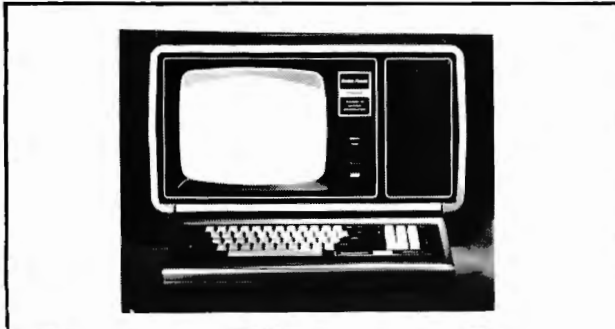
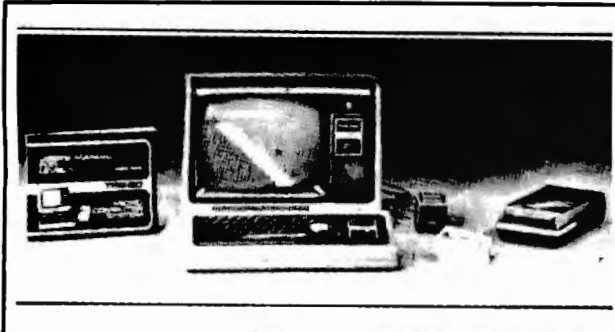


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46 TRANS	Transportation method for linear programming		
47 EOQ	Economic order quantity inventory model		
48 QUEUE1	Single server queuing (waiting line) model		
49 CVP	Cost-volume-profit analysis		
50 CONDPFROF	Conditional profit tables		
51 OPTLOSS	Opportunity loss tables		
52 FQJIOQ	Fixed quantity economic order quantity model		
NAME	DESCRIPTION		
53 FQEOWSH	As above but with shortages permitted		
54 FQEQOPB	As above but with quantity price breaks		
55 QJIEFCB	Cost-benefit waiting line analysis		
56 NCFANAL	Net cash-flow analysis for simple investment		
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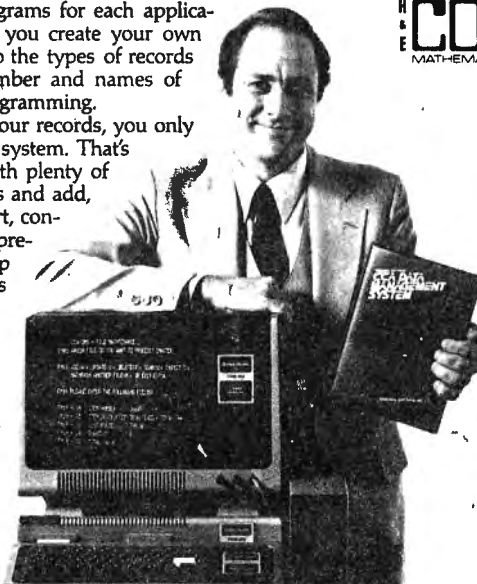
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* ORDERING NEW DOS & SUPERZAP *

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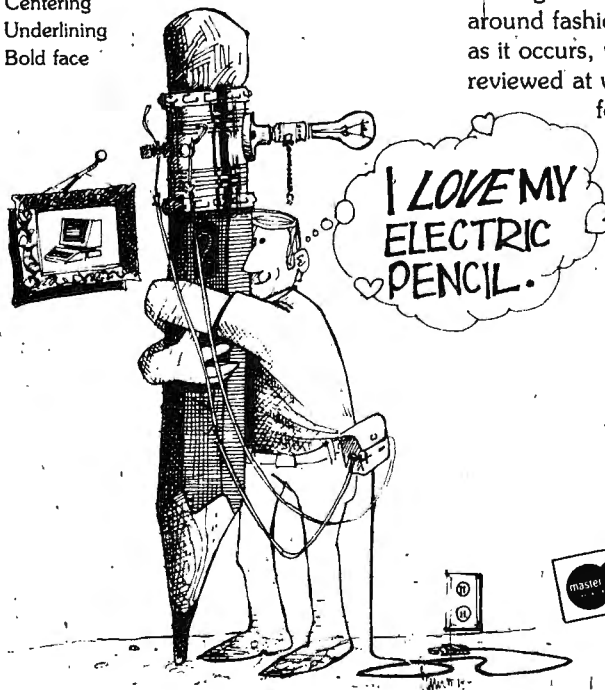
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Cursor left, right, up, down, home
Cursor to beginning of line
Cursor to beginning of text
Cursor to end of text
Cursor tab

SCROLLING CONTROLS

Scroll up and down
Scroll speed control
Scroll stop, continue, abort
Scroll a page at a time

INSERTIONS and DELETIONS

Insert character, line, block
Delete character, line, block
Delete to end of line

SEARCH COMMANDS

Search for string (may be coded string)
Search and replace (may be coded string)

DISK COMMANDS

Directory, Save, Load, Kill

SYSTEM COMMANDS

Repeat any command a given number of times
Line feed, form feed, carriage return
Go to sub-system command tables
Clear all after cursor
Clear all before cursor
Clear system
Exit to CP/M

PRINTER FORMATTING COMMANDS

Set justification
Set page stopping
Set page number 1 to 255
Set line spacing 1 to 5 lines
Set page length 1 to 72 lines
Set print length 1 to All records
Set line indent 1 to 100 characters
Set left margin 1 to 100 characters
Set line length 25 to 125 characters
Set char spacing HMI 8, to 50 (Diable versions)
Set page spacing 2 to 20 lines (Standard versions)

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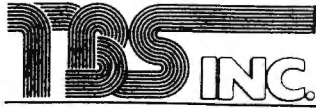
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The Bottom Shelf, Inc.

CHECK REGISTER ACCOUNTING SYSTEM

(REQUIRES 32K AND 2-DISK DRIVES)

BY O.E.DIAL, as published in PERSONAL COMPUTING and converted and improved for the TRS-80 by DALE KUBLER
AVAILABLE JUNE 15, 1979.

CRAS, the Check Register Accounting System. Rolls Royce appearance, Mercedes quality, and Cadillac convenience. And it runs on your Radio Shack TRS-80 computer with disk drive and 80 column printer!

This is the perfect way to totally structure your finances. Convenience and thorough analysis are incorporated in the structure of this program.

Using your checkbook and other information you can:

Lay out a full set of income and expense accounts.

Conveniently enter your transactions.

Does not require you to enter all your transactions in one session.

At any time you can release the computers power to:

- (1) Receive a running balance of the account.
- (2) Reconcile your bank account.



Print any or all of the following reports:

1. Statement of accounts.
2. Check register for any month.
3. Notes to the check register for any month.
4. Income/expense distribution statements for any month.
5. Statement of any selected account for any period.
6. Bank checking account reconciliation statement.
7. Suspense file for any month in the year.
8. Check printer option.

The above is only an overview of the power and versatility of this program. You will constantly discover new ways to use the devices built into CRAS for your benefit.

By the way, if you have a business of your own, this program generates income and expense statements for business use as well as personal use. Complete with transaction numbers and audit trail, we believe your accountant will approve.

Complete with full instructional user documentation.

\$74.95

CHECK REGISTER FOR JANUARY 1979										PAGE 1	
JOHN & MARY DOE 123-456-7890 ANYTOWN ANYSTATE, OHIO											
TRN NO	DA	CHK	AMOUNT	PAID	RECEIVED	BALANCE					
OPENING BALANCE										1,000.00	
1	1	1000	1000.00			0.00					
2	1	1000	1000.00			0.00					
3	1	1000	1000.00			0.00					
STATEMENT OF ACCOUNT NO. 36 - FOOD-REVENUES										PAGE 1	
FOR JANUARY THROUGH MARCH 1979											
JOHN & MARY DOE 123-456-7890 ANYTOWN ANYSTATE, OHIO											
TRN NO	DA	CHK	AMOUNT	PAID	RECEIVED	BALANCE					
CHECK REGISTER NOTES FOR JANUARY 1979										PAGE 2	
JOHN & MARY DOE 123-456-7890 ANYTOWN ANYSTATE, OHIO											
TRANSACTION NO. 1											
1. MISDIFFERENCE BETWEEN REGULAR SALARY AND BONUS REGULAR SALARY											
TRANSACTION NO. 10											
CHECKING ACCOUNT RECONCILIATION STATEMENT FOR 1/15/79											
JOHN & MARY DOE 123-456-7890 ANYTOWN ANYSTATE, OHIO											
B. BANK STATEMENT DURING BALANCE										PAGE 40	
TRANSACTIONS WHICH WERE NOT CLEARED											
TRN NO	DA	CHK	AMOUNT	PAID	RECEIVED	BALANCE					
1	1	1000	1000.00			0.00					
2	1	1000	1000.00			0.00					
3	1	1000	1000.00			0.00					
4	1	1000	1000.00			0.00					
5	1	1000	1000.00			0.00					
6	1	1000	1000.00			0.00					
7	1	1000	1000.00			0.00					
8	1	1000	1000.00			0.00					
9	1	1000	1000.00			0.00					
10	1	1000	1000.00			0.00					
11	1	1000	1000.00			0.00					
12	1	1000	1000.00			0.00					
13	1	1000	1000.00			0.00					
14	1	1000	1000.00			0.00					
15	1	1000	1000.00			0.00					
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17	1	1000	1000.00			0.00					
18	1	1000	1000.00			0.00					

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- * Complete editing mode allowing changes in any or all columns plus deletion module.

- * Checkbook balancing with balance brought forward held in memory and recorded on tape. Program will handle balances up to \$999,999.99. Graphic screen printout starting at any given check number.

- * Bank reconcile with listing of all outstanding checks. Program automatically deletes all cleared checks if checkbook balances.

- * Search and total routine with the capability of searching all checks in memory or an entire month, by date, check number, whom to or code.

- * Tape input/output with the ability to record from any given check number. Automatically names file by check numbers.

- * Complete printout of everything on screen with the press of a button from anywhere in the program.

- * Visual numeric sort routine. Automatic after keyboard input.

- * 16K version handles 75 transactions. The 32K version (without DOS) can handle an amazing 400!

- * Plus many other interesting devices to make checkbook balancing enjoyable, for a change.

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M E N U

1. KEYBOARD INPUT
 2. LIST AND EDIT
 3. PRINT WITH BALANCE
 4. SEARCH AND TOTAL
 5. RECONCILE
 6. SORT
 7. INPUT FROM TAPE
 8. OUTPUT TO TAPE
 9. CHECK FILE LENGTH
 10. CLEAR
- WHICH NUMBER? ..

