to learn how it works and possibly modify it if you want to.

Loading and Modifying the Program

The program is provided on a standard Level II cassette tape. It is loaded by CLOAD "T" (or simply CLOAD). (In Disk Basic you must type CMD"T" first.)

The standard version is written to fit into a 16K Level II TRS-80 computer. It has provisions for 100 lines of text, which is sufficient for much business correspondence or short documents. It you have 32K or 48K, you will probably want to expand it to fill your larger memory. This is accomplished by changing line 40, near the beginning of the program. It currently reads:

```
40 CLEAR 3000: NL=100
```

With 32K, you can expand to 200 lines, and with 48K to 400 lines. For 32K, change line 40 to:

```
40 CLEAR 9000: NL=200
```

and for 48K change it to:

```
40 CLEAR 24000: NL=400
```

Disk Basic users who want to save or load text files on cassette tapes must modify the program so that interrupts are disabled during the cassette operations. The following lines should be changed to read as follows:

```
2070 CMD"T": INPUT#-1,LA,LM,SP,PN,PG,PL,LL,T
2110 NEXT L: CMD"R": GOSUB 4050: GOTO 220
2290 CMD"T": PRINT#-1,LA,LM,SP,PN,PG,PL,LL,LEN(T$)
2330 NEXT L: CMD"R": GOSUB 4200: GOTO 220
```

Running the Program

There are basically two modes of operation in TEXT: the FILL mode and the COMMAND mode. FILL is used when you are entering text into the computer, and COMMAND at other times. When in FILL, you can return to COMMAND only by typing "shift-@" twice in succession. (That is, hold down the shift key while typing "@".)

When in COMMAND mode, the program prints "COMMAND?" and awaits your reply. The replies, either a single letter or character or an entire word, are all discussed in detail below. The program executes the command, which may require additional input from you, and returns for another one.

HELP (H)

The "H" command ("HELP") is provided in case you forget any of the commands. It prints the complete list of commands and their associated words in order to remind you of their functions. The list of commands are as follows:

F	FILL	Add text to the buffer.
P	PRINT	Print text (on video display or line printer)
H	HELP	HELP! Print list of commands.
R	REPLACE	Replace range of lines with new text.
I	INSERT	Insert new text starting at empty line.
D	DELETE	Delete text lines.
M	MOVE	Move text lines.
N	NUMBER	(Re)number lines, eliminating blanks.
E	EDIT	Edit line.
L	LOAD	Load text file from cassette or disk.
S	SAVE	Save text file on cassette or disk.
K	KILL	Kill disk file.
J	JUSTIFY	Right justify text lines.
B	BROWSE	Browse through text using up and down arrows.
V	SET	Set variables governing print options.
	CLEAR	Clear buffer (erase all text).
*	KEYBOARD REVERSE	Convert to lower case.

FILL (F)

"F" enters the FILL mode, which you use to enter text into the computer. At the beginning, cursor positions are indicated across the top of the screen, and asterisks are printed down the right-hand column to mark the right margin of text. In this manner you will always know where the text you are typing will fit on the page.

The line number of the line currently to be typed in is displayed at the left, and then the cursor flashes on and off over the current position in the line where you are entering text. If you are starting at the beginning, FILL begins at the first space in line 1. If there is already some text in the buffer, it starts after the last space filled, and any preceding lines are printed on the video display. The "cursor" used throughout the program is not the same cursor used in Basic, but a graphics block that covers the entire space filled in by the letter.

If you are typing in a word which goes off the end of a line (by exceeding the line length, which is set to 60 by default or by the "V" command), the program automatically removes the word from the preceding line and places it at the beginning of the next line so that the word will not be split. Later, the lines can be right justified by the "J" command.

During the FILL mode, the following keys have special functions:

LEFT ARROW	backspace
RIGHT ARROW	TAB five spaces to the right
DOWN ARROW	form feed (page eject) on line printer (Note: this command does not work properly with all line printers.)
ENTER	move to next line (no character inserted)
SHIFT LEFT ARROW	backspace entire line
SHIFT RIGHT ARROW	fill to end of line with spaces (so that justify will not change line)
SHIFT-@ (twice)	return to COMMAND mode

The following points should be noted about the use of these special keys:

The RIGHT ARROW (TAB) key actually inserts five blank spaces into the line.

The DOWN ARROW key will cause a page eject on the line printer (if your line printer has software that responds to the form feed character), but does not affect the printing of the page number and title.

When ENTER/ is typed, it does not insert a character into the line. If it is typed at the beginning of a line, the line remains empty, but FILL proceeds to the next line.

If you type SHIFT LEFT ARROW when the cursor is at the bottom of the screen, it appears to scroll to the next line but actually continues to fill the same line.

The FILL mode it entered by both REPLACE and INSERT as well as FILL. The difference is that REPLACE and INSERT can insert lines of text anywhere a line number exists, and they will stop as soon as existing text is reached. FILL always adds text to the end of the file.

PRINT (P)

PRINT is used to print the text in the buffer, optionally on the line printer of video display. When the PRINT command is issued, the program asks two questions:

```
PRINT LINE NUMBERS (Y/N)?
LINE PRINTER OR VIDEO DISPLAY (P/V)?
```

You must reply "Y" for line numbers to be printed and "P" for the printer to be selected. When you select the line printer, the program pauses and prints:

```
READY PRINTER
(TYPE V TO PRINT ON VIDEO DISPLAY)?
```

At this moment you should ready the line printer, but if you want to change your request to print on the video display you type "V", and in either case type the ENTER key when ready. If you use the line printer without first readying it the program will "freeze up" causing you to lose all the text in the buffer.

The printing on the video display is identical to that on the line printer, except that only upper case letters are displayed. The video display can show no more than 64 characters across and 16 lines down. Lines longer than 64

characters (including the line number and left margin) are continued on the next line, and only a portion of the 50 lines of text that can appear on a page can be displayed. Therefore it is often useful to PAUSE during the printing process by typing "shift-@". (This is a normal feature of Level II Basic.) The program pauses and asks you to press ENTER at the end of each page of a multi-page printing.

The TITLE and PAGE NUMBER are optionally printed at the top of each page. These options are controlled by the "V" (SET) command. Titles are printed only if page numbering is ON.

