

\$2

Washington Apple Pi



Volume 5

July 1983

Number 7

Highlights

TIP (.) - THE INVOICE PRINTER
HOUSEHOLDER TRANSFORMATIONS
FORTH: PUTTING IT TOGETHER-III
INTRODUCTION TO APPLESOFT 3
SYNETIX DISK WITH USCD P-SYSTEM

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WAP members interested in participating leave your name and phone number for Mike Teller at the Comm Center - 953-1110. Mike will return your call later. If you donate a Visi template or application model by September 5th, you will receive a free copy of all contributions. We are presently assembling a list of all participants and their areas of interest - so call now!

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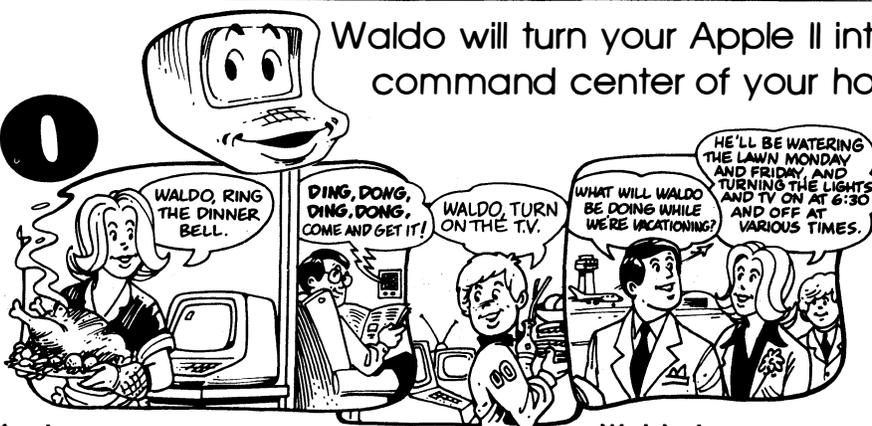
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I call it analagous to entropy. Once an organism, physical system or organization achieves significant size, i.e. a size which attracts attention to it, inevitably competing forces are unleashed which attempt to cut it down. Witness AT&T and IBM. Now I don't want you to dwell too long on that analogy in regard to WAP, but I am outraged by the implications of the article which appeared in the May 1983 issue of Software Merchandising (see "An Irate Letter" by David Morganstein elsewhere in this issue). Jim McCullagh, Editor, and Bill Slapin, Publisher, of Software Merchandising should be invited to attend one of our forthcoming monthly meetings (the sooner the better and at their own expense) to explain to our membership their reasons for deprecating the WAP.

From the very beginning we have made it our stated policy not to permit copying of copyrighted software during any WAP activity and have acted swiftly whenever anything smacking of that came to our (the Board's) attention. If this activity has occurred without our knowledge, and they have evidence of its occurrence, then they should present that evidence to the Board so that it can be dealt with promptly. If they do not, and merely implied that this may be happening, then I suggest that they issue a retraction in the very next issue of their publication. What do you think?

EVENT QUEUE

Washington Apple PI meets on the 4th Saturday (usually) of each month at the Uniformed Services University of the Health Sciences (USUHS), Building B, 4301 Jones Bridge Road, Bethesda, MD, on the campus of the National Naval Medical Center. Library transactions, newsletter pickup, memberships, etc. are from 8:45 - 10:00 AM. From 9:00 to 10:00 AM there will be an informal "Help" session in the auditorium. The main meeting starts promptly at 10:00, at which time all sales and services close so that volunteers can attend the meeting.

Following are the dates and topics for the next few months:

July 23 - LISA Demonstration
 August 27 - Home Control and Robotics
 Sept. 24 -

GENERAL INFORMATION

Apple user groups may reprint without prior permission any portion of the contents herein, provided proper author, title and publication credits are given.

Membership dues for Washington Apple PI are \$25.00 for the first year and 18.00 per year thereafter, beginning in the month joined. If you would like to join, please call the club office or write to the office address. A membership application will be mailed to you. Subscriptions to the Washington Apple PI Journal are not available. The Journal is distributed as a benefit of membership.

Current Office hours are:

Mon, Wed, Thu, Fri - 10 AM to 2:30 PM
 Tue - 12:30 to 2:30 PM & 7 to 9:30 PM
 Sat - 12 to 4 PM (meeting Sat only)

CLASSIFIEDS

FOR SALE: Complete II+ system, including disk drive, 16K RAM card, upper/lower case, adapter, shift key modification, Applesoft Reference Manual, DOS 3.3 Manual - \$1050. Excellent 9" Sanyo monitor, add \$70. Silentype printer, add \$175. All items in excellent condition. Bruce Field, home (301) 340-7038.

FOR SALE: Apple II+ computer system which includes the Apple II+ with 64K (language card), 2 disk drives, hi-res green screen monitor, numeric keypad, Grappler card, Micro-stand and many programs. Programs include most Visi-corporation programs and Locksmith programs, as well as Apple DOS Toolkit, DAKIN 5, the Routine Machine, Apple Writer, Apple Writer II, ScreenWriter, Magic Window, Bag of Tricks, Home Accountant, Apple Pascal, Apple Fortran, Zoom Graphics, and more. Complete library is included. Total estimated value is over \$4000. Priced at only \$1800. Call John at 492-9566 weekdays between 7 AM and 3:45 PM, or at 869-5660 weekends and evenings, or leave a message for WP1818 on ABBS.

FOR SALE: Hayes Micromodem II - \$190. Call Bill, 588-1992, evenings until 11:30.

FOR SALE: Epson MX-70 printer, in very good condition. Prints 80 cpi, u/I case, plus graphics. Also includes parallel interface board and cable. \$200. Call Bernie Benson, (H) 546-0076 (W) 252-1072.

FOR SALE: 25-inch color monitor \$175, many widgets, Satchell Carlson industrial model, four inch speakers, input/output jacks, cable, etc. This is a large unit! Call Bill at 560-3928 after 6:00 PM and weekends.

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COMMERCIAL CLASSIFIED

FOR SALE: Inventory Overstock of DB Master. Version Three for Apple II. Unopened and Unused. \$120 per program. Call (202) 822-4200. ☞

APPLE TEAS

WAP is conducting small discussion groups around the D.C. area. Below you will find a list of volunteers who will be holding sessions in the next few weeks. These will be informal and last about 2 hours. If you would like to attend, call the host and register with him/her. Each host will limit the size according to his/her wishes and will let you know if there is room

JOB MART

HELP WANTED

Typist Wanted for WP. Evening or daytime, \$3.50 - \$5.00 per hour, on call basis, will train, Call Cara Cira, 468-6118, evenings.

Part-time Expert Programmer needed for Apple II+. Experienced in writing text editors and/or spreadsheets, knowledge of Assembler. Contact Dr. Daniel Power, College of Business, University of Maryland, College Park, MD 20742. (H) 779-4768, (W) 454-6725.

Dr. Wo Needs More Help! Programmer/Analyst Wanted. New software development company has an immediate opening for a senior programmer to work with creative professionals. Minimum five years experience and Pascal preferred. Products under development include office and professional software, educational programs and games. Long hours, hard exciting work, fun people, casual environment. Write: Dr. Wo, Information Systems, Inc., 3865 Wilson Blvd. Suite 202, Arlington, VA 22203.