CHK#	DATE	KEYBOARD INPUT TO WHOM	AMOUNT	CODE
710	4/10/79	ATLANTA GAS	34.55	GAS
711	4/11/79	TBS	51.50	SOFT
712	4/11/79	ACME AUTO SALES	3,452.87	AUTO
712.1	4/11/79	DEPOSIT	3,000.00	LOAN
713	4/12/79	RADIO SHACK	125.33	AUTO
714	4/13/79	GEORGIA	43.55	TAX
715	4/14/79	IRS	348.66	TAX
715.1	4/14/79	DEPOSIT	675.87	SAL
716	4/15/79	COMPUTER STORE	123.45	COMP
717	4/20/79	COMPUTER STORE	14.44	COMP
717.1	4/20/79	DEPOSIT-COMPING	500.00	XING

CHK#	DATE	CHECK BALANCING TO WHOM	AMOUNT	BALANCE
709	4/09/79	GEORGIA POWER	46.79	3,526.64
710	4/10/79	ATLANTA GAS	34.55	3,492.09
711	4/11/79	TBS	51.50	3,440.59
712	4/11/79	ACME AUTO SALES	3,452.87	12.29
712.1	4/11/79	DEPOSIT	3,000.00	2,987.72
713	4/12/79	RADIO SHACK	125.33	2,862.39
714	4/13/79	GEORGIA	43.55	2,818.84
715	4/14/79	IRS	348.66	2,470.18
715.1	4/14/79	DEPOSIT	675.87	3,146.05
716	4/15/79	COMPUTER STORE	123.45	3,022.60
717	4/20/79	COMPUTER STORE	14.44	3,008.16

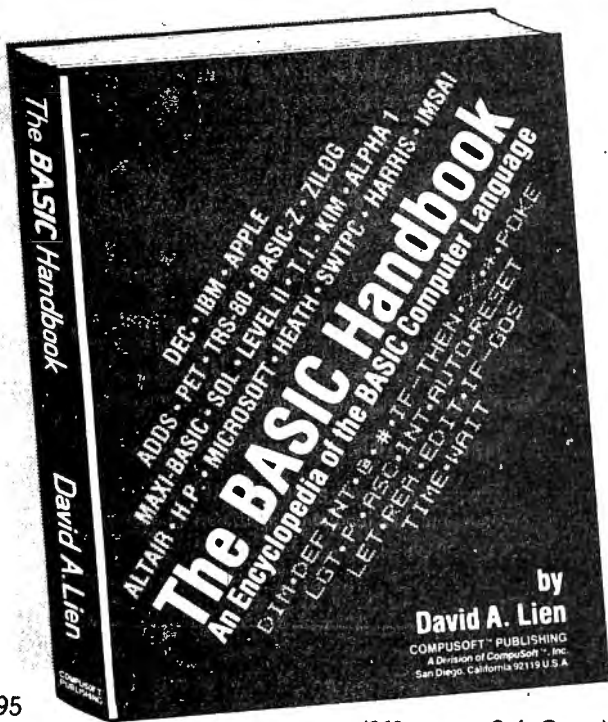
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This HANDBOOK is written to be used!

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- Append files
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- Renumber BASIC programs
- End keyboard bounce

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- Disassembler (Z80 machine code)
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- BASIC 1-Level one BASIC saved on disk
- LV1DSKSL - not a typo, this saves and loads BASIC 1 programs to disk
- DIRCHECK - tests and lists disk directory
- Superzap-display/print/modify any location in memory or on disk

Superzap alone is worth the price of this package. With it, we've quickly recovered lost programs, restored killed data files, and saved many hours of effort. The NEWDOS + manual is another plus; clear and concise, it even includes a byte-by-byte explanation of the directory file...Invaluable if you ever need to save a crashed disk!

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- ★ New BASIC commands that supports with variable record lengths up to 4095 Bytes long.
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- GSF INCLUDES eighteen machine language subroutines providing the TRS-80 with much greater flexibility and extended capabilities.

SORT 1000-ELEMENT ARRAYS IN 9 SECONDS!!! Two in-core sort subroutines are provided for sorting data in memory. The first subroutine sorts records consisting of corresponding elements of up to 15 arrays (mixed string, floating point, and integer) using multiple ascending or descending sort keys. The second subroutine sorts records consisting of elements of a character string array using multiple substrings as ascending or descending sort keys. These sort systems are very fast, versatile, and easy to use. Sort times average 30 TIMES faster than the fastest BASIC sort routines.

READ AND WRITE ARRAYS TO TAPE. Two subroutines are provided to read and write data to cassette tape. This provides the user with the capability of reading or writing an **entire** array or screen image with one command. No leaders are written between data items. This significantly reduces read/write times making data tapes much more practical. Data validity checking is performed to ensure correct data is read, thus eliminating many data input/output errors.

COMPRESS AND UNCOMPRESS DATA. Two subroutines are provided which compress data in memory by removing repeated characters with the ability to uncompress the data in the minimum space possible with subsequent regeneration. This, coupled with the Read and Write Tape Data Subroutines, provides an efficient method of data storage and retrieval.

MOVE ARRAYS IN MEMORY. This subroutine moves data from one location in memory to another. This can be used to rapidly set one array of data equal to another or to move data into protected memory. The latter option provides a "common" area that can be passed from one BASIC program to another.

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FAST HORIZONTAL AND VERTICAL LINES. This two subroutines draw graphic lines of any length and location on the screen. These routines dramatically decrease times necessary to generate graphical displays containing lines.

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SORT/MERGE multi-diskette files. DOSORT utilizes a control program written in BASIC with very efficient machine language routines for the time-critical tasks of sorting and data comparisons. An extended GSF is included which is used as an interface between the BASIC and machine language programs. The resulting system is both a versatile and effective sort merge package for the TRS-80 system.

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- DOSORT can process data files that are read or written using standard TRS-80 input/output commands.
- DOSORT sorts input files according to user specified sequences utilizing multiple ascending or descending sort keys. User exits are provided during initial input and final output processing allowing specialized processing.
- TWO MODES of sort variable specification may be used - multi-mixed-array mode and character string mode.
- MULTI-VOLUME (diskette) files may be sorted or merged on a minimum two-disk 32K system. System performance is improved with a 48K or three- or four-disk system.
- PRESORTED files may be included in a given sort/merge application. Data files may be spread over several diskettes.
- DOSORT is self-instructing-supported by comprehensive user documentation. Specification of sort parameters has been designed to be easy - even for the inexperienced user.

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SARGON II

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Because new algorithms have been added, the program is able to: push passed pawns toward queening; play a stronger end game; and range into deeper play levels at end game without user direction. And, the computer displays the levels of play at which it is thinking and also shows the move it is currently thinking and also shows the move it is currently thinking of making, changing the move shown until its final choice is made. **SARGON II** has 7 levels of play, and levels 0-3 play in tournament time. It has a randomized opening book up to 7 levels of play for 3 moves. When setting up the board, the user can scan up and down, left and right. And finally, you can use the hint option at any level but 0 and request **SARGON II** to tell what the best next move is. Available now.

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INFORMATION SYSTEM (IN MEMORY)

- * INFORMATION SYSTEM
- * CROSS REFERENCE INDEXER
- * DATA ORGANIZER
- * INDEX CARD SYSTEM
- * INFORMATION RETRIEVAL SYSTEM
- * ALPHA/NUMERIC SORTING SYSTEM
- * DATA BASE RETRIEVAL SYSTEM
- * ASSOCIATION ANALYSIS PROGRAM
- * DATA BASE MANAGER *

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FEATURES :

- * USER PROGRAMMABLE FIELDS - Up to 10 fields each labeled by the user.
- * USER PROGRAMMABLE FIELD LENGTHS - Field lengths of up to 40 columns with a maximum of 120 characters per record.
- * PROFESSIONAL INPUT MECHANISM - Field labels and field lengths are always

CODE	FUNCTION
1	ADD
2	EDIT
3	SORT
4	SEARCH
5	VIDEO DISPLAY
6	PRINT
7	READ DATA FILE
8	WRITE DATA FILE
9	INITIALIZE NEW DATA FILE
10	END

ENTER FUNCTION CODE DESIRED

available on the screen. High speed, no key-bounce input is supported. Error correction or record deletion is supported at the completion of each record.

- * SUPPORTS DISK OR CASSETTE FILES - Use either method of storage. Disk based users can back up their data base easily on cassette.
- * PROGRAMMABLE PRINT OUT - Print out your file in the format desired. Create mailing labels, rolodex cards, index cards, or just plain printouts in your format.
- * EDITING - Edit any item in the file without retyping the whole record.
- * SUMMARY LISTINGS - on the screen or on paper.
- * MORE MORE MORE MORE MORE MORE

CASSETTE

VERSION

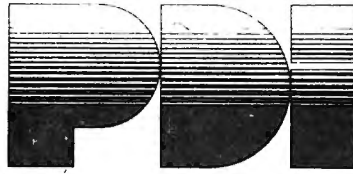
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BASIC ^{STEP} BY ^{STEP} FOR LEVEL II TRS-80 OWNERS

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STEP BY STEP - Ages Junior High to Adult. TRS-80 LEVEL II

32 programs and a 64 page workbook teach programming in BASIC for the beginner. Introduces all important BASIC commands and programming logic, including simple string logic and one-dimensional arrays. Lessons are interactive, presented in a question-and-answer format on the computer screen. The Workbook adds auxiliary information and is, most importantly, a permanent reference source. Through instruction, structured practice, and frequent skills testing, the user learns how to write BASIC programs.

GRAPH BUILDER - Ages 10 up. TRS-80 LEVEL I OR II

11 teaching programs and games teach students to read graphs. Covers x and y coordinates, and representation of numerical data on graphs. Starts with simplest concepts and works up to complicated grid game.

MINICROSSWORD - All ages. TRS-80 LEVEL II

4 programs that consist of 2 minicrosswords and 2 codeword games. Crossword programs invent their own crossword puzzle -- dozens of completely different puzzles are possible -- and scores how well you do each puzzle. When used in conjunction with the codeword programs, which are word-guessing games, the course provides a vocabulary and spelling development system.

SPELLING BUILDER - Junior High up. TRS-80 LEVEL II

8 programs plus an audio cassette teach important rules and skills. Helps students and adults overcome spelling difficulties. Not just spelling drill, this course teaches a method for approaching difficult words. Ideal for the student or adult who has mastered basic spelling, but has trouble deciding if it's "supersede" or "supercede," "combustable" or "combustible". Final test of 25, ten-word lists.

