

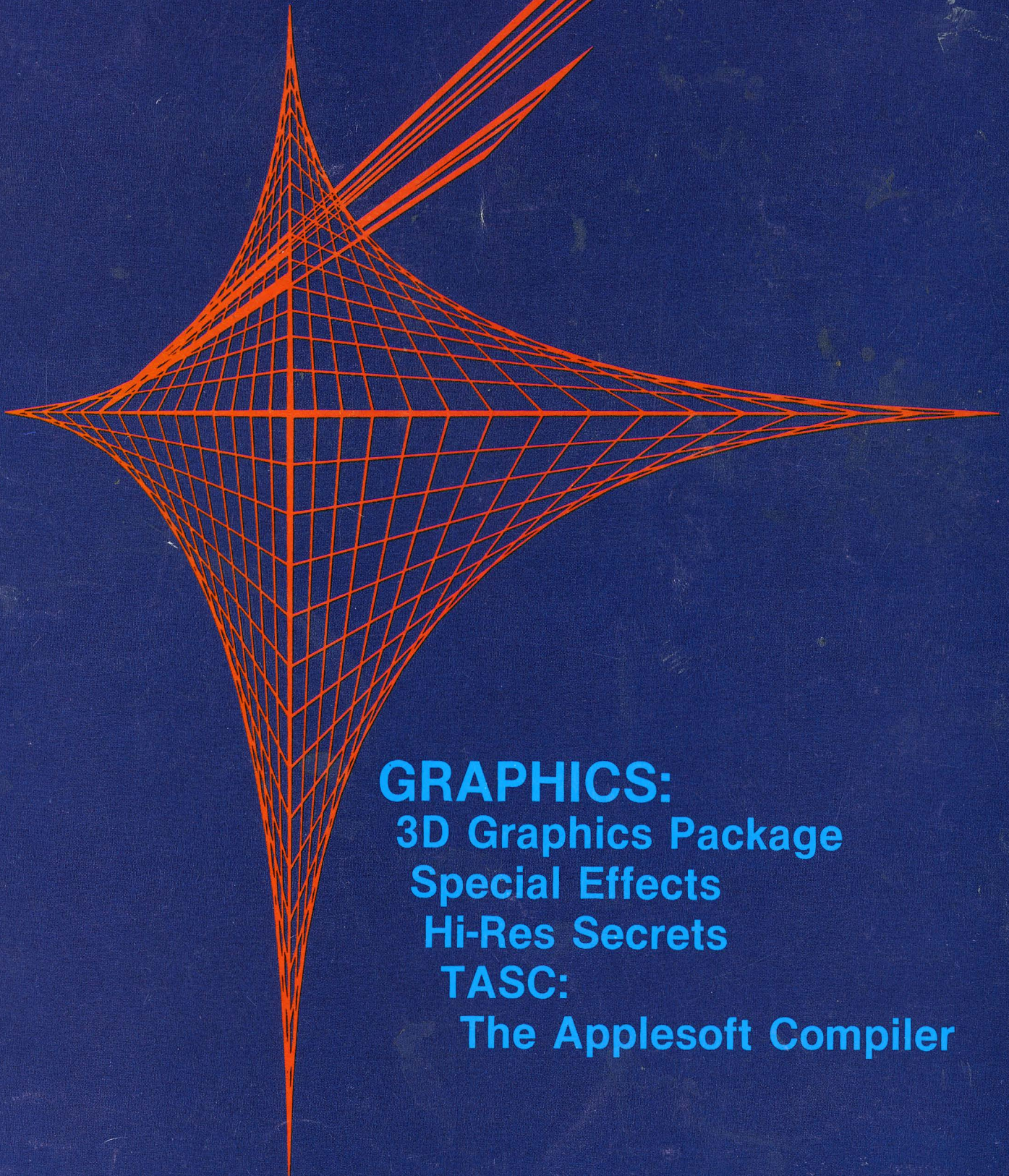
# Peelings II



THE MAGAZINE OF APPLE SOFTWARE EVALUATION

MARCH 1982

\$2.50



**GRAPHICS:**  
3D Graphics Package  
Special Effects  
Hi-Res Secrets  
**TASC:**  
The Applesoft Compiler



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# ARTSCI explains why some word processing systems are better than others.

Let's begin with an easy to understand explanation of what a word processor is and how ARTSCI has created a professional system.

A word processing system is simply an easier, faster and less expensive way to type. With a modern word processor, documents are entered on a video screen instead of paper.

You can enter your first rough draft without concern about errors or spelling. Simply go back and insert letters, delete words and even move paragraphs with a few keystrokes. No document will ever have to be retyped.

## WORD PROCESSING AND THE APPLE II

The APPLE II is the most expandable, inexpensive micro-computer available today. It can perform almost any task, including word processing.

The standard APPLE II however, uses a 40 column video display. This display causes a serious word processing problem: How do you display a full sized 80 column letter? Most word processing programs available today do not solve this problem.



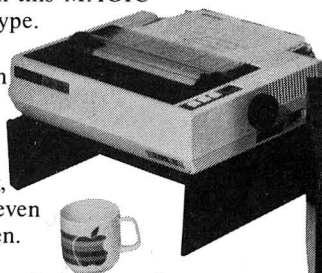
## THE MAGIC WINDOW

ARTSCI has developed the MAGIC WINDOW word processing system that incorporates the full power of a professional word processor and solves the APPLE'S display problem without expensive hardware.

The first feature of a professional word processing system is the ability to enter and edit data in a fast and friendly manner. The MAGIC WINDOW operates just like a standard typewriter. The electronic paper moves to the left across the video screen as you type. Almost any size document can be represented on the video screen. You can see the edges

of the paper through this MAGIC WINDOW as you type.

The rule is: What you see on the screen is what you'll get in print. However, if you print using proportional spacing, the result will look even better than the screen.



This typewriter simulation, together with simple to use menu selection of functions and electronic editing abilities, creates the finest word processor available on the standard APPLE II.

## MAGIC SPELL

The second feature of an advanced word processor is the ability to find and correct mistakes. The most common mistakes in most documents is the misspelled word.

ARTSCI's MAGIC SPELL program will take any document you can create and find spelling errors. Over 14,000 commonly misspelled words are known to MAGIC SPELL. You can also add new words to the vocabulary at any time.

## CUSTOM LETTERS

The third feature of a professional word processing system is the ability to alter a document by replacing names and other related data from mailing lists.

Form letters, invoices, and almost any document can be individualized by replacing names, addresses or any other personal data anywhere in the document using ARTSCI'S BASIC MAILER.

By using the BASIC MAILER you can take any mailing list and sort through the list by different criteria and print personalized letters with a few simple keystrokes.

## A COMPLETE SYSTEM

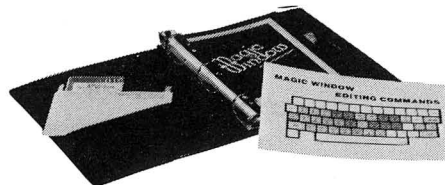
These three programs, THE MAGIC WINDOW, MAGIC SPELL AND THE BASIC MAILER, together form the only complete and professional word processing system available on



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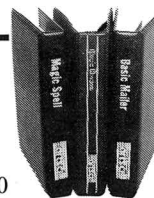
the standard APPLE II computer system.

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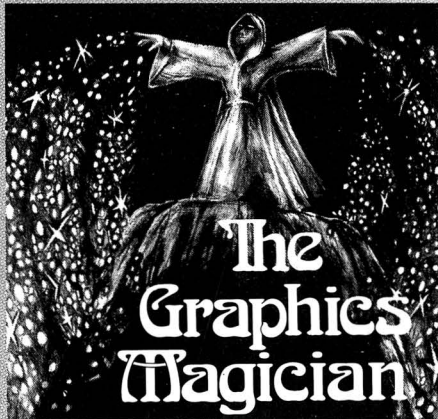
City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

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ST ☐ PE ☐ MI ☐ CC ☐ BY ☐ CA

# Penguin software

The Leader in Apple Graphics



by Chris Jochumson and  
Mark Pelczarski

Now anyone can put professional graphics into their own programs. *The Graphics Magician* contains machine language animation routines that use the same techniques as most of the popular Apple arcade games. Three animation editors let you design your figures, their paths, and assemble animation with up to 32 independent objects. Also included is a hi-res

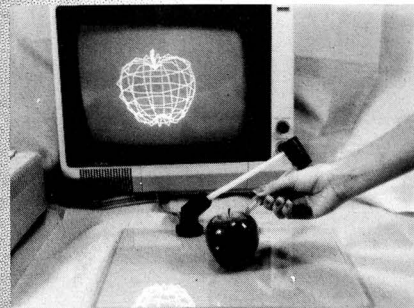
picture/object builder that lets you store hundreds of 100-color pictures on a single disk and recall them quickly from your own programs. These exact routines are being used in the new graphic adventure games from Scott Adams' *Adventure International*. Plus, a new shape editor greatly extends the capabilities of Apple shape tables with multicolors and angles that are preserved on scaling. All design of graphics is done through menu-driven editors; to use in your programs, just attach our machine language routines. Extensive documentation makes this package easy to use for the beginning programmer, yet flexible enough for the most advanced.

Add a New Dimension  
to your Apple!  
with

## THE SPACE TABLET

a 3-D Graphics Tablet

**MCS**  
micro control systems, inc.



version of *The Complete Graphics System*, specifically designed to accept input from three dimensions. In addition, the *Space Tablet* includes machine language software that allows you to design your own programs using 3-D input. This unique hardware/software package also comes at a very palatable price -- half the cost of most standard graphics tablets. See your Penguin Software dealer today!

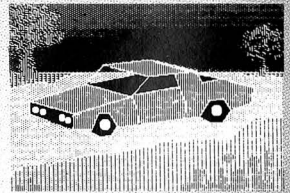
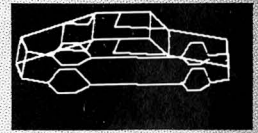
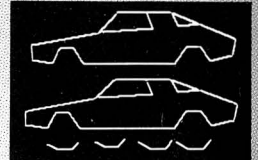


This incredible new device produced by Micro Control Systems, Inc. functions as a standard graphics tablet in two dimensions, until you decide to expand to real-world 3-dimensional input. Now you can trace 3-D objects, either real or imaginary, then view and modify them in 3-D perspective with your Apple computer. The 16"x13" tablet comes with a customized

## THE COMPLETE GRAPHICS SYSTEM II

by Mark Pelczarski

This improved version of the already popular *Complete Graphics System* is a complete and easy to use 2-dimensional and 3-dimensional graphics design package for the non-programmer. Create color screen images with lines, circles, ellipses, automatic 108-color filling, and "paintbrushes". Use high-resolution text anywhere on the screen in dozens of colors. Create and edit shape tables, and shrink pictures for multiple displays. Amazing 3-D routines let you draw the parts of 3-D objects on the screen, then assemble, rotate, and edit them visually in true 3-D perspective. All the software is easy to use, even for the novice. Programmers can use the graphics, and even our machine language routines, in their own software. This one package gives you more than most other graphics software packages combined. Find out why *The Complete Graphics System* is top rated in Apple graphics.



Development of a 3-D image using  
*The Complete Graphics System*.

## Special Effects



by Mark Pelczarski

Like nothing else on the market, this unique software package allows you to escape the "coloring book" approach to computer graphics, giving you a palette of 108 colors and 96 different brushes for creating or enhancing color computer images. Also included is a magnifying mode that lets you magnify images 2 or 4 times and edit them point-by-point, a "picture packer" that lets you store images in a fraction of the space normally taken, and a set of tricks that allow you to reverse colors, perform mirror images, and move parts of screen images around and to other pictures. *Special Effects* is great as a stand-alone package -- or the perfect complement to *The Complete Graphics System*.

The Complete Graphics System II  
paddle/joystick version \$69.95  
Apple Tablet or Hi-Pad version \$119.95

Additional Fonts and Character Sets  
for The Complete Graphics System  
(50 fonts on two disks) \$19.95

The Graphics Magician  
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Special Effects  
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Apple Tablet or Hi-Pad version \$69.95

The Space Tablet, with custom version of  
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# Peelings II



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# EDITORIAL · SCIENTIFIC SOFTWARE

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I have owned a Hewlett-Packard HP-67 programmable scientific calculator for about 5 years. It has 224 steps of program memory, stores its programs on magnetic cards, and sells now for about \$300. It is a very high quality machine and more powerful than you might think. (The newest generation HP-41C is even more powerful.) Hewlett-Packard sells "application packs" for this machine which consist of a holder for the magnetic cards and a very thorough, spiral bound manual. I won't say "instruction" manual because it is much more than that. There are perhaps fifteen to twenty programs in the manual, and each chapter has an introduction showing the applicable equations, a section on exactly how to enter the data, a section of sample problems so you can check out the program, and finally a complete listing of the code that generates the results. (My statistics package has over 100 pages and sells for \$30.00) I have used the math and statistics packages frequently in graduate school and never had a problem. In fact, the introductory chapters with their cogent listing and explanation of the formulas were often a better reference than many textbooks. In addition, there are many engineers in the HP calculator users community that go over the programs, and while an occasional bug has been found, these packages are uniformly correct and professionally done.

In direct contrast, most statistics programs reviewed so far in *Peelings II* hide the equations with protected software and do not provide a listing of the equations used or any of the rationale for their use. I now have a firm belief that producing scientific or mathematical software without a complete listing of all the formulas used and the assumptions of their use is totally unacceptable. Such information is vital in confirming that the vendor knows what he is doing, and it is also vital for confirming the results of the program.

Programs that do not give correct or consistent answers or mislead the user into making fatal errors or which can bomb leaving the user with no hope but to hit RESET rebooting the disk are unacceptable. The experiences so far lead me to the following observations.

1. You as a user of any mathematical or scientific program are entitled to a complete explanation of what the program is doing, a listing of applicable equations, and the assumptions involved in their use.

2. You as a user are entitled to make as many backups of your program as you need to do your work. The documentation supplied should be so thorough and well done that a) the program is of limited use without it, b) the documentation is the major profit item, and c) it actually serves as an educational item. Anything less is an open invitation to piracy.

3. Major calculations should be structured in such a way that display code is isolated from the important calculations to allow a user to find algorithm subroutines that make evident the techniques used to obtain the results. If the program is compiled, the source code should be supplied in machine readable form as well.

4. The vendor should hire consultants who are ex-

perienced and expert in the field, if necessary, to ensure that programs that deal with scientific and mathematical calculations are completely correct. Prospective buyers should examine carefully the credentials and educational background of the authors. Not everything that comes out of a computer is to be believed.

5. Users of the product have an obligation to report errors or problems so that the vendor can send out corrections. Simply stashing the program on the shelf and grumbling about "lousy software" does nothing to improve the quality of the software on the market and is an irresponsible attitude.

In my opinion, copy protected, list protected computer software for scientific purposes is completely inappropriate. Vendors who feel that they must hide their work are at direct odds with the concepts of both the scientific method and the adversary method of truth finding.

In the future, *Peelings II* is going to be taking long, hard, sober looks at scientific and mathematical software with the above concepts in mind. □

*John Martellaro*

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## BACK ISSUES

Our first three issues V1N1 - V1N3 are forever unavailable. They will NOT be reprinted, and the reviews are out of date. Remaining back issues are \$4.00 ppd Third Class Postage.

V1N1 Depleted	V2N3 Available
V1N2 Depleted	V2N4 Available
V1N3 Depleted	V2N5 Available
V1N4 Limited	V2N6 Limited

V2N1 Depleted	V3N1 Available
V2N2 Available	V3N2 Available

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## AAA SOFTWARE DISCOVERED

*Peelings II* has been looking at software since the early spring of 1980. At the time, we set a standard for AAA software that we had no idea would be so difficult to obtain. Many programs have come close, but no cigar. Finally, we have run across a AAA product, regrettably not published in the U.S. The author, Graeme Scott, is a programmer for Bell Northern Systems and lives near Toronto. He has written some absolutely astounding communications software that does things no one has thought of to date. In the next issue, we expect to review his programs. □

# Why does EDU-WARE bother

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Because at Edu-Ware, we are scientists on the frontiers of instruction. Our concern is with finding the best ways to communicate the knowledge needed and the tools to use it.

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At Edu-Ware, Instructional Designers work together to develop learning software strategies.

\*For details about the Test Site Project, contact Edu-Ware.

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# THE AUTHORS

Sandy Abernathy describes herself as "living on a farm south of Las Cruces with her husband George, a resident roadrunner family, various domestic feathered friends, and whatever college age kids (four) happen to be around." She taught elementary school for 13 years and was last a language arts and science teacher. Presently, she is working on a doctorate in Educational Management at New Mexico State University. Her hobbies include fishing, camping, swimming, reading, and using her Apple.

Edward Burlbaw works for Science & Technology Corp and is a Ph.D candidate in physics at New Mexico State University specializing in applied physics. His background is in physics electronics and mathematics. He has a B.S. in physics, an M.S. in mathematics, and an M.S. in physics. Edward enjoys snow skiing and electronics.

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John Mitchener is a Personnel Management Specialist at White Sands Missile Range and president of the Mesilla Valley Orchard (the local IAC Chapter). He is a former Electronics Warfare Analyst for the U.S. Army and has a B.S. in psychology. John's hobbies are ballooning, cooking, and ham radio.

Virginia L. Owens is an assistant professor in the Department of Educational Management and Development and New Mexico State University. She holds a B.A. in History, an M.A. in Political Science, and a Ph.D. in Educational Administration. Her research interests include the utilization of computer technology to improve the decision-making processes in management systems. Virginia enjoys needlepoint and cooking.

Michael Weasner is a U.S.A.F. Captain and a fighter pilot/instructor with multiple FAA ratings. He is currently assigned to the Dept. of Defense Space Shuttle Program Office in Los Angeles. He is a member of the Aerospace Apple Computer Group and the L-5 Society. Mike holds a B.S. in astrophysics. Besides flying, his interests include science fiction, space, and computers. □

# Peelings Ratings

Peelings Ratings are a letter grade designed to indicate an overall impression of the product. It is a measure of how well the publisher did the job he intended to do taking into consideration comparison to other similar products, price to performance, ease of use, documentation, and sophistication.

We stress that you should not skip a review or disparage a program because it receives a low rating. The rating alone can never tell the whole story. Only reading the entire review will give you all the information you need. For this reason, the rating should never be quoted alone without reference to text of the review.

The Peelings II rating categories follow: Some example criteria are given for the categories, but they are not meant to be all inclusive.