Part-time Help Sought. The WAP is seeking a person to work at the office on a 20 hour per week basis during July and August. If the proposed budget is adopted, this position will continue for the next fiscal year. The duties will include: answering the phone, maintaining the mailing list, assisting with the mailing of the Journal and helping with other office duties. The applicant must be willing to work one evening per week and on the Saturday afternoon of the monthly meeting, and should have a working knowledge of the Apple.

The Center for Science in the Public Interest is looking for someone who can translate several of their computerized games and quizzes on nutrition from S-Basic into Apple formats. If any members can help, they may contact Michael Jacobson, CSPI, 1755 S Street, N.W., Washington, DC 20009.

Minerva Corp. is seeking programmers in dBase II, communications and assembly for 8088 and Z80. Excellent growth potential in start-up firm doing business custom software, communications and local area networking. Call Sam Hargadine, 387-2029, to set up an interview. ☞

left in that particular tea. Hopefully, there will be ample numbers of sessions to meet the interest.

Session leaders may be needed if the host does not feel knowledgeable about the Apple. If you would like to volunteer your help or be a session leader, contact Paula Benson or the Club Office.

APPLE TEA SCHEDULE:

Host	Area	Phone	Date/Time	Date/Time	Leader Needed
Gloria Seelman	Bethesda	365-2281	Jun 26/3:00	(Education)	
D & H Dubester	Bethesda	229-5435	Jun 29/7:00		
Karl & Liz Lahm	Falls Church	573-0926	Jul 10/7:00		Maybe
J & F Lineberger	Bowie	464-0527	Jul 12/7:00		
Ronald LaJoy	Upper Marlboro	627-1162	Jul 14/7:00	Jul 28/7:00	Y
Douglas Eide	Clinton/Andrews	868-5487	Jul 15/7:30		N
Bob Martin	Laurel	498-6074	Jul 16/2:00		
Ben & Dottie Acton	Germantown	428-3605	Jul 17/7:00	Aug 14/7:00	N
Ina Concaugh	Alexandria	256-3062	Jul		
Ron Bernstein	Silver Spring	890-6855	To be announced		
Dave Bosserman	Olde Town, Alex.	836-8756	After July 4		Y
Warren Lenz	Baltimore	254-9974	2nd Thurs/7:30		N
Yvonne Powers	Rockville	251-6248	Mon-Thurs/7:00		Y
			(anytime till 8/25)		

SIGNEWS

APPLE /// SIG meets on the second Thursday of the month at 7:30 PM. The meeting place alternates between the Walter Reed Medical Center and Universal Computers.

ASMSIG meets immediately after the regular Washington Apple PI meeting.

Business SIG meets just after the regular Washington Apple PI meeting - see "The Bottom Line" elsewhere in this issue.

EDSIG - the education special interest group - see the EDSIG Page elsewhere in this issue.

Home Control SIG will meet after the regular WAP meeting each month.

LAWSIG provides attorneys and those not versed in the law an opportunity to discuss various aspects of computer applications to the law. The LAWSIG usually meets in downtown Washington, D.C. at noon once a week. For information call Charles G. Field, Chairman, 265-4040, or Jim Burger, 822-1093.

LOGOSIG - see the LOGOSIG column elsewhere in this issue.

NEWSIG will meet just after the regular Washington Apple PI meeting. We will answer questions and try to help new owners get their systems up and running. We will also explain how our club operates. The following members have agreed to answer questions over the phone when someone gets stuck and needs help between meetings:

Bob Chesley 560-0120
Paul Hoffman 831-7433
Sarah Lavilla 926-6355
Boris Levine 229-5730
Steve Sondag 281-5392

PIG, the Pascal Interest Group, meets on the third Thursday of each month at 7:30 PM at the Club Office.

SIGAMES is the special interest group of computer hobbyists interested in using their APPLES for entertainment. They meet immediately following the monthly meeting of Washington Apple Pi.

STOCKSIG meetings are on the second Thursday at 8:00 PM and are currently held at the home of the chairman, Robert Wood, (703) 893-9591.

Telecomm SIG usually meets after the regular WAP meeting.

*** ROBOTICS INTEREST GROUP BEING FORMED ***

The "Robotics Interest Group" is having its first meeting in August. Members will learn about robot programming, mechanics and electronics. Demos of homebrew and production devices are planned. Call for free newsletter and sign up sheet. Volunteers and networkers needed. Kent Myers (703) 573-6437, Hal Kohn (703) 578-4320.

MEMBERSHIP IN CALL-A.P.P.L.E.

Membership in Call-A.P.P.L.E., a users group in Kent, Washington, is available at a discount to WAP members. The one-time application fee is \$5 instead of \$25, and the annual dues of \$20 remain the same. Call the WAP office for further details and an application blank.

MINUTES

MAY GENERAL MEETING

WAP, Ltd. met at USUHS on May 28 at 10:00. Tom Warrick gave instructions for voting in WAP elections. Volunteers were solicited for labeling ballot envelopes and also for counting ballots. The candidates were introduced. Details were given on the June Garage Sale. A person will be available each month to sign for the hearing impaired. Hosts and technical experts were solicited for the Apple Teas. WAP representatives were requested for the June 23 ACM conference and for the Fort Meade computer show. Volunteers were solicited for publicity, coordinating demonstrations, and Hotline. Appreciation was expressed to Betsy Harriman for the New Member Manual. The Telecommunications SIG gave the presentation.

SUMMARY OF JUNE BOARD MEETING

The Executive Board of WAP, Ltd. met at the office on June 15. The items discussed include elections, reading library developments, group purchase activity and goals, Call-A.P.P.L.E. products and memberships, a report from the LOGOSIG on projected activities, policy on new disks, search for meeting location, budget projections, advertisement for part-time office help, regular tutorials, Q & A publication, percs, Apple Tea coordinator, journal distribution rate, report on video projector search, and publicity chairman.

COMPUTER DONATIONS SOUGHT

As you upgrade your computer system, consider the tax benefits of donating your old equipment to a charitable organization. Educational Alternatives, Inc., a non-profit corporation, charged with bringing innovative educational programs to the schools of Maryland, is seeking donations of microcomputers, and related hardware and software for use with computer literacy training and with low income students in rural Southern Maryland. All donations are tax deductible. Replies should be made to Dr. Raymond H. Hartjen, Educational Alternatives, Inc., P. O. Box 265, Port Tobacco, MD 20677. (301) 934-2992 or 870-3399.

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PRESIDENT'S CORNER

by David Morganstein

MEETING TOPICS. The last two meeting presentations (April was LOGO and May was telecommunications) were sensational. I'd like to thank the two SIGs involved for all of the effort it took to organize the carefully presented sessions. We all saw the interest which caused them to form a SIG around the two topics. It seems fair to challenge the other SIGs to share with us your interests, as well!

What topics would the rest of you like to have presented? Please suggest subjects of interest and the Board will seek out appropriate speakers.

ARTICLES. Periodically we remind all 3000 plus members that our Journal survives on your contributions. Whether you are a newcomer or an old hand, you can prepare an article of interest to many. Describe a product you purchased; tell what you liked and didn't like about it. Tell us about an unusual application of your Apple. Help prevent others from making the same mistakes you did in learning about something. Sharing what each of us has found out about our equipment is what started the WAP and what helps bind us together. Keep those articles coming, please!