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1. S.B.S.G. is a sophisticated Business Software System designed for the serious businessman.
2. Each of the S.B.S.G. Business Modules may be purchased separately...or you may purchase the entire coordinated business system.
3. Modules purchased separately do not coordinate with the General Ledger (although for the standard S.B.S.G. fee, the user may upgrade his individual modules for the coordinated system).
4. Foolproof, Step-By-Step procedures are supplied, planned and documented for the First-Time Computer User. All programs are self-explanatory, telling the user what is required at every step.
5. Programs are written in BASIC and the source code listing is supplied for those users who decide to modify the original system.
6. A complete users manual is supplied with each module.
7. Demo Data diskettes are supplied with sample data.
8. S.B.S.G. has an In-House staff that can answer questions and problems related to the proper use of the S.B.S.G. Business System (on the telephone or through the mail).
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12. Minimum system requirement is 4-drives to run the extended coordinated system (AR-AP-GL-PR and INVENTORY/INVOICING).
13. The A. OSBORNE & ASSOCIATES business manuals are provided FREE with each order (they may be purchased separately at \$20 per manual).
14. The INVENTORY and INVOICING modules are original programs written by S.B.S.G.
15. Each module can be purchased as independent modules to run on a 2 or more drive system except INVOICING.
16. Memory requirement is 48K for the MODEL-I and 64K for the MODEL-II.
17. All S.B.S.G. BUSINESS SYSTEMS may be upgraded up to 4-disk drives. No data is ever lost during an upgrade. There is a standard S.B.S.G. charge for all upgrades.

ACCOUNTS PAYABLE

The accounts payable system receives data concerning purchases from suppliers and produces checks in payment of outstanding invoices. In addition, it produces cash management reports. This system aids in tight financial control over all cash disbursements of the business. Several reports are available and supply information needed for the analysis of payments, expenses, purchases and cash requirements. All A/P data feeds General Ledger so that data is entered into the system just once. These programs were developed 5 years ago for the Wang micro-computer and have been tested in many environments since then. The package has been converted to the TRS-80™ and is now well documented, on-line, interactive micro-computer system with the capabilities of (or exceeding many larger systems).

CAPABILITIES:

- ★ menu driven; easy to use; full screen prompting and cursor control
- ★ invoice oriented; everything revolves around the invoice; handles new invoice or credit memo or debit memo
- ★ invoice information recorded; invoice #, description, buyer, check register #, invoice date, age date, amount of invoice, discount (in %), freight, tax (\$), total payable
- ★ transaction print and file maintenance procedures insure accuracy
- ★ flexible check calculation procedure; allows checks to be calculated for a set of vendors-or-for specific vendors
- ★ program prints your checks; contiguous computer checks with your company letterhead can be purchased from SBSG
- ★ reports include (samples on back):
 - open item listing/closed item listing - both detail and summary
 - debit memo listing/credit memo listing
 - aging
 - check register report (to give an audit trail of checks printed)
 - vendor listing and vendor activity (activity of the whole year)
- ★ fully linked to GENERAL LEDGER; each invoice can be distributed to as many as five (5) different GL accounts; system automatically posts to cash and A/P accounts

ACCOUNTS RECEIVABLE

The objective of a computerized A/R system is to prepare accurate and timely monthly statements to credit customers. Management can generate information required to control the amount of credit extended and the collection of money owed in order to maximize profitable credit sales while minimizing losses from bad debts. The programs composing this system were developed 5 years ago, especially for small businesses using the Wang Microcomputer. They have been tested in many environments since then. Each module can be used stand alone or can feed General Ledger for a fully integrated system.

CAPABILITIES:

- ★ menu driven; easy to use; full screen prompting and cursor control
- ★ invoice oriented; invoices can be entered before ready for billing, when ready for billing, after billing or after paid
- ★ allows entry of new invoice, credit memo, debit memo, or change/delete invoice
- ★ allows for progress payment
- ★ transaction information includes:
 - type of A/R transaction
 - customer P.O. #
 - description of P.O.
 - shipping/transportation charges
 - tax charges
 - payment
 - progress payment information
 - transaction print & file maintenance procedures insure accuracy
- ★ customer statements printed; computer statements with your company letterhead can be purchased from SBSG
- ★ reports include: (samples on back)
 - listing of invoices not yet billed
 - open items (unpaid invoices)
 - closed items (paid invoices)
 - aging
- ★ fully linked to General Ledger; will post to applicable accounts; debit A/R, credits account you specify

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PAYROLL

Payroll involves many, complex calculations and the production of reports and documents, many of which are required by government agencies. It is an ideal candidate for the computer. With this Payroll system in-house, you can promptly and accurately pay your employees and generate accurate documents/reports to management, employees, and appropriate government agencies concerning earnings, taxes, and other deductions. The package has been converted to the TRS-80™ and is now a well documented, on-line, interactive, micro-computer system with the capabilities of (or exceeding) many larger systems.

CAPABILITIES:

- ★ performs all necessary payroll tasks including:
 - file maintenance, pay data entry and verification
 - computation of pay and deduction amounts
 - printing of reports and checks
- ★ can handle salaried and hourly employees
- ★ employees can receive:
 - hourly or salary wage
 - vacation pay
 - holiday pay
 - piecework pay
 - overtime pay
- ★ employees can be paid using any combination of pay types (except, hourly cannot receive salary and salary cannot receive hourly)
- ★ special non-taxable or taxable lump sums can be paid regularly or one time (bonus, reimbursements, etc)
- ★ health and welfare deductions can be automatically calculated for each employee
- ★ earnings-to-date are accumulated and added to permanent records; taxes are computed and deducted: US income tax, Social Security tax, state income tax, other deductions (regular or one time)
- ★ paychecks are printed; computer checks with your company letter-head can be purchased from SBSG
- ★ calculations are accumulated for: employee pay history, 941A report, W-2 report, insurance report, absentee report
- ★ fully linked to General Ledger. Each employee's payroll information can be distributed to as many as (12) twelve different GL accounts; system automatically posts to cash account

INVENTORY CONTROL/INVOICING

- ★ ISAM (Indexed Sequential Access Method) eliminates the necessity for time consuming sort.
- ★ Pre-Allocated Files for IMMEDIATE update and inquiry capabilities.
- ★ Fast Disk storage and retrieval.
- ★ Inventory Master Record includes...class...SKU...Division...Retail...Cost...Beginning Balance...Period Sale Units...Period Receipts...On Order...On Hand...Minimum Reorder Point...Recommended Reorder Amount...Vendor Number...Period Sale Dollars...YTD Sale Units...YTD Sale Dollars.
- ★ Calculated and Displayed Formulas include...Gross Margin (\$)...Gross Margin (%)...Gross Margin ROI (%)...Average Inventory Retail (\$)...Average Inventory Cost (\$)...Turn-Over (%).
- ★ Reports Generated include...Master File Listing...Class Description Listing...Transaction Audit Trail...Minimum Reorder Point by Vendor...Retail Price List...Retail & Cost Price List...Period Sales Report...Year to Date Sales Report...Stock Status (Screen or printer output)...Commission Report (for salesmen and buyers).
- ★ Transaction Types include...Sales...Vendor Receipts...Vendor Orders...Customer Returns...Vendor Returns...Transfer Stock.

GENERAL LEDGER

The General Ledger accounting system consolidates financial data from other accounting subsystems (A/R, A/P, Payroll, direct posting) in an accurate and timely manner. Major reports include the Income Statement and Balance Sheet and a "special" report designed by management. The beauty of this General Ledger system is that it is completely user formatted. You "customize" the account numbers, descriptions, and report formats to suit particular business requirements. These programs were developed 5 years ago for the Wang micro-computer and have been tested in many environments since then. The package has been converted to the TRS-80™ and is now a well documented, on-line, interactive micro-computer system with the capabilities of (or exceeding) many larger systems.

CAPABILITIES:

- ★ more than 200 chart of accounts can be handled
- ★ account number structure is user defined and controlled
- ★ more than 1,750 transactions may be entered via:
 - direct posting; done by hand; validated against the account file before acceptance
 - external posting; generated by A/R, A/P, Payroll or any other user source
- ★ data is maintained and reported by:
 - month
 - quarter
 - year
 - previous three quarters
- ★ reports (samples on back) include:
 - trial balances
 - income statement
 - balance sheet
 - special accounts reports and more.....
- ★ user formats reports with the following designated as you wish:
 - titles
 - headings
 - account numbers
 - descriptions
 - subtotals
 - totals
 - skip lines
 - skip pages
- ★ up to eight levels of totals - fully user designated
- ★ menu driven; easy to use; full screen prompting and cursor control

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COORDINATED INVENTORY/INVOICING ACCOUNTS RECEIVABLE	\$449	\$749
COORDINATED AR-AP-GL	\$375	\$675
COORDINATED AR-AP-GL with PAYROLL	\$495	\$899
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Rx for your computer - The System Doctor does a thorough diagnostic check of your whole computer system. It lets you know if something is wrong with your computer - Before you spend time programming or entering data - Before you do an important job that could affect your data base - Before your computers warranty expires.

The symptoms of computer ailments are hard to detect. Even when you turn your computer in for repair, Radio Shack doesn't have the time to do a thorough 12 hour check of the computer system (and you may not have turned the whole system in for repair). System Doctor wrings the symptoms of computer ailments out of your system. When you turn your system in for repair, you will know what is wrong with it. This diagnostic system provides a more thorough check of your system than any other program or collection of programs on the market.

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IT WOULD COST THEM TOO MUCH IN WARRANTY REPAIRS

PARTIAL LIST OF FUNCTIONS:

- Checks the ROM to ensure every bit is functional.
- Checks the Random Access Memory 6 different ways to ensure that all memory locations are functional.
- Checks the disk drive(s) in a variety of ways to ensure reliability.
- Checks video memory and video display.
- Checks the cassette recorder(s) for speed, distortion, and volume control.
- Checks the printer functions.
- Does a 12 hour check of the entire system, printing results to printer - cassette - diskette or screen.

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REMODEL • PROLOAD • COPSYS • TIMSER LEVEL II TRS-80 PROFESSIONAL PROGRAMMING TOOLS YOU HAVE BEEN WAITING FOR

NOW FOR THE FIRST TIME WITH REMODEL YOU CAN:

- RENUMBER any portion or all of a basic program with line number references adjusted.
- MOVE any portion of a basic program from one location to another.
- DELETE lines or ranges of lines while using the utility.

WITH BOTH PROLOAD AND REMODEL YOU HAVE THE ADDITIONAL POWER TO:

- LOAD all or any portion of a basic program from tape (CLOAD format).
- LOAD MULTIPLE basic programs - renumbering and merging into any location.
- SAVE combined/merged programs or any portion of a program to tape.
- VERIFY bit-for-bit the contents of saved programs.