AAA - Absolutely astounding software. We have seen one program in two years that fits this category.

AA - Top notch, superb. Programs in this class generally use the most sophisticated programming techniques and have excellent documentation.

A - Very good. Software in this class incorporates very good programming techniques and has clear and informative documentation.

B - Good. Software in this class may have minor errors or be slightly flawed, it may be lacking in thorough documentation, or it may just be unexciting.

C - Average. Software of a mediocre nature. There may be a lack of good programming concepts or lack of good error trapping. It may be a repeat of other work, or have a low performance/price ratio.

D - Below Average. Software with a blatant disregard for the user in terms of programming design, unacceptable documentation, or unacceptable price to performance ratio.

F - Unacceptable. Software of such poor value or usability that it should not be marketed.

P - Pending. The rating is on hold for comparison to the other similar types or it is not yet appropriate to give a rating (e.g., mini-review).

R - Provisional. The reviewer has seen enough to give a tentative letter grade, but there may be more analysis necessary, or new documentation may be in the works, or some program bugs may still be present. Followed by a letter, e.g., RC.

N - No Rating. The reviewer abstains, or a rating is inappropriate. □

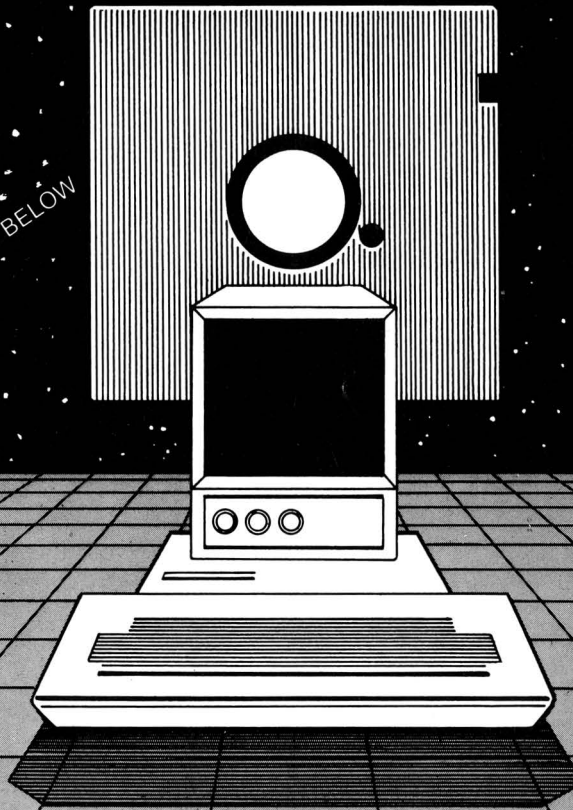
## NEXT ISSUE

Many of you may be concerned these days about the possible obsolescence of your Apple II with its 6502 microprocessor. But you already have a tidy investment in a monitor, keyboard, memory, probably a disk drive or two and perhaps a printer. One very workable solution is an additional processor. You already know about the success of putting a Z-80 in your Apple II. Next month we are going to be looking at a few new, very exciting hardware products that are designed to speed up and enhance the life of your Apple II: Digital Acoustic's 68000 board and Applied Analytic's Micro Speed. □

# Professional proofreading on the APPLE II Computer is now a reality

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APPLE CP/M**

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**THE APPLE SPELLER** fills the void that has consistently kept the large variety of excellent word processing packages for the Apple II Computer from approaching the power of a dedicated word processor. Finally, the first professional quality spelling verification program is available for the Apple II. The Apple Speller will certainly be the standard against which all other similar programs are compared.

The Apple Speller interfaces to the most popular Apple word processors, including Applewriter, Apple Pie, Executive Secretary, Letter Perfect, Magic Window, and Superscribe II, just to name a few. In fact, The Apple Speller can analyze the output of any editor that writes a standard Apple binary or text file to a diskette. In addition to this flexibility, the performance of The Apple Speller will astound the microcomputer world.

The Apple Speller is supplied with a 30,000+ word dictionary on a single 5¼" diskette with additional space to easily add another 8,000 words to suit your individual needs.

The Apple Speller has built-in utilities to maintain the dictionary diskette. You can readily add words, delete words, and create an unlimited number of modified and/or new dictionaries for specific application.

The Apple Speller is unbelievably fast. The first pass reads your document and collects all the words it contains at a rate of 5,000 words per minute. Next, the words are compared to the dictionary for spelling errors at the incredible speed of 50,000 words per minute. Finally, all misspelled words are marked as such in your document with a rate of 1,000 words per minute. This translates to proofreading a 10 page document in 1 minute if there are no spelling mistakes and 2 minutes, 15 seconds for an unlimited number of spelling errors.

Numerous options are provided throughout the program to enable you to completely control all activities of The Apple Speller. These include the ability to ignore both control codes and formatting commands, an alphabetical listing of

either misspelled words or all the words in your document along with usage frequencies, multiple options for the action taken with each misspelled word, and much, much more! A verification mode is provided to allow you to examine and dispense with misspelled words while viewing them in the actual context in which they appeared in your file.

The Apple Speller requires an Apple II/Apple II+ equipped with 48K, DOS 3.3, and 1 or 2 disk drives. Two disk drives are required to delete or add words to the dictionary.

The Apple Speller is being introduced at the incredible price of **\$75.00!**



## **Sensible Software**

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Please specify program desired

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48K, Applesoft ROM, 1 drive, printer (optional)  
DOS 3.2/3.3  
Unlocked

Rating: A

*Reviewed by Michael L. Weasner*

## INTRODUCTION

Utility City (UC) is a collection of programs for both the programmer and for the general Apple user. Each program will be briefly discussed in this review. With the UC disk comes an 11x17 inch PEEKS, POKEs, and Pointers chart and the Apple Tip Book #3 (which includes the UC manual).

## THE CHART

The chart lists several Apple memory locations in both decimal and hexadecimal and includes many DOS and general subroutines that can be executed with a CALL. This chart is much more useful than Beagle Bros.' previous offering (see DOS Boss review, Peelings V2N5).

## APPLE TIP BOOK #3 (AND UC MANUAL)

The Tip Book is another compilation of many useful (and some useless) tips, ideas, and programs in a 5-1/2 x 8-1/2 inch book. The first 25 pages comprise the tip book; the remaining 20 the UC manual. The manual explains the UC programs in sufficient detail to use them. There are, however, a few oversights that will be explained in this review. (There is a BUGLIST program on the disk that updates the manual, so it is hoped the oversights mentioned here will appear on newer releases.)

## THE PROGRAMS

The following alphabetical list of programs is what comprises UC. There are the usual Beagle Bros. commercials on the disk done in typically fine fashion! Each program is covered in the order in which it appears in the manual. It should be noted that most of the programs are Applesoft or text files; all are usable with Applesoft programs except as noted in the discussion.

- |                    |                   |
|--------------------|-------------------|
| 1. ADDRESS CHECKER | 7. CTRL-FIND      |
| 2. BFIN            | 8. DEC            |
| 3. BIGLINER        | 9. DEX            |
| 4. CHR\$ POKER     | 10. DOUBLE LOADER |
| 5. COMMAND ZAP     | 11. FILENAME ZAP  |
| 6. CONNECT         | 12. HEX           |

- |                   |                   |
|-------------------|-------------------|
| 13. INT CONVERTER | 20. RUN COUNTER   |
| 14. KEY-CAT       | 21. RUN DATER     |
| 15. KILL-CAT      | 22. SCREENWRITER  |
| 16. LINE SEARCH   | 23. SORTFILE      |
| 17. MULTI-CAT     | 24. TEST PATTERNS |
| 18. REM FIND      | 25. TEXT DUMP     |
| 19. REM ZAP       | 26. XLISTER       |

## FILENAME ZAP

This utility creates invisible, flashing, inverse, or normal filenames in your disk catalogs. The invisible filename routine allows you to select the option of having the file type code (A,I,B,T) and the sectors visible or invisible. The program is easy to use, but I wish there was a routine to make invisible filenames visible again. Access to files with invisible names must be done through a program. Access to INVERSE or FLASH files is accomplished via the Apple screen editing functions (ESC sequences).

## COMMAND ZAP

This is a tricky little utility to make program lines invisible or appear to be other than what they are. First write your program: then include the special characters as indicated in the manual: then EXEC COMMAND ZAP. The utility requests the line number you want changed, so you must know what lines require changing. COMMAND ZAP can be used to create "fake" lines in your program by making the actual lines invisible or can create fancy titles to your listings by eliminating line numbers and the REM. It should be recognized that these changes work only on listings to the screen since backspaces are used to create the illusion. Listings to a printer (with backspace capability) will overprint the old portion with the changes making for a messy printout.

## LINE SEARCH

Line Search locates Applesoft program line numbers in memory. Load the program you wish to examine and EXEC LINE SEARCH. Starting and ending addresses of your program are displayed (dec and hex). You then enter the line numbers you are interested in. Starting and ending addresses are displayed for that line and you can search as many lines as you wish with one exception: a zero indicates exit from the utility so line #0 can not be searched. This is a minor annoyance. The utility is useful for repairing "garbaged" program lines or making "illegal" changes to your program. The four page discussion of the utility includes very useful information on how the Apple stores Applesoft programs in memory and the use of "tokens." If you don't already have this type of utility, I suggest that UC may be the appropriate place to get it.

## SCREENWRITER

This is one of the most useful utilities on UC. You can create standard Apple text screen layouts that include NORMAL, FLASH, INVERSE, centered, or right/left justified text

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and do it as easily as typing the text on the screen. What you make can be saved to disk and then BLOADED from within your programs. Use of SCREENWRITER is easy and straightforward. One nice feature is a flashing HI-RES grid which can be superimposed over your text screen to help you with the formatting. Previously created and saved screens can be loaded and edited or dumped to a printer. One caution: to view the utility commands, you type a CTRL-C. This works fine as long as the text you are entering when you type CTRL-C is NORMAL or INVERSE. The program hangs if in the FLASH mode when CTRL-C is entered. The best way to avoid the problem is to always return to NORMAL before trying to view the commands display. If the program does hang, you must reboot, losing your screen. The program as supplied does not support a two drive system but is modifiable (as are most of the UC programs).

## INT CONVERTER

This program converts Integer BASIC programs to Applesoft. The utility converts your Integer program to a text file, switches to Applesoft BASIC, and EXECs the text file back into memory. You must correct all improper syntax. Again, a two drive system is not supported, but the utility can be modified. This utility requires Integer BASIC.

## BFIND

BFIND displays the starting address and length of last BLOADED program. BLOAD the program desired and EXEC BFIND. This utility doesn't replace FID but does give important data if your CATALOG program lacks this function.

*(You can do this yourself with an EXEC file:*

```
PRINT "LEN= "; PEEK (43617) * 256 + PEEK (43616)
PRINT "LOC = "; PEEK (43635) * 256 + PEEK (43634)
```

*AJM)*

## SORTFILE

SORTFILE allows you to create a list and save the alphabetically sorted list to disk, and can load the file back into memory for addition, deletion, or renaming of items. Standard text files are used. Program displays available memory left. Sorted files can be printed to the screen or printer. To delete or rename an item requires you to know the item number or you can enter the first characters of the item (program will then supply only the first matching item). A simple program for simple uses.

## CONNECT

This utility may be used to connect together two Applesoft programs. Normally the program to be appended must have higher line numbers than the original one. The lower numbered program is retained in memory while the higher numbered program is LOADED from disk after EXEC-ing CONNECT. One note: after LOADING the first program, you type the following in immediate mode:

A\$ = "filename"

This is the file that will be LOADED from disk, and you may specify slot and drive numbers as part of the string. One nice use is to have repeating line numbers in your programs. Best use here would be with REM statements at the end of your program although any unreferenced line numbers can be repeated without messing up the program flow. By combining with the COMMAND ZAP utility, you certainly could confuse prying eyes.

## TEXT DUMP

This program prints a text screen on your printer. Using CONNECT, TEXT DUMP is appended to your program and a GOTO 63900 (not 63990 as mentioned twice in the manual) is inserted wherever you want a screen printout. Utility can be modified to print many screens within a program. Both BUGLIST and the program listing mention that if your printer can print emphasized letters then the utility can be modified to print INVERSE or FLASH characters as emphasized. However it was not immediately obvious how to change the necessary lines to accomplish this even though the lines to be changed are noted by REMs.

## REM ZAP/REM FIND/CTRL-FIND

REM ZAP converts letters (except "M") to control characters in specified REM statements. Hence these letters will be invisible in a listing (although funny things may happen like bells or line feeds; CTRL-G and CTRL-J, respectively.) REM FIND AND CTRL-FIND convert control characters to INVERSE and thus make these REM statements visible again. These last two utilities can also be used to find control characters in other program listings or catalogs; a valuable utility to have at times.

## ADDRESS CHECKER

This program is mostly for learning about Apple memory usage. It PEEKs a range of addresses (user specifies the start address) and then displays 88 to 110 memory locations on the screen and the current (decimal) value stored there. Apple commands can be changed from within the utility to determine the effect of the change on memory. Values that change when the utility is rerun appear flashing; not really useful but interesting.

## MULTI-CAT/KEY-CAT/KILL-CAT

MULTI-CAT creates multiple column catalog printouts to screen or printer. Use for printing hard copies of long catalogs on single sheets of paper. With 132 columns and leaving off file codes, you can printout ten columns of filenames (eleven characters/filename). Options selectable are disk ID, printer on?, printer width, columns desired, print file codes?, and vertical spacing between lines. The maximum number of characters in a filename to be printed is displayed to allow changes before actually printing. Single drive use only.

KEY-CAT is a single keystroke CATALOG and RUN utility. It is also available on the DOS Boss package (Beagle Bros.) and was previously reviewed in Peelings (V2N5, page 32).

KILL-CAT is a short and sometimes useful utility to allow clean break on long catalogs. The key to break on can be changed. If three lines from KILL-CAT are added to your boot program, you can always have the capability whenever the disk is booted.

## DOUBLE LOADER

This utility creates a text file which relocates the Applesoft program currently in memory, RUNs another program from disk and then moves the original program back to where it belongs so it can be accessed. The program to be RUN from disk must have four POKEs made in the last line executed. The utility is useful to RUN utilities that you may need while programming. The explanation of the use of DOUBLE LOADER is a bit complicated, but you are forewarned of this by Beagle Bros. The manual states: "Read this carefully and take notes. Then rewrite it so it makes sense to you." (They weren't kidding either!) One limitation to the use of this utility will be the size of the individual programs.

## RUN COUNTER/RUN DATER

These are interesting little utilities to append to the beginning of your programs (with the CONNECT utility) that will either display the number of times a program has been run, update this number or display the date of the last run and request today's date. Before program execution continues, the program is UNLOCKed, SAVED, and LOCKed on the disk. It is nice to have utility if you are interested in seeing just how often you use a particular program or programs. One note: no line number less than 17 can be in the original program.

## CHR\$ POKER

This converts VTAB/HTAB locations on the text screen and any characters (including "\_", "\", and "[") to a POKE statement for NORMAL, INVERSE, and FLASH. The POKEs can then be included in your program. For involved screens, SCREENWRITER is probably easier to use, but for a small amount of special applications, CHR\$ POKER could save some searching through your manuals for ASCII codes and text screen memory locations.

## BIGLINER

BIGLINER is a useful utility to programmers. It can be used to create line numbers of 65535, the highest allowed in Applesoft, to prevent a user from modifying these lines. Line numbers greater than 63999 can not be directly accessed. BIGLINER can also lower all unaccessible line numbers to make them accessible (so much for this type of protection!) One caution: DO NOT renumber all your lines to 65535. Besides not changing GOSUBs, GOTOs, and IF . . . THEN statement referenced line numbers, making lines accessible again is tricky. If you should "accidentally" renumber all lines, insert a dummy line with a low number (ie. 0 REM) and then EXEC BIGLINER to lower all non-accessible line numbers. Best use is to make your ending REM statements inaccessible to "protect" your copyright notice and other information.

## HEX/DEC/DEX

Three very useful utilities to use while programming. If you need to convert a number you simply type (in immediate mode):

A = number (to convert to hexadecimal)  
and EXEC HEX or

A\$ = "number" (to convert to decimal)

and EXEC DEC. If you have a lot of conversions to do or need a binary number, then EXEC DEX and enter your numbers (decimal or hex) and all three bases will be displayed for each number entered. All three utilities are used without disturbing your program in memory. EXCEPTION: attempts to convert an illegal quantity to hex ( $A > 65535$ ) with the HEX utility will result in an error message AND a new line being placed in your program (3D0G). This does not happen with DEC or DEX.

## XLISTER

XLISTER is a useful utility to print, to screen or printer, nicely formatted program listings. LOAD your program and EXEC XLISTER. A title and column width is entered, then printer option. Program listing prints with single statements on separate lines (statements on a single line number are indented), FOR-NEXT loops indented, and statements following IF-THEN statements are marked by a "\*\*\*". Numbered lines are separated by a line of dashes. Page breaks are given

Dear K.

This APPLE\* program will teach you assembler.

I assume you know BASIC already, and now you'd like to learn APPLE\* assembler. You need three things (two heavies and a friend)...

1. The APPLE II Reference Manual (ask for both at your APPLE\* dealer), and
2. A good 6502 assembler manual (ask for both at your APPLE\* dealer), and
3. ASSEMBLER TEACHER, a program that takes you right through the learning barrier!

ASSEMBLER TEACHER will soon have you eating those manuals for breakfast. And you'll never outgrow ASSEMBLER TEACHER, since it has tools an expert can use even more than a novice. Here's how ASSEMBLER TEACHER works:

- +ASSEMBLER TEACHER prowls your APPLE\*s memory page by page, drawing a map of what it finds.
- +ASSEMBLER TEACHER shows your CPU running in slow motion on your screen, so you can see exactly what the operations are doing to the registers and the stack (a great debugging tool).
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with hardcopies. Utility is modifiable for page length and top/bottom margins. Two minor complaints: the utility does not check for split words at the end of a printed line, and it does not title and number each page. However, it can be user modified so any limitations can be overcome.

## TEST PATTERNS

This program was not mentioned in the manual. It simply displays HI-RES and LO-RES colors. There is a surprise awaiting you when you exit this one.