If your TRS-80 is unmodified, holding down the SHIFT key while typing a letter produces a LOWER case letter; otherwise the letter is upper case. This is the reverse of a normal typewriter. Even though only upper case letters are displayed, upper and lower case letters are distinct and will be printed properly on a line printer that has both upper and lower case letters. This method can be used to produce upper and lower case letters, but it is easiest to use the "*" KEYBOARD REVERSE option before printing, which reverses upper and lower case letters in the text. In this way you can type the text into the program in the normal manner.

CLEAR

CLEAR erases everything in the buffer. In addition, it restores all SET variables to their default values. Because its effect is so drastic, you must type out the entire word rather than just the first letter.

It is not necessary to perform a CLEAR at the beginning of a run. It is only necessary if you want to clear everything out and start over. LOADing a text file from cassette tape or disk also clears everything in the buffer and fills it with material read in.

INSERT (I)

INSERT is used to FILL in new lines starting at any legal line number, provided that no text currently occupies the starting line. INSERT operates exactly like FILL except that it automatically terminates when you come to a line already occupied with text.

REPLACE (R)

REPLACE is used to FILL in new lines starting from any legal line number, provided that text DOES exist at the starting line. The text at the starting line is replaced entirely. Following that line, REPLACE operates exactly like INSERT and continues to FILL in new lines until you come to a line already occupied with text, at which point you are returned to the COMMAND mode.

DELETE (D)

DELETE is used to delete a range of lines from the text. Deleted lines are empty, but the line marker used by FILL continues to point to the spot where it

did before the DELETE. Therefore, to insert new test into the deleted lines, INSERT should be used rather than FILL.

MOVE (M)

MOVE is used to move a block of lines from one position in the buffer to another. The only limitation is that the position where the text is moved must consist of empty lines. If a new line is ever found that contains text, the MOVE is terminated and only the lines moved prior to the error are moved. The lins from which the text is moved are replaced with empty spaces.

When a move begins, the program asks:

```
FIRST LINE TO MOVE?
LAST LINE TO MOVE?
FIRST NEW LINE?
```

If your replies to these questions are 1, 4, and 6, then line 1 would be moved to line 6, line 2 to line 7, line 3 to line 8, and line 4 to line 9. Lines 1-4 would become empty lines. If, in performing the move, the computer found that line 7 already had text in it, it would print:

```
LINE 7 ALREADY OCCUPIED
```

and stop the move. However, line 1 would have been moved to line 6.

If you want to insert one or more blank lines into existing text, first MOVE the lines following where you want the blank line to be inserted down to a free area in the buffer, and then MOVE them back to one or more lines following their original position.

MOVE can also be used to rearrange the text lines, in order to change the order of paragraphs or for other reasons.

NUMBER (N)

NUMBER is used to delete all empty lines and close up the text. In addition, the lines are renumbered starting from 1 and the line marker is moved to the first empty line.

BLANK lines (lines containing only spaces) are different from EMPTY lines (lines containing nothing at all). Only EMPTY lines are eliminated by NUMBER. Therefore, blank lines can still be kept in a text.

SAVE (S)

SAVE writes the text file, including the TITLE, all SET variables, and the complete text, on cassette tape or disk. When you type SAVE, the computer first asks:

```
TAPE OR DISK (T/D)?
```

If you are using cassette tape, the computer prints READY CASSETTE and waits for you to ready the tape before continuing. If you are using disk, the computer asks FILESPEC? and waits for you to give the complete file specification. If you specify a drive number (such as ":1") the entire file specification must be enclosed in double quotation marks.

If you want to abort the SAVE command at this point, type BREAK and GOTO 220. (If you abort it after this time, the file will be translated.)

Because of the way that Level II Basic handles string variables, commas, colons, blank spaces and double quotation marks must be translated into special graphics characters so that the text can be restored to its precise form when read. Unfortunately, this translation process takes a significant amount of computer time -- possibly several minutes. You are always informed of where the program is in the translation process; the message

TRANSLATING LINE 1 OF 45

(where 45 is the total number of lines in the file) is printed and continuously updated.

After the file has been saved on tape or disk, the program then asks if you want to continue with the same file. If so, the text must be untranslated, just as if it were loaded. This process takes the same amount of time.

Text files are stored in the same way whether on tape or disk. When files are saved on tape, you are continually informed of the line currently being written.

LOAD (L)

LOAD reads a previously-saved text file from cassette tape or disk. LOADing the file restores everything to the condition it was in when the file was saved: all SET variables, the TITLE, and all text lines are retrieved. Any text previously in the buffer when LOAD is executed is lost.

After a file is read, the special characters must be untranslated (see SAVE above). You are informed of the line currently being worked on.

In other respects the operation of LOAD is similar to SAVE.

KILL (K)

KILL is used to kill disk files. The program asks for the file specification, and then kills the file if present. KILL may be used to "clean up" diskettes in order to have sufficient room to save text files.

SET (V)

SET (abbreviated "V") is used to set internal variables that control the printing process. These are line length, page length, left margin, spacing of text, page numbering, starting page number, and TITLE. When you type "V", the program asks a series of questions about each of these variables. If you do not

want to change the present value, simply hit ENTER without typing a new value. Only new values are inserted. The variables are as follows:

LINE LENGTH (DEFAULT=60)? This indicates the number of characters in a line. It can be any value up to the maximum print length for your printer (but not greater than 255). It controls the manner in which words are separated during FILL, and is used to set the right margin by JUSTIFY.

PAGE LENGTH (DEFAULT=50)? This indicates the number of lines on a page. During printing, the program waits for you to press ENTER following the completion of each page.

LEFT MARGIN (DEFAULT=0)? This indicates a number of blank spaces to be printed at the left before each line, and can be used to indent the text on the paper. All text is printed with this margin; additional indentation can be inserted as blanks in the text itself.

LINE SPACING (1=SINGLE, 2=DOUBLE, DEFAULT=1)? This controls the spacing between lines during printing. 1 is for single spacing, 2 for double, and any number that you input here is used as the number of spaces between lines.