AND WITH COPSYS YOU CAN:

- COPY SYSTEM (machine language object) tapes rapidly and accurately.
- MERGE independently assembled object tapes into one load module.
- VERIFY bit-for-bit system tapes duplicated by COPSYS.

REMODEL is a powerful utility that for the first time allows the TRS-80 user to RENUMBER any portion or all of a basic program, MOVE, any portion from one location to another, or DELETE any range of lines. This includes readjusting line number references where required. The user will find REMODEL to be an indispensable tool in program development by assisting in the creation of well organized, readable, and easy to document programs. Specify 16, 32, 48K.

PROLOAD extends the power of REMODEL with features to LOAD all or any portion of a basic program, COMBINE basic programs with renumbering and merging into any location, SAVE combined/merged programs or any portion to tape, and to VERIFY bit-for-bit the contents of saved programs. Users can now create libraries of BASIC programs or DATA statements which can then be loaded individually or in combination with other programs, thus expanding programming productivity and versatility. Requires REMODEL (16, 32, 48K). Special combined PROLOAD + REMODEL tape.

COPSYS is designed to COPY SYSTEM tapes (machine language object code) generated from the Radio Shack Editor/Assembler program. COPSYS can be used to duplicate those valuable system tapes before they become damaged.

TIMSER is a Time Series Analysis program that fits data to nine different 1st, 2nd and 3rd order curves. Goodness of fit data, tables, including projected data and confidence limits, and graphical displays of curve fit and variance are included. The program provides for correction factors and functions to test seasonal variations, inflation corrections, or cyclical variations. A detailed Users Manual is included complete with illustrated examples.

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REMODEL EXAMPLES

The examples below illustrate some of the capabilities of REMODEL. A trivial sample program is used to show the status before and after the specified action is completed. User input is underlined> and modified areas are shaded.

1. REQUIREMENT: Renumber the entire program using a starting number of 10 and incrementing by 10.

```
User: START?      END?      NEW?10  BY?      MODE?
Used: START?5    END?125  NEW?10  BY?10    MODE?RES
```

PROGRAM BEFORE	PROGRAM AFTER
5 PRINT 1: GOTO 24	10 PRINT 1: GOTO 20
24 PRINT 2: GOTO 125	20 PRINT 2: GOTO 60
25 PRINT 3: GOTO 63	30 PRINT 3: GOTO 50
50 PRINT 4: END	40 PRINT 4: END
63 PRINT 5: GOTO 50	50 PRINT 5: GOTO 40
125 PRINT 6: GOTO 25	60 PRINT 6: GOTO 30

COMMENTS: Note that default values were supplied automatically for the fields left blank.

2. REQUIREMENT: Move lines #50-63 between lines #5 and #24, renumbering in increments of 10 starting at 10.

```
User: START?50   END?100  NEW?10  BY?      MODE?
Used: START?50  END?63  NEW?10  BY?10    MODE?MOV
```

PROGRAM BEFORE	PROGRAM AFTER
5 PRINT 1: GOTO 24	5 PRINT 1: GOTO 24
24 PRINT 2: GOTO 125	10 PRINT 4: END
25 PRINT 3: GOTO 63	20 PRINT 5: GOTO 10
50 PRINT 4: END	24 PRINT 2: GOTO 125
63 PRINT 5: GOTO 50	25 PRINT 3: GOTO 20
125 PRINT 6: GOTO 25	125 PRINT 6: GOTO 25

Comments: Blocks may be moved to any new location as long as there is sufficient room between sequence numbers, as above.

3. REQUIREMENT: Move lines #50-63 between lines #24 and #25.

```
User: START?25   END?25   NEW?40  BY?      MODE?
Used: START?25  END?25  NEW?40  BY?10    MODE?RES

User: START?50   END?63   NEW?30  BY?5     MODE?
Used: START?50  END?63  NEW?30  BY?5     MODE?MOV
```

PROGRAM BEFORE	PROGRAM AFTER
5 PRINT 1: GOTO 24	5 PRINT 1: GOTO 24
24 PRINT 2: GOTO 125	24 PRINT 2: GOTO 125
25 PRINT 3: GOTO 63	30 PRINT 4: END
50 PRINT 4: END	35 PRINT 5: GOTO 30
63 PRINT 5: GOTO 50	40 PRINT 3: GOTO 35
125 PRINT 6: GOTO 25	125 PRINT 6: GOTO 40

COMMENTS: Two steps were required in the above example. The first renumbered line #25 to #40, and the second moved lines #50-63 between #24 and #40 producing the desired result.

REMODEL CAN BE USED IN DOS OR NON-DOS ENVIRONMENT

PROLOAD EXAMPLES

PROLOAD expands the capabilities of REMODEL as illustrated in the examples shown below. For these examples it is assumed that the following two programs are on tape and positioned correctly when needed:

PROGRAM "A"	PROGRAM "B"
10 PRINT 1: GOTO 30	25 PRINT 4: GOTO 35
15 PRINT 2: END	30 PRINT 5: STOP
30 PRINT 3: GOTO 15	35 PRINT 6: GOTO 30

User input is underlined> and areas loaded or saved to tape are shaded.

1. REQUIREMENT: Load program "A" into memory.

```
User: START?      END?      NEW?      BY?      MODE?"A"
Used: START?0     END?65535 NEW?      BY?      MODE?"A"
```

MEMORY BEFORE	MEMORY AFTER
	10 PRINT 1: GOTO 30
	15 PRINT 2: END
	30 PRINT 3: GOTO 15

COMMENTS: Default values were supplied for the START and END fields. The NEW and BY fields were not used, as a result the statements were not renumbered.

2. REQUIREMENT: Load statements #30 and #35 of program "B" between lines #15 and #30 of program "A", renumbering to #20 and #25.

```
User: START?30   END?35   NEW?20  BY?5     MODE?"B"
Used: START?30  END?35  NEW?20  BY?5     MODE?"B"
```

MEMORY BEFORE	MEMORY AFTER
10 PRINT 1: GOTO 30	10 PRINT 1: GOTO 30
15 PRINT 2: END	15 PRINT 2: END
30 PRINT 3: GOTO 15	20 PRINT 5: STOP
	25 PRINT 6: GOTO 20
	30 PRINT 3: GOTO 15

COMMENTS: This operation was successful because there was room between statements # 15 and #30 for the two lines desired.

3. REQUIREMENT: Save the contents of memory which contains program "A" from lines #15 to #30 to tape, renaming to program "C".

```
User: START?15   END?30   NEW?      BY?      MODE?(C)
Used: START?15  END?30  NEW?      BY?      MODE?(C)
```

MEMORY BEFORE	PROGRAM "C" TAPE
10 PRINT 1: GOTO 30	15 PRINT 2: END
15 PRINT 2: END	30 PRINT 3: GOTO 15
30 PRINT 3: GOTO 15	

COMMENTS: Note that the NEW and BY fields were not used. Any range of lines can be saved to tape. Tapes written can be verified by using the =C= mode as for the example above.

PROLOAD CAN BE USED IN A DOS OR NON-DOS ENVIRONMENT

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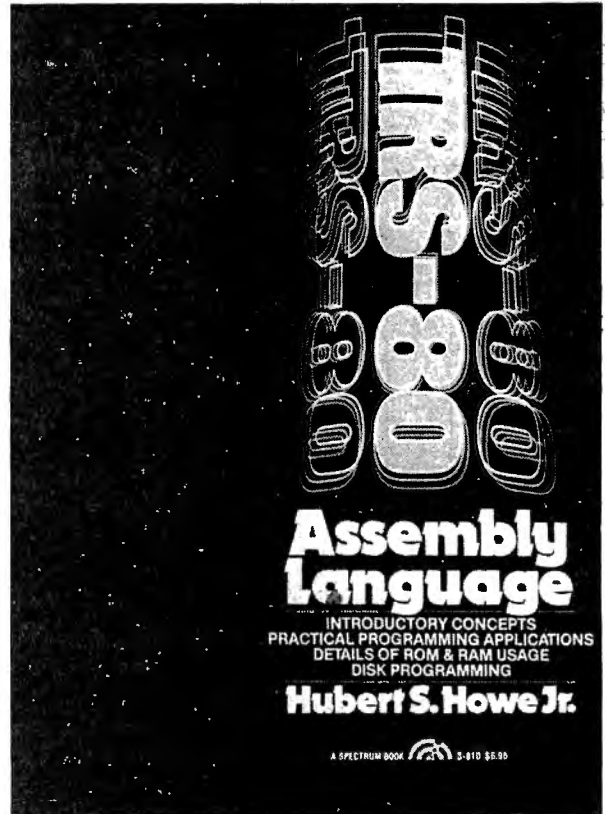
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The audit trail output also becomes a fine front page for your 3-ring binders, in which you keep your actual records.

Another backup produced by the system is the diskette itself. Here you have two alternatives. You may just retain each data diskette as a permanent record for that accounting period. This practice allows you later reruns, modeling, etc. Or else, you may rename and resave your data files on the same disk. Say your September '78 journal becomes SEPT78. In this fashion, you may keep many old files on the same disk.

Finally, you get your financial reports. The fifth program produces your PROFIT AND LOSS STATEMENT. An easily read standard format shows all your accounts by category, your total revenues, total direct expenses, total G. & A. expenses and your income (or loss) for the period.

The last program prints (or displays on the screen) your BALANCE SHEET. Assets, liabilities and owners equities are shown by account and by totals.

Since there are only two files, the system may be set up rapidly. Both current and prior period adjustments are made quickly, either by journal update and re-run or directly via chart update in a single operation. Thus, the system is eminently suitable for "What-if" kinds of modeling usage.

ACCOUNTS PAYABLE SYSTEM

MICROPAY consists of a series of computer programs that carry out the Accounts Payable functions for a small business. MICROPAY is designed to provide an essentially simplified sequence of operations that can be easily executed on a microcomputer by a person who has only the basic familiarity with such a system.

The first program lets you initialize your A/P transaction file and master file. Then you may start entering A/P transactions.

Data include vendor name, invoice number, description, quantity invoiced, receiving date, voucher number, quantity received, purchase order number, quantity ordered, ledger account number to be debited, ledger account number to be credited, street address and city-state-zip of vendor.

Later programs provide the means to accumulate transactions into your master file, which becomes your A/P history file. You may select to pay accounts for a single date, or for a range of dates. The program will count the appropriate records and tell you the number of continuous check forms required. It will then print your checks, ready to be mailed to the vendors.

The programs will also keep the master file updated and transmit the A/P information to the JOURNAL file. From there, MICROLEDGER will pick them up and integrate them with your other transactions.