---

# Super Disk Copy III

---

author unspecified  
Sensible Software  
6619 Perham Drive  
West Bloomfield, MI 48033  
313 399-8877

\$30.00  
Machine Language  
48K, Disk II, Applesoft  
Locked

Rating: AA

### *Reviewed by John Martellaro*

The software that we have comes in several varieties: some of it gets hidden away on the shelf never to be seen again, some is kept reasonably handy, but not used every day, and some of it is so useful that it sits right up front in our diskette box, handy for almost daily use. Super Disk Copy III is one of those latter programs. Not only does it combine many useful functions, but it does it with clarity, ease, and speed.

SDC III combines the features of FID, Muffin, de-Muffin (or Niffum if you prefer), and utilities for getting control characters out of your catalog names, "undeleting" files, and removing DOS from a diskette. In addition, there is a great deal of flexibility in the copying process which will be described below. (Note: SDC III is for copying standard diskettes and is not a nibble copier.)

I will briefly discuss each of these features.

Copy. File copying can be done from DOS 3.1, 3.2 or 3.3 to any other DOS. Of course, copying DOS itself to a disk of a different DOS (or a horse of a different color) is not allowed. Under copy, you can:

1. Copy DOS (to same DOS). Tracks \$0, \$1, and \$2 are copied from the source to the target.
2. Copy entire disk. Here you have the options of a contiguous copy, a quick copy, or a brute force. The first option collects the scattered sectors of a file and lays them down in sequential sectors. This gives a slight decrease in load time. The next, quick copy, copies only the used sectors and (presumably) lays them down in arbitrary order. The last, brute force copy, tries to copy every sector and can be used for copying Pascal and FORTRAN diskettes.

## SUMMARY

Utility City will provide many useful utilities to the average user and some very worthwhile ones to the serious Applesoft programmer. At slightly over \$1.00 apiece how can anyone go wrong with it?

NOTE: no mention was made about royalty fees for the use of the routines to create something for use with your programs. However, in all fairness, any extensive use of UC should result in some credit being given to Beagle Bros. □

3. Copy files. Individually named files can be copied from the source to the target and the Apple FID features of "=" and "?" are similarly used. An indication of the sophistication here is that in the copy process, the target diskette is read first so see how much room remains on the diskette. If there isn't enough room to transfer the file, the process is aborted. (The remaining space on both diskettes is displayed.)

Delete. You can delete DOS from the diskette. The VTOC is changed to allow writing to tracks \$1 and \$2. (Track \$0 has problems.) This gives an extra 6.5K on a 3.3 diskette. You can choose to delete all files on a diskette, and you can delete selected files. You get a chance to confirm each candidate.

Fix file sizes. For those BASIC files that have become smaller (!), DOS isn't smart enough to release the unused space. This utility frees up that space. (Normally, to free up the space, you would delete the file before saving it.)

Replace funny characters in catalog. Just recently I had a CTRL-A in a file name that kept me from deleting it. SDC replaces that CTRL-A with a character that can be traced over with the cursor either for LOADING and RENAMING or DELETING.

Undelete. Does just what it says: if you, in a fit of midnight stupor, delete a file that you desperately need back, just type in the name, and it will be recovered. Of course, no writes to the disk can take place before you do this.

Catalog. In addition to the catalog of either source or target with just single letter commands, you also see a disk map afterwards on a 35H by 16V display (DOS 3.3) on the text page. Each used sector is indicated by an asterisk. It is interesting to see the comparison of an old diskette and a new one made with contiguous copy.

Alphabetize and Purge Deleted files. We found this to be very useful for our diskettes of reviews. Finding the review in the catalog is much easier when the catalog is alphabetized. In the process, space marked for deletion under deletes is freed up.

Boot. When you are done, put your new diskette in and you are ready to reboot. (SDC is copy protected and you cannot get out of the menu.)

There are other minor options for selecting the DOS for the source and target and specifying single or dual drive usage. While the program can be used with a single drive, it is really designed for two.

## USER INTERFACE

SDC III has an extraordinarily informative and easy to use display. The current configuration for the active DOS on the source and target diskettes is displayed at the top with room for the number of free sectors. Below that is a menu that selects the options with a single letter command. Defaults are selected with a RETURN, and any option can be escaped with an ESC or an empty RETURN. The program keeps you constantly informed by turning on indicators in the display, so you always know what it is doing. Some very sophisticated techniques are used resulting in very fast boot, file read, and file alphabetization. The program is bomb proof as far as we can tell (after 6 months continuous use) and it has never zapped us, lost a diskette, or done something unexpected.

## INSTRUCTIONS

The five page booklet is very well written and complete. The user is warned about some of the things that the program will prevent (such as copying DOS from a 13 sector diskette to a 16). Each menu option is adequately explained, and after a single reading you can put away the manual. The program is completely self-prompting and obvious after only a few sessions.

## CONCLUSION

SDC III is one of the smoothest, easiest to use, most powerful and well thought out utilities that we have seen. The entire Peelings staff agrees on this. It is probably the one program we use the most next to our word processors, so it has been given the acid test and passes with flying colors. In addition, the price is reasonable. That's good for another AA. □

# MEMORY MANAGEMENT SYSTEM II

By William Reynolds, III  
Computer Data Services  
P.O. Box 696  
Amherst, NH 03031  
603-673-7375

\$39.95  
Machine Language  
48K, Disk II  
DOS 3.2 and 3.3  
1 or 2 16K RAM boards or  
1 16K RAM board and an  
Integer or Applesoft ROM card  
Unlocked

Rating: A

*Reviewed by Edward Burlbaw*

Memory Management System II (MMS) is designed to free 10K of RAM memory normally used by DOS by moving DOS to a 16K RAM card. This leaves the full 48K on the motherboard for user programs and variables.

## HOW IT WORKS

Upon booting, MMS moves DOS to the 16K RAM card in slot 0. If you have a second language card, it may be placed in any slot except 0 for dual language operation plus relocated DOS. Second language card means either Applesoft, Integer, or 16K RAM card. If you do not have another language card, it is still possible to use MMS with the language resident on the motherboard. Once MMS is installed, the full range of memory from 2048 to 48896 is available for user programs or data. Normally the top 10K is used for DOS.

## WHAT IT'S GOOD FOR

While MMS does give the programmer an additional 10K of memory, there may be cases where it does you no good. For example: copy protected programs that require a new boot would not leave MMS resident, and some programs may not

know what to do with the extra space. In either case, MMS does not really help. However, if you are using your own program, then your program will take advantage of the extra space without any additional effort on your part. Normal Applesoft programs will allow variable space from LOMEM to HIMEM. If HIMEM is 10K higher than normal (with DOS resident), the program won't complain, and you will have approximately 30% more memory available.

## LIMITATIONS

The limitations associated with an earlier version of MMS no longer exist. All DOS commands are now operational. Running a short configuration procedure will alter MMS to your exact system, it can be reconfigured later, if your system changes. MMS will only relocate a Master DOS, so it is important to run MASTER CREATE on any new diskette that you will use.

## DOCUMENTATION

The documentation is not really very elaborate. It contains an explanation of the configuration process, and a procedure for making a one step boot diskette with MMS; i.e., installing MMS and running your application program upon booting. With a utility program as easy to use as this, I feel that the information is adequate and would rather not pay an extra \$30 for a padded binder.

## SUMMARY

MMS works as advertised and, indeed, does give you an additional 10K of programming space. As articles describing the process of relocating DOS or a 16K card have appeared and public domain programs are becoming available, the need for a commercially available program may diminish. However, there is something to be said for the convenience of purchasing a program rather than typing it in from a listing. I have seen advertised a program that not only relocates DOS but also provides enhancements to BASIC through the use of & commands. MMS may have been first on the market with a good idea, but I believe there will be some stiff competition by these other items. □

# HUNTINGTON COMPUTING

## Softlights

By Fred Huntington

Time for our latest new program for the Apple\*, **Computer Almanac**. Written by David Carman, an honest-to-goodness weatherman, **Computer Almanac** is a diverse collection of well thought-out programs. It contains sunrise and sunset times, weather forecasts for any year, a wind chill chart, lighting safety rules, a super-duper extra easy to use loan amortization program that will print out in 80 columns, health chapter (including a nifty calorie counter), a vacation planner, a biorhythm chapter (needs printer) and more.

We're very proud of this program and think that at **\$24.95**, it's one of the best bargains in the software market today. Also, don't forget our other new program for the Apple\*, **Understand Yourself**, also **\$24.95**. Dealer inquiries welcome.

Speaking of good programs, we'd like to recommend for either home or school use **Crossword Magic** by L&S Computerware. A super outstanding program with nothing else even close, we thought the original price of **\$79.95** was a little steep. So we were able to convince them to lower it to **\$49.95**, which is still a little steep for a crossword program, no matter how fantastic. So, to prove a point, we've set the price at **\$39.99**. Now it's a bargain.

It will work with most graphic printers, including the Epson, with or without the Grappler.

### GREAT GRANDMA HUNTINGTON

Great Grandma Huntington told me when I was a lad that I should always buy my computer media as a discount. She also said that a single density disk in the hand was better than a double density disk in the bush.

Great Grandma Huntington said a lot of things, many of which I can't remember. So we're having a contest to see who can come up with the best Great Grandma Huntington sayings. All entries must be postmarked no later than June 30, 1982 and should be addressed to:

### GREAT GRANDMA HUNTINGTON

#### CONTEST

P. O. Box 787

Corcoran, CA 93212

The top two entries will receive genuine Epson LC Digital Quartz watches (yep, made by the same people who make those great printers). Winners will be used in future Softlights columns. All entries become the property of Huntington Computing and will not be returned. The worst ones may be used in future advertising.

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Verbatim ..... 10/28.99  
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## INTERPRETERS VS. COMPILED

An interpreter, like your BASIC interpreters on the Apple, is a machine language program that scans a BASIC program in memory and deciphers or translates it and then jumps to appropriate subroutines to execute the intended code. If looping causes code to again be examined, then it is again interpreted. The processes of both parsing the code and re-executing repeated code are two factors that slow down interpreters. In addition, the interpreter in your Apple has to search the entire list of line numbers to find the line of a GOTO or GOSUB. Other interpreters on bigger computers keep addresses for each line number so that jumps are faster. In addition, some code in loops may be partially compiled.

Compilation is the process of creating a machine language program that does the same thing as the source code intends. The program that does this is itself a machine language program called a compiler. Since the compiler analyzes the program ahead of time, it can provide memory addresses for program lines and variables. The compiler must do many things: it must analyze the source code and identify key words of the language and be sure that the syntax is correct. (Normally, you avoid this by checking out the program with the interpreter.) It must then parse the code to identify program logic. Then it must generate machine code that represents the source logic. It is here that some compilers optimize the code by deciding that there is a more efficient way to do the same things. Permanent addresses are assigned to variables so they can be referenced by address directly.

Some operations are so typical to the programming environment that it would be inefficient to include code every place the operation occurs. FORTRAN, if you are familiar with it, does this by having a library of often used functions like SQRT, TAN, INT and others. Making calls to these subroutines is a little slower but produces more compact code. BASIC compilers do the same thing, and TASC calls it a "runtime" library. In addition, to save even more space, calls are made to the Applesoft interpreter itself which provides handy subroutines for frequent operations. The result is that the compiled code must nevertheless have Applesoft resident.

An interesting note is that most compilers are bootstrapped. In the case of the Applesoft compilers, the compiler is written in Applesoft and used to compile itself. The first time through, however, it is running under the interpreter and the compilation can take many hours. Once done, the result is a machine language program that can be used to compile improved versions of the compiler itself. □

## The Applesoft Compiler (TASC)

author unspecified  
Microsoft Consumer Products  
10700 Northup  
Bellevue, WA 98004  
206-828-8080

\$175.00  
Machine Language  
48K, Disk II, Applesoft  
Unlocked

Rating: AA+

*Reviewed by John Martellaro*

### SOME BACKGROUND

The Applesoft Compiler (TASC) is the fourth Applesoft compiler to appear. The first three were reviewed in Peelings II (Jul-Aug 1981) and all four were given a thorough review in the September 1981 Softalk. For those who are new to Peelings II, I will give just a little background.

A compiler is a pretty sophisticated piece of software. It converts your program, called source code, into machine language. (For more details on this, see the boxed article.) Since a compiler is one of the most sophisticated pieces of programming you'll find, it was a long time (four years) before anyone talented enough got around to doing it for the Apple II. Then, in the summer of 1981, four appeared. It is rumored that TASC was written at the Massachusetts Institute of Technology where there are some sharp programmers.

Writing a BASIC compiler for the Apple II, especially for a moderately complex and powerful interpreter such as Applesoft, is fraught with difficulties. Disk access is limited to the speed of a floppy, and memory is relatively limited. As a result, you don't really get a stand alone program in 6502 machine language. To achieve a useful compiler within the capabilities of programmers and the Apple II requires a small runtime library of routines that the compiled code can access and calls to the Applesoft Interpreter. The upshot is that a 2K Applesoft program might grow to 7K in the form of a 4K runtime library and perhaps 50% larger representation in machine code (3K). To top it off, the current compilers don't really achieve a staggering increase in execution speed, merely a tidy factor from 2 to about 10 at most (or 20 in very special cases).

In addition, there is the advantage of disguising your source code in programs for resale provided that the company that markets the compiler consents. In the case of Microsoft, their marketing department informs me that there is no license agreement or royalty payment required. You can sell your compiled program along with the runtime library with no restrictions. Nevertheless, it is a courtesy to give Microsoft credit. Microsoft is the only one of the four companies that has this policy. They are to be commended.

## TAKING TO TASC

I was, I admit, much more enamored with the TASC than the other three compilers. Even though Edward Burlbaw did the initial reviews in the Jul-Aug 81 issue of *Peelings II*, I looked at each compiler quite thoroughly. The reason was that I have been trying to compile a Space Shuttle flight simulator that I have written. The difficulty so far has been the failure of the compiled code to fit into available memory. The primary reason was that the program animates the forward view on both pages of HIRES graphics requiring that the code reside starting at 24576. While the Applesoft fits between that point and normal HIMEM, the expanded machine code does not. At the time, we did not have access to a "DOS mover" or the Memory Management System from Computer Data Services. This time I did. Because my machine language routines reside from 3096 to 6000, I had a problem with the runtime library location. Fortunately, the runtime library for TASC is relocatable, so I moved that to 25000. The compilation went off without a hitch. My 41 sector BASIC expanded to only 65 sectors. After DOS was relocated into the upper 16K of RAM, the runtime library loaded, the program loaded, I got a syntax error in line 0. Since the compilation went off without a hitch, I began looking at the one program peculiarity, and sure enough, the compiled code was choking on it. It is a routine that enters the monitor on the fly to do a memory move:

```
1400 Z$ = "800,400.7FFM"
1410 Z$ = Z$ + "N D823G"
1420 FOR I = 1 TO LEN(Z$)
1430 POKE 511 + I,ASC(MID$(Z$,I,1))+128
1440 NEXT
1450 POKE 72,0:CALL-144
```

The above routine enters the monitor in line 1450, executes the monitor command in quotes in line 1400, and returns to location \$D823 (Applesoft interpreter entry point). But because the interpreter isn't running, the compiled program errors off. The lesson is that you should inspect your complex programs carefully for any interpreter related tricks. This one was particularly nasty since the offending operation was in a string and compiled cleanly.

TASC's overall implementation and user interface is more refined than the other compilers. In its usage, it reminds me of compilers used on bigger machines. There is none of the flash of a one line Applesoft program that calls the machine code. There are no inconvenient protection keys to displace your valued joystick or paddles. There are no fancy displays as with Hayden's compiler. There is just a straight forward business like entry. You name the source file to be compiled and step through the defaults including the naming of your machine code as FILENAME.OBJ. If you need to have your object code execute at other than the default location (6064 decimal), simply specify it. Widgets like REM! lines (pronounced "rem bang") are reserved for options not as heavily used (COMMON blocks) instead of the primary compile options. I like this.

TASC is a disk based compiler. Your source code is read from diskette, and the object code is written to diskette. The advantage of this is the flexibility to have the object code be

able to execute at almost any memory location. Interference with the compiler code is eliminated, but the disadvantage is a slower compilation speed. Since the compiled code must be written to diskette, the process is slower (but not unacceptable as far as I am concerned). In the last issue, Tom Little criticized Apple Computer's assembler for being disk based. In the context of the reviews, I felt the complaint justified, however, in this case, with the possibility of compiling large Applesoft programs into even larger object files, I think this is the best method.

If you want the runtime library to run at its nominal location and to have the compiled code be next, simply hit RETURN to select these defaults. The next set of compilation options involve:

- 1) Option to display listing during compilation
- 2) Option to pause on error messages.
- 3) Option to select variables as integers when possible
- 4) Option to store constants in integer format
- 5) Option to handle the RESUME statement for handling errors

TASC is a two pass compiler. It uses a technique a little more sophisticated than the other compilers and produces relatively more compact code. The optimization has leaned towards compact code at the cost of speed. Nevertheless, TASC code runs as fast, or faster with heavy integer arithmetic, than any of the other compilers' code.

Like all the other compilers, a facility is provided to allow different routines to talk to each other via COMMON variables. COMMON variables are "common" to different routines. The only requirement is that programs compiled to use these variables must run at the same starting address. A short paragraph in the documentation discusses the technique for passing subroutine arguments to and from a compiled subroutine called from Applesoft. A small example would have helped make the technique clearer.

Unlike the Expediter which uses static strings, TASC handles strings much like Applesoft only more efficiently. For example, the duplication of strings is avoided by having several equivalent strings point to the same place in memory. The advantage is increased flexibility. If you have one very long string and many short ones or many dynamically changing strings, space is used more efficiently. The disadvantage is that garbage collection occurs in the compiled code as well. The documentation points out in detail how refinements in handling the strings plus intelligent program planning can keep garbage collection to a minimum.