PAGE NUMBERING (1=YES, 0=NO, DEFAULT=NO)? This variable controls the printing of both the TITLE and the page numbering. If you respond with zero, nothing is printed at the top of the page, but if you reply with 1, then both the TITLE (if present) and the page number are printed at the head of each page. This line is not counted as a line of text.

STARTING PAGE NUMBER (DEFAULT=1)? This indicates the number of the first page of text. If you have long documents prepared as several text files, they can still be combined into one final document by setting the starting page number to the right value. Page numbers are printed so that they are right justified over the right margin of the text.

TITLE (DEFAULT IS NONE)? The TITLE is a line of text that is printed left-justified at the top of each page of text, followed by the page number. It is printed only if PAGE NUMBERING is ON. The TITLE can appear to be centered if it begins with blank spaces. The same title is printed at the top of each page. The TITLE must not contain any punctuation.

EDIT (E)

EDIT is one of the most powerful commands in the text editor. It is used to edit a single line in a manner very similar to Level II Basic editing. When you type "E", the program asks you the line number you want to edit. If the line contains text, it is printed on the video display with the cursor flashing over the first character. (If there is no text, an error message is produced.) What you type at the keyboard determines how the line is edited. The following commands are recognized:

SPACE	Advances the cursor to the next character in the line unless you are at the end. Holding down the space bar moves the cursor continuously to the right.
ENTER	Terminates editing.

LEFT ARROW — Backspace, unless you are at the first character. Holding down the left arrow key moves the cursor continuously to the left.

I — Insert characters. Following the "I", any characters that you type are inserted BEFORE the current cursor position. You can exit from I either by typing ENTER, which terminates editing, or SHIFT UP ARROW, which allows you to continue editing the line. Inserting is terminated at the end of the line.

D — Delete character. Only ONE character can be deleted at a time. All characters following that deleted are moved left one space.

H — Hack and Insert. All text following the current cursor position is deleted, and whatever you type is added to the line. Note that the cursor does not flash in this mode, indicating that there is no text in the line at the position where text is being added. It is impossible to add text past the end of the line length. It is also impossible to exit from "H" or "X" by typing SHIFT UP ARROW, as during "I".

X — End of line and insert. The cursor is moved to the first position following the last character in the line. Thereafter the operation is identical to H.

C — Change character. Only ONE character is changed, to whatever character is typed after the "C".

S — Search character. The character following the "S" is searched for in the line. If it is found, the cursor is moved to that position; otherwise, it is not moved.

During the EDIT process, upper and lower case letters are kept distinct, although everything is printed as upper case on the screen.

JUSTIFY (J)

JUSTIFY is used to right justify text lines. At first you are asked the range of lines you want justified. During the operation of JUSTIFY you are informed of the line number currently being worked on.

JUSTIFY inserts additional spaces into the middle of a line, only where blank spaces already exist, to make the right margin vertically aligned. If a line contains no spaces at all, it will not be justified. It will also not be justified if it ends in a period, question mark, exclamation point, or right parenthesis.

Lines that contain only a few words, requiring many spaces to be justified, may require that JUSTIFY be executed more than once. If a line ends with a blank space, it may appear not to be justified even though the program would consider it to be. When you end a line with SHIFT RIGHT ARROW, spaces are automatically inserted out to the end of a line. This is used when you want text such as titles to be centered on the page, or not to be justified for any other reason.

JUSTIFY pysically changes the text in the buffer, so that it is then stored with the internal spaces.

* KEYBOARD REVERSE

KEYBOARD REVERSE ("*") is used to reverse upper and lower case letters typed in at the keyboard. Since the TRS-80's SHIFT key produces lower case rather than upper case letters, this command is used to make the program work like a typewriter.

KEYBOARD REVERSE first asks you the range of lines you want reversed, and then informs you of the line it is working on as the operation proceeds. The first letter of each sentence is automatically capitalized. Once you have REVERSED a passage of text, you can reverse it back if you desire.

BROWSE (B)

BROWSE is used to scroll through the text in order to locate specific lines. After typing "B", the program asks you to type the DOWN ARROW key to begin the process. A new line is added to the text each time you type DOWN ARROW, and if you are at the end of the screen typing the UP ARROW causes the text to scroll up the screen. UP ARROW is not effective past the first line of text. BROWSE is terminated by typing ENTER, and it does not change the text in any way.

REVISIONS (OF PREVIOUS VERSION)

Readers who have been using TEXT since the April 1979 issue will notice many revisions in the present version, although the same overall form of the program has been retained. New commands include the "*" KEYBOARD REVERSE, KILL, and BROWSE. CLEAR must now be typed in full, and "V" is used as the abbreviation for SET. The operation of FILL has been improved in many ways, most obviously by the printing of cursor positions across the top of the screen and asterisks to mark the end of the line on the right. The Left Margin variable has been added. In addition, you are always informed of the line number being operated upon by any command that might take a significant amount of time. Many other changes, too numerous to describe, have been included.

PROBLEMS

As before, there are many problems that must be taken into account when using TEXT. Most of these are a direct consequence of the fact that the program is in Basic.

The speed at which you can type characters into the program is not always fast enough, and some letters that you type may not be inserted into the text. This is because of the time that it takes Basic to process each letter, particularly at the end of a line. (The program runs much more easily on the TRS-80 Model II because of its increased clock speed.)

Sometimes the entire computer will "freeze up" momentarily, particularly when you are close to the end of the buffer. This is because Basic must sometimes

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reallocate string space while the job is running. If this is the case, the cursor will not flash, and the computer will not even respond to an attempt to interrupt the program by typing BREAK.

Another Basic problem is the necessity for translating special characters before executing a SAVE or after a LOAD. This process takes time, but unfortunately other methods do not save the text properly.

Finally, if you ever want to interrupt the program and continue it without destroying any text in the buffer, type BREAK and GOTO 220.