Service routines make it easy to list both the transactions file and the master file. In case you find an error, or some data have changed since you entered it, update routines carry out the changes quickly.

Reporting routines include facilities to output the following reports:

- Cash requirements (single date/range of dates)
- A/P single vendor/all vendors
- A/P single date/range of dates

The user manual explains options in detail; contains sample data and sample runs; shows the exact format of check form and stub form to be printed with the company name and bank numbers to be able to use printing program.

ACCOUNTS RECEIVABLE SYSTEM

MICROREC is the Accounts Receivable counterpart package, quite similar to the A/P system.

The data employed by MICROREC include:

- Customer name and address
- Purchase order number
- Invoice number
- Invoice date
- Amount
- Description
- Quantity invoiced
- Waybill number
- Ledger account number to debit
- Ledger account number to credit

"Conversational" programs help you enter the data rapidly and easily. A transaction file holds your A/R until a period is ended and you want to accumulate them into the master file.

The master is a permanent record of all A/R entries and customer payment receipts. Both the transaction file and the master file may be easily inspected and updated at any time.

There are several reporting routines. You may ask for the following outputs:

- Print invoices
- Aged Trial Balances (under 30 days, 31-60 days, 61-90 days, over 91 days).
- Receivables by Customer. You have the option to request report for a single customer or for all customers.
- Receivables by Date. In this program, you can ask for a statement covering a single date or a range of dates. The statements will also produce the corresponding cash projections.

Finally, the journalizing option will create the journal file entries that correspond to each A/R as it is entered, as well as to the receipt of each customer payment as it is input.

These transactions will ripple through your trial balance, posting, profit and loss statement and balance sheet - if you are also a user of MICROLEDGER.

INVENTORY CONTROL SYSTEM

MICROINV is a series of computer programs that carry out the INVENTORY CONTROL functions for a small business.

There is an inventory transactions file and a master file. the data employed are the following:

- Item number and description
- Quantity on hand
- Quantity on order and delivery date
- Unit price and name of units used
- Lead time, Reorder point and Safety stock
- ABC class describing frequency of usage
- Vendor name
- Job allocation

Each transaction is identified by entering the quantity issued or received, current price and job or work order classification for an issue.

The program will accumulate the transactions: current average cost, LIFO (Last-In First-Out) cost, year-to-date usage and job allocation will be updated.

At any time you may ask for:

- Stock Analysis Report, showing your standard inventory stock data and stock valuation
- ABC Analysis, breaking down the inventory into groups separated by frequency of usage.
- Job Cost Report/Materials, showing totals allocated to each job or work code used. When this report is used jointly with Job Cost Report/Personnel in MICROPERS, you get complete job cost control.
- Economic (or Optimal) Order Quantities for all items for which you have cost of placing an order, expected annual demand and annual inventory carrying cost available.

Finally, all inventory receipt or issue transactions will be journalized and made available to MICROLEDGER for automatic entering into your trial balance, posting and financial reports.

PAYROLL/PERSONNEL

In the **MICROPERS** package, you get two systems for the price of one: a complete payroll system and a personnel management system.

The first program creates and updates your master file of PERSONNEL. Data include:

- Name and address, telephone, social security number
- Married or single status
- Action (like hire, raise, fire, etc.)
- Date of action
- Position
- Salaried or hourly category, rate
- Number of exemptions
- Miscellaneous deductions
- Job or work codes

The second program sets up and maintains the file for PAYROLL transactions: regular and special times worked, percentage on each job or work code.

Subsequent programs compute the PAYROLL REGISTER. Once all deductions and figures are checked and approved, PAYCHECKS are printed and payroll transactions are journalized.

The documentation includes the current Federal and California State withholding tables. By examining these tables along with the commented data statements that hold the rates and the cutoffs, it will be easy for the user to update the program for a future change in rates, or to customize it for another state.

Further programs produce:

- Annual W-2 Forms
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- Job Cost Report/Personnel
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The user should back up the PAYROLL file before carrying out the PAYROLL REGISTER computation. Then the same data may be recovered, should an update be necessary before printing the checks.

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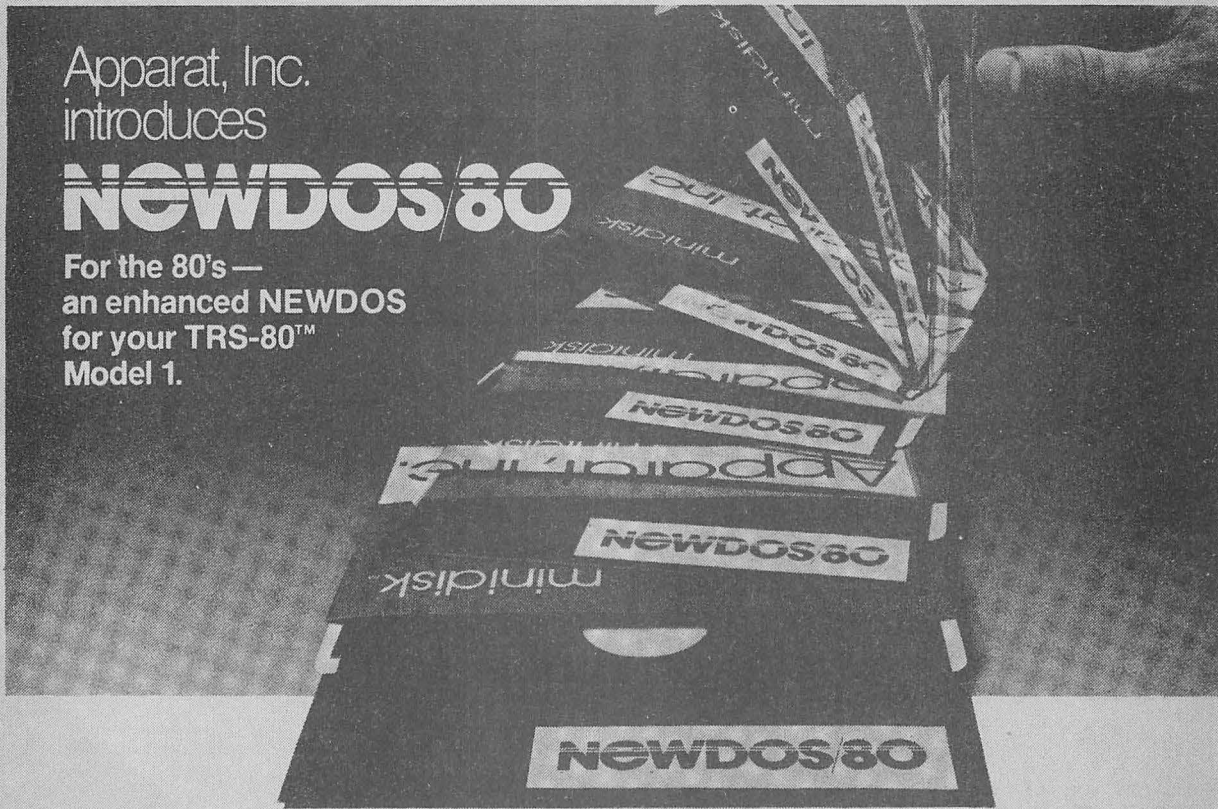
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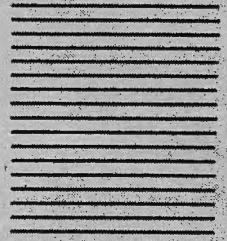
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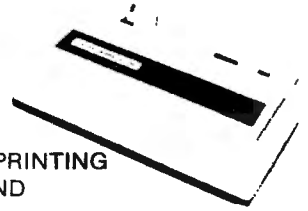
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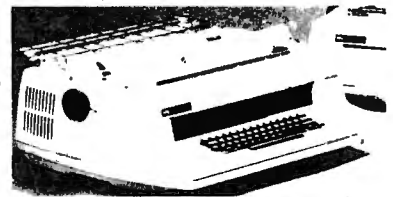


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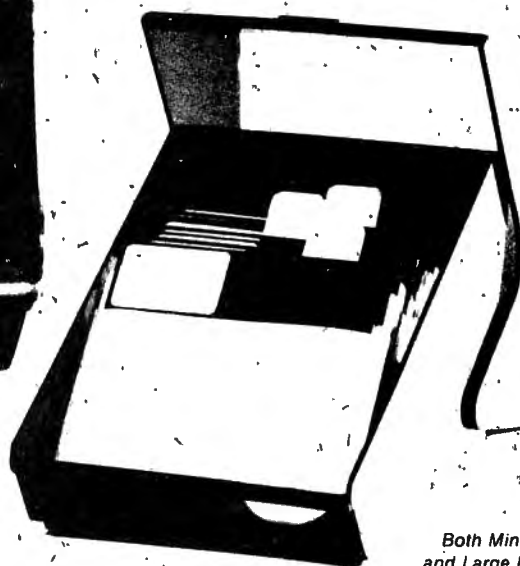
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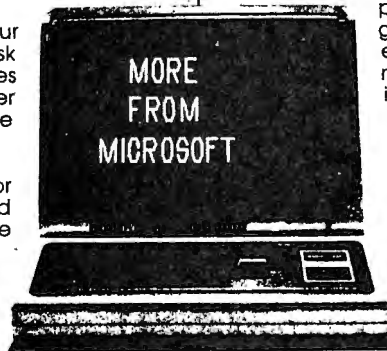
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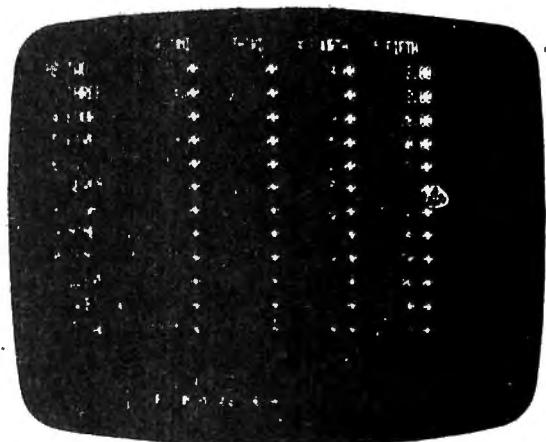
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- ** Combine or access all or part of analysis files into any designed format. You do not have to key in data twice.
- ** Repeat calculations on columns, using different variables.
- ** Operate on 20-30 or more columns, then print out the whole resulting analysis sheet in four column segments.
- ** Work on 20, 30, or more columns at a time.

The list of features is too big to describe. This program was designed by programmers that knew what you wanted from an analysis pad. They have given you the most versatile system you could ask for. The drudgery of working with large numbers of figures has been eliminated by automation.