The following Applesoft commands are not implemented:

CONT	DEL	LIST	LOAD
LOMEM:	NOTRACE	RECALL	SAVE
SHLOAD	STORE	TRACE	&

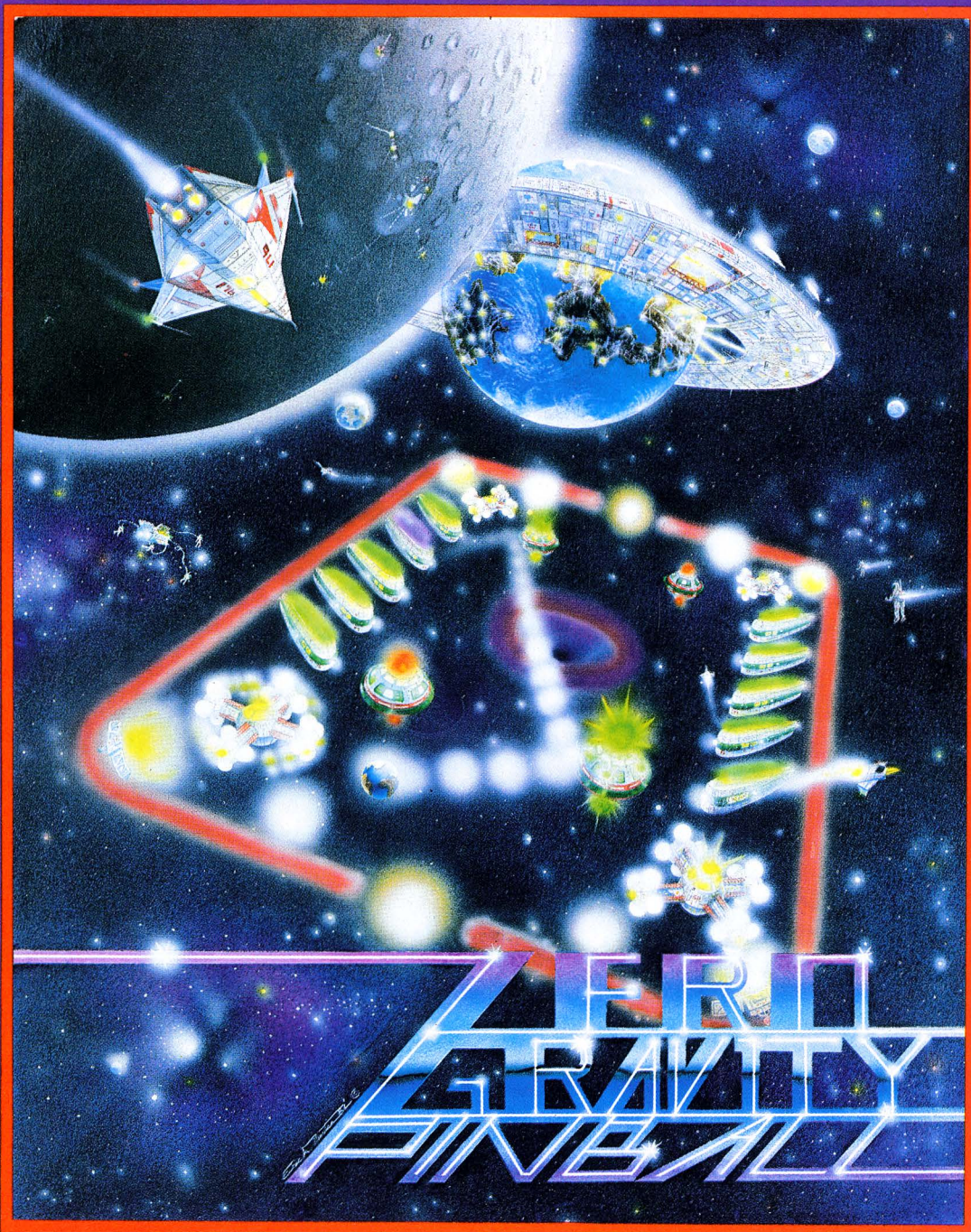
Use with limitations is available for: DEF FN, DIM, and CTRL-C. In the case of DEF FN, you can only define a function once since the compiler is going to cast it in concrete at compile time. As with all the other compilers, DIMension statements must use integer constants to avoid dynamic array sizing.

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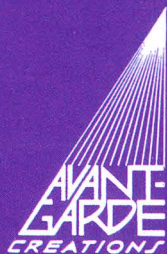
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A very good enhancement in TASC is the ability to declare variables as integers in the same manner as FORTRAN. If you have certain looping variables in FOR/NEXT loops that should be real integers, you can force this by:

```
10 REM! INTEGER I,J,K
```

If you want all your variables to be integer, you need not list them all. Just use:

```
10 REM! INTEGER *
```

Such variables are true 16 bit integers as opposed to Applesoft integer variables which still use 5 bytes. (You may have seen programs in magazines for the TRS-80 with extensive use of integer variables such as I%, JK% etc. Microsoft implemented the TRS-80 interpreter a little differently, and it treats those variables as 16 bit integers unlike Applesoft. The only advantage of using integer variables in Applesoft is in Integer arrays. See page 137 of the Applesoft manual.) Needless to say (I'll say it anyway), 16 bit arithmetic is a lot faster than floating point arithmetic.

## DOCUMENTATION

You want documentation? You got it. Large quantities of readable, extremely well done documentation. In contrast, I was disappointed in the documentation that came with the other compilers, especially Hayden's. Call me a hopeless romantic, but I had a dream that a really good compiler manual would explain, inform, advise, and reveal. The TASC manual does. Never mind that it is printed in a very nice little padded binder on slick paper and typeset. Never mind that it has a real live index that is useful. What I hunger for is details, and I got plenty. In a partial attempt to show you the class of this manual, I'll show you the table of contents:

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Have you ever seen anything so delightful? They did it right. And that's from a reviewer who is very fussy about documentation. They start with a real live bibliography on learning BASIC, move into a demonstration, discuss what compilation is (vs. interpretation), and actually get into the details of lexical analysis and parsing. I don't know about you, but I get particular pleasure from both using a fine utility AND knowing what's going on inside it. You'll appreciate the documentation of this program.

## CONCLUSION

Microsoft is marketing a fine product. A list of its virtues is in order:

1. A price only a little more than the other compilers.
2. A copyable diskette providing you with a useful utility that will last for the lifetime of your computer.
3. A brilliantly done manual.
4. No hardware keys to fool with.
5. The ability to compile programs almost as big as available memory.
6. No licensing or fees on marketed code.

In my opinion, the above features make TASC the compiler of choice. It beats the others easily in all really important areas, even if it does compile a little slower.

Microsoft has played it straight with you and given you a product so good that it is hard to believe. If you buy this compiler and give a copy away to a friend, may God have mercy on your soul. □

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\$29.95  
Applesoft, machine language  
Disk II  
DOS 3.3/3.2 (front/back)  
Locked

Rating: B (program)  
D (documentation)

*Reviewed by Michael L. Weasner*

## INTRODUCTION

Masterdisk (MD) is a DOS utility to access any track/sector on a DOS 3.2 or 3.3 disk and modify the data byte by byte. There are also utilities to reconstruct a Volume Table of Contents (VTOC), perform single drive copying, and undelete deleted programs.

## THE DOCUMENTATION

The MD manual is an Apple-sized 6 page manual with only the briefest of explanations on how to use MD. While it is not intended to replace the available DOS manuals it should give the user considerably more information than is provided. The explanation of reading, editing, and writing changes should have been of a tutorial-type but is actually only a description of the various MD commands. When manipulating DOS, the more information the user has the better prepared he is -- also the more comfortable. One can experiment with the program using a back-up disk to learn the functions, but a better manual would have made this unnecessary. The explanations for the VTOC reconstruction, copying, and undeleting are sufficient. They also don't require many user inputs.

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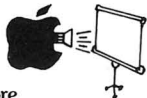
added to the list for your convenience). The shopping list automatically combines "like" ingredients and adjusts each recipe for the number of people eating the meal. We provide 135 basic recipes to get you started. Recipes can be added or changed at any time (even while you're making your selections) and you may also request a printed copy of any recipe. Since you won't be over-buying anymore, "THE MENU" may pay for itself on your very first shopping trip!

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took two minutes, thirty-eight seconds for the same disk. Since the times include the time to swap the source and destination disks, one has to wonder why MD took so long even though there was less swapping to do with MD! Less full disks seem to favor MD for speed. I consider the value of this option low.

## DISK MAINTENANCE

There are two options here; reconstruct the VTOC, and undelete a deleted file. Reconstructing the VTOC is the other routine that most users will find extremely useful sometime. It reads the disk to determine what sectors are in use and then reconstructs the VTOC based on the search. The routine is useful when you suspect that something may have happened to the VTOC. Other than inserting the disk to be fixed, no user inputs are required.

The ability to undelete a mistakenly deleted file is nice to have at times. The directory is searched for files marked as deleted and then the user selects those files by number to undelete. A series of numbers may be supplied. The VTOC is

rewritten thereby allowing the undeleted program to be used without further actions. However as the manual notes, the undeleted program still may not RUN if any sectors that were used by the program have been overwritten while the file was marked as deleted.

## SUMMARY

There are a couple of significant bugs in MD. If the DOS tracks (0-2) are read and displayed, the program may hang requiring rebooting. Some strange track/sector numbers appeared at seemingly random times while evaluating MD. Numbers like track 233 and sector 183 would be great to have, but DOS 3.3 (or 3.2) doesn't support such a configuration.

If you want a program to edit bytes on a disk or to repair a VTOC, then MD may be what you need. Just keep in mind that you will have to spend some effort to determine exactly how best to use MD. You may wish to check into one of the copy programs with these options and get the benefit of a more powerful piece of software (at significantly greater expense too). □

---

# HSD STATS

---

**Stephen Madigan, Ph.D and  
Virginia Lawrence, Ph.D.  
Human Systems Dynamics  
9249 Reseda Boulevard, Suite 107  
Northridge, CA 91324  
213-993-8536**

\$99.95  
Applesoft  
48K, Disk II, Applesoft  
Locked

Rating: C-

*Reviewed by Helena Martellaro*

## INTRODUCTION

HSD STATS is a statistical analysis program. The statistical options include: 1) descriptive statistics, 2) chi-square, 3) t-tests, 4) correlation matrices, and 5) regression of two variables.

A hard copy of the results (or data) can be printed out if you have a silentyte, a printer controlled by the Apple Serial Interface or a Centronics Parallel.

The instruction manual states "HSD STATS is a reasonably bomb-proof program." In using the program, I managed to bomb it quite a few times unintentionally, and I'm not quite sure how I did it. When the program bombed, all the data was lost, so it is advisable to keep a file of the data on a data diskette just after you enter it.

The program allows you to enter seven samples containing up to 200 cases in each sample. All the options were tested against problems independently solved and appeared to give

the correct answers. (The sample sizes I used were between N=10 and N=30.)

My general opinion of the program is that it is designed for the social science/education person who does not work with very large data sets. This program could also be useful for the instruction of basic statistics at the high school or college level.

## DOCUMENTATION

The documentation assumes that you already know statistics. It also assumes that you know all the inside things that are common to the social science/education people, like Cramer's [phi] and [omega-squared]. The instruction book does not give any formulas or explanation of what certain terms mean. The authors assume that you understand the significance of values and how to use them properly.

I would have liked to have seen a great deal more in the way of documentation. I don't think it is a good idea for a program like this to say "here's the answer" without presenting all the theory. On the other hand, the documentation provided does give one all the information needed to at least run the program, and there are many examples throughout the instruction book.

You do need to be careful how you read some of the text. For example: "The standard deviations are unbiased population estimates." does not mean that they use N as the divisor instead of (n-1) in the standard deviations equation. (A side note: if you are checking their calculations on a calculator be aware that some TI calculators use N as the divisor for standard deviation while the HP's use (n-1). Since this standard deviation is repeated when doing the T-test (according to the author), the correct term should be (n-1), and this is what the program uses.

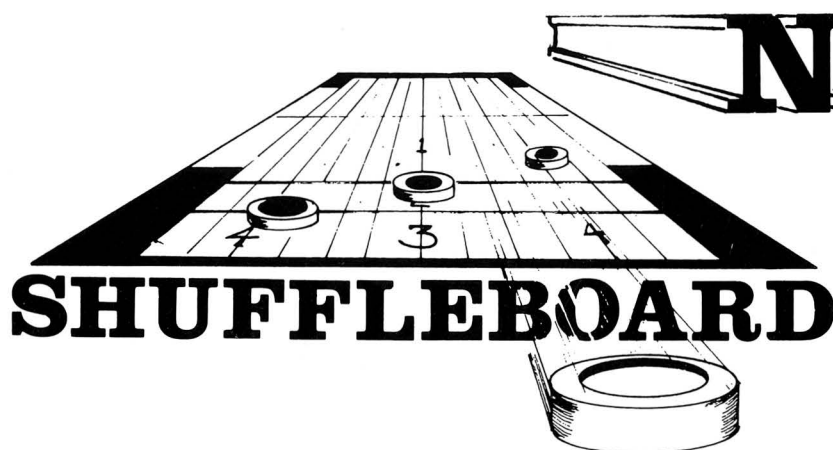
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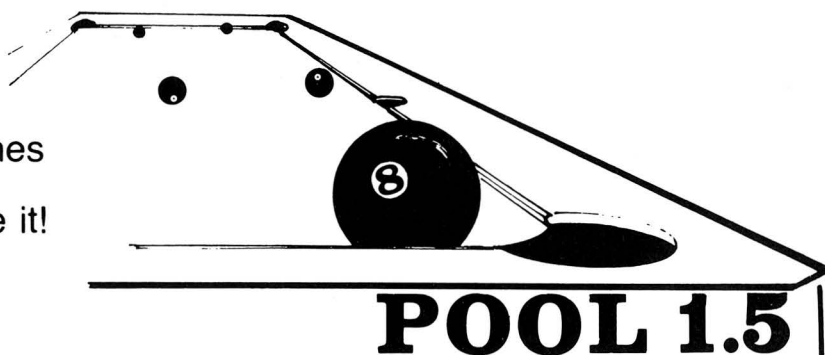
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## THE PROGRAM

There are seventeen program options. They are:

1. DATA ENTRY
2. DATA REVIEW EDIT
3. REVIEW SAMPLES LIST
4. CATALOG
5. MEAN & STANDARD DEVIATION
6. FREQUENCY DISTRIBUTION
7. TWO-SAMPLE CORRELATION & REGRESSION
8. CORRELATION MATRIX
9. T-TESTS
10. CHI-SQUARE
11. TRANSFORMATIONS
12. SAMPLE OPERATIONS (+, -, X, /)
13. DATA HARD COPY
14. FILE CREATION
15. DELETE FILES
16. RUN GRAPHICS
17. EXIT/END

The following paragraphs will explain what each option does.

1. DATA ENTRY. This option allows you to input data from either the keyboard or the disk. You must first enter the data from the keyboard and then save it to the disk for later use. You cannot correct any mistakes as you are entering the data. If you make a mistake, you have to finish entering all the data and then use Option #2 to edit it.

2. DATA REVIEW/EDIT. This option allows you to edit the data that is in the memory. Once you have entered the data with option #1 you can then use DATA REVIEW/EDIT to correct any mistakes. However, corrections do not reflect in the data display forcing you to exit and re-enter to verify your editing. The idea of a second mode simply to edit is not good.

3. REVIEW SAMPLES LIST. This option allows you to review the names and size of the samples in memory. Only seven samples can reside in memory at one time.

4. CATALOG. This option allows you to look at the catalog of the diskette. Because of the copy protection on the diskette, you cannot get a CATALOG listing, therefore you must use this option provided in the program to examine your files on the diskette.

5. MEAN AND STANDARD DEVIATION. This option allows you to find the mean and standard deviation for a data set residing in memory. The output looks like the following:

SAMPLE	N	MEAN	S.D.
GROUP	58	9.5	2.798

6. FREQUENCY DISTRIBUTION — This option allows you to produce a frequency distribution containing up to 15 grouping intervals. The desired interval size can be set at any value (so long as it does not produce more than 15 intervals. The program will tell the user what the minimum size must be). The output looks like the following:

DISTRIBUTION OF GROUP N=58

12 VALUES IN THE SAMPLE

MAXIMUM: 14  
MINIMUM: 3  
RANGE: 11

INTERVAL	FREENCY*	CUM. FREQ.
3	1	1
4	2	3
5	3	6
6	4	10
7	5	15
8	5	20
9	6	26
10	7	33
11	8	41
12	9	50
13	6	56
14	2	58

\*(NOTE: FREENCY is how it is spelled on the print out.) The program then asks if you wish to find percentile ranks or percentile points for the frequency distribution.

7. TWO SAMPLE CORRELATION AND REGRESSION. This option produces a simple linear regression of X on Y or Y on X. The output produced looks like the following:

SAMPLE	N	MEAN	S.D.
X	14	5.357	2.499
Y	14	18.857	10.383

CORRELATION = .906 DF= 12 P = .000

REGRESSION OF Y ON X

SLOPE = 3.764

INTERCEPT = -1.308

R-SARED = .820 SY.X = 4.393

("SARED" is how it actually appears.)

8. CORRELATION MATRIX. This option allows you to correlate up to seven samples. The correlation is shown to three decimal places. The output looks like the following:

	Y	Z	T
X	.906	.514	-.343
Y		.652	-.504
Z			.104

9. T-TESTS. This option allows you to: (1) Test a single sample mean against a population value; (2) Test the significance of the difference between two independent sample means (of equal variance) with or without equal n; (3) Test the significance of the difference between two correlated samples.