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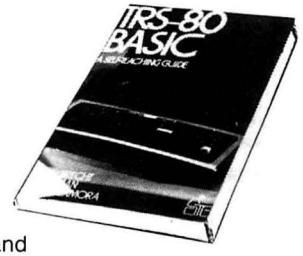

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```
10 CLS:PRINT@464,"SUPER BASIC TEXT EDITOR"
20 REM COPYRIGHT <C> BY HUBERT S. HOWE, JR.
30 DEFINT A-Z
40 CLEAR 24000:NL=400
50 DIM A$(NL)
60 C=0:S=1:L=0:LA=0:LM=0:SP=1:PN=0:PG=1:PL=50:LL=60:T$="":KK=64
70 Q$=CHR$(34):LF$=CHR$(10)
80 B$=" ":BB$="  ":CC$=CHR$(143):BR$=CHR$(96):FF$=CHR$(12)
90 A$=INKEY$:IFA$=""THEN90ELSECLS
100 PRINT@448,"DO YOU NEED HELP IN USING THIS PROGRAM (Y/N)";
110 INPUTY$
120 IFY$="Y"THEN1690
220 PRINT:INPUT"COMMAND";C$
230 ON ERROR GOTO 0
260 HH=0
270 IFC$="F"THENL=LA:GOTO530
280 IFC$<>"K"THEN370
290 ONERRORGOTO2170:REM KILL
300 INPUT"FILESPEC";F$
310 PRINT"PLEASE CONFIRM YOU WANT TO KILL--";Q$;F$;
320 PRINTQ$;"--BY ENTERING 'YES'";:INPUTG$
330 IFG$<>"YES"THEN220
340 PRINT"PLEASE STAND BY":KILL F$
350 PRINTQ$;F$;Q$;"--HAS BEEN KILLED!!!!"
360 FORUU=1TO200:NEXTUU:GOTO40
370 IFC$="CLEAR"THEN10
380 IFC$="D"THEN1440
390 IFC$="R"THEN1490
400 IFC$="I"THEN1520
410 IFC$="P"THEN1120
420 IFC$="N"THEN1550
430 IFC$="M"THEN1600
440 IFC$="H"THEN1690
450 IFC$="V"THEN1770
460 IFC$="E"THEN1880
470 IFC$="L"THEN2060
480 IFC$="S"THEN2280
490 IFC$="J"THEN3110
500 IFC$="B"THEN3410
510 IFC$="*"THEN3640
520 GOTO220
530 CLS:IFL<1THEN610:REM FILL
540 IFLL>60THENKK=128ELSEKK=64
550 FORJ=0TOL-1:C=J*KK:IFC>958THENPRINT@960,B$:C=896
560 IFJ>0PRINT@C,J;
570 IFLEN(A$(J))<1THEN600
580 IFJ>0THENPRINTTAB(4);A$(J);
590 IFJ<L-1THENPRINT
600 NEXTJ
```

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```
610 GOSUB930:IFL>0THENPRINT@C,L;TAB(4);:C=C+4
620 IFLEN(A$(L))>0THENS=LEN(A$(L))+1:PRINT@C,A$(L);:C=C+S-1
630 IFLL>60THENKK=128ELSEKK=64
640 FORK=1TO896/KK
650 PRINT@LL+3+(K*KK),"*";
660 NEXTK
670 PRINT@0,"    1        10        20        30        40";
680 PRINT"        50        60";
690 IFHH=1GOTO710
700 IFL=0THENA$(L)=A$(L)+LF$:A$=B$:GOTO980
710 PRINT@C,CC$;:A$=INKEY$:IFA$=""THENPRINT@C,B$;:GOTO710
720 A=ASC(A$):IFA>31ANDA<96GOTO800
730 IFA=13THENA$=B$:GOTO980
740 IFA=8THEN990
750 IFA=9THEN1060
760 IFA=24THEN1030
770 IFA=10THEN970
780 IFA$=BR$THENPRINT:GOTO220
790 IFA=25THEN1090
800 PRINT@C,A$;:A$(L)=A$(L)+A$:S=S+1:C=C+1
810 IFS<INT(LL+1-HH)THEN710
820 IFHH=1THENHH=0:PRINT:GOTO3030
830 S=1:L=L+1
840 IFL>NLTHENL=NL:PRINT"BUFFER FULL":GOTO220
850 IFLEN(A$(L))<>0THENPRINT:GOTO220
860 IFL>LATHENLA=L
870 IFA$=B$THEN610
880 FORI=LLTO0STEP-1:IFMID$(A$(L-1),I,1)=B$THEN900
890 C=C-1:NEXTI:GOTO610
900 IFI=LLTHEN610 ELSEFORJ=I+1TOLL:PRINT@C,B$;
910 A$(L)=A$(L)+MID$(A$(L-1),J,1)
920 S=S+1:C=C+1:NEXTJ:A$(L-1)=LEFT$(A$(L-1),I-1):GOTO610
930 IFLL>60THENKK=128ELSEKK=64
940 C=L*KK:IFC<959THENRETURNELSEPRINT@960,B$
950 IFKK=128THENPRINTELSE960
960 C=896:RETURN
970 A$(L)=A$(L)+FF$:A$=B$:REM DOWN ARROW
980 PRINT@C,A$;:GOTO820:REM ENTER
990 IFS<2THEN1020:REM BACKSPACE
1000 C=C-1:PRINT@C,"  ";:S=S-1:A$(L)=LEFT$(A$(L),S-1):GOTO710
1020 IFS=1THENA$(L)=" ":GOTO710
1030 IFS<2THEN710:REM SHIFT LEFT ARROW
1040 A$(L)="":S=1:GOSUB930
1050 PRINT@C,CHR$(30):C=C+4:GOTO710
1060 IFS>LL-6THEN710:REM RIGHT ARROW
1070 FORI=STOS+4:A$(L)=A$(L)+B$:PRINT@C,B$;:C=C+1:NEXTI
1080 S=S+5:GOTO710
1090 IFS>=LLTHEN830:REM SHIFT RIGHT ARROW
1100 PRINT@C,B$:FORI=STOLL:A$(L)=A$(L)+B$:NEXTI:GOTO830
1110 PRINT:INPUT"PRESS ENTER WHEN READY TO CONTINUE";EN$:RETURN
```

```
1120 CLS:REM PRINT
1130 INPUT"PRINT LINE NUMBERS (Y/N)";N$
1150 INPUT"LINE PRINTER OR VIDEO DISPLAY (P/V)";P$
1170 IFP$="P"THEN1270
1180 CLS:PP=PG-1:FORK=1TOLASTEPPL:PP=PP+1
1190 IFPN<1THEN1210ELSEPRINTTAB(LM);T$;
1200 PRINTTAB(LL+LM-7);"PAGE";:PRINT USING"###";PP
1210 FORJ=KTOK+PL-1:IFJ>LATHEN1260
1220 IFSP>0THENFORM=1TOSP:PRINT:NEXTM
1230 IFN$="Y"THENPRINTJ;" ";
1240 PRINTTAB(LM);A$(J);
1250 NEXTJ:GOSUB1110
1260 PRINTCHR$(30):NEXTK:GOTO220
1270 PRINT"READY PRINTER":A$=""
1280 INPUT"(TYPE V TO PRINT ON VIDEO DISPLAY)";A$
1290 IFA$="V"THEN1180
1300 PP=PG-1:FORK=1TOLASTEPPL:PP=PP+1
1330 IFPN<1THEN1350ELSELPRINTTAB(LM);T$;
1340 LPRINTTAB(LL+LM-7);"PAGE";:LPRINT USING"###";PP
1350 FORJ=KTOK+PL-1:IFJ>LATHEN1410
1360 IFSP>0THENFORM=1TOSP:LPRINT" ":NEXTM
1370 IFN$="Y"THENLPRINTJ;" ";
1380 IFLEN(A$(J))=0THENLPRINT" ":GOTO1400
1390 LPRINTTAB(LM);A$(J);
1400 NEXTJ:GOSUB1110
1410 LPRINTFF$:NEXTK:GOTO220
1440 INPUT"FIRST LINE TO DELETE";N1:REM DELETE
1450 INPUT"LAST LINE TO DELETE";N2:IFN1>NLTHENN1=NL
1460 IFN1<0THENN1=0
1470 IFN2>NLTHENN2=NL
1480 FORI=N1TON2:A$(I)="":NEXTI:S=0:GOTO220
1490 INPUT"LINE NUMBER";L:REM REPLACE
1500 IFA$(L)=""THENPRINT"CAN'T REPLACE LINE";L:GOTO220
1510 A$(L)="":S=1:HH=1:GOTO530
1520 INPUT"STARTING LINE";L:REM INSERT
1530 IFLEN(A$(L))=0THENS=1:HH=1:GOTO530
1540 PRINT"CAN'T INSERT AT LINE";L:GOTO220
1550 CLS:K=1:REM NUMBER
1555 PRINT@0,"NUMBERING LINE";K
1560 IFK>=LATHEN220
1570 IFLEN(A$(K))<>0THENK=K+1:GOTO1555
1580 FORJ=KTOLA-1:A$(J)=A$(J+1):NEXTJ
1590 A$(LA)="":LA=LA-1:GOTO1555
1600 INPUT"FIRST LINE TO MOVE";N1:REM MOVE
1610 INPUT"LAST LINE TO MOVE";N2
1620 INPUT"FIRST NEW LINE";N3
1630 FORJ=N1TON2
1640 IFLEN(A$(N3))=0THEN1660
1650 PRINT"LINE";N3;"ALREADY OCCUPIED.":GOTO220
1660 A$(N3)=A$(J):A$(J)=""
```