LIBRARY DISK MAIL-OUT. Now that Sarah Lavilla will be our new Secretary, the Lavilla family (including Bob and Michael) will be passing the baton of mailing out our library orders to Scott Rullman. We want to thank the Lavillas for the many years of help they have given the WAP. They have been serving in this capacity for over two years...thank you. A welcome and expression of thanks to Scott for volunteering to take over in this function.

VOLUNTEERS NEEDED. We are looking for help in three areas:

- o Program Co-ordinator. To help arrange new speakers for the monthly meeting. Also, to work with the arrangements committee to insure that the speakers have necessary equipment. Effort per month: one to three hours.

- o Library staff to work with our "new disk" librarian, Bob Platt. Bob needs some technical experts to sort through programs and test them. He is trying to convert DOS 3.2 utility programs to DOS 3.3 and phase out our 3.2 disks. Effort per month: at least four hours.

- o Distribution of newsletters to local stores. To attend monthly meeting where volunteers would be sought to deliver the Journal. Effort per month: one to two hours.

IAC. At the Apple //e users conference held in March, 28 club representatives met to discuss common club problems. The result of the meeting was a six page report with many recommendations to the IAC directors. Several of the more important suggestions included the establishment of a publication aimed at communicating between clubs. A volunteer from the Big Red Apple Club stepped forward to edit such a newsletter.

Another strong suggestion was that the annual meeting include an opportunity for club representatives to spend time together. It was suggested that seminars be held regarding the solution of clubs problems and discussion sessions on how to work together through our international organization. One attendee from

Call-A.P.P.L.E. prepared and circulated an excellent detailed outline of several valuable discussion sessions. All the attendees felt that there was currently little incentive to attend an annual meeting that had virtually nothing to offer club representatives.

A summary report was prepared and distributed to four of the club representatives for verification of its accuracy. The report was sent in early May to the President of the IAC. Gordon Stubbs attended the annual meeting (held at 8:00 AM) to enter the report into the minutes; the meeting lasted less than an hour. I encourage all IAC member clubs to contact the IAC office to obtain a copy of this report. The 28 attendees of the //e conference were unanimous in their conclusions and recommendations. If member clubs have any difficulty obtaining the report, please feel free to contact the WAP. (We would appreciate you sending a stamped self-addressed envelope).

Those who attended the annual meeting were, no doubt, disappointed to find that no arrangements had been made for any discussion groups or seminars to help clubs deal with their concerns.

CALL-A.P.P.L.E. SOFTWARE. We are still in the process of negotiating the group purchase of CA software. The most likely arrangement will be to buy a number of copies of various items and have them available at the office. WAP members who belong to CA will be able to buy the items at the office (where they can see a demo). We will supply CA with a monthly report of which items were bought by which CA members. It appears that we will be able to begin this arrangement in July. Call or visit the office to verify this.

REGULAR TUTORIALS. If the membership approves of the purchase of a half dozen Apples for use in a learning center, we will be looking for several instructors, each of whom can teach a once-a-month introduction to the Apple. If we can find four such volunteers, we will hold a weekly intro. which members will be able to attend. We might plan on several different topics. As usual, two fees will be charged, one for those attending without an Apple and a discounted fee for those who bring one. The additional space (next to the office) which the board has decided to rent would allow for a class of 15 to 20. I think we must give serious consideration to compensating qualified instructors of such a regularly scheduled program. Candidates would be critiqued by the classes to insure their ability to communicate.

PART-TIME HELP SOUGHT. The WAP is seeking a person to work at the office on a 20-hour per week basis during July and August. If the proposed budget is adopted, this position will continue for the next fiscal year. The duties will include: answering the phone, maintaining the mailing list, assisting with the mailing of the Journal and helping with other office duties. The applicant must be willing to work one evening per week and on the Saturday afternoon of the monthly meeting, and should have a working knowledge of the Apple.

WAP HOTLINE

Have a problem? The following club members have agreed to help. PLEASE, respect all telephone restrictions, where listed, and no calls after 10:00 PM except where indicated. Users of the Hotline are reminded that calls regarding commercial software packages should be limited to those you have purchased. Please do not call about copied software for which you have no documentation.

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*Calls up until midnight are ok.

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Q & A

by Bruce F. Field

Q. I want to do some work in Esperanto, which requires superscripts (umlaut, accents, etc.) above the characters. I think the Apple Dot Matrix printer will do this, but will I be able to see it on the screen? A British Esperantist offers the necessary ROM to do this for the EPSON MX80. Would this do me any good? Also, I could use a German alphabet right now for occasional words and wonder if it's worth the trouble.

A. The May 1983 issues of Washington Apple PI and Apple Assembly Line contain ads for a Font Downloader & Character Editor for the Apple Dot Matrix Printer or Clith 8510AP printer. This program (\$39.95 from RAK-WARE, 41 Ralph Road, West Orange, NJ 07052) allows you to generate a character font containing any special characters or symbols you need. This new font can be quickly downloaded to the printer before using your word processor. Then during printing the word processor should output ESC ' to turn on the custom font and ESC \$ to return to the standard font. Unfortunately you won't be able to display these characters on the screen using this method.

There are several foreign language characters normally available with the Apple Dot Matrix Printer; however the documentation is not clear on how to access these additional characters. The values for the sets are:

- | | |
|------------------|-------------|
| 0 - English (US) | 1 - Italian |
| 3 - English (UK) | 4 - German |
| 5 - Swedish | 6 - French |
| 7 - Spanish | |

To turn on the alternate character set from Applesoft, assuming you are already in English (US), all you have to do is PRINT CHR\$(27)"Z" CHR\$(0);CHR\$(0); CHR\$(27)"D" CHR\$(N);CHR\$(0) where N is the number of the set above. To return to English (US): PRINT CHR\$(27)"Z"CHR\$(N);CHR\$(0); CHR\$(27)"D"CHR\$(0);CHR\$(0) where N is the number of the set you were previously in and are now turning off. To output these control characters from a word processor may be a little difficult; you will have to consult your word processor manual to find out how to imbed control characters.

Q. We have an Apple II Plus that has a hardware problem. When we first turn on the Apple on cold mornings we get vertical bars on the screen instead of any text. Programs seem to work properly except we can't see the text. Also the graphics screen seems to work okay, and when the Apple warms up the vertical bars disappear and the text will appear. We have a service contract with a local computer store but when the repairman came out the weather was warmer and the problem disappeared. He ran a diagnostic program and everything checked out okay. Can you help?

A. Since the graphics screen seems to be okay the problem is almost certainly with the character generator ROM. This is a 24-pin chip located on the motherboard, underneath the keyboard. Specifically, it is at location A5. For early Apple IIs it is a 2513 ROM, and for later models (rev. 7 and later) it is a 2316B ROM.

The diagnostic disk can only check components and peripherals connected to the Apple that are accessible to the CPU chip. For example, the Apple can send a command to the printer to print a certain character, but it has no way of looking at the character on the paper to see if the ribbon is worn out or not. Similarly, it can put a character in memory so that it should be displayed on the screen, but it has no way of knowing if it is actually displayed properly. The TV or monitor could be turned off and the Apple wouldn't know it. When using a diagnostic test for printing to the screen, it is up to the user to tell the computer whether or not everything is okay.