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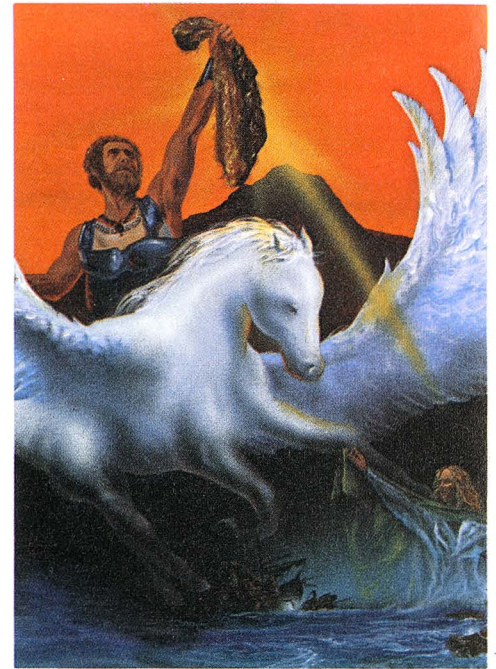
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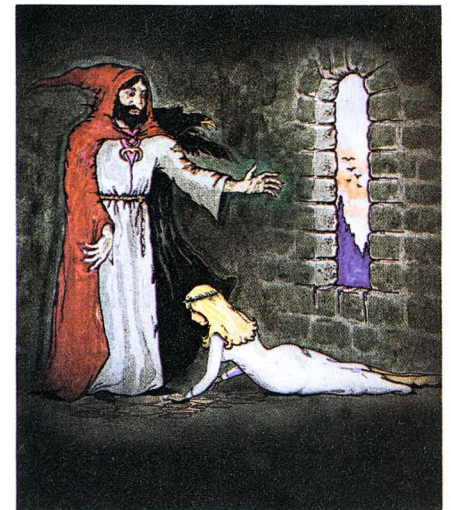


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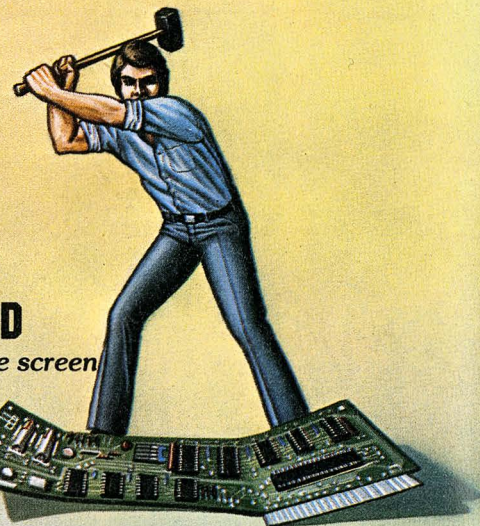
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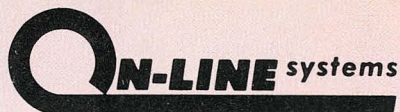
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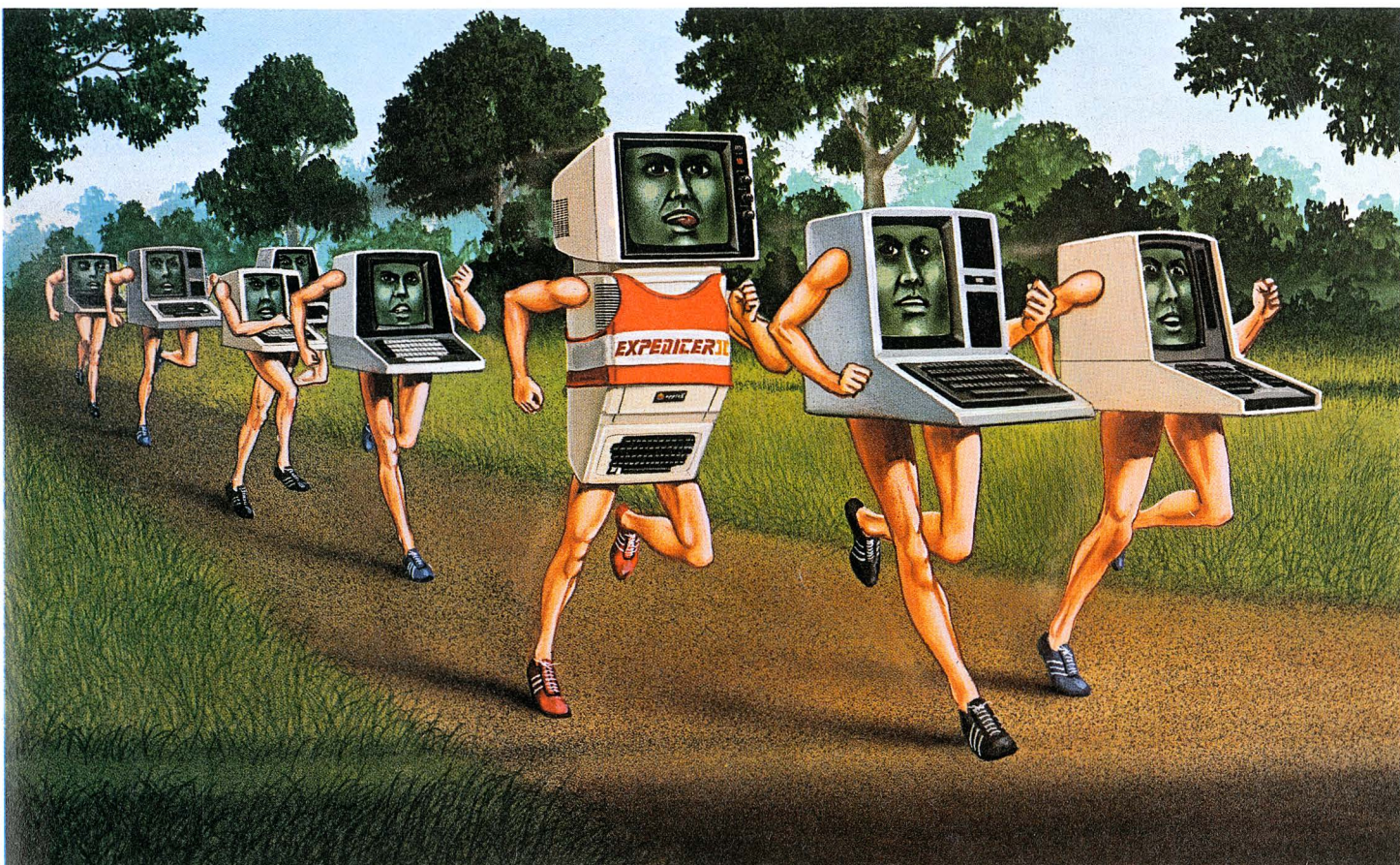
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All three procedures test the hypotheses of zero means difference. They all use a two-tailed test and the output looks like the following:

SAMPLE	N	MEAN	S.D.
Z	14	47.642	22.825
T	14	58.071	27.949

T = -1.081 DF = 26 P = .289  
 STANDARD ERROR = 9.64  
 OMEGA SARED = .006  
 F(VAR) = 1.499 DF = 13,13 P = .237

10. CHI SQUARE. This option allows you to perform a limited testing of contingency tables. Only two variables may be tested, and only seven levels in each variable. The data must be separately entered for this option, and the data may not be stored on the diskette. No correction for small expected frequencies has been done. The output looks like the following:

11. TRANSFORMATIONS: This option allows you to transform the data by addition, subtraction, multiplication or division of a constant. Also there is a standard score, square root, reciprocal, natural log, common log, and a new mean and standard deviation transformation. There is good protection against such things as the LOG of zero.

12. SAMPLE OPERATION. This option allows you to add, subtract, multiply or divide elements between samples thereby creating a new set of elements.

13. DATA HARD COPY. This option allows you to get a printed listing of the sample data.

14. FILE CREATION. This option allows you to save samples to a file on the diskette, combine samples into one file, or append samples to an existing file. The authors note that there may be a bug in the append procedure for DOS 3.2 and refer to APPLE Orchard, Fall, 1981. But they don't tell you what the bug is or how to avoid it.

15. DELETE FILES. This option allows you to delete the files from the master diskette. Again, since the program is locked, there is no way to use standard DOS commands to delete files. This option provides a means of erasing unwanted files.

16. RUN GRAPHICS. This option allows you to see a plot on the CRT of a bargraph, polygon, or scattergram for the particular data you are working with. A silentype will print out the data directly, otherwise you must save the picture to a file not on the master disk and, according to the manual, "follow your graphics printer manual instructions, or use commercially available graphics printer software to obtain hard copy of results."

7. EXIT/END. The program is erased before returning the cursor to you.

## GENERAL OBSERVATIONS

The program does not appear to be state of the art in computer programming. For example, the authors say they "use a

modified bubble-sort procedure, which can be time-consuming for large samples." The reason bubble sorts are popular is that they are very simple to program, but they are not very sophisticated, and the sort is time consuming unless the list is pre-ordered.

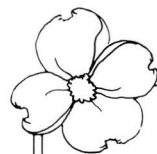
The run times for some routines seem to be rather long. I measured the run time for a correlation matrix with four samples (of sample size 50) at about 28 seconds. For the mean and standard deviation of four samples (of sample size 50), the run time was 24 seconds.

The authors also say that "There are some DOS errors that will terminate the program". The authors don't tell you what these errors are which is very discomfoting. In an addendum, to the program the authors say that they have corrected for DISK FULL, VOLUME MISMATCH, or FILE TYPE MISMATCH. When these errors occur, no abort takes place and you can just press return to get back to the appropriate prompt.

The program requires that only one disk drive be used. Because of the program limitations, there is no way to use a second disk drive. This means that in some cases you must shuffle between the data diskette and the program diskette.

The authors also warn you that if you try to append files on a full disk you will replace the existing file.

All in all, the program is not really user friendly. □



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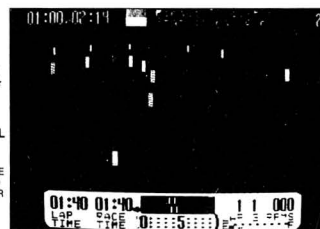
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by RICHARD ORBAN

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# STATISTICS 3.0

Sherwin Steffin et al  
Edu-Ware  
P.O. Box 22222  
Agoura, CA 91301  
213-706-0661

\$25.00  
Applesoft  
48K, Disk II, Applesoft  
DOS 3.2, or 3.3  
Locked

Rating = F

*Reviewed by Helena Martellaro*

## INTRODUCTION

Statistics 3.0 by Edu-Ware is a simplistic statistical program that provides subroutines in six areas: 1) Mean, Variance, and Standard Deviation, 2) Pearson's Product Moment Correlation, 3) Normal Distribution Probability, 4) Chi-Square Distribution, 5) Chi-Square Test (for contingency tables), and 6) T-Test.

The program can be used with Epson MX-80, but I can't tell if it would work with all printers. The printer can be in any slot except #6, and the program will ask for the slot number of

the printer. The disk drive must be located in slot #6. You are limited to the amount of data you can enter by the amount of room left in memory, but the documentation does not tell you approximately how many data points can be used with this program.

The major fault of the program is that sometimes it won't give you the correct answer. I'll go into the errors later in this review.

## DOCUMENTATION

The documentation is straight forward and easy to read. Like most statistics packages on the market, it does not tell you anything about statistics. The assumption is that you already understand statistics and are interested in a ready to use package. Nevertheless, there are some gaps in the documentation. When the instructions talk about the Normal Distribution, they do not explain which probability they are providing. After trial and error I found that the probability is the area under the curve between X (or Z) and the mean. What they call the frequency of the Normal Distribution is the ordinate or height of the normal curve at a particular point. This is not clearly explained in the documentation.

The documentation is very clear on how to run the program, but is no help at all for beginners wishing to know the correct procedures to choose.

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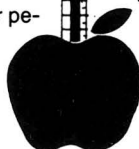
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## THE PROGRAM

The program presents a menu with six options:

- ⟨1⟩ Mean, Variance and Standard Dev.
  - ⟨2⟩ Pearson's Product Moment Corr.
  - ⟨3⟩ Normal Distribution Probability
  - ⟨4⟩ Chi-Square Distribution
  - ⟨5⟩ Chi-square Test
  - ⟨6⟩ T-Test
- 

⟨0⟩ Exit STATISTICS

### ⟨1⟩ Mean, Variance and Standard Dev.

This routine provides you with opportunity to find the mean, variance and standard deviation of a Population or sample with grouped or ungrouped data. You must first enter the data through a very nice entry routine; then you can edit the data or do the calculation. The program draws a graph for the height of each value as entered. This is very pretty but not very useful if the data is entered randomly. After the calculations are complete the program asks:

- ⟨1⟩ Add More Data
- ⟨2⟩ Enter New Data
- ⟨3⟩ Output to Printer
- ⟨4⟩ Save Data to Disk
- ⟨5⟩ Enter Data from Disk
- ⟨6⟩ Return to Menu

Option #5 does not work correctly and will not enter any data from the disk. It simply toggles to a new menu inviting you to enter data from the keyboard. Frustrating. Another problem is that if you hit a letter instead of a number the program will enter a zero. You can edit the zero to another number, but there is no way to totally remove the data point from the data list. This can have an impact on your calculations. The only way to correct this is to reenter all the data again.

Another problem was in the frequencies of ungrouped data. It was confusing because it did not give the expected frequencies. What it did display was unclear.

As far as I could tell, after experimenting with various inputs, all the other calculations for this routine were done correctly.

### ⟨2⟩ Pearson's Product Moment Corr.

In this option you enter the X and Y coordinates through the same easy to use entry routine. The program then gives you the correlation coefficient. After experimentation I found no errors in the calculation. The data prints out in a nice format and is easy to read and understand.

### ⟨3⟩ Normal Distribution Probability

In this option you are asked if you want a standard or non-standard normal probability distribution. If you ask for standard, the program then asks for the "Reference Value (X)". For the standard value, I believe they mean the Z value not the X value. They then produce a chart with: Frequency, Occurrences, and Probability of Occurrence. As stated above, when they show frequency they mean the ordinate (or height of the curve), and the Probability of Occurrences is the probability from the mean out to the X (Z) value.

For non-standard normal distributions you must enter the number of observation, the reference value X, the mean of the

sample, and the standard deviation. The program then provides the frequency, occurrences, and the probability of occurrence.

### ⟨4⟩ Chi-Square Distribution

This option gives you the tail end probability and (1 - the tail probability). There is one problem with this routine. If you enter more than 50 degrees of freedom and a chi-square value over 63, the program will cause an overflow which tells you to contact Edu-Ware. I tested the computation out on my HP-67 programmable calculator and it had no problem handling the larger numbers because the HP-67 can handle numbers up to 9.9E99. It is not unreasonable to expect occasional values as mentioned above. If the normal capability of 1E38 is not sufficient on the Apple, there are ways to get around it.

### ⟨5⟩ Chi-Square Test

This option is provided to calculate the value of Chi-Square from a contingency table. This was an area in which I ran into some trouble. Edu-Ware had problems with this part of the program before but assured me that all the bugs had been corrected. That turned out not to be the case. All sorts of things started going wrong. If I entered the data, and then tried to edit it, the results of the calculations were wrong. If I ran it again, I got a different wrong answer. When I tried to enter new data into the display (starting over with new data), I found that there was some old data still in the display. And finally, if I happened to hit the keys too fast, my data was not correctly entered. (This last one might be excusable, but I still think the key action is too slow.)

### ⟨6⟩ T-Test

This option supposedly provides you with the ability to do a simple T-Test with one of the following three options.

- 1. Hypothesis: The Mean is equal to a specific value.
- 2. Hypothesis: Mean 1 is equal to Mean 2 (and S.D. 1 = S.D. 2).
- 3. Hypothesis: Mean 1 is equal to Mean 2 (and S.D. 1 < S.D. 2).

Again, I ran into problems when I followed the instructions for adding more data. The program totally bombed out. I had to hit RESET and reboot the disk. (With the help of an old monitor ROM, we were able to use TRACE to run the program; it hangs at line 373/376.)

When I used option number three, I found that the degrees of freedom presented in the output were incorrect. The reason is that when the variances are different, the degrees of freedom is given by the smaller of  $n_2 - 1$  or  $n_1 - 1$ . (Ref: Robert Johnson, Elementary Statistics, 3rd ed., 1980, p 368.) In option number 2 they give a value for Standard Deviation (S.D.) when the value is actually the variance.

## GENERAL OBSERVATIONS

The printouts of the results are nicely formatted. And the ease of use of the program is terrific, but that doesn't help if it gives the wrong answers. Another slight inconvenience is that data files are saved to the diskette by a file number instead of a name. This makes it hard to remember which file contains which data. My final observation is that there are too many problems and bugs in this program for the simple type of statistics it does. □

# SUBLOGIC GRAPHICS

---

see individual sections for authors  
SubLOGIC Communications Corp.  
713 Edgebrook Drive  
Champaign, IL 61820  
217-359-8482

\$119.95

see individual sections for system requirements

Rating: A

*Reviewed by Tom Little*

## INTRODUCTION

In 1979, SubLOGIC introduced the "Animation Package: 3D Microcomputer Graphics" system, built around A2-3D1, a sophisticated machine language program for generating hi-res

graphics displays of three dimensional scenes.

This original system had some shortcomings, both in the technical features and in the area of usability. To alleviate these problems, SubLOGIC introduced in 1981 two new programs: the A1-3D2 enhancement, which adds many technical features to the A2-3D1 program; and the A2-GE1 Graphics Editor, which provides a more usable interface to the A2-3D1 or A2-3D2 program for the non-technical user. Neither of these new programs is stand-alone, but is used with the A2-3D1 program.

Although the original A2-3D1 "Animation Package" was reviewed previously in PEELINGS, all three programs are reviewed here together, for the sake of clarity. The price above is for the entire system (all three programs); each program may also be purchased separately at the prices indicated in each section. □

---

## A2-3D1 ANIMATION PACKAGE:

---

By Bruce Artwick

\$59.95

Machine Language

32K (disk)

cassette tape version also available

DOS 3.2

Unlocked

## PROGRAM DESCRIPTION:

The heart of SubLOGIC's Animation Package is a machine language program, A2-3D1, which interprets a 3-D data base and produces a view of it on the hi-res screen. Credit must be given to the author for making this routine very powerful and very general. The screen dimensions are not fixed, but can be arbitrarily chosen. A2-3D1's output can be saved as data instead of being displayed on the screen. All this means that the program could be used not only for an Apple, but, with minor modifications, essentially any 6502-based graphics system.

The A2-3D1 program also does things that other 3-D graphics systems do not do. It has a truly generalized viewpoint. You control the characteristics of an "eye" which views the scene from an arbitrary location, with an arbitrary field of view. The "eye" can also be tilted up/down, left/right, or turned as though the viewer were cocking his head to one side. Because the transformations are done in such a general way, the spatial coordinates in the data base are permitted to have a range unlimited by the dimensions of the Apple's screen and can be much larger than the view of it you see displayed. Locations are defined in a three-dimensional Cartesian coordinate

system with values in the full range of sixteen-bit integer numbers, -32768 to +32767.

The data base used by the A2-3D1 program is a different type than the one used by other graphics programs. Instead of being a definition of points and lines, the A2-3D1 data base is more like a program. Successive bytes of the data base act as "opcodes" directing the A2-3D1 program to perform specific actions, such as drawing lines, or changing the location of the "eye." For example, the data base to draw a line from A to B would consist of the "start" opcode, followed by the 3-D coordinates of point A, then the "continue" opcode, followed by the coordinates of point B. There is even a "jump" opcode, which causes A2-3D1 to start taking its input from a different area of memory. There are also opcodes for the usual things like clearing the screen and switching hi-res pages.

Some important features of A2-3D1 include the ability to clip lines which go off the screen, or not plot them at all; the fact that all transformations are made with double-precision (sixteen-bit) arithmetic which allows objects to be viewed in any conceivable orientation, not just predefined, discrete positions and rotations; and the ability to draw strictly 2-D lines on the screen, which are not transformed with the 3-D data base.