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```
1670 N3=N3+1:IFN3>LATHENLA=N3
1680 NEXTJ:GOTO220
1690 CLS:PRINT"LEGAL COMMANDS ARE AS FOLLOWS:"
1700 PRINT"F  FILL","P  PRINT","H  HELP"
1710 PRINT"R  REPLACE","I  INSERT","D  DELETE"
1720 PRINT"N  NUMBER","M  MOVE","E  EDIT"
1730 PRINT"L  LOAD","S  SAVE","K  KILL"
1740 PRINT"J  JUSTIFY","B  BROWSE","V  SET"
1750 PRINT"   CLEAR","*  KEYBOARD REVERSE"
1760 PRINT"TYPE 'SHIFT-@' TWICE TO RETURN TO COMMAND MODE."
1765 GOTO220
1770 CLS:PRINT@320,"INPUT LINE LENGTH (DEFAULT=60)";
1780 INPUT LL
1790 INPUT"PAGE LENGTH (DEFAULT=50)";PL
1800 INPUT"LEFT MARGIN (DEFAULT=0)";LM
1810 INPUT"LINE SPACING (1=SINGLE, 2=DOUBLE, DEFAULT=1)";SP
1820 INPUT"PAGE NUMBERING (1=YES, 0=NO, DEFAULT=NO)";PN
1840 INPUT"STARTING PAGE NUMBER (DEFAULT=1)";PG
1850 INPUT"TITLE (DEFAULT IS NONE)";T$
1860 GOTO220
1880 INPUT"LINE NUMBER";L:CLS:PRINT:REM EDIT
1900 IF LEN(A$(L))<1 THEN PRINT"CAN'T EDIT LINE";L:GOTO 220
1910 PRINT:PRINTL;TAB(4);A$(L);
1930 C=132:S=1:IFL>99THENC=69
1950 GOSUB2570
1960 IFA$=" "THEN2530
1970 IFASC(A$)=8THENGOSUB2550:GOTO1950
1980 IFASC(A$)=13THEN3010
1990 IFA$="I"THEN2720
2000 IFA$="D"THEN2850
2010 IFA$="H"THEN2880
2020 IFA$="X"THEN2920
2030 IFA$="C"THEN2970
2040 IFA$="S"THEN3060
2050 GOTO1950
2060 GOSUB2450:IFA$="D"THEN2120:REM LOAD
2070 INPUT#-1,LA,LM,SP,PN,PG,PL,LL,T
2080 IFT>0THENINPUT#-1,T$
2090 FORL=1TOLA:PRINT@512,"CASSETTE RECORDER NOW LOADING";
2100 PRINT" LINE";L;"OF";LA;"LINES":INPUT#-1,A$(L)
2110 NEXTL:GOSUB4050:GOTO220
2120 PRINT"PLEASE STAND BY--LOADING OF ";Q$;F$;Q$;
2130 PRINT" IN PROGRESS"
2140 ON ERROR GOTO 2170
2150 OPEN"I",1,F$:GOTO2200
2170 PRINT"NO TEXT BY THE NAME--";Q$;F$;Q$;
2180 PRINT"--PLEASE RE-ENTER"
2190 RESUME 220
2200 INPUT#1,LA,LM,SP,PN,PG,PL,LL,T
2210 IFT>0THENINPUT#1,T$
```

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```
2220 FORL=1TOLA:INPUT#1,A$(L):NEXTL:CLOSE
2240 GOSUB4050
2250 PRINTQ$;F$;Q$;"--LOADED AND READY FOR";
2260 PRINT" EDITING":GOTO220
2280 GOSUB2450:GOSUB4000:IFA$="D"THEN2340:REM SAVE
2290 PRINT#-1,LA,LM,SP,PN,PG,PL,LL,LEN(T$)
2300 IFLEN(T$)>0THENPRINT#-1,T$
2310 FORL=1TOLA:PRINT@512,"CASSETTE RECORDER NOW SAVING";
2320 PRINT" LINE";L;"OF";LA;"LINES":PRINT#-1,A$(L)
2330 NEXTL:GOSUB4200:GOTO220
2340 PRINT"PLEASE STAND BY--";Q$;F$;Q$;
2350 PRINT"--IS BEING SAVED ON DISK"
2360 OPEN"O",1,F$
2370 PRINT#1,LA,LM,SP,PN,PG,PL,LL,LEN(T$)
2380 IFLEN(T$)>0THENPRINT#1,T$
2390 FORL=1TOLA:PRINT#1,A$(L):NEXTL:CLOSE:CLS
2420 PRINTQ$;F$;Q$;
2430 PRINT"--NOW PERMANENTLY STORED ON DISK"
2440 GOSUB4200:GOTO220
2450 CLS
2460 INPUT"TAPE OR DISK (T/D)";A$
2480 IFA$="T"THEN2520ELSEIFA$="D"THEN2510
2490 PRINT"ILLEGAL ENTRY--PLEASE ENTER 'T' OR 'D'":GOTO2460
2510 INPUT"FILESPEC";F$:RETURN
2520 PRINT"READY CASSETTE":GOSUB1110:RETURN
2530 IFS>=LEN(A$(L))THEN1950
2540 PRINT@C,MID$(A$(L),S,1);:S=S+1:C=C+1:GOTO1950
2550 IFS<2THENRETURN
2560 PRINT@C,MID$(A$(L),S,1);:S=S-1:C=C-1:RETURN
2570 PRINT@C,CC$;
2580 IFIL=1THEN2610
2590 IFPEEK(16444)=128THENA$=CHR$(32):GOTO2630
2600 IFPEEK(16444)=32THENA$=CHR$(8):GOTO2630
2610 A$=INKEY$:IFA$=""THENPRINT@C,B$;:GOTO2570
2620 IFASC(A$)=13THENPRINT:GOTO3030
2630 IFASC(A$)=8THENGOSUB2550:GOTO2570
2640 RETURN
2650 IFLEN(A$(L))>=LLTHEN1950ELSERETURN
2660 IFLEN(A$(L))>1THENRETURNELSE1950
2670 PRINTCHR$(8);
2680 IFS>=LEN(A$(L))THEN1950ELSERETURN
2690 L$="":IFS>1THENL$=LEFT$(A$(L),S-1):RETURN
2700 R$="":IFS<LEN(A$(L))THEN R$=RIGHT$(A$(L),LEN(A$(L))-S+1)
2710 RETURN
2720 IFLEN(A$(L))>=LL-1THEN3030ELSEGOSUB2650:REM INSERT
2730 IL=1
2740 FORK=1TO896/KK
2750 PRINT@LL+3+(K*KK)-64,"*";
2760 NEXT K
2770 PRINT@0,"    1        10        20        30        40";
2780 PRINT"        50        60";
2790 IFLEN(A$(L))>=LL-1THENPRINT:GOTO3030
2800 GOSUB2570:PRINT@C,A$;:IFASC(A$)=13THENGOTO3040
```