Q. The other day I ran across what seems to be a bug in Applesoft or maybe DOS. If the Applesoft text output mode is INVERSE or FLASHING, then file operations behave in a most peculiar way. Mainly they don't work. If FLASH is invoked in a program and then a text file is OPENed and READ before NORMAL is called, DOS will open a file with an \$E0 prefixed to the intended name. DOS then of course tries to read from a newly opened file that is empty and goes into error. Also a one sector text file is created with what appears to be the intended name having a space as the first character. The file cannot be deleted from DOS unless it's apparent name is concatenated to an \$E0.

A. (Thanks to Val Golding for the answer to this one.) The problem results from a number of circumstances, none of which directly relate to Applesoft. To output flashing characters, Integer Basic and the monitor store the value 127 in location 50 (POKE 50,127). It is cleared with POKE 50,255.

Owing to a bug in the monitor, only ASCII characters with a value less than 160 can be displayed in FLASHING. The space, figures and special characters are displayed in inverse only.

The FLASH routine in Applesoft overcomes this problem by placing a value of 64 in location 243 when FLASH is called. This location is called ORMASK and its function is to add 64 to the ASCII value of those characters which do not flash properly.

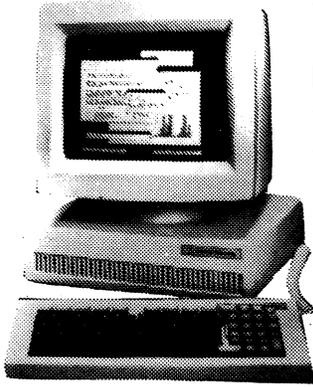
Neither the monitor nor DOS know anything about location 243, which is reset only by the Applesoft NORMAL command. When DOS receives a request for a file access, it stores 255 in location 50, which theoretically restores the characters to normal. However, since ORMASK is not restored to 0, those characters with a value of 160 and greater still have 64 added to them, thus a space \$A0 becomes \$E0, etc.

Q. After carefully typing in a long program from a magazine and saving it to disk, I find that I cannot seem to load it back into memory. The disk spins for a while then beeps and prints I/O ERROR. I remember reading somewhere that it is possible to do some POKES so the disk will read even with an error. Do you know what these POKES are?

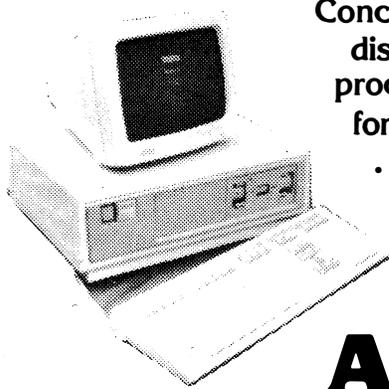
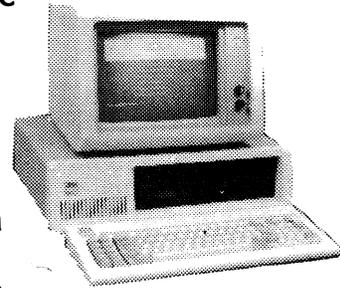
A. When DOS writes information from memory to the disk, it does so a sector at a time, where a sector is a group of 256 bytes of data. In addition it

contd.

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also writes a checksum byte that is a combination of the 256 data bytes just written. When the data is read back a new checksum is computed and compared to the original checksum written on the disk. If the two do not agree it means that there is an error in the data. When this occurs DOS will try to re-read the sector up to 48 times before giving up and stopping with an I/O ERROR. We will modify DOS to re-read up to 48 times and if there is still an error we will ignore it and return with whatever data we have read. The following two POKES will do this:

POKE 48590,48 : POKE 48591,29.

You only want to do this for disks that have I/O errors and you should carefully check the data for errors once it is read in. After you have done this, save the data or program on a new diskette and re-boot a new copy of DOS to remove the POKES.

Q. A recent attempt to read a random access file, which I knew had 47 records in it, stopped at record 29 with an END OF DATA error. Out came the back up disk with the same result. By trying to read individual records it was determined that records 29, 30, and 31 were the only bad ones, and with a record length of 80, it seemed likely only one sector was involved. Using Disk Zap I read the sector that should have contained the missing records, and I was stunned to find the recently revised menu from another program. The gentleman I consult at my local computer store said that for some reason the VTOC had mistakenly marked the sector as being free, and suggested that I run RECONSTRUCT VTOC. The RECONSTRUCT VTOC program came up with an incredible 46 errors corrected. How can this be when I apparently had only the one problem, and what kind of error was it talking about? Would it be a good idea to routinely run RECONSTRUCT VTOC on important disks with frequently revised data? What could I have done that caused this problem?

A. To answer your questions in reverse order. If you open the disk drive door or press RESET while the computer is writing to the disk this could give you problems. It is also possible that while debugging a program it somehow wrote into memory incorrectly somewhat scrambling DOS, then when you saved the program it was saved to the wrong area of the disk. It is a good idea to use "disposable" diskettes when you are writing and debugging programs and keep your good records on separate disks. It is also possible that you did nothing to cause this problem; an electrical spike on the power line or a momentary problem with the disk controller card-edge connector could also be at fault.

I am not familiar with RECONSTRUCT VTOC although I can make a guess at what it does. It probably goes through the diskette directory making sure that the pointers to the data sectors are in order, and the sectors being used are marked as used in the VTOC. Although this will catch some errors, it would still be possible to have incorrect or scrambled data and pass RECONSTRUCT VTOC without any errors. The best solution is to keep backups of your current data as well as a copy of your data before the current update.

As far as having 46 errors, the data in sectors marked as free remains intact until new information is saved into that sector. You can read it as many times as you want without any problem until you save new information to the diskette, then some of the sectors may be overwritten.

I ran across an interesting phenomena the other day I'd like to pass along. As Applesoft programmers well know the INPUT command stumbles over commas and colons, returning an exasperating EXTRA IGNORED message when trying to input strings containing these characters. As a result a spate of "input anything" routines have sprung up in the literature. (See for example Call A.P.P.L.E. in Depth No. 1, All About Applesoft, p.97, Call A.P.P.L.E. March-April 1981, p.54, Call A.P.P.L.E. January 1983, p.43, and Nibble Vol. 2, No. 2, p.57 which was also reprinted in the WAP Journal, June 1981, p.8.) All of these require LOADING or POKEing a machine language routine into memory which is a minor pain. Some also perform string manipulation which quickly load up memory with extraneous strings, causing premature garbage collection. There is a much simpler way for a lot of applications.

To input a string containing commas or colons using the Applesoft INPUT command, preface the string with the quotation mark ("). For example if you want to input the following string:

John Doe, Anytown

using the INPUT A\$ command, type:

"John Doe, Anytown<return>

The entire string INCLUDING the comma but EXCLUDING the " is placed in A\$.