The A2-3D1, when used alone without the additional software described below, has the following technical limitations:

All lines are drawn in white; this corresponds to plotting two adjacent points using the Applesoft HPLOT command. This means that half the possible resolution of the screen is lost, which is a shame because the A2-3D1 does its calculations to such a fine level of precision. This problem has been corrected by the A2-3D2 enhancement.

Because of the program-like nature of the A2-3D1 data base, it is extremely difficult to do animation. Animation must

be done either by writing a very long data base, which erases an old scene and then draws a new one repetitively (a generally unacceptable solution), or by employing a control program written by the user in machine language or BASIC which changes the data base "on the run" and calls the A2-3D1 routine after each change. For the same reason, the A2-3D1 does not lend itself to manipulation of independent objects. A2-3D1 knows only a string of "commands." It does not understand individual objects as data items in the way that other 3-D graphics programs do. These two limitations have been virtually eliminated by the faculty to draw independent objects in the A2-3D2 Enhancement and by a BASIC interface program designed to facilitate animation which is included with the A2-GE1 Graphics Editor (but also requires A2-3D2 for animation of independent objects). When used alone, the A2-3D1 Animation Package also has the following limitations in the area of usability: The only method of creating an A2-3D1 data base without the A2-GE1 graphics editor is with the DEVELOP program included on the A2-3D1 diskette.

DEVELOP is a BASIC program which allows you, in one mode, to view the data base from different orientations, and, in the other mode, to create the data base to be viewed. Unfortunately, DEVELOP is not a very slick program: its prompts are often opaque, and input is done with BASIC INPUT statements, sometimes with prompts, sometimes with just the infamous "?". There is no attempt to format the screen or the prompts to help the user understand what he is doing.

When using DEVELOP to create your data base, you must enter a start address for the data base, and then proceed to enter the numeric opcodes for the specific A2-3D1 com-

mands. All kinds of prompts and messages are displayed as you are doing this, to make sure you know what you're doing before you accept an entry and move on. There is no turning back with this program. If you want to change something, you'd better have the address of that particular command written down. If you do, you can carefully run the program again starting at the address to be changed. Then if you still have things to add, you must stop and start again, this time at the old END address. Opcodes are given in hex, addresses in decimal, which is another minor annoyance.

Provided you survive your development session with your data base intact, you must save it manually by exiting DEVELOP and doing a BSAVE. This implies that you have written down the start and finish addresses the editor was prompting you with at every turn, so you can compute the A and L parameters for the BSAVE. Similarly, data bases are loaded manually with a BLOAD.

DEVELOP cannot be considered a data base editor in any normal sense of the term. It is difficult to use and does not allow you to insert, delete, or rearrange commands in an A2-3D1 data base. The problems of data base creation and editing have been partially alleviated by the

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A2-GE1 graphics editor.

### **DOCUMENTATION:**

The Animation Package documentation consists of a formidable 84 page, full-size Technical Manual and a 32 page half-sized "Load & Go" manual which is intended to provide an easy introduction to what is, after all, a complicated piece of software.

The large Technical Manual is nicely written, very complete, and has all sorts of extras: discussions of technique and many application notes and interesting speculations. The A2-3D1 commands are neatly and clearly described in this manual. The Load & Go manual has many serious problems. Essentially, it is not what it claims to be — a hands-on tutorial. Instead of providing the urgently needed function of familiarizing the user with the system, it digressed constantly into detail which is inappropriate. The reader never knows whether he should be doing something at the keyboard or not. Another problem with getting started with this system is that the Load & Go manual was apparently written primarily for the cassette tape version of the program, and for the Apple II, not the II PLUS. The instructions for loading of programs from disk with Applesoft resident seem to be afterthoughts. An update was made to this system to facilitate loading of the files under Applesoft (a LOMEM-setter program), but the documentation of the update is included as a loose-leaf addition to the Technical Manual. This, unfortunately, adds to the general confusion encountered in getting the system up and running the first time because the Load & Go manual has been in no way modified. Once the user is familiar with the system, he will probably

never refer to the Load & Go manual, so its shortcomings are of no great importance in the long run. However, the user's first attempt to enter the system is frustrated by this out-of-date and often bewildering booklet. It is my opinion that a total rewrite and reprint is urgently called for.

With the A2-GE1 Graphics Editor, the Load & Go manual is no longer the user's means of entry into the systems.

## SUMMARY:

A2-3D1, without the A2-3D2 enhancement and A2-GE1 Graphics Editor, will present a number of difficulties to the average user who is not technically oriented and is not familiar with the details of the Apple's memory map. There is no adequate facility for entering and editing the data base to be displayed by the A2-3D1. While it is conceivable that a proficient programmer with a specific application might enjoy writing his own development software and be able to save some money by purchasing only the A2-3D1 Animation Package, in general all three programs reviewed here must be purchased to get a readily usable 3-D Graphics System. □

# A2-3D2 ENHANCEMENT

By Bruce Artwick

\$24.95

Machine Language

48K

DOS 3.3

Unlocked

## PROGRAM DESCRIPTION:

The A2-3D2 is a new version of A2-3D1 extended by eleven new opcodes. Seven of these opcodes have to do with the now available choice between half-resolution color graphics and full-resolution black-and-white graphics. Anything which is plotted by A2-3D2 can appear in any one of the five Apple hi-res colors (there is no black), or, if you prefer, color can be ignored and plotting may be done using the full 280-column resolution. In this way the user has a choice between color and resolution, something many other graphics programs do not offer.

There are two commands which force A2-3D2 to generate an intermediate 3-D output array. Thus the user may have access to the numerical representation of the objects after A2-3D2 has transformed them in 3-space but before they are projected onto the 2-D screen. This feature is an excellent extension of the 2D output array capability provided with A2-3D1. This indicates a real attempt to assist the user who may want to use graphics data in a context rather than the Apple video display. A2-3D2, like A2-3D1 before it, is not a "magic black box" which makes video pictures.

There is a SKIP opcode which causes A2-3D2 to ignore a segment of the data base. SKIP has a status byte ("on" or "off")

which would be POKEd by a control program allowing easy control of which portions of a data base should be interpreted on the screen. There is a PAUS opcode which causes A2-3D2 to pause from 0.2 to 51 seconds, facilitating debugging of an A2-3D2 data base.

The last and most noticeable new opcode is for "independent object calls." If an A2-3D2 data base is to be considered as a program, then the ICALL opcode is like a subroutine call. Essentially, ICALL causes A2-3D2 to start taking input from a specified memory location returning to the caller data base when the end-of-file opcode is reached. This feature is made extremely powerful by the presence of parameters to the ICALL command which specify the position (in 3-space), and rotations of the object being called. There is also a status parameter, which either ignores the object call entirely, executes the call, or executes the call and decrements its counter. This "countdown" capability allows a control program to draw the independent object N times, without having to keep track of the counter itself.

It is obvious that A2-3D2 was written with the idea of a control program which modifies the data base and calls A2-3D2 in a loop, thereby producing animation or other time-dependent effects. Of course, this was the standard means of doing involved presentations with A2-3D1; but we now see, for the first time, technical features and documentation intended to assist the user in making this a reality. The status flags for the SKIP and ICALL opcodes are prime examples. The control program can easily change these parameters without doing massive over-writing of the original data base with each loop.

The method of implementation of independent object calls allows recursive object definition, and the countdown status

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limits the recursion to a user-specified number of levels. Any object may reference any other object, and A2-3D2 imposes no arbitrary limit on the number of objects which can be used, unlike virtually every other 3-D graphics program.

The support software on the A2-3D2 disk is the same DEVELOP program provided with A2-3D1. It has been modified to allow color or hi-res mode to be selected, but the ICALL command, which is the single most important feature of A2-3D2, is simply not accepted by the "new" DEVELOP program, and neither are the other eight new opcodes.

Thus, without the A2-GE1 Graphics Editor, you are actually forced to create your data base by loading memory through the Apple monitor with all the joys of converting integers into sixteen-bit two's complement hexadecimal numbers and tedious memory-moves if it becomes necessary to make insertions into a data base. Actually, the Apple monitor is probably easier to use than the DEVELOP program anyway, except that DEVELOP does do number conversions and does verify the command name with each opcode you enter. A test program is also provided on the disk, which "tests" all of the A2-3D2's abilities. It also makes a fairly interesting demo.

## DOCUMENTATION:

A2-3D2 comes with a 61-page Technical Manual in the style of the A2-3D1 Manual. This manual very thoughtfully summarizes ALL the commands not merely the new A2-3D2 ones. The spirit of informativeness mixed with speculation which characterizes the A2-3D1 Manual is to be seen here as well. In short, it is very interesting reading.

If you do not have the Graphics Editor, you are still intended to enter the system via the Load & Go Manual, which will be a more difficult experience because of the differences in memory usage between A2-3D1 and A2-3D2. The Manual states that the A2-3D1 program is needed to generate the A2-3D2 enhancement, and for you to refer to the HELLO program on the A2-3D2 disk for instructions. Well, there aren't any, and the A2-3D2 on each of the two disks this reviewer has seen operated perfectly well without any use of the old A2-3D1. Perhaps SubLOGIC decided (after printing the Manual) to provide the full, working version of A2-3D2, rather than an upgrade program. Something needs to be changed. It is a little confusing currently. Certainly the A2-3D2 Technical Manual assumes familiarization with the A2-3D1 Manual, and that is a good reason to buy the original A2-3D1 as well. However, even here an informed user could get by with only A2-3D2.

A more palatable approach to marketing A2-3D2 (in this reviewer's opinion) would have been to offer it as a totally new program, not as an add-on to A2-3D1. It is disconcerting to purchase two items for \$59.95 and \$24.95, only to find that the less expensive of the two includes almost everything that is needed, and the more expensive is largely a redundancy. The memory map which is provided at the end of the A2-3D2 Manual is dot-matrix assembler output, and although it provides addresses of various entry points to A2-3D2, it does not give any clear idea of how the user might organize memory when using A2-3D2. That is something the A2-3D1 Manual provided in some detail.

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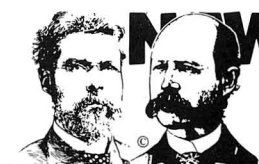
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## SUMMARY:

The A2-3D2 Animation Package is an extremely powerful 3-D graphics system. It is the unique interpreter-type design of A2-3D1 which has made possible this extension. The potential of this program is truly tremendous, going far beyond other graphics systems I have seen. The A2-3D2 places SubLOGIC graphics in a whole new league. The program-like nature of the data base, combined with the new independent object call feature, allows for unprecedented flexibility in the creation of 3-D graphics displays and programs. I think that most, if not all, competitive systems could be shown to provide subsets of the A2-3D2 capability.

The problem with flexibility is that it requires more detailed knowledge from the user. To make full use of A2-3D2 (or A2-3D1 for that matter), the user must be familiar with at least the basic concepts of machine language programming and

memory management, and the initial period of learning how to make the program do things will be long and possibly discouraging for the user with little or no technical background. However, the pricetags suggest that these programs (A2-3D1 and A2-3D2) are not intended for the casual dabbler in Apple graphics. After making the monetary investment, the purchaser will probably be inclined to make the investment in time and study required to use A2-3D2 to its best advantage for his application.

Again, A2-3D2 is not recommended without the A2-GE1 Graphic Editor unless the user is prepared to undertake detailed and time-consuming operations to produce the desired results. The DEVELOP program included with A2-3D2, rather than being an improvement on the old one, is actually made more inadequate because there are now new capabilities which DEVELOP cannot deal with. □

---

# A2-GE1 GRAPHICS EDITOR

---

By James Bozek, David Denhart, and Terry Egan

\$34.95

Machine Language

48K

DOS 3.3-compatible

Locked

## PROGRAM DESCRIPTION:

The A2-GE1 Graphics Editor actually consists of several separate tools for making use of the A2-3D1/3D2 graphics programs. First, there is an Object Editor program which allows the user to easily and interactively create an A2-3D2 (or A2-3D1) data base. Second, there are two programs, a Motion Programmer and a Slide Show Programmer, with which previously created objects and scenes can be manipulated easily on the screen. Motion Programmer can save the entire session onto disk and play it back later. Slide Show Programmer may save specific scenes in order for later retrieval. Finally, there is a BASIC Interface, which nicely illustrates a method for utilizing A2-3D1/3D2 from a BASIC control program.

## OBJECT EDITOR

This program provides the much needed assistance in creating A2-3D2 data bases. The user manipulates a cursor on the hi-res display, and four lines of text at the bottom describe, among other things, the cursor's location. This cursor moves in three-dimensional space. Once it is positioned to the user's satisfaction, he may enter an A2-3D2 command using those coordinates. For example, a start or continue point for a line. This is done very naturally with few keystrokes. At all times, the entire data base is visible as interpreted by the A2-3D2.

From Object Editor, you can place text into the three-dimensional data base, and it is transformed along with every

thing else. This can lead to some very interesting effects. (Did you ever look at an 'R' from underneath?) The Object Editor ranks very high on the scale of usability largely because the user is presented at all times with feedback in both graphic and numeric forms. An excellent feature is the ability to step backwards through the data base you are defining (the hi-res cursor follows you!) This allows you to change the coordinates of a point in the object definition, and you can then move forward again. The system works interactively, largely with single-keypress commands. The information displayed includes the current memory address, the coordinates of the previous point, the coordinates of the cursor, and the characteristics of the "eye". You can move the eye, for example to look at the object you are creating from the top or the side.

Often programs which give the user a great deal of control actually make it much easier for the user to lose control. The Object Editor is not this way. The constant display of information in text form allows the user to UNDERSTAND what is happening at the same time he SEES it happen. The ability to backup through the data base provides an easy way of undoing mistakes and returning to a more or less known state. Object Editor is a superior program for the creation of three-dimensional graphics.

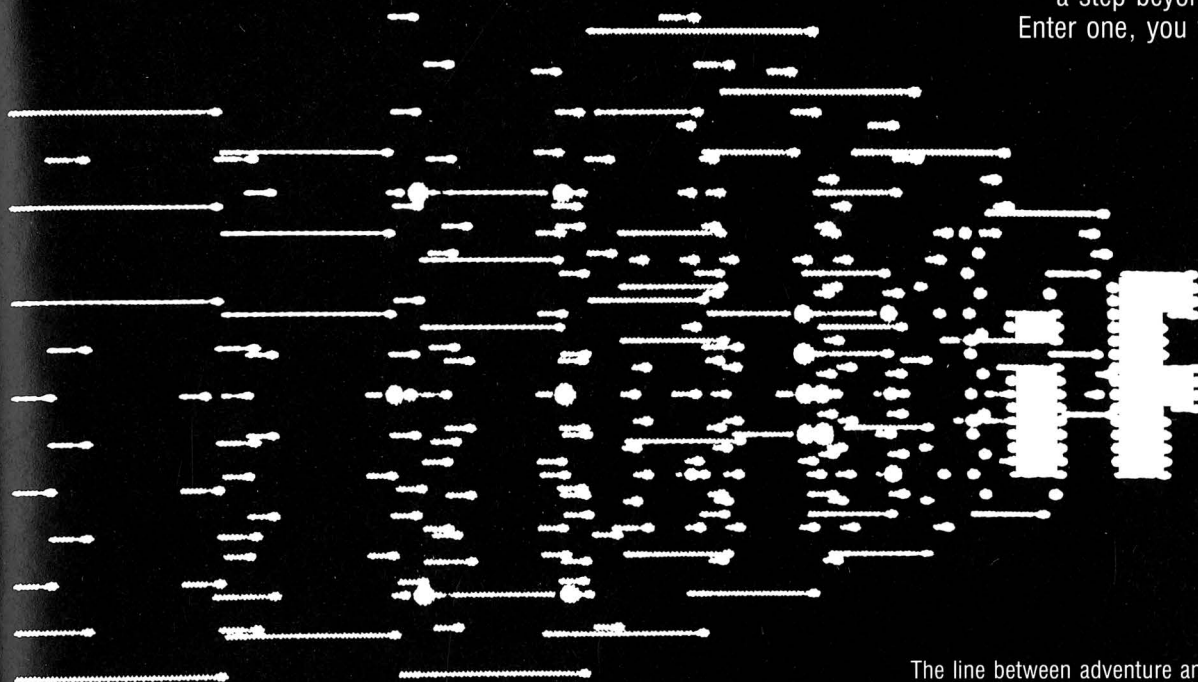
Although Object Editor as it stands does more than most competing graphics programs, it has some shortcomings which were rather disappointing.

The Object Editor does not accept all the A2-3D2 (or A2-3D1) opcodes for insertion into the data base. You can set the color or the resolution, for instance, but you cannot create an A2-3D2 data base with all those other nice opcodes to switch hi-res pages, do independent object calls, or turn on array generation. It is understood, of course, that most of these unimplemented opcodes are inappropriate in an interactive

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editing environment. However, this means that Object Editor can only create data bases which draw objects on the screen. These form only a part of all possible A2-3D2 data bases. If you have an interesting idea to make use of some of the "special" capabilities of A2-3D2 (or A2-3D1), you are again confronted with the editing problems discussed above.

The second inadequacy is the inability to use Object Editor to insert commands into the middle of a data base or delete or move a block of commands. These are functions which are implied in the name "Editor." With Object Editor, you can back up, but if you wish to change one of these previously entered commands, the only option is to replace it with another command of equal length.

## MOTION PROGRAMMER

With this program you load in object data files (created with Object Editor; up to six may be loaded) which you may then manipulate independently. This independent manipulation is done internally by using the independent object call feature of A2-3D2, and so cannot be done with A2-3D1 alone. Each object may be given an arbitrary spatial velocity and an arbitrary rotation. One object must remain stationary with regard to the eye. The motion is controlled from the keyboard with single-keystroke commands, which increase or decrease a specified object's speed along each of three spatial directions and rotation around each of three axes. This is all done interactively as you view the objects and is as much a challenge as any live-action arcade game, if you have several objects all moving at once. Text phrases can be designed and placed on the screen under user control.

Motion Programmer gives you a great feeling of power over all the objects on the screen and is one of the most exciting computer programs I have used. Once you become comfortable keeping all your objects under your sway, you may turn on the motion recorder feature which saves the whole session from then on until you turn it off. This recording can then be played back using the MPLAY program on the disk. This is a simply tremendous way to organize and create a 3-D, animated graphics presentation for education, business, or other areas. The ease with which this can be done is again a tribute to the basic design of the A2-3D2 program.

Slide Show Programmer works in essentially the same way as Motion Programmer. However, instead of saving the entire session, it saves only "snapshots" which the user selects, interactively, from the keyboard. Thus it is less hectic and demanding than Motion Programmer and provides a desirable alternate method for some presentations.