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```
2810 IFASC(A$)=27THEN1950
2820 IFASC(A$)=8THENGOSUB2550:GOTO2790
2830 GOSUB2690:GOSUB2700
2840 A$(L)=L$+A$+R$:S=S+1:C=C+1:PRINTR$;:GOTO2790
2850 GOSUB2660:GOSUB2670:PRINTCHR$(30);:REM DELETE
2860 GOSUB2690:S=S+1:GOSUB2700:S=S-1
2870 A$(L)=L$+R$:PRINTR$:PRINT@132+LEN(A$(L))," ":GOTO1950
2880 PRINTCHR$(30):REM HACK
2890 HH=1
2900 IFS>1THENA$(L)=LEFT$(A$(L),S-1)
2910 GOTO640
2920 GOSUB2650:GOSUB2670:REM X
2930 GOSUB2700:PRINTR$;:C=C+LEN(A$(L))-S+1
2940 S=LEN(A$(L))+1
2950 IFS>=INT(LL-1)THEN3030
2960 GOTO2880
2970 GOSUB2570:REM CHANGE
2980 PRINT@C,A$;
2990 GOSUB2690:S=S+1:GOSUB2700:S=S-1
3000 A$(L)=L$+A$+R$:S=S+1:C=C+1:GOTO1950
3010 IFLEN(A$(L))>=LL-1THEN3030:REM ENTER
3020 FORI=STOLEN(A$(L)):PRINT@C,MID$(A$(L),I,1);:C=C+1:NEXTI
3030 PRINT:S=1:IL=0:IFLEN(A$(L))<=LL-2THEN220
3040 PRINT"LINE";L;"CONTAINS";LEN(A$(L));"CHARACTERS."
3050 INPUT"HIT ENTER TO RETURN TO COMMAND MODE";V:GOTO220
3060 GOSUB2680:GOSUB2570:PRINT@C,MID$(A$(L),S,1);:REM SEARCH
3070 CS=C+1
3080 FORI=S+1TOLEN(A$(L)):IFMID$(A$(L),I,1)<>A$THEN3100
3090 S=I:C=CS:GOTO1950
3100 CS=CS+1:NEXTI:GOTO1950
3110 PRINT:LL=LL-1:P$="":REM JUSTIFY
3120 INPUT"JUSTIFY ALL LINES (Y=YES,N=NO)";P$
3140 IFP$="N"THEN3170
3150 IFP$="Y"THENL=0:JL=LA:GOTO3210
3160 PRINT"ILLEGAL ENTRY--PLEASE ENTER 'Y' OR 'N'":GOTO3120
3170 INPUT"ENTER FIRST LINE TO BE JUSTIFIED";L:L=L-1
3180 IFL<0THEN3170
3190 INPUT"ENTER LAST LINE TO BE JUSTIFIED";JL
3200 IFJL>LATHEN3190
3210 L=L+1
3220 IFLEN(A$(L))<10RLEN(A$(L))>=LLTHEN3350
3230 PRINT@960,"JUSTIFY NOW WORKING ON LINE";L;"OF";LA;"LINES";
3240 E$=RIGHT$(A$(L),1)
3250 IFLEN(A$(L))<.8*LLTHEN3350
3260 FORI=1TOLEN(A$(L))
3270 IFMID$(A$(L),I,1)<>B$THENNEXTI:GOTO3350
3280 I=FIX(LEN(A$(L))/2):J=I+1
3290 IFMID$(A$(L),I,1)=B$THENGOSUB3370
3300 I=I-1:IFI<2THEN3210
```