This also works for DOS text files! When originally printing the string to the disk include a " as the first character of the string. Unfortunately you can't print the " directly but instead have to use the CHR\$ function. Like this:

PRINT CHR\$(34);A\$

When you read the string back, all the commas and colons come back perfectly. How come this works? It is all very carefully explained in the Applesoft Reference Manual (which people rarely read, me included). Quoting from page 66.

"...a response assigned to a string variable must be a single string or literal, not a string expression. Spaces preceding the first character are ignored. If the response is a string, then a quotation mark anywhere within the string will cause a ?REENTER message. However, within a string, all characters except the quotation mark, ctrl X and ctrl M are accepted as characters for the string. This includes the colon and the comma. Spaces following the final quotation mark are ignored."

Well, well, if colons and commas ARE explicitly accepted how come John Doe, Anytown gives an EXTRA IGNORED message? The answer lies in the definition of a string and a literal. Back to the manual, pp. 145,149 for the following definitions.

```
string
:= "{character}" or
:= "{character} <return>

literal
:= {character}
```

Ah, Ha! Strings are groups of characters enclosed in quotes, or prefaced by a quote and terminated by a carriage return. A literal on the other hand is just a group of characters with no quotes. Thus John Doe, Anytown is a literal, and again quoting from the manual (p. 66),

contd. on pg 11

DISABLEDSIG NEWS

by Jay Thal

DISABLEDSIG JULY MEETING
THURSDAY, JULY 14, 1983, 7:00P.M.
Chevy Chase Community Center
Connecticut Ave. & McKinley St., NW, D.C.

DISABLEDSIG's June meeting was held at our new meeting place -- the Chevy Chase Community Center. The Center is fully accessible to the physically impaired and immediately accessible to public transportation.

The main speaker of the evening was Richard Rowell of Galludet College's Model Secondary School for the Deaf (MSSD). Together with two of MSSD's other teachers, Mary Ellsworth and Barbara Fields, he described some of their Apple-cations in teaching their students. They have both modified existing programs and produced original programs for their own use. Their biggest problem is not program limitations, but a hardware limitation in that they have but one Apple which runs a constant six hours a day. Any benefactors out there who can donate an Apple for the teachers?

Most of MSSD's programs are used to teach a variety of science subjects -- Chemistry, Biology, and Genetics, and simple hardware interfaces have been developed for monitoring experiments. Nothing fancy, just hardcore task-oriented activities and programs. Subject matter is essential at MSSD and the programs used are chosen not because they have been designed for the handicapped, but because they impart basic information. MSSD focuses on the student's strengths, not his or her deficits.

Roger Petersen, who works in the field of computer applications for the vision impaired -- braille writers and speech synthesis, discussed the unavailability of basic computer literature on disk. This is a strange phenomenon when most printing houses drive their typesetting machinery by computer. Roger will be out in California in July and plans to stop by the old garageworks in Cupertino to find out whether WAP can secure Apple manuals on diskette. Combined with a speech synthesizer, manuals on disk will allow the vision impaired to take a bigger byte out of their Apples.

In the discussion that followed the DISABLEDSIG decided to contact several of the computer magazines, as well, to determine whether those magazines could also be made available on disk.

Several months ago we noted a public domain program available for the diagnosis and training of persons with aphasia. That program's author, Dr. Richard C. Katz, has now introduced three new reading drills for mild-to-moderate aphasic users. They are:

UNDERSTANDING QUESTIONS -- differentiating question words like "who", "what", etc., \$29.50

UNDERSTANDING SENTENCES -- Set 1: Absurdities, identifying words that do not belong, \$29.50

UNDERSTANDING STORIES -- finding information from short stories - immediate and delayed response modes, \$39.50

The programs run on a II+ or //e, one drive, 48K, and Applesoft. \$3 shipping. For further information contact Sunset Software, 11750 Sunset Blvd, Suite 414, Los Angeles, CA 90049.

Visualtek has announced both a Large Print Computer (LPC) for the vision impaired and an Apple adapter, the DB-10 which will print to screen text from 1X to 16X. In addition to keyboard controls there is a control panel, with joystick, which can move text around the screen. Not an inexpensive Apple peripheral at \$2,495, the DB-10 still fills a need. Visualtek, 1610 26th Street, Santa Monica, CA 90404. (213) 829-4565.

Large Type Math Programs are a new release out of Educational Activities, Inc., P.O. Box 83A, Freeport, NY 11520. (800) 645-3739. There are 12 titles combined on six disks, at \$39.95 each. The company offers the programs on a 30 day review.

Scott Instruments is sponsoring a promotional program to advance the availability of their Voice-Based Learning System (VBLS). Through October 1, 1983 the VBLS will be available for \$495 instead of the usual \$895. Designed, in part, to meet the needs of the physically handicapped, the VBLS can also be used by persons with speech impairments since it can be "trained" to recognize the user's particular speech pattern. Conversely, a speech model can be established so that the student will be forced to improve articulation. For more information contact: Scott Instruments Corp., 1111 Willow Springs Dr., Denton, TX 76201 (817) 387-9514.

Q & A contd. from pg 10

"If the response is a literal, then quotation marks are accepted as characters in any part of the literal except the first non-space character. Spaces following the last character are accepted as part of the literal. However, the comma and the colon (and Ctrl X and Ctrl M) are not accepted as characters in the literal."

The first sentence is a little confusing. You can put quotation marks in a literal and they will be accepted as characters, but you can't put quotation marks in a string except to denote the beginning or end of the string. Because if you put a quotation mark as the first character of a literal, by definition it is a string and no longer a literal. So, you can imbed quotation marks in a literal but not commas or colons. Boy, talk about picky computers!

Since I'm now totally confused let me summarize all this. If you respond to a string INPUT where the first non-blank character is a " all characters EXCEPT Ctrl X, Ctrl M (a return), or " may be included in the response. If the first non-blank character is not a " commas, colons, Ctrl X, and Ctrl M may NOT be included in the response. This works for both a keyboard response and a DOS text file.

TIP (.) - THE INVOICE PRINTER

by James T. DeMay Jr.

When operating a business, the need arises for a system for storing, retrieving and printing order information. TIP(.) will handle an order from placement to final collection and then some.

Customer name, street address, city, state, zip code, and telephone number are maintained in the CUSTOMER FILE. It is a random access file, having the lengths; 30, 30, 30, 2, 5, and 12 respectively. This plus one additional space for a carriage return for each field, equals a total record length of 115. The specific data for each order is maintained in the INVOICE FILE. This file is built from all the information entered for each order. The number of invoices and the particular customer to whom each invoice was issued is kept in record #0. The length of each record in this random access file is 575, a rather large file, but necessary if all data from each invoice is to be retained. The AR-N-FILES contain the billing information. These Accounts Receivable files are created when customer information is entered. They are automatically updated whenever an invoice is prepared for each customer. TIP(.) can figure finance charges based on the overdue amount, or on a specified amount, add the finance charges to the outstanding amount, and then print a statement which can be sent as a payment notice. When a payment is received, TIP(.) will record the payment, subtract the payment from the amount outstanding, and save the information to the accounts receivable file. A separate AR-N-FILE is maintained for each customer. To save disk space, this is a sequential text file. The N is a number which is the actual customer number assigned on entry of customer name, and pertinent data.