## OTHER PROGRAMS

The BASIC Interface is discussed below with the documentation.

The diskette contains two Applesoft programs, DFOFST and DFPRINT, which provide handy facilities. The first of these programs allows all the coordinates of a given data base to be offset by a specified amount. This provides an easy way to reposition the center around which an object will rotate. The second program produces a printout (or screen display) of a data base shown in symbolic form. That is, the hexadecimal opcodes are printed as mnemonics and the hexadecimal parameters or coordinates are printed as integers. This is an extremely nice thing to have. It will print out any A2-3D2/3D1

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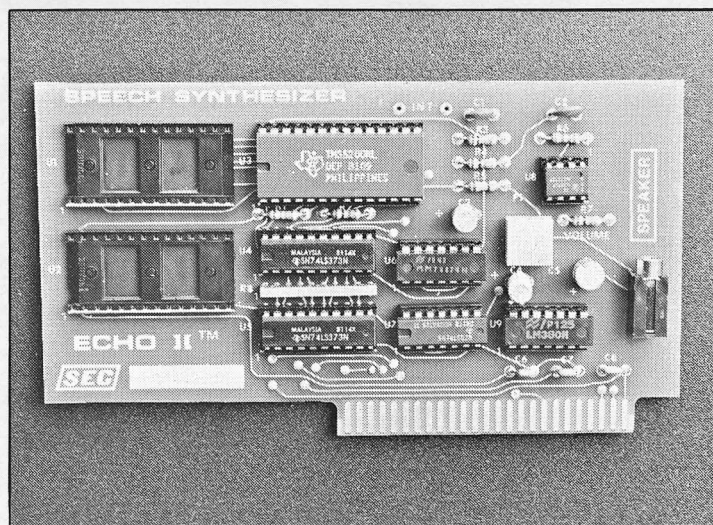
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data base in human-intelligible form. What is really needed (but not provided) is a program to translate the mnemonics and integers into a hexadecimal data base. Such a program, together with good editing capabilities, would make a full power of the A2-3D2 available to the average user.

## DOCUMENTATION:

The manual for A2-GE1 is written by Norm Olsen and is quite different from the Technical Manuals. It is directed toward the beginning user and is very well written. It is a hands-on tutorial leading you through the Object Editor, Motion Programmer, and Slide Show Programmer. Keypresses are indicated by filled-in boxes, as in the Apple tutorials. It is 134 pages long, but there is much covered, and it is exceedingly readable. Perhaps Mr. Olsen could rewrite the Load & Go Manual.

The A2-GE1 documentation also includes worksheets for documenting objects and presentations created with the Editor. These will be a great help to all SubLOGIC graphics users.

One of the best sections of this documentation is the description of a BASIC Interface to A2-3D2 interface written by Terry Eagan. This shows how objects created by Object Editor can be loaded into memory and animated under the control of a BASIC program. BASIC subroutines are provided which do the animation (updating ICALL parameters and calling A2-3D2), and also plot text on the hi-res screen. The interface is also usable for non-animated presentations. Such an interface to BASIC is a vital feature which had previously not been available to A2-3D2 users.

The interface, like the Motion Programmer, relies on the ICALL command of A2-3D2 and is intended to use data

bases created by the Object Editor. The full potential of A2-3D2 is again not completely realized.

## SUMMARY:

There is so much superior software in the A2-GE1 system that it is hard to believe that it is being sold for \$34.95. However, the necessity to have the other two packages to run A2-GE1 adequately is a sobering influence. The Object Editor, Motion Programmer, and Basic Interface are all top-quality products. A2-GE1 falls short of providing a TOTAL editing capability for A2-3D2 data bases, but the facilities which it does provide still make it an exceedingly powerful package.

## CONCLUSION

If you have a professional application for Apple graphics, the SubLOGIC systems are the obvious choice. All three systems must be purchased in order to do any serious development work. There are few software products selling at over \$100 that can be considered good buys, but this is one of them.

There are still unfortunate and conspicuous deficiencies in support software: a true data base editor, as opposed to the A2-GE1 Object Editor, would allow the full potential of the A2-3D2 software to be realized. Also, an overhauling of all the various documents to bring them up-to-date and integrated would be appreciated by the new user especially. Even with these drawbacks, the three programs, as they stand, provide the user with a great deal of graphics power. New potential will open up as the user learns more about the system. The flexibility inherent in this system's design makes it possible for a serious programmer to develop software which will suit his own purposes. □

---

# HI-RES SECRETS

---

by "Don Fudge"  
Avant-Garde Creations  
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Eugene, OR 97403  
503-345-3043

\$125.00  
Applesoft and Machine Language  
48K, DOS 3.2 or 3.3  
Partially locked

Rating: N

*Reviewed by Tom Little*

## WHO IS DON FUDGE?

The Manual for Hi-Res Secrets asks this timely question. We are informed that Don Fudge is not the one who wrote all those arcade games (that was Bill Budge), and that Don Fudge is more a metaphysical entity, "our computerized guardian

angel." This is all a build up to the Hi-Res Secrets motto: "If you can't Budge it, Fudge it." This reviewer might add, with no antagonism intended, "You can't Fudge Budge."

## ... AND WHAT IS HI-RES SECRETS?

This is the real question, and the answer is the reason that no Peelings rating is given for this product.

Hi-Res Secrets is a new kind of product. It is a combination of How-To Manual, utility programs, demonstration programs, and more. Its primary purpose in life is to "bridge the gap between novice programmers and expert programmers" in the field of Apple hi-resolution graphics. The starring attraction of Hi-Res Secrets is its manual, which is professionally produced and very well written. It is designed to teach you everything you always wanted to know about graphics in over 260 (half-size) pages.

The author has a good sense of humor which makes this manual a pleasure to read, even when some serious learning

may be going on. Much fuss is made about the philosophical basis of Hi-Res Secrets, namely that information must be shared if we expect the computer industry to remain healthy and benefit from new developments. I agree with this premise, but remain skeptical. In the manual's introduction, there is extensive criticism of game programmers who do not share their secrets because they are after the "little green rectangles". This kind of talk may rub some people the wrong way after they shell out \$125 for Hi-Res Secrets.

Besides the manual, there are four disks which are packed nearly to overflowing with all kinds of programs, shape tables, and the like as illustrations of the techniques presented in the manual. Each disk has a menu program, from which you can run demonstration programs which utilize most of the interesting matter on the disk.

## TOPICS COVERED

Perhaps the central emphasis of Hi-Res Secrets is on shape tables and animation techniques. The manual provides informative sections on Vector Shapes (these are the "Apple-soft shapes" used by DRAW, XDRAW, SCALE, ROT, etc.), Block shapes (two-dimensional arrays indicating whether a pixel is "on" or "off"), and HPlot shapes (lists of successive coordinates, used by the Applesoft HPlot command). These three shapes are basically the only ones used (in one form or other) by all graphics programs. The manual pretty much assumes that you are familiar with the Applesoft graphics commands and abilities, and that you want more information. These three kinds of shapes are described in detail and there are programs on the disks for converting among them. There is no fancy software on the disks for creating Applesoft Vector Shapes: you are expected to purchase Avant-Garde's shape builder program if you want to do much in this area. There are very attractively printed reference cards summarizing these different types of shapes. Under the topic of shapes, hi-res character sets are covered, and there are some good character-generator programs on the disks.

There is discussion on various methods of doing animation with these shapes, including the page-switching technique and interesting Assembly Language "bit shifting" animation for horizontal motion.

An attempt is made to describe the handling of color in Apple graphics, and the problems of color animation are carefully described. "Color fill" algorithms are discussed, and programs are provided on the disk. This is a topic which it is not too easy to find outside information on (as are many of the things covered in Hi-Res Secrets, which is, of course, the justification for the name). In addition, the manual also tells you about things only peripherally related to hi-res graphics: Music Programs, Game Paddles, Assembly Language, PEEKs and POKEs, Memory organization and other topics which are a source of frustration for the new programmer who is trying to educate himself.

There is a great deal of knowledge to be gained from Hi-Res Secrets if you've finished with your Applesoft manual and feel that you really haven't learned about graphics yet. The manual is designed so that you can go to the section which interests you, read it, and come away smarter. You can list the

programs on the disks and work through them to increase your understanding. This is an extremely valuable learning tool because you have access to a working program that really DOES do animation, or music, or color fill, and it's there for you to look at.

## WHO BURNT THE FUDGE?

I wish that I could whole-heartedly recommend Hi-Res Secrets, because we need more production in the spirit of this package. Unfortunately, there are some questions about the merits of Hi-Res Secrets.

The programs on the disks are not smoothly done. By this I mean that they often are not "user-friendly". No real attempt is ever made to present information in a pleasing format on the screen. It is fairly easy to get into situations you wish to get out of, but don't really know how. This is true of most of the programs. Most seriously, two of the disks are supposed to be protected. In order to get listings from these two disks, you must use a special program that is provided, but the problem is that the protection mechanism is not very professional and seems to be constantly in the way. It is easy to enter bizarre, undocumented states. If you press RESET, you must reboot the system to bring your computer back to life. There are no instructions for explaining how to get a listing from these protected disks to go to the printer, and I had to go to great lengths to get such a printout. (This involved doing a PR#1 at the beginning so that all output went to the printer.)

The above points are disappointing to be sure, but minor. There is a more serious shortcoming, however. Most of the programs on the disk are rather opaquely written. REMark statements are seldom to be found, and programs were apparently not written or formatted for clarity. Some documentation is provided in the manual, but the manual is not a guide to reading the disk programs. I cannot understand why a basically educational package would contain difficult-to-read programs.

Finally, the manual is excellent for procuring information on a given topic, but it falls short of providing a planned course of study in Apple graphics.

## WHAT IS THE BOTTOM LINE?

If you want to learn more about hi-res graphics, take a look at Hi-Res Secrets. It may be just the thing for you, but if you purchase it sight-unseen, you may be disappointed. \$125 is still expensive even when data base programs are selling for \$700. The "secrets" in Hi-Res Secrets are not the "deep, dark, guarded by a dragon" secrets, but are rather the "where's that darned magazine article?" secrets. You can get most of the information elsewhere, if you know where to look. Would it have been more honest for Avant-Garde to write a book on graphics and sell it for \$20? I don't really know — it's a matter of viewpoint.

No rating is given because this product has no competition on the current market, and because its worth depends so much on the personality and needs of the purchaser. □

# SPECIAL EFFECTS

by Mark Pelczarski and David Lubar  
Penguin Software  
P.O. Box 432  
West Chicago, IL 60185  
312-231-0912

\$39.95

Applesoft and Machine Language  
48K, game paddles or joystick  
DOS 3.2 or 3.3  
Locked

Rating: A-

*Reviewed by Tom Little*

## INTRODUCTION

SPECIAL EFFECTS is a collection of graphics utilities which provide new and interesting means of creating and modifying hi-res pictures.

Although SPECIAL EFFECTS is something of a follow-up act to Pelczarski's Complete Graphics System (reviewed in Peelings II, V2N6), it has been designed so that you can make use of all its features even if you don't have the earlier product. SPECIAL EFFECTS is also available in a graphics tablet version for \$69.95, but only the game paddle/joystick version is reviewed here.

## FEATURES

SPECIAL EFFECTS is menu-driven, following the style of The Complete Graphics System, and is very easy to use. From the master menu, you can enter five separate modules.

The first is the "Brush Module" which is a super-extended version of the paintbrush mode in The Complete Graphics System. There are now gobs and gobs of funny-looking brushes that you can use to "paint" all sorts of interesting patterns on the hi-res screen. Pictures of all the brush shapes are kept on hi-res page two and you use the game paddles to select one of them. Painting is done by using the game paddles to move the brush image around on page one. Brushes are one of the more creative things Mr. Pelczarski has added to the world of Apple graphics, and SPECIAL EFFECTS is like a candy store with all these new brush-shapes. However, the familiar game paddle jitter prohibits you from really utilizing the possibilities of this technique. I think an improvement might be to have the program interpolate between successive positions of the brush, to fill in the inevitable gaps brought about by not being able to manipulate the game paddles slowly enough. This kind of "painting" can be done in any of the many colors available in The Complete Graphics System. The Brush Module also has a magnification command which shows you the hi-res pixels blown up two or four times. You can move the cursor around the magnified image and change the color of any pixel easily. This is the best magnifying mode I have used.

The second module is the "Tricks Module" which includes an assortment of miscellaneous down-and-dirty games to play with the colors on the hi-res screen. Using the Tricks Module, you can make any half of the screen a mirror-image of the other half, or flip the picture around either axis. There are also commands which produce rather bizarre color changes of the picture on the screen. This is all tremendous fun: small children and tired programmers will love the Tricks Module, I did!

A more utilitarian feature of the Tricks Module is a command which allows you to move a rectangular region of a picture either onto another part of itself, or onto the other graphics page. Most of the work is done through the game paddle buttons.

The Tricks Module also lets you move pictures between the two graphics pages. The picture of "Tree and Cave" in the SPECIAL EFFECTS ad is included on the disk, and after a few minutes in the Tricks Module, it emerged as something not at all like a Tree but quite beautiful.

There is also a Packing Module, to which I can only say "It's about time!" Packing algorithms have been around for a long, long time, and hi-res pictures are ideal candidates for packing. Essentially this compresses your picture in a way that preserves all its informational content. Thus a picture with very little detail can be efficiently packed. Packing doesn't help too much with an intricate picture. The Packing Module allows you to store a high-res picture in significantly less than 34 disk sectors. Of course you must invoke the unpack command when you read the picture back into the computer to view it.

The next module is for viewing strings of packed pictures which may be created in the Packing Module. The clever idea here is to view a small presentation of hi-res scenes in sequence without time-consuming disk access for each frame. Of course, there are limitations to this procedure, but it remains a good idea.

The final module provides a conversion routine for converting from Apple Tool Kit-type character sets to Penguin-type character sets.

## DOCUMENTATION

The documentation, as with The Complete Graphics System, is easy to use and uncluttered. It is 16 half-size pages, and all the options are neatly summarized at the back. This, combined with the menu-driven nature of the program, makes it comfortable to use. There are "Programmer's Notes" describing the internal format and operation of some of the SPECIAL EFFECTS features, so some of the effects can be used in your own program.

## CONCLUSION

There are no staggering new ideas in SPECIAL EFFECTS, but if you have a pressing need for any of the utilities it contains, it is highly recommended. On the other hand, if you would rather just fool around, you'll get lots of enjoyment as well. □

# MASTERTYPE

---

by Bruce Zweig  
Lightning Software  
P.O. Box 11725  
Palo Alto, CA 94306  
415-856-1855

\$39.95  
Compiled Applesoft & Machine Language  
48K, Disk II  
Boots 3.2 or 3.3 or Apple III emulation  
Rating: A

*Reviewed by Dr. Virginia L. Owens*

## INTRODUCTION

MasterType is a computer game that is designed to teach touch typing skills through utilization of an "invaders" style game approach.

The accompanying manual consists of 8 pages and an index of the contents of the 17 lessons contained on the diskette. The instructions are straightforward and simple enough for first-time computer users as well as elementary school age children.

Upon booting MasterType, the user is greeted by a demonstration of the game. Clear instructions are given for the beginning of the war against the words.

## THE GRAPHICS

A reasonably fast, colorful display has an island in the center and attacking vehicles coming in from the four corners. While the animation is not in the class of Threshold (reviewed elsewhere) it certainly is very good. The words to be spelled appear in a box in this island (or letters in the corners at the beginning stage).

## EDUCATIONAL VALUE

There is no question that keyboard skills are necessary to realize the full potential of microcomputers. While this fact

may be readily apparent to adult users, it may not be so obvious to children. MasterType has combined repetitive typing drills with a space war format (with attacking missiles, satellites, and atomic fireballs) that holds the interest of young users. Whether it is a child or an adult trying to learn to type, this package is a rather painless way to begin.

## EVALUATION

As the mother of two veteran computer game players (ages seven and ten), I was intrigued by the idea that a game could develop typing skills. With no instruction from Mom, each child was able to boot the disk and begin the game. The younger child had problems placing his fingers on the home keys as instructed. Due to "heavy hands," he inadvertently committed numerous errors and consistently lost the battle against the words. The older child, being somewhat more wise in the ways of war games, quickly discovered that his score vastly improved if he ignored the advice to put the fingers on certain keys. His use of the tried and true (for him) "hunt and peck" method achieved the results he was seeking; i.e., victory. However, when not in the heat of the battle, he was able to use touch typing techniques. So far, he isn't sure why he would ever want to, but MasterType has not undertaken the formidable task of convincing him within their program.

Of considerable interest to both children was the opportunity to create their own lessons/games. This feature prompted numerous questions about programming. When a package is able to trigger an inquiry process in the learner, whether intended or not, you must give it good marks.

One measure of success for this approach to developing typing skills is whether or not the program will hold the interest of the learner. I must say that both boys did indeed show considerable interest over the ten days they had access to the program. For me to evaluate the effect the use of MasterType has on the development of typing skills would require more time. With such a high initial interest on the part of the young users, it seems that the chances of success would be fairly high. □

---

# MICRO-ATLAS

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Columbia Software  
PO Box 2235  
Columbia, MD 21045  
301-997-3100

\$24.00  
Applesoft  
48K, Disk II  
DOS 3.2/3.3  
Unlocked but program unlistable  
Rating: B

*Reviewed by Sandy Abernathy*

## INTRODUCTION

Micro-ATLAS is a simple appearing program that will locate and compute distances between 411 major cities found in the continental United States, Canada, and Mexico. City locations are marked by a blinking cursor on a high resolution map. When the location of a city is requested, the computer also prints the longitude and latitude in degrees, minutes, and seconds. When distance between two cities is requested, the

computer prints the heading in degrees and straight line distance in miles and kilometers.

## FEATURES

The program is silent which is an advantage if it is to be used in a classroom. The high resolution map of the United States and Canada is redrawn each time a new location or direction is requested. I found myself watching the screen intently as the map developed and anticipating where the blinking cursor(s) would appear. Using blinking cursors to mark cities on a map is an excellent way to develop a feel for location, direction, and distance.

The procedure for using the program is consumer oriented. There are only two menus and both use the same keystrokes for choices. The main menu choices are: LOCATE, DISTANCE, and QUIT. The menus for the two subroutines, LOCATE and DISTANCE, are the same. The choices are: LIST CITIES, ENTER CITY, and START OVER. LIST CITIES scrolls the 411 cities, their identification numbers, and state abbreviations. The list can begin at any requested letter. Speed is regulated by pressing the F (fast) or S (slow) key. Each display line is retrieved individually from the disk. Listing the cities was tedious. It was much easier to find what I wanted in the booklet that accompanied the disk. With the printout of the data contained in the booklet to look at, I could check my spelling as I entered cities and state abbreviations.