```
3310 IFLEN(A$(L))>=LLTHEN3350
3320 IFMID$(A$(L),J,1)=B$THENGOSUB3390
3330 J=J+1:IFJ>=LLTHEN3210
3340 IFLEN(A$(L))<LLTHEN3290
3350 IFL=>JLTHEN3360ELSE3210
3360 LL=LL+1:GOTO220
3370 L$=LEFT$(A$(L),I):R$=RIGHT$(A$(L),LEN(A$(L))-I)
3380 I=I-1:GOTO3400
3390 L$=LEFT$(A$(L),J):R$=RIGHT$(A$(L),LEN(A$(L))-J):J=J+1
3400 A$(L)=L$+B$+R$:RETURN
3410 CLS:PRINTTAB(15);"START SCAN WITH DOWN ARROW"
3420 L=1
3430 IFPEEK(16444)=16ANDL<=LATHEN3470
3440 IFPEEK(16444)=1THEN220
3450 IFPEEK(16444)=8THEN3510
3460 GOTO3430
3470 PRINTL;TAB(4);A$(L)
3480 FORI=1TO50:NEXTI
3490 L=L+1
3500 GOTO3430
3510 L=L-2
3520 IFLL>60THENIFPEEK(16444)=8ANDL>=7THEN3570
3530 IFLL<=60THENIFPEEK(16444)=8ANDL>=15THEN3570
3540 IFPEEK(16444)=16THENL=L+2:GOTO3430
3550 IFPEEK(16444)=1THEN220ELSE3520
3570 CLS
3580 IFLL>60THENK1=6ELSEK1=14
3590 FORL=L-K1TOL+K1
3600 PRINTL;TAB(4);A$(L):NEXTL
3620 FORI=1TO50:NEXTI:GOTO3510
3640 PRINT:GOSUB4300:REM KEYBOARD REVERSE
3650 FORL=N1TON2
3660 PRINT@960,"KEYBOARD REVERSE WORKING ON LINE";L;
3665 PRINT"OF";LA;"LINES";
3670 I$=A$(L)
3680 O$="":IFI$=""THEN3830
3690 FORK=1TOLEN(I$)
3700 D=ASC(MID$(I$,K,1))
3710 IFK=1THEN3740
3720 IFK>=2ANDK<=(LEN(I$)-1)ANDD=73THEN3730ELSE3740
3730 IFMID$(I$,K-1,1)=" "ANDMID$(I$,K+1,1)=" "THENBC=1
3740 IFK=1ANDD=73ANDMID$(I$,K+1,1)=" "THENBC=1
3750 IFK=1ANDL=1THENBC=1
3760 IFBC=0ANDD>95ANDD<128THEND=D-32:GOTO3800
3770 IFD>63ANDD<96THEND=D+32
3780 IFBC=1ANDD>95ANDD<128THEND=D-32:BC=0
3790 IFD=46ORD=33ORD=63THENBC=1
3800 O$=O$+CHR$(D)
3810 NEXTK
3820 A$(L)=O$
3830 NEXTL:GOTO220
```

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```
4000 FORL=1TOLA:REM TRANSLATE
4005 PRINT@128,"TRANSLATING LINE";L;"OF";LA
4010 IFLEN(A$(L))<1THEN4040
4015 FORI=1TOLEN(A$(L)):M$=MID$(A$(L),I,1)
4020 IFM$=","ORM$=":"ORM$=" "ORM$=Q$THENGOSUB4120
4030 NEXTI
4040 NEXTL:RETURN
4050 FORL=1TOLA:REM UNTRANSLATE
4055 PRINT@192,"UNTRANSLATING LINE";L;"OF";LA
4060 IFLEN(A$(L))<1THEN4090
4065 FORI=1TOLEN(A$(L))
4070 M=ASC(MID$(A$(L),I,1))
4075 IFM>128THENGOSUB4100
4080 NEXTI
4090 NEXTL:RETURN
4100 GOSUB4150
4110 M$=CHR$(M-128):GOTO4130
4120 GOSUB4150:M$=CHR$(ASC(M$)+128)
4130 A$(L)=L$+M$+R$:RETURN
4150 L$="":IFI>1THENL$=LEFT$(A$(L),I-1)
4160 R$="":IFI<LEN(A$(L))THENR$=RIGHT$(A$(L),LEN(A$(L))-I)
4170 RETURN
4200 INPUT"CONTINUE WITH THIS TEXT(Y/N)";A$
4210 IFA$="Y"THENGOSUB4050
4220 RETURN
4300 INPUT"REVERSE ALL LINES (Y/N)";A$
4310 IFA$="Y"THENN1=1:N2=LA:RETURN
4320 INPUT"FIRST LINE TO REVERSE";N1
4330 INPUT"LAST LINE TO REVERSE";N2:RETURN
```