A unique invoice number is composed of two four digit numbers joined by a dash. The first four digits equal the customer number as in the AR-N-FILE. The second part of the invoice number is the actual record number in the INVOICE FILE. Using this system, one can always be aware of the customer number and the invoice record number.

Customer information need only be entered once, although it can be modified at any time. Thereafter, all that is required to access the data for a particular customer is a number. If you forget which number is assigned to which customer, TIP(.) will be glad to help you remember. Just press the V for View customer file, and each customer name and number will be presented at the bottom of the screen. To stop this loop and return to entering data, just press the SPACE bar.

Since the files used by TIP(.) are so large, I suggest using a special data disk which has DOS removed thus allowing more room for data storage. There are several public domain programs available which will do this.

USING THE PROGRAM

TIP(.) is menu driven, and prompts when input is required. When first run, TIP(.) presents the title page and requests that you insert the data disk. Pressing any key causes the program to attempt to read the CUSTOMER FILE and the INVOICE FILE. If no files exist, TIP(.) will ask you to enter information for customer #1. After the data has been provided, the "input invoice data" section is entered. Here you have a choice of returning to the menu, adding a new customer, changing existing customer information, or

entering the appropriate number for a customer to place an order. Entering a legitimate number directs TIP(.) to read the customer information from the disk and display it on the screen. You are then asked where to ship the merchandise. If the "ship to" address is the same as the "sold to" address, a RETURN is all that is required to complete the "ship to" section of the invoice. If the addresses are different, the appropriate information must be entered.

The ship date, terms, and carrier are requested in order, each having their default values in parentheses. Pressing RETURN will cause the default values to be entered in the correct positions. This completes the top portion of the invoice form. Pressing any key will present the remainder of the form and the appropriate input prompts.

Up to ten items, quantities and prices can be entered. TIP(.) asks for the item, quantity, price per unit, and requests that you verify the data just entered. Numerical values are expected for quantity and price. Pressing any key except N will be interpreted as an affirmative answer. The subtotal for each item is computed and the data displayed. TIP(.) continues to step through the loop until ten items have been entered. What if there are less than ten items? Just pressing RETURN for the item will end the loop and move to the final section of the invoice. The subtotals of all items previously entered are added and displayed. Additional information required to complete the invoice is requested; such as discount, shipping and handling fee, and sales tax. The total bill is computed and you are given the option of saving the data, or aborting this entry. If abort is selected, TIP(.) erases the data entered, and returns to the main menu. If the save option is chosen, an entry is made in the INVOICE FILE, and the AR-N-FILE. You are then asked if the invoice is to be printed at this time. This data can be recalled at any time from the menu by selecting the Print invoice option. The invoice will be printed to the screen, and then if desired, to a printer. As written, this option requires a printer in slot #1. More about printing later.

Reconciling an accounts receivable file is done by choosing the Update/verify account option. From here, you choose a customer by number, then compute finance charges if required. Enter a payment and then if desired, print a statement to be sent to the customer as a payment notice.

Choosing the Totals to date option requests the printing of each customer number, name, and important information from each invoice sent to that customer. Totals are printed following the last invoice for each customer. The program steps through the customer file and then through the invoice file, selecting the appropriate records, and then printing them to the printer only. This continues until all invoices for each customer have been printed. A final tally of the totals of all columns is printed for all customers.

DECIMAL FORMATTING AND PRINT ROUTINES

I first saw this decimal formatting technique in the March 1980 issue of SOFTSIDE. It has been adapted to work with TIP(.). The number to format is passed to the subroutine at line #500 as the variable N. The number to print is returned in N\$ with the length in

contd.

NL. All that is required to print the formatted number in a specific column is to HTAB X - NL where X is the column and NL is the length of N\$, and then PRINT N\$. An alternative method, the one which TIP(.) uses, is to POKE the column desired minus NL into location 36 and then PRINT N\$. The latter technique, POKEing location 36, allows printing to columns greater than 40. Refer to the program listing for several examples.

THE PRINTER

I use TIP(.) with an Epson MX-80 printer. By loading the PC\$ array with printer control characters in the initialization section of the program, it is easy to control character density, enhanced, double strike, or any of the other print features you may wish to use in your program. The invoices are printed in the 80 column format. Some portions of the Totals to date option are printed using the 132 character mode. TIP(.) could be modified to use a printer capable of less than 132 columns. It may be desirable to eliminate some of the items reported in the Totals section. Be careful if you decide on this course. It may be necessary to rearrange the subroutines which read and write the INVOICE FILES, in addition to the section that does the actual printing. The Totals section reads and prints the first six items written to each record in the INVOICE FILE. Using this technique simplifies the coding required. A series of FOR-NEXT loops is used to read, total, and print the specific information for each customer.

OTHER MODIFICATIONS

You may decide that some of the data that TIP(.) gathers is not required for your application. Deleting the "ship to" information alone, will result in a savings in the invoice record length of 115 bytes.

Another change that may be required is in lines 90-108. This is the subroutine that gathers the time and date. If you have a THUNDERCLOCK in slot #3, use lines 90 to 97. Lines 105 to 108 can be used if a clock is not available. You may want to substitute a modified subroutine to take advantage of another type of clock in another slot. In either case, keep line 90 since this line is referenced whenever the time and date are needed. A colon or a REM following the line number is all that is required. All other REMs may be deleted with no ill effects to the operation of the program. It is usually poor programming practice to reference REM statements with a GOTO or a GOSUB. REMs are useful tools when used correctly, but they should be included in such a way that their elimination will not affect program operation.

Most certainly, you will want to replace the information in the AD\$ array. Put your address and phone number here just as you would like it to appear on your invoices. The T\$ array can also be replaced with your company logo. The initialization section, lines 10000 to 10999 contain the original strings. A trial and error approach might be the easiest method for entering data into the T\$ array.

REQUIREMENTS

TIP(.) is written entirely in APPLESOFT and will run on a 48K Apple. A single disk drive is required, although a dual drive system is recommended. Using two drives would permit the CUSTOMER FILE to be on one disk and the INVOICE and AR-N-FILES to be on the other. As previously mentioned, a printer capable of several character sizes is required to work with TIP(.) as written. If other than an EPSON, the printer control characters in the PC string array may have to be altered.

IN SUMMARY

TIP(.) will collect and maintain data on customers and orders generated by them, along with a record of payments. Invoices can be saved, recalled, and printed with a minimum of keystrokes. In addition, a summary of orders to date can be printed. Totals are computed for each customer, and a final total is printed for all customers.

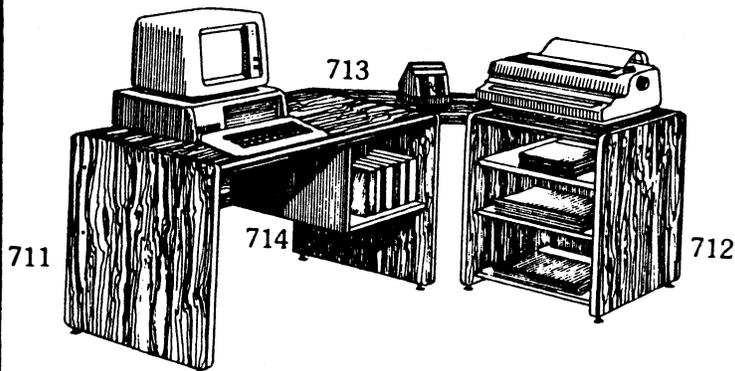
AFTER THOUGHTS

TIP(.) has been running for over six months now with no problems. However, the number of invoices stored per disk is very limited. It may be necessary, depending on the activity of the business, to use a separate data disk each month. I hope that you will be able to adapt TIP(.) to fit your needs. TIP(.) will be available on a WAP library disk in the near future. I am interested in any suggestions and/or improvements you may discover. I can be contacted thru the WAP JOURNAL, or on the WAP ABBS.

contd.