Now, accurate, effortless results are only a fingertip away. You owe it to yourself to bring the Analysis Pad System to YOUR fingertips.

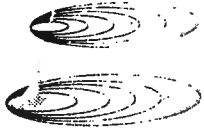
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6. Daily overall market, "volume" and "closing Dow" are also provided from a newspaper.
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8. Comparisons of the issue against itself are also done. This may allow the user to spot "unusual" activity on the issue.
9. Clear indications are given as to whether the issue is "out performing", "under performing" or "performing with" the market.
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11. This program is intended to be a guide to indications, and is not to be used as a sole recommendation to buy, sell or hold an issue. These decisions are the responsibility of the user and his brokerage.

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1977 LOW - - - - 10.5 *** 1978 LOW - - - - 15.0 *** BETA FACTOR - - - 1.45

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CLOSE LAST MONTH - - - - - 29.125 *** TOTAL VOLUME LAST MONTH - - - 23354
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CURRENT EARNINGS PER SHARE - - 2.75 *** CURRENT DIVIDEND PER SHARE - - 0.00
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INDICATED PRICE AS COMPUTED USING THE BETA FORMULA - - - - - 28
PROBABLE INDICATED PRICE IF THE DOW RISES *50* POINTS - - - - - 31
PROBABLE INDICATED PRICE IF THE DOW FALLS *50* POINTS - - - - - 26
TECHNICAL RELATIVE STRENGTH IN THE PRESENT MARKET - - * * -0.71
RATIO OF CHANGE FROM AVERAGE IN THE TOTAL MARKET VOLUME - - - - - 1.77
RATIO OF CHANGE IN THE DOW FROM THE END OF LAST MONTH - - - - - 0.98
RATIO OF CHANGE FROM AVERAGE DAILY VOLUME TRADED IN COMPANY - - - - - 1.19
RATIO OF CHANGE IN PRICE PER SHARE FROM THE END OF LAST MONTH - - - - - 0.97
PERCENT CHANGE FROM AVERAGE VOLUME TRADED IN COMPANY - - * * +19.1%
PERCENT CHANGE IN PRICE PER SHARE FROM THE END OF LAST MONTH - - * * -3.0%
TECHNICAL CHANGE IN VOLUME RELATIVE TO TOTAL MARKET VOLUME - - - - - 0.67
TECHNICAL CHANGE IN THE PRICE PER SHARE RELATIVE TO THE DOW - - - - - 0.99

DATE 11/15/78

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1977 HIGH - - - - 49.3 *** 1978 HIGH - - - - 51.9 *** VALUELINE PAGE - - 133
1977 LOW - - - - 41.4 *** 1978 LOW - - - - 40.0 *** BETA FACTOR - - - 1.05

LATEST DOW JONE CLOSE - - - - 851.75 *** LATEST TOTAL MARKET VOLUME - - 51.40
CLOSE LAST MONTH - - - - - 45.500 *** TOTAL VOLUME LAST MONTH - - - 24652
AVERAGE DAILY VOLUME L/M - - - 1174 *** SHARES OUTSTANDING (MILLIONS) -119.5
CURRENT EARNINGS PER SHARE - - 11.75 *** CURRENT DIVIDEND PER SHARE - - 3.50
PRICE EARNINGS RATIO - - - - - 3.59 *** STANDARD AND POORS RATING - - - - A-

INDICATED PRICE AS COMPUTED USING THE BETA FORMULA - - - - - 44
PROBABLE INDICATED PRICE IF THE DOW RISES *50* POINTS - - - - - 45
PROBABLE INDICATED PRICE IF THE DOW FALLS *50* POINTS - - - - - 40
TECHNICAL RELATIVE STRENGTH IN THE PRESENT MARKET - - * * -5.12
RATIO OF CHANGE FROM AVERAGE IN THE TOTAL MARKET VOLUME - - - - - 1.77
RATIO OF CHANGE IN THE DOW FROM THE END OF LAST MONTH - - - - - 0.98
RATIO OF CHANGE FROM AVERAGE DAILY VOLUME TRADED IN COMPANY - - - - - 0.89
RATIO OF CHANGE IN PRICE PER SHARE FROM THE END OF LAST MONTH - - - - - 0.93
PERCENT CHANGE FROM AVERAGE VOLUME TRADED IN COMPANY - - * * -11.0%
PERCENT CHANGE IN PRICE PER SHARE FROM THE END OF LAST MONTH - - * * -7.4%
TECHNICAL CHANGE IN VOLUME RELATIVE TO TOTAL MARKET VOLUME - - - - - 0.50
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RSM-2 MACHINE LANGUAGE MONITOR

A 27-command monitor program with capabilities for entering, executing, saving and loading machine language programs. Commands to search, display, edit, zero, exchange, test, fill and verify memory. Also provides links for keyboard and CRT display access for users.

Provides access to all memory locations. You may examine your Basic ROM's, test your RAM, enter and execute machine language programs, read and write machine language tapes.

You can set BREAKPOINTS in your programs, write SYSTEM tapes, READ SYSTEM tapes and display their name and starting address, and PRINT any command with the TRS232 printer interface or the Radio Shack expansion interface! Disk commands (see RSM-2D) are included for future expansion of your system. RSM-2 loads from cassette into the top 5K of memory in Level I or Level II 16K computers so that it can reside in memory with other programs!

RSM-2D

This special disk version of RSM-2 has all the commands of both RSM-1S and RSM-2, including two commands that read or write disk sectors directly! You can read any number of disk sectors into any memory area, or write any memory area to disk! A truly unique tool for use with disk systems. RSM-2D is furnished on disk with three versions that load and run in the top 5K of 16K, 32K and 48K computers. A special loader program prompts you to select the desired version, which then loads and executes. If desired, you can make CMD files of RSM-2D by use of the TAPE-DISK command for direct execution from TRSDOS.

DCV-1 CONVERTS MACHINE LANGUAGE PROGRAMS FROM A TAPE TO A DISK PROGRAM

DCV-1 is a special SYSTEM tape that allows you to convert nearly any machine language program from a tape to a disk program. Nearly all of our software may now be executed from your disk system! This includes RSM monitors, The Electric Pencil, Air Raid, RSL-1, ESP-1 or any program that occupies less than 5K (Larger programs may be handled if you have more than 16K of memory). After DCV-1 is loaded, DCV-1 then loads any SYSTEM tape into memory starting at 6C00 Hex. A short block-move program is added at the beginning of the program, and the parameters necessary to create a disk file are displayed on the screen. TAPEDISK is then used to create a disk file. When accessed, the program loads at 6C00 Hex, moves itself to its correct address, then jumps there and executes! A super accessory for disk systems!

BASIC-1 LEVEL I BASIC FOR LEVEL II MACHINES

Level I and II without extra hardware. This program will read a 12K maximum level I program and execute it as is. It is possible to switch back and forth between level I and level II without reloading the program. Works under level II and DOS BASIC. All level I abbreviations are supported.

AIR RAID A REAL-TIME SHOOTING GALLERY

AIR RAID is an arcade-type action game that uses the high speed machine language capabilities of the TRS-80. AIR RAID offers enough challenge to keep the attention of the most dedicated of game haters, and has been known to become nearly an obsession to more than one individual. Just about the time you finally achieve that magic score of 10,000, someone points out that you're still playing the game at one of the low speeds!

AIR RAID is played on the TRS-80 video screen. A random sequence of large slow aircraft and small fast aircraft traverse the screen in both directions at seven altitudes. A missile launcher that can be pointed in 5 different directions launches missiles under your command. After launch, the flight path may be modified (if you're fast enough)! When hit, aircraft explode dramatically and the debris rains to the bottom of the screen, destroying any aircraft in its path! On occasion, two aircraft collide, destroying the aircraft and creating a parachute which settles slowly to the ground. These, of course, offer additional targets, but they are much harder to hit than the aircraft. To compensate, a higher score is tallied for parachute hits!

AIR RAID also runs in a continuous demonstration mode, providing an interesting display for shows or computer meetings. AIR RAID will provide hours of fun for you, and is an ideal program for entertaining your friends!

MON-3 MACHINE LANGUAGE PROGRAMMING FOR BEGINNERS

By Dr. Hubert S. Howe, Jr.

- **BEGINNERS** can learn to interact directly with the computer in machine language.
- **COMPLETE** manual provided with program.
- **SIMPLE** commands, easy for beginners to use.
- **ADVANCED** commands for assembly programmers and disk systems.

The features of the monitor allow you to do the following things:

- **SAVE** or **READ SYSTEM** tapes.
- **SAVE SYSTEM** tapes on disk.
- **DISPLAY** contents of memory in different ways.
- **DISASSEMBLE** memory to see machine language commands.
- **SEARCH** through memory to find specific values.
- **MOVE** and **COMPARE** memory blocks.
- **MODIFY** and initialize memory blocks.
- **RELOCATE** object programs.
- **PRINT** output either on video display or line printer.

MON-3 is a powerful utility program that is as useful for beginners as it is for advanced programmers. Its commands provide you with nearly everything you need to interact with the TRS-80 in machine language. More advanced features include a command that produces a symbolic tape of the disassembly that can be loaded and reassembled using the TRS-80 Editor/Assembler, and a feature that allows object programs that are to be executed anywhere in memory to be saved on disk, even if they run in the same area used by the TRSDOS system.

The program is available only for Level II BASIC computers. Specify whether you have 16K, 32K, or 48K RAM. All versions are compatible with cassette or disk.

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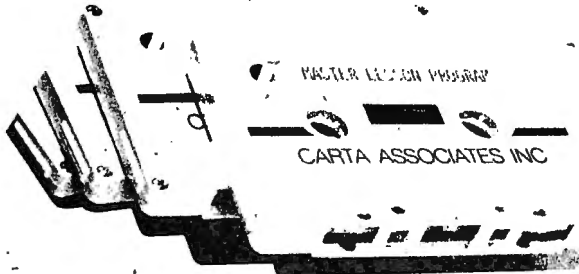
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COMPUTER

PROGRAM

(VIC)



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THE FIRST

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If you want to gain access to the full resources of the TRS-80™ by learning to write your own programs, the Carta Visual Instructional Computer program (VIC) provides the essential first step. VIC gives you a fundamental understanding of how computers work. And it teaches you to write programs in the most basic language they are designed to understand — machine language. The real beauty of VIC is that you see the results of your instructions on the display — just as if you were looking at the inside of the computer. By making the otherwise invisible electronic processes visible, VIC helps you understand the internal workings of computers — from the inside out.