ENTER CITY uses the same set of directions for both subroutines. For the subroutine, LOCATE, directions for entering a city are given once. For the subroutine, DISTANCE, directions are given twice since two names must be entered. Keeping the number of keystrokes and directions to a minimum is important if the program is designed for the unsophisticated user. Color is used in an interesting way in the program. Directions are displayed in black and white while the map and accompanying information is shown in color.

To "enter" a city, according to the directions, the city number or city name (spelled correctly), a comma (mandatory), and the state abbreviation (optional) must be entered followed by a RETURN. Trying to confuse the program, I entered a city name without the comma and found that the computer would return with a double question mark. I could then enter the state abbreviation or just press RETURN and the program would accept this procedure as readily as the proper method. If you spot an error while typing your entry, you can backspace using the left arrow key and retype that portion.

When the subroutine, LOCATE, is completed, the high resolution map is displayed and the city is marked by a blinking cursor. The following information appears below the map.

(CITY), (STATE)

LATITUDE: —.—, — (DEG. MIN, SEC)

LONGITUDE: —.—, — (DEG. MIN, SEC)

ANOTHER CITY (Y/N)?

When the subroutine, DISTANCE, is completed, the high resolution map is displayed, the two cities are marked by blinking cursors with a flashing line drawn between the two. The following information appears below the map.

(CITY), (STATE) TO (CITY), (STATE)

DISTANCE = — MI (—KM)

HEADING = — DEGREES

## ANOTHER CITY PAIR (Y/N)?

The program appears to be idiot-proof. I tried entering characters other than the 1, 2, or B for the menus and was reminded of the correct key choices. I tried keys other than Y or N when asked if I wished to "do" another city. The computer patiently ignored anything but the two correct keystrokes. When I misspelled the name of a city or typed the wrong state abbreviation, I was told that there was no match and asked to enter the city again. Since a city could be entered without a state, I tried to enter a state without a city (example: ,NM) Unfortunately, this didn't work; the program started over. To enter a state without a city would be an added attraction in a school setting. The computer could indicate the state by displaying the location of and information for the state capital. This would be very helpful for students beginning to learn state locations and state capitals.

There are no introductory remarks on the program, and some users may consider this a lack of documentation. As a former teacher, I am glad to see the program purpose in the booklet and not in the program. That means the teacher can incorporate the program in a variety of activities. Not only can it be used for latitude and longitude, distance and direction estimation, it can be used for such activities as determining which cities could be visited given a starting point, a particular brand of car, and a certain amount of money. The possibilities for using the program are intriguing.

I regret the sparse six-page booklet that comes with the disk. It states what the program can do, gives a short description of the two subroutines, and lists the 411 cities, their identification number, and state abbreviation. No suggestions are made as to possible uses for the program. A press release sent with the software package mentioned three possible applications: to plan trips, to improve map skills, and to align ham radio antennas. I think the inclusion of a few possibilities such as these might increase the interest of the possible buyer.

## EVALUATION

While the program is extremely hard to crash, easy to use, and a good program for students, it isn't particularly sophisticated. (It is not in the class of Tellstar.) With the help of Mr. Martellaro, the list protection was bypassed and we were able to see the program. It uses good error trapping procedure and, interestingly, uses trigonometry to compute inter-city distance and heading. But the program is definitely not 1982 class programming caliber. Another thing that would be nice is the ability to add to the list of cities. This feature is not provided and would have been a good addition. All in all I give the program a B. It is a simple program from the consumer's standpoint, does what it says it will do, and is error free, but it isn't an overwhelmingly impressive program either. I am intrigued by it because I can see several possibilities for school use. I find the lack of documentation within the program to be an advantage, but I would like to see state location added to the program as outlined earlier. I do think the package might sell better if a few possible uses were mentioned in the accompanying booklet. Now that this is written, I think I will try out the program again to see what else can be done with it . . . □

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# CHEQUEMATE

Masterworks Software, Inc.  
1823 W. Lomita Blvd.  
Lomita, CA 90717  
213-539-7486

\$39.95  
Applesoft  
48K, Disk II, printer  
DOS 3.3  
Unlocked

Rating: Program : B  
Documentation : C-

*Reviewed by John Mitchener*

Chequemate is an integrated set of programs designed to maintain a large portion of your home financial transactions. An annual budget for each of your accounting categories may be established. The program also could be useful to a small business for maintaining a record of expenditures.

## SET UP

The Chequemate system uses six different files to main-

tain information about your accounts. The files are definitions, account, standard entry, check, budget, and charge files. When initiating a new account, it is necessary to set up the definitions file which includes such items as the date, your name, address, printer slot, printer setup codes, and the location of each of the data files (slot and drive). The next file established is the account data. This file contains the name of the account, the bank, the account number, and the current balance. It is convenient that Chequemate may be started at any time and not just at the beginning of the year although the program operates on a calendar year basis.

## BUDGETING

In order to fully use the capabilities of Chequemate, you must set up a budget file. This file must be established before you enter any checks, or the budget comparison reports will not work properly. The documentation does not indicate the maximum number of budget categories that can be established for a particular account, but it is possible to set up a sufficient number for most household and small business applications. For each budget category, you may specify a budgeted amount for each month of the year. On the right hand side of the screen the actual amount spent or received

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BY SYNERGISTIC SOFTWARE

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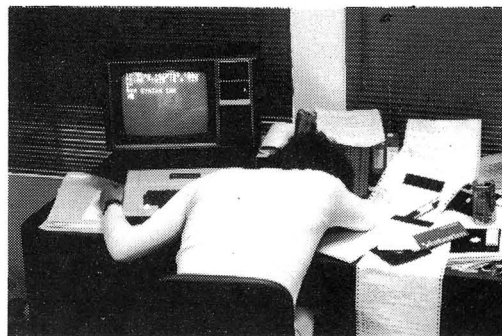
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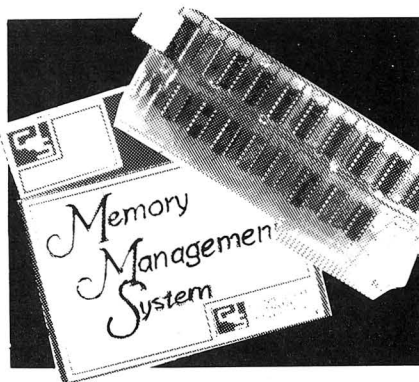
## HOW IT DOES IT

**MMS II** removes the Apple Disk Operating System (DOS) from your Apple's memory and places it on a 16K RAM Expansion board in slot 0. Once DOS is removed, the memory it took up is now **available** for your use. DOS is still active but it no longer takes up precious memory. You have **regained** the full capabilities of your 48K Apple.

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The following 16K Expansion boards are compatible with **MMS II**.

- ☐ Apple Language Card
  - ☐ Microsoft RAMCard
- ☐ Prometheus MEM-1
- ☐ Computer Stop CS16K



- ☐ Andromeda 16K RAM Board
- ☐ and all others

## DUAL LANGUAGE CAPABILITY

Apple owners who need both Applesoft and Integer BASICs and, simultaneously, wish to have **MMS II** active must have another 16K RAM or ROM card in their computer. **MMS II** will recognize this second card in whatever slot you select.

## ENHANCED VERSION

The original MMS was very well received by many Apple owners. But a few people wrote to us and asked for some modifications. We have **incorporated** these suggestions into **MMS II**.

- ☐ **MMS II** is **copyable** and is not protected. It can now become the boot 'Hello' program on your work disk.

- ☐ Once **MMS II** is initialized it will **automatically** run whatever program you direct it to.
- ☐ **MMS II** allows you to specify the slot that contains the second ROM/RAM card.
- ☐ All DOS commands are enabled in **MMS II** and are available for your use.
- ☐ **MMS II** is compatible with programs that use page 3 of memory (i.e. programs that use the ampersand, &, vector.)

## WHAT IS REQUIRED

- ☐ 48K Apple II or Apple II Plus
- ☐ 1 or more disk drives
- ☐ 1 16K RAM Expansion board
- ☐ **MMS II** by CDS

## UPGRADE POLICY

Current owners of MMS can upgrade their system to **MMS II** by returning their original MMS diskette and \$20.00. **MMS II** will be returned immediately.

## HOW TO ORDER

**MMS II** is available through your local computer store, or you can order direct by calling **COMPUTER DATA SERVICES** at (603) 673-7375. VISA, MasterCard, and COD accepted.

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is shown. At set up time this amount is blank, but is incremented as checks or deposits are entered. The actual amount may be edited with the change command. It is best to be sure of what you are doing since the documentation only mentions that the actual amount fields may be changed and does not detail what the effects of such changes are.

## SHORTCUTS

Many of us have bills each month that go to the same person or firm and are for the same amount. It seems to be a waste of effort to type in each entry each time, and Chequemate has a solution to this problem. A standard entry file, one of the six, can be established which allows the entry of the payee name, an amount, the budget category, and a comment by simply typing a code from one to four characters. If the amount is variable, you may simply leave it blank in the standard entry file and fill it in when entering checks.

## ENTERING CHARGES

Chequemate provides the capability of entering bills in the charge file as they are received. The bills currently outstanding are displayed in the check entry mode and may be paid and cleared at that time. This lets you write one check to a company rather than one check per bill. Of course, this implies that you receive more than one bill per month from the same company.

## PAYING THE BILLS

Entering your checks is very simple. There are seven items which may be entered for a given transaction.

1. Check #, Deposit, bank charge, or autoteller transaction.
2. Date (a default field).
3. Payee
4. Amount
5. Category (Budget)
6. Comment
7. Status (Cleared or Outstanding)

The first two items are default fields, and if they are correct, no entry is required. You may switch among the various types of transactions by entering CK for check, DP for deposit, AT for autoteller, or BC for bank charges. At the Payee line, there are several options. You may enter the payee, the code for previously defined standard entry, or a question mark if you have forgotten the codes for the standard entries. After entering the payee line, the list of current bills for that payee is displayed on the bottom of the screen. One small inconvenience was noted when using the standard entry mode for entries without an amount defined. After you enter the code, the program skips to the completion line. To

enter the amount you must enter the edit mode and change the amount. It is not a major flaw; only an inconvenience.

The comment line may be used to split the check amount into two different budget categories. This is particularly useful if you go to the grocery store and write the check for some extra cash. To use the feature the amount to be charged to the second category must be entered in the comment field and preceded by an asterick. The amount is followed by the category to which it should be charged. The split check feature is available only on certain reports.

Full editing of all data is possible before the entry is saved to disk. Each entry is saved to disk before you move on to the next entry. It takes a little longer, but there is no possibility of forgetting to save the data. Another option at the edit line is to mark the outstanding bills entered through the charge file as paid. This is accomplished by entering "P" and the number of the bill.

## RECONCILIATION

Reconciliation of your account with the bank is accomplished by entering the statement date, the statement balance, and the checkbook balance. The program then guides you through each check and asks if you have received the transaction or not. You simply answer yes or no. If the account is in balance, the checks which have cleared the bank will have the status marked as cleared. Should you be out of balance, nothing is changed and you must go back, find, and correct the problem. The reconciliation must be done all over again. This is an inconvenience if there are multiple errors.

## WHERE DID THE MONEY GO?

A good question and one which is better answered with a computer than with a pencil and paper. Chequemate has a variety of reports to give you indications of your spending habits. The first of these reports is the check report. With the check list, you can list checks within a specified date range. The report can be "sorted" by either reference number (record number), budget category, or payee. This is actually a grouping so that all of the utility checks appear together and all of the grocery checks appear together. A subtotal for each category or payee is printed. This report does not use the split categories mentioned earlier, so the totals for a particular category will be off if a split category is included. The check list report is also used to delete transactions that have cleared the bank. This is an option and it is possible to maintain the cleared checks in the file for future reports.

A second report is the standard entries report. It lists the entries on the standard entries file that you set up for recurring transactions.

The third and fourth reports are budget related. One prints your budget for the year or the actuals for the year. The second budget report prints a comparison of the planned versus the actual for both income and expenditures with

to show amounts, so it is useful only for rough trends; although the maximum value is shown in text at the bottom of the screen. This elementary technique was disappointing.

## USER FRIENDLINESS

Once you have worked with the program and made the mistakes that teach so much, the program is quite friendly with a consistent set of commands for entering, changing, and reviewing data. "A" is for add, "C" for change, and "R" for review. This scheme is used throughout the program wherever appropriate. Screen formats are well done and report formats are concise with page numbers and appropriate headings.

Getting started with the program is a challenge and requires some trial and error. The manual is 25 half sized pages, but is somewhat lacking in details to answer all of the questions that come up in using the system. The authors have told many things about the program, but they could have spent more space explaining about the interactions of

the files and the effects of editing only one file. Will that editing result in other dependent files being updated as well? Such questions are left unanswered.

That the programs are unlocked is a major benefit. It is possible to list and modify these programs if you are inclined to do that. For those who wish to use the files created by Chequemate, the authors have provided the file formats but have not thoroughly detailed the interactions of the files.

## CONCLUSION

Chequemate is an adequate program for maintaining your home accounts. It does not offer some of the features of fancier, more complex programs, but it performs as advertised. The ability to save cleared checks, enter a budget, and print reports to show your fiscal habits makes keeping your checking account on the computer worth the time and effort. As all of us have become aware, it is usually faster to balance a checkbook by hand, but we are not able to determine quickly where we spend our money — except for the large sums that inevitably end up at the computer store. □

# HI-RES COMPUTER GOLF

By Stuart Aronoff  
Avant-Garde Creations  
P. O. Box 30160  
Eugene, OR 97403  
503-345-3043

\$29.95  
Applesoft  
48K Disk II  
Game paddles  
DOS 3.3 or 3.2  
Locked

Rating: B+

*Reviewed by Edward Burlbaw*

FORE! Going . . . going . . . gone. Oh, no, not into the trees again! The ads say HI-RES Computer Golf is better than the real thing. I had no trouble cursing the ball, the clubs, the caddy, the disk drive, the diskette, the Apple, the monitor . . . all without leaving the comfort of my own home. No long walks around the course dragging the clubs and no lost balls.

## THE TEE-OFF

HI-RES Computer Golf (Golf) allows up to four players to tee-off for an 18-hole round of golf at five levels of difficulty. There are beginners through World Championship courses to choose from. Due to a certain amount of randomness built into the program, playing the same level of difficulty course will not result in playing the exact same course again. The holes have true to scale fairways such that some require three Hi-res screen pictures. Each fairway has typical obstacles including water, sand traps, roughs, trees, and fairway boundaries. The greens are contoured with slopes shown by arrows. Close

ups of the greens can be requested while still on the fairways with simple display commands. Similar commands will display any part of a multipart fairway. There is an element of nature involved: wind. The speed and direction is indicated at the side of the screen and must be accounted for in aiming your shots.

## FORE!

Your golf bag contains two woods, five irons and a putter. As in the real game, each has its associated trajectory. You may select several different swing strengths for each club to achieve (hopefully) the desired distance. Aiming is done with the game paddle and the direction is indicated on the screen by a pointer and a number. Once the club, swing strength and direction is selected, you proceed to the swing. There is a Hi-res representation of the swing arc through which you must guide your clubhead. This is done by hitting a key to change the direction of the head by 22 ½ degree increments. If this is done correctly, the club will strike the ball squarely and the ball will go the expected distance and have the expected trajectory. If this is not done properly, the swing can result in a hook, slice or a complete miss. I became quite expert at the last three before I used the interlocking grip on the diskette.

## HANDICAPS

There are many options included to help overcome any handicaps one may have. On-screen displays (upon request) include clubs and their ranges, scale of the fairway or green, length of the fairway from tee to center of green, fairway parts (1,2, or 3), the green, and (heavens) the scorecard. There is a "max strokes" option which makes it easier for a novice and a pro to play together by limiting the number of strokes one can make before automatically receiving double the par for the hole as a score. One may also request one practice swing

before the real one. Once the round is over, it is possible to get a hard copy of the scorecard, suitable for framing. I would include a sample (mine, of course), but I wouldn't want to be challenged to a game by Gerald Ford. Of course I may have the advantage because you can only play one course at a time in HI-RES Computer Golf. The game in progress is saved as you go along and the next time you boot the disk, play is continued where you left off.

## INSTRUCTION MANUAL

The manual contains 16 half-size pages and a preface. It describes the various features of Golf clearly and adequately. Three exhibits show the ball trajectories of each club, perfect (and imperfect) swings, and clubhead/ball contacts (i.e., top, undercut, etc.).

There is also a follow along section to be used in conjunction with the practice session included on the back side of the Golf diskette. It is recommended that you go through this before starting to play a course. I had more trouble using the practice session than I did with the real game. What I did miss was being able to use the practice swing section of the practice session. Usually I made at least one mistake following the directions and the program would just "hang." This was the most frustrating part of the game. With an easily accessible practice swing section it would be much easier to perfect the consistent swing that it takes to approach par on the real courses.

## THE NINETEENTH HOLE

HI-RES Computer Golf is a very well done game. The club, range and direction selections coupled with the dynamic swing control make the game challenging and sometimes frustrating. Golf is definitely much better and requires more skill than games determined solely by chance. At \$29.95 the performance/price is very good.

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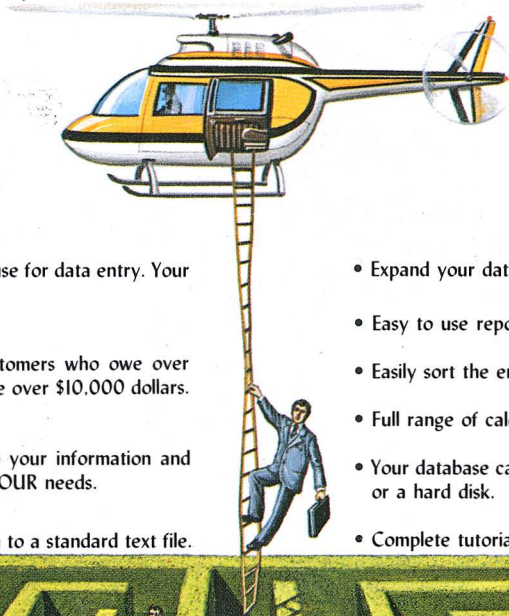
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