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Listing of TIP(.) - James T. DeMay Jr.

```

1 ONERR GOTO 30000
3 GOTO 10000
4 VTAB CV + 2: CALL - 958: VTAB 22: RETURN
5 VTAB 23: CALL - 958: RETURN
6 GOSUB 5: HTAB 5: PRINT "PRESS ANY KEY TO CONTINUE
  ";; GET CH$: PRINT CH$: RETURN
10 PW = 0:FL = 0:OD = 0:TL = 0:AM = 0:SL = 0:SF = 0:ST
  = 0:NI = 0:SD$ = "":TS$ = "":CR$ = "": FOR K = 1 TO
  10:I$(K) = "": NEXT K
15 TX = 0
20 FOR C = 1 TO 7:LL(C) = 0:TT(C) = 0: NEXT C: GOTO
  5000
30 FOR K = 1 TO 13
33 VTAB V: HTAB 9 + K
36 GET Q$
37 IF Q$ = CHR$(8) THEN K = K - 1: IF K < 1 THEN K =
  1
38 IF K = 13 THEN Q$ = "": FOR X = 1 TO 12:Q$ = Q$ +
  QQ$(X): NEXT X: GOTO 54
39 IF K = 1 AND Q$ = CHR$(13) THEN Q$ = " ":K = 13:
  GOTO 38
42 IF Q$ = CHR$(8) THEN PRINT Q$;" ": GOTO 33
45 IF K = 3 THEN Q$ = Q$ + "/" :K = K + 1
48 IF K = 7 THEN Q$ = Q$ + "-" :K = K + 1
50 IF ASC (Q$) < 48 OR ASC (Q$) > 57 THEN Q$ = CHR$(
  8): GOTO 42
51 PRINT Q$:QQ$(K) = Q$
54 NEXT K
55 C$(6) = Q$:Q$ = ""
60 RETURN
80 N
90 : REM THIS LINE IS REFERENCED TO ENTER THE CLOCK
  ROUTINE. KEEP THIS LINE AS <90:> TO SAVE SPACE.
91 PRINT D$;"PR#3"
92 PRINT D$;"IN#3"
93 INPUT " ":W$
94 PRINT D$;"PR#0"
95 PRINT D$;"IN#0"
96 DA$ = LEFT$(W$,10)
97 RETURN
99 :
100 REM USE LINES 91 THRU 97 IF
101 REM YOU HAVE A CLOCK CARD
102 REM IN SLOT #3. LINES 105
103 REM THRU 108 IF YOU DON'T
104 :
105 HOME : VTAB 23: PRINT "ENTER TODAY'S DATE AS (MON
  JUN 26):": VTAB 24: HTAB 12: PRINT " _ _ _ _ _ ";:
  VTAB 24: HTAB 12: INPUT "":DA$
106 IF LEN (DA$) < 10 OR LEN (DA$) > 10 THEN PRINT
  G$;; GOTO 105
107 W$ = DA$
108 RETURN
109 :
190 IF LEN (CH$) > 1 THEN C$(CH) = CH$:CH = 0: GOTO
  880
192 HTAB 10: PRINT C$(CH)
198 RETURN
500 IF N > = .01 THEN 510
501 IF N < = 0 THEN 510
503 N = N * 1000
504 N$ = ".00" + STR$(N)
506 NL = 2
508 RETURN
510 N = INT (N * 100 + .5) / 100
512 N$ = STR$(INT (N)):NL = LEN (N$) * (VAL (N$)
  < > 0):N$ = STR$(N)
514 IF INT (N) = N THEN N$ = N$ + Z$
516 IF 10 * N = INT (10 * N) THEN N$ = N$ + Z1$
518 IF LEN (N$) < 3 THEN N$ = N$ + Z1$
520 Z$ = RIGHT$(N$,2)
522 Z6$ = LEFT$(Z$,1)
524 IF Z6$ = "." THEN N$ = N$ + Z1$
526 NL = LEN (N$) - 1
528 RETURN
599 REM ** PRINT FORMATTER **
600 T = 0: IF N < 10 THEN T = 1: GOTO 620

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605 IF N < 100 THEN T = 0: GOTO 620
610 IF N < 1000 THEN T = - 1: GOTO 620
615 IF N < 10000 THEN T = - 2: GOTO 620
620 POKE 36,H + T: PRINT N;; RETURN
650 IF N < 10 THEN PRINT "000";: RETURN
655 IF N < 100 THEN PRINT "00";: RETURN
660 IF N < 1000 THEN PRINT "0";: RETURN
700 SH$(1) = CH$: IF LEN (CH$) > 30 THEN 6160
705 VTAB 11: HTAB 10: PRINT SH$(1)
710 GOSUB 5: INPUT "STREET: ";SH$(2): IF LEN
  (SH$(2)) > 30 THEN 710
715 VTAB 13: HTAB 10: PRINT SH$(2)
720 GOSUB 5: INPUT "CITY: ";SH$(3): IF LEN (SH$(3))
  > 30 THEN 720
725 VTAB 15: HTAB 10: PRINT SH$(3)
730 GOSUB 5: INPUT "STATE: ";SH$(4): IF LEN (SH$(4))
  > 2 THEN 730
735 VTAB 15: HTAB 38: PRINT SH$(4)
740 GOSUB 5: INPUT "ZIP CODE: ";SH$(5): IF LEN
  (SH$(5)) > 5 THEN 740
745 VTAB 17: HTAB 10: PRINT SH$(5)
750 GOSUB 5: PRINT "PHONE # ";:V = 23: GOSUB
  30:SH$(6) = C$(6)
755 VTAB 17: HTAB 28: PRINT SH$(6)
760 GOTO 6210
800 TEXT : HOME : IF CN% > TQ% + 99 THEN VTAB 10:
  INVERSE : PRINT "TO ENTER MORE CUSTOMERS YOU MUST
  EXIT THE PROGRAM AND THEN RERUN IT. A MAXIMUM
  100 CUSTOMERS CAN BE ADDED AT ONE TIME": NORMAL :
  FOR K = 1 TO 2000: NEXT K: GOTO 10
801 IF CH$ = "A" THEN 808
802 TEXT : HOME : PRINT "<M>ENU, OR ENTER CUSTOMER #1
  TO ";CN%;" ";: INPUT "":CH$
803 IF CH$ = "M" THEN 10
804 CH = VAL (CH$): IF CH < 1 OR CH > CN% THEN 800
805 C% = CH: GOSUB 1100:HE = 1
806 TEXT : HOME : IF HE THEN GOSUB 1100: GOTO 810
808 TEXT : HOME :CN% = CN% + 1: PRINT "THIS WILL BE
  CUSTOMER #";CN%;C% = CN%
810 VTAB 5: HTAB 5: PRINT "NAME: ";: HTAB 10: CALL -
  958: PRINT US$;; IF CN% > 1 THEN VTAB 7: HTAB 5:
  PRINT "PRESS RETURN FOR MENU ...": IF HE THEN