VIC's internal structure (architecture) is very simple, and is representative of all computers. Numbers between 1 and 61 (machine language instructions) are placed in certain locations in the computer's memory. Each instruction causes the computer to perform a task. By watching this process on the display, you gain a clear understanding of the logic that is fundamental to all computers.

It's easy to learn to use VIC. Our comprehensive instruction booklet explains exactly how VIC works, defines all the computer terminology you will need, and gives detailed, step-by-step instructions for using VIC to write machine language programs. The booklet defines each of the machine language instructions you can use VIC, and tells you what the computer will do when it is given each instruction.

VIC provides three general purpose registers, two condition flags, an instruction counter, 100 memory locations, and a hardware stack. Forty-one instructions provide for movement data between the memory and the registers, arithmetic (+, -, ×, ÷), program flow (seven types of branch instructions), subroutine calls and stack operations. At full speed, VIC operates at only about two to three instructions per second (!), letting you actually see what is happening.

With the help of both the instruction booklet and the display, even beginners can carry out VIC procedures and learn to write simple machine language programs. As you use VIC, you become more and more competent — and confident — in your programming skills. And you gain a basic working knowledge of computers that can be applied to programming in other computer languages.

*** VISUAL INSTRUCTIONAL COMPUTER (VI.I) ***

A-0	IC-0	COMMAND	OUTPUT
B-0	Z-0		
C-0	V-0		

MEMORY ↓	0	1	2	3	4	5	6	7	8	9	↓ STACK ↓
00:	0	0	0	0	0	0	0	0	0	0	
10:	0	0	0	0	0	0	0	0	0	0	
20:	0	0	0	0	0	0	0	0	0	0	
30:	0	0	0	0	0	0	0	0	0	0	
40:	0	0	0	0	0	0	0	0	0	0	
50:	0	0	0	0	0	0	0	0	0	0	
60:	0	0	0	0	0	0	0	0	0	0	
70:	0	0	0	0	0	0	0	0	0	0	
80:	0	0	0	0	0	0	0	0	0	0	
90:	0	0	0	0	0	0	0	0	0	0	

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Commands	12	18	Wait on Error	Yes	Yes	Breakpoints	1	8
Find	Yes	Yes	Full Error Messages	Yes	Yes	Type Out Modes	1	5
Return to BASIC	Yes	Yes	Hex, Octal and Decimal Constants	Yes	Yes	Type In Modes	1	4
Edit	Yes	Yes	Optional List, Object Code, Symbol Table	Yes	Yes	Examine Memory	Yes	Yes
Delete	Yes	Yes	6-Character Labels	Yes	Yes	Examine Registers	Yes	Yes
Scroll Up, Down, and Tab	Yes	Yes	Macro Capability	No	Yes	Go	Yes	Yes
Insert	Yes	Yes	Assemble Directly Into Memory	No	Yes	Punch	Yes	Yes
Renumber	Yes	Yes	Conditional Assembly	No	Yes	Load	Yes	Yes
Output to Line Printer	Yes	Yes	Operators AND, SHIFT	Yes	Yes	Symbolic References	No	Yes
Move and Copy	No	Yes	Operators EQU, NEG OR, XOR, MOD	No	Yes	Single Step Execution	No	Yes
Substitute	No	Yes	Operator Precedence	No	Yes	Proceed After Breakpoint	No	Yes
Range Extensions	No	Yes	Automatic Program Origin	No	Yes	Calculator Mode	No	Yes
Extend	No	Yes	Alphabetic Symbol Tables	No	Yes	Load Debugger W Editor Assembler	No	Yes
Edit in a Range	No	Yes	Quash	No	Yes	Runs With Level I	Yes	No
Find in a Range	No	Yes	Runs With Level I	Yes	No			
Line Number Offset	No	Yes						
Load and Save Editor Files	Yes	Yes						
Runs With Level I	Yes	No						

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THE ASSEMBLY LANGUAGE "PLUS" YOU'VE BEEN LOOKING FOR

Have you reached the limits of your editor/assembler/debugger? Have you always wanted to try assembly language programming but were a little awed by it? Then Microsoft's Editor/Assembler-Plus™ is what you've been looking for! The Editor/Assembler-Plus has every feature of the original Editor/Assembler AND T-Bug from Radio Shack. PLUS many added features that will make your programming, editing, and debugging not only easier and more efficient, but more fun, too!

Microsoft's Editor/Assembler-Plus is a low-cost, cassette package that has many features of a "big computer" development system. It supports both macros and conditional assembly.

You no longer have to waste time creating both source and object tapes. Assembler-Plus can assemble DIRECTLY into memory.

Program editing is greatly enhanced by new commands like Substitute, Move, Copy, and Extend. You can zap bugs with Z-BUG™, a debugger that has the same capabilities used by professionals. Z-BUG provides power never before available on the TRS-80.

Editor/Assembler-Plus comes complete with an 80-page reference manual describing use of Editor/Assembler-Plus and Z-BUG. You need not wait any longer to learn assembly language!

THE ASSEMBLER

Microsoft Assembler-Plus performs all the assembler functions of Radio Shack's assembler, PLUS the following:

MACRO FACILITY. Save programming time and memory space by defining macros to generate commonly used sequences of instructions. Every time a macro is referenced, a sequence of statements defined by that macro is assembled. You specify the parameters that are used in the assembly of each macro expansion.

ASSEMBLE DIRECTLY INTO MEMORY. Avoid the hassle of saving your object code on cassette tape and then loading it into memory for execution. With Assembler-Plus you can assemble directly into memory. Coding/editing/debugging sessions are much more efficient, with no need for tape storage until your program is in its final form.

CONDITIONAL ASSEMBLY. The COND and ENDC pseudo-ops are included to allow the assembly of code if a given condition is true. Conditionals can be nested up to 255 levels. Especially useful for generating different versions of a program.

EXPRESSION EVALUATOR. In addition to the +, -, AND, SHIFT operators, the assembler supports the EQU, NEQ, OR, XOR, *, /, and MOD operators. Standard operator precedence is recognized, including precedence of expressions in parentheses.

AUTOMATIC ORIGIN. Because the assembler dynamically allocates space for the edit buffer, symbol table and user program, the origin of your program is determined automatically for maximum space efficiency. Or, if you choose not to use the automatic feature, a manual override is provided.

IMPROVED SYMBOL TABLE PRINT-OUT. An alphabetical symbol table is printed at the end of the assembly listing. In addition to the symbol name and value, codes are printed to indicate the type of symbol. The printout is optional.

QUASH COMMAND. Deletes the assembler and/or the Z-BUG debugger so more space can be allocated to the edit buffer. This gives you more working storage for general text editing.

THE DEBUGGER

Z-BUG is included as part of the Editor/Assembler-Plus package. There is no need to purchase a separate debugger. The many capabilities of Z-BUG will help you debug programs fast and improve your assembly language skills in the process.

- Use up to 8 breakpoints at a time, with commands to set, remove, display and proceed from breakpoints. There's no need to remove a breakpoint before proceeding. Simply type the proceed command, and Z-BUG executes the breakpoint's instruction, jumps to the next instruction, and continues to the next breakpoint.

- Single step through instructions in memory.

- Use any of the following type-out modes when displaying memory contents:
 - Decimal, Octal, Hexadecimal, ASCII,
 - Symbolic (disassembles statements during type-out)
- Type-in radix may be set to decimal, octal, hexadecimal, or ASCII.
- Use program symbols to reference memory locations.
- Type a tab to instantly display the contents of whatever memory address was last displayed.
- Z-BUG may be loaded in its standard configuration as a part of Editor/Assembler-Plus or in a standalone configuration, allowing more memory space for debugging larger programs.
- While using Z-BUG, the full power of the expression evaluator is available to you in interactive calculator mode.

THE EDITOR

In addition to ALL the commands in Radio Shack's editor, Editor-Plus has the following convenient commands:

MOVE AND COPY. These one-step commands save on typing time by moving entire blocks of text or repeating lines anywhere in the file.

SUBSTITUTE. Easy search and substitute of all occurrences of old text for new text. The Substitute command can cover the entire file, or just a given range.

RANGE SPECIFICATIONS. In addition to conventional range specifications, a range can be specified with a line number and an exclamation point, indicating "for n lines."

For example: P500!10

Another handy feature is line number specification by offset.

For example: P500 + 5 prints the fifth line after line 500.

EXTEND. Use the Extend command to immediately enter insert mode at the end of a line. Great for adding comments to assembly language code.

EDIT (range) and FIND (range). Edit mode may be entered on a range of line numbers as well as one line number at a time. A range specification is also allowed with the Find command.

DOCUMENTATION

The Editor/Assembler-Plus includes an 80-page reference manual explaining Editor/Assembler-Plus and Z-BUG commands. A handy editor/assembler/debugger reference card completes the package.

SYSTEM REQUIREMENTS

Editor/Assembler-Plus will operate on a TRS-80, Level II, 16K computer. Editor/Assembler-Plus will not run on a Level I TRS-80.

DESIGNERS

Microsoft's Editor/Assembler-Plus was written by Mark L. Chamberlin and William E. Yates, consultants to Microsoft. Mr. Chamberlin is the author of the original Radio Shack Editor/Assembler.

WE SAVED THE BEST FOR LAST

Listed below is a cost comparison of Radio Shack and Microsoft editor/assemblers:

Radio Shack		Microsoft	
Editor/Assembler # 26-2002	\$29.95	Editor/Assembler-Plus:	
T-Bug # 26-2001	\$14.95	includes Editor and	
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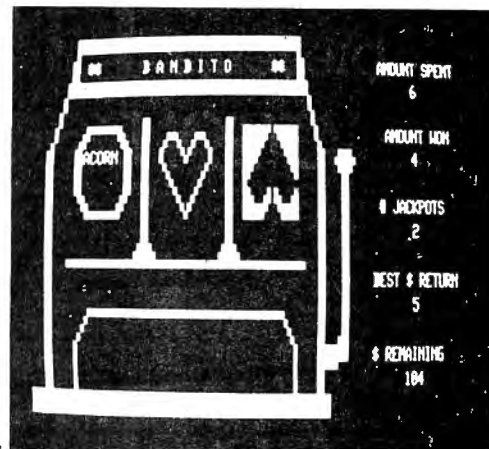
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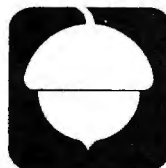
Hear the *Bandito*'s arm creak as it moves. Wait anxiously as the spinning and clicking wheels slow to a stop. And, if your luck holds out, you'll see your winnings pile up!

Bandito will provide hours of fun and entertainment on your TRS-80 microcomputer. The fast graphics are excellent animation and the sound effects give the feeling of actually playing the slots. *Bandito* is good for demonstrating your computer to friends, a great party program, and enjoyable entertainment at any hour.