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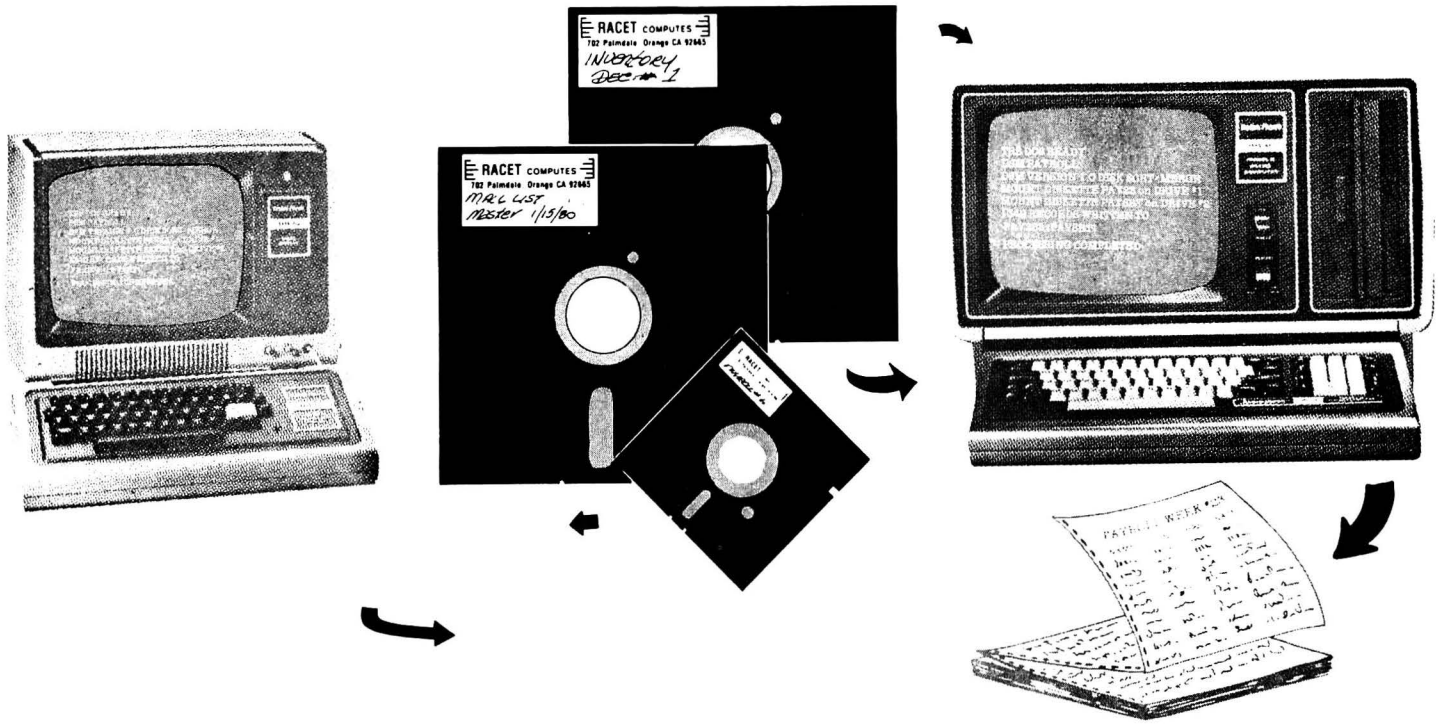

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DSM is written entirely in machine language for fast sorting. The sorting operations use very efficient techniques. Internal operations are optimized to allow running at maximum disk I/O speeds. The sort timings shown below illustrate the speed of DSM:

Type	File Size (Byte)	Time (Sec)	Type	File Size (Bytes)	Time (Sec)
SORT	16K	33	SORT	340K	1081
SORT	32K	49	SORT	680K	2569
SORT	85K	173	SORT +	85K	
SORT	170K	445	MERGE	1275K	1757

Times will vary based on sort and system configurations. The sort times shown above are for a Mod-I 48K 4-drive configuration, 64 byte records, and 5 sort keys. Model-II sort times are TWICE AS FAST!

DSM IS EASY TO USE!!!!!

DSM requires only a few simple commands for a given sort application. The sort commands may be saved for production applications, requiring only a single DOS command for execution.

The sort commands are entered in any order in a free format. Default values are provided for user convenience. The example below illustrates sorting a typical mailing list in order by last name, first name, and ZIP code.

```
10' FILEIN    LRECL = 64,TYPE = FB
20' SORTIN    INMAIL(DISK1)
30' FIELD     LNAME(CH,20,11),FNAME(CH,10,1),ZIP(BI,2,31)
40' UNIT      1,2,3
50' WORK      DISKA,DISKB
60' SORTOUT   OUTMAIL(DISK2)
```

The "FILEIN" statement describes the length and type of records (FB = fixed blocked). The "SORTIN" statement identifies the input filespec ("INMAIL" on diskette "DISK1"). The "FIELD" statement specifies the name, type, length, and starting column number of each field (CH = character, BI = binary integer). All other unspecified fields would be automatically carried along in the sort. The "UNIT" and "WORK" statements specify the disk drive and work diskettes available for use by DSM. The "SORTOUT" statement specifies the output filespec for the sorted records.

The application above could be changed to sort in descending order by ZIP code by adding the following command:

```
70' -ZIP,LNAME,FNAME
```

Adding the following statements would keep only the fields LNAME and ZIP, deleting FNAME and other unspecified fields from the sorted output file:

```
80' KEEP      LNAME,ZIP
90' FILEOUT   LRECL = 32
```

Note in the above example the resulting sub-records would be only 32 bytes in length.

DSM IS FLEXIBLE!!!!!

The many powerful features of DSM exceed those commonly found on even the largest computer systems. Additional features include:

- Ability to specify multiple file input from the same or different diskettes. For example LINE #20 above could be written: 20' SORTIN IN1(DISK1),IN2(DISK2)
- Number of input records can be specified. For example, Line #20 above could be written: 20' SORTIN INMAIL(DISK1,1247).
- The "ORDER" option may be used to retain input sequence for identical records.
- The "PRINT" and "MSGLEVEL" options may be used to print and/or display DSM messages.
- The "MEMORY" option allows the user to protect upper memory for other purposes (such as RS232 drivers).
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