Sound effects on *Bandito*, as on all Acorn programs, are made through the cassette cables. You just plug a small speaker amplifier into the AUX cable and you'll hear the arm creak, the wheels spin, and the winnings pile up.

Acorn produces several programs with sound effects. These include *Star Warp* and *Lunar Lander*, *Alien*, *Star Trek*, *Ting-Tong*, *Music*, *Codebreaker*, *Word Challenge* and more. All available for \$9.95 for a 16K, Level II TRS-80. Ask for these quality programs at your local computer store.

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GAMES WITH



TING-TONG! by Ray Daly
4K Level II \$9.95

TING-TONG is a graphic arcade game of ping-pong with sound effects for the TRS-80™. It has machine language graphics and speed and can be played by one or two players.

CODEBREAKER by Mikal Pederson
16K Level II \$9.95

Puzzling, challenging, exciting. Determine, in as few moves as possible, the colors and positions of four secret code pegs. The sound effects heighten the suspense and enhance the enjoyment. Plan your moves logically!

WORD CHALLENGE by Richard Taylor
16K Level II \$9.95

Guess a phrase — letter by letter or all at once. One or two players can challenge each other by making up words/phrases or can accept the machine's challenge. Careful — wrong guesses cost points!

MUSIC by Tom Stibolt
16K Level II \$9.95

This program allows you to enter musical scores for play through the TRS-80™. It comes with a portion of the theme from "The Sting" and an uncompiled Bach's "Bourée Anglaise" as examples which will get you fascinated as well as show you how to begin using the program.

BLOCKADE by Joseph Moran
16K Level II \$9.95

Maneuver your blockade so that your opponent crashes before you. There are four game options each of which offers different crash possibilities. Sound effects encourage you as you force your opponent to his destruction.

ALIEN INVASION by Roy Niederhoffer
16K Level II \$9.95

Earth is under attack by Archons, and you must save it! Sound and graphics combine in this real time game as asteroids and black holes make avoiding the bombs more difficult. You fight back with your laser guns. Good luck.

PIGSKIN is a graphic game with sound effects for the TRS-80™. It contains most of the elements of the football games that you watch every weekend. You can pit your wits against a friend's, watch the computer play against itself, or you can play against the computer. Average game length is 20-30 minutes.

STAR WARP/GRAPHIC LUNAR LANDER by Mike Partain and Ray Daly
4K Level II \$9.95

Sound effects bring a new dimension to these familiar games! Independently developed SPACE WARP is similar to the classic "Star Wars" with accurate shooting essential for best score. Manual positioning of cross hairs, game timer and scoring add new interest. The graphics and sound effects on GRAPHIC LUNAR LANDER make this old favorite more exciting, but success is no easier to come by.

STAR TREK by John Christman
16K Level II \$9.95

Four different levels of play, a non-scrolling display, and sound effects make this version interesting to any Captain. Klingons move within quadrants, and games and played in real-time (Centons will pass if you don't enter a move!).

BANDITO by Doug Prosser
16K Level II \$9.95

Go ahead! Take a gamble! Pull the arm of this graphic slot machine, listen to the sound effects, and watch for your luck. For once, your winnings won't have to be reported to IRS.

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PRESENT VALUE OF A TAX SHIELD
FUTURE VALUE OF AN INVESTMENT
(uneven cash flow)
NET PRESENT VALUE OF AN INVESTMENT
LEASE/BUY DECISION
SYNDICATED INVESTMENT ANALYSIS
DEPRECIATION SWITCH
APPORTIONMENT BY RATIOS
INTERNAL RATE OF RETURN
FINANCIAL MANAGEMENT RATE OF RETURN
FINANCIAL STATEMENT RATIO ANALYSIS
PROFIT SHARING CONTRIBUTIONS
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HOME BUDGETING
CRITICAL PATH METHOD (CPM)
NONLINEAR BREAKEVEN ANALYSIS
PROGRAM EVALUATION & REVIEW
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SWEDISH MACHINE (QUEUEING THEORY)
MARKOV ANALYSIS
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By R.M. Richardson

• IN DEPTH Look At The TRS-80™ ROM

• A MUST For Every Assembly Language Programmer

VOLUME I - Subject

- i - Forward
- ii - Introduction
- 1. Decoding Level II ROM Function CALL Locations
- 2. Integer, Single & Double Precision Arithmetic
- 3. Using ROM Trig, Exponent, Log, et al Subroutines
- 4. Ancillary Level II ROM Subroutines
- 5. Level II BASIC ROM CALL Addresses-Alphabetical
- 6. Level II ROM Hex Code
- 7. Multi-Base Number Conversion Program
- 8. Print All Zeros With A Slash (Source/Object Code)
- 9. Self-Test Questions
- 10. Bibliography and Self-Test Answers

VOLUME II - Contents

i. Foreword

ii. Introduction

1. Disassembling TRS-80™ ROM Object Code

Covers all 694 Z-80 instructions and illustrates both their decimal and hex values. When you finish this Chapter, you will understand how easy it is to disassemble ROM by yourself...no disassembler required.

2. Partial Disassembled Level II ROM

Is a partial disassembled listing of Level II ROM with a number of object and source codes blanked out to protect Microsoft, the copyright owner.

3. Using VARPTR and ROM Calls With Integers

Illustrate how ROM stores integers, strings, and string arrays in MEM. A number of mini-programs illustrate these functions' storage protocols using VARPTR.

4. String & String Array ID, Locations, & Recall

Illustrate how ROM stores, strings, and string arrays in MEM. A number of mini-programs illustrate these functions' storage protocols using VARPTR.

5. Single & Double Precision Floating Point Numbers

Single and double precision floating-point numbers stored in MEM. Provides a number of truly UNIQUE programs that will logically and understandably decode their absolute and true values.

6. Simulating 'JKL' Video For Non-Disk Systems

Explains and fully covers how both non-disk users without the NEWDOS+ press 'JKL' to LPRINT out video feature, may quite simply utilize and add this useful function. Even NEWDOS+ users will find it attractive as it adds the function of 'press' SPACEBAR' to stop printing.

7. Storing Video IN MEM For Later Recall

Presents a program, plus detailed comments that will teach the reader video MEM handling, storage, and recall techniques that are extremely useful for all sorts of applications. These include storing and recalling telephone line/MODEM computer bulletin boards and/or teletype, but to name a few

8. Split Screen Separate Video On One Display

Allows the user to create TWO entirely separate video displays on one TRS-80™ screen.

9. Level II ROM CALL & Ancillary Functions Summary

Summary of ALL Level II BASIC ROM CALLS and significant ancillary function CALL addresses.

10. Basic Review: Morse Code Transmit & Receive Program

11. Basic Review: TV Satellite Locator Program

12. Self-Test Questions Chapters 1-11

13. Bibliography and Self-Test Answers

14. APPENDIX: Disk/Cassette Programs - Vols. 1 and 2 Index For Volumes 1 and 2

VOLUME III - Available July/August '80

- * Time sharing (SPOOLING) demonstration programs
- * UART serial transmit demonstration programs
- * UART serial receive demonstration programs
- * WOULD YOU BELIEVE? A homebrew \$15 telephone line MODEM
- * COMPUTER BULLETIN BOARD access software program
- * ASCII ham radio and receive program 110/300 baud
- * Using TRS-80™ interrupts demonstration programs
- * A/D homebrew converter and demonstration programs
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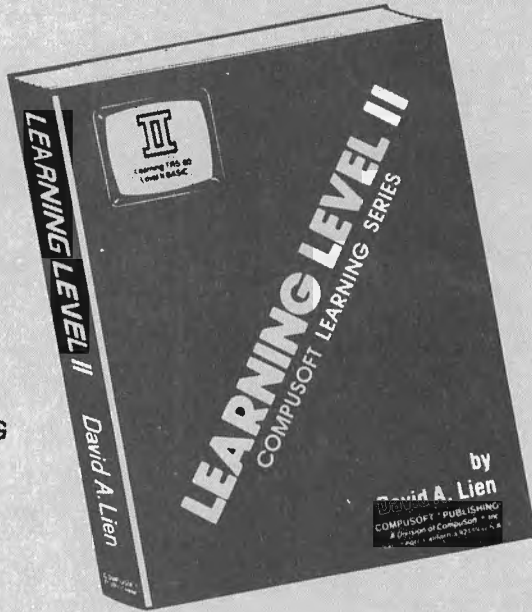
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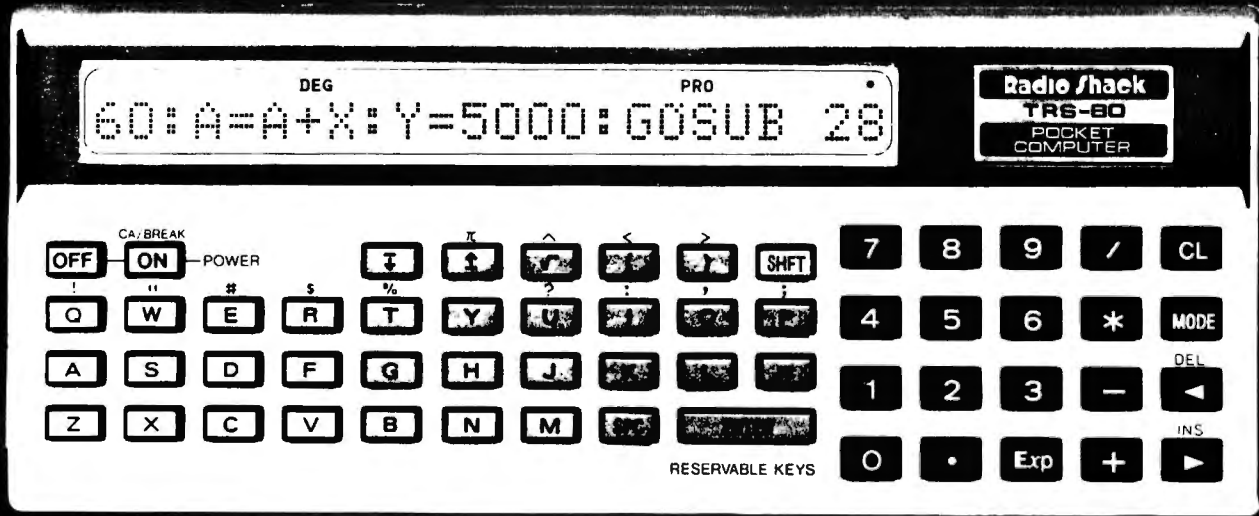
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