  VTAB 5: HTAB 10: PRINT C$(1): GOTO 820
811 IF HE THEN VTAB 5: HTAB 10: PRINT C$(1): GOTO
  820
812 VTAB 5: HTAB 10: INPUT "":C$(1): IF CN% > 1 THEN
  IF C$(1) = "" THEN CN% = CN% - 1: POP : GOTO 10
813 IF CN% = 1 AND C$(1) = "" THEN 810
815 IF LEN (C$(1)) > 30 THEN PRINT G$;; GOTO 810
820 VTAB 7: HTAB 3: PRINT "STREET: ";: HTAB 10: CALL
  - 958: PRINT US$;; IF HE THEN HTAB 10: PRINT
  C$(2): GOTO 830
822 VTAB 7: HTAB 10: INPUT "":C$(2)
825 IF LEN (C$(2)) > 30 THEN PRINT G$;; GOTO 820
830 VTAB 9: HTAB 5: PRINT "CITY: ";: HTAB 10: CALL -
  958: PRINT US$;; IF HE THEN HTAB 10: PRINT
  C$(3): GOTO 840
832 VTAB 9: HTAB 10: INPUT "":C$(3)
835 IF LEN (C$(3)) > 27 THEN PRINT G$;; GOTO 830
840 VTAB 11: HTAB 4: PRINT "STATE: ";: HTAB 10: CALL
  - 958: PRINT CHR$(95); CHR$(95);: IF HE THEN
  HTAB 10: PRINT C$(4): GOTO 850
842 VTAB 11: HTAB 10: INPUT "":C$(4)
845 IF LEN (C$(4)) > 2 THEN PRINT G$;; GOTO 840
850 VTAB 13: HTAB 1: PRINT "ZIP CODE: ";: HTAB 10:
  CALL - 958: PRINT UZ$;; IF HE THEN HTAB 10:
  PRINT C$(5): GOTO 870
852 VTAB 13: HTAB 10: INPUT "":C$(5)
855 IF C$(5) = "" THEN 870
860 IF LEN (C$(5)) < > 5 THEN PRINT G$;; GOTO 850
865 IF VAL (C$(5)) < 1 THEN PRINT G$: GOTO 850
870 VTAB 15: HTAB 2: PRINT "PHONE #";: HTAB 10: CALL
  - 958: PRINT UP$;; IF HE THEN HTAB 10: PRINT
  C$(6): GOTO 880
872 VTAB 15: HTAB 10:V = 15: GOSUB 30
880 PRINT : VTAB 20: PRINT "<A> BORT, <C> ORRECT, OR
  <S> AVE ";: GET CH$: PRINT CH$:CH = 0
882 IF HE THEN IF CH$ = "A" THEN HE = 0: GOTO 6005
885 IF CH$ = "A" THEN CN% = CN% - 1: GOTO 6005

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contd.

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887 IF CH$ = "C" THEN 905
890 IF CH$ = "S" THEN POKE 34,21: VTAB 20: CALL -
    958: HTAB 14: INVERSE : PRINT "SAVING DATA":
    NORMAL : GOSUB 1200:CF$(C%) = C$(1):CH = C%: IF
    HE THEN HE = 0: GOTO 6005
895 IF CH$ = "S" THEN TZ = 0: GOSUB 2000: GOTO 6005
900 GOTO 880
905 VTAB 20: CALL - 958: PRINT "PRESS <RETURN> TO
    POSITION CURSER ";
910 INPUT "";CH$:CH = 1: VTAB 5: HTAB 10: INPUT
    "";CH$: VTAB 5: GOSUB 190
915 IF LEN (CH$) < 1 THEN CH = CH + 1: VTAB 7: HTAB
    10: INPUT "";CH$: VTAB 7: GOSUB 190
920 IF LEN (CH$) < 1 THEN CH = CH + 1: VTAB 9: HTAB
    10: INPUT "";CH$: VTAB 9: GOSUB 190
925 IF LEN (CH$) < 1 THEN CH = CH + 1: VTAB 11: HTAB
    10: INPUT "";CH$: VTAB 11: GOSUB 190
930 IF LEN (CH$) < 1 THEN CH = CH + 1: VTAB 13: HTAB
    10: INPUT "";CH$: VTAB 13: GOSUB 190
935 IF LEN (CH$) < 1 THEN CH = CH + 1: V = 15: GOSUB
    30
940 GOTO 880
1000 PRINT D$;"OPEN CUSTOMER FILE,L115"
1010 PRINT D$;"READ CUSTOMER FILE,R0"
1020 INPUT CN%
1040 PRINT D$;"CLOSE"
1050 RETURN
1100 PRINT D$;"OPEN CUSTOMER FILE,L115"
1110 PRINT D$;"READ CUSTOMER FILE,R";C%
1120 FOR I = 1 TO 6
1122 INPUT C$(I)
1124 NEXT I
1130 PRINT D$;"CLOSE"
1140 RETURN
1200 PRINT D$;"OPEN CUSTOMER FILE,L115"
1210 PRINT D$;"WRITE CUSTOMER FILE,R0"
1212 PRINT CN%
1215 PRINT D$;"CLOSE"
1216 IF FL THEN FL = 0: RETURN
1217 PRINT D$;"OPEN CUSTOMER FILE,L115"
1218 PRINT D$;"WRITE CUSTOMER FILE,R";C%
1220 FOR I = 1 TO 6: PRINT C$(I): NEXT I
1230 PRINT D$;"CLOSE"
1240 RETURN
1300 CF = 1
1330 PRINT D$;"OPEN CUSTOMER FILE,L115"
1340 FOR K = 1 TO CN%
1350 PRINT D$;"READ CUSTOMER FILE,R";K
1360 INPUT CF$(K): NEXT K
1370 PRINT D$;"CLOSE"
1380 RETURN
1400 PRINT D$;"OPEN INVOICE FILE-";YR$; ",L575"
1410 PRINT D$;"WRITE INVOICE FILE-";YR$; ",R";0
1415 PRINT IN%
1420 FOR K = 1 TO IN%
1430 PRINT B(K)
1440 NEXT K
1450 PRINT D$;"CLOSE"
1460 RETURN
1500 PRINT D$;"OPEN INVOICE FILE-";YR$; ",L575"
1510 PRINT D$;"READ INVOICE FILE-";YR$; ",R";0
1515 INPUT IN%
1517 IF NOT D THEN DIM B(IN% + 100):D = 1
1520 FOR K = 1 TO IN%
1530 INPUT B(K)
1540 NEXT K
1550 PRINT D$;"CLOSE"
1560 RETURN
1900 GOSUB 2100
1910 TZ = TZ + 1
1920 DE$(TZ) = LEFT$(SD$,6)
1930 CC$(TZ) = "D": REM DEBIT
1940 CCE%(TZ) = I%: REM INVOICE #
1950 AM(TZ) = TL: REM TOTAL DUE
1980 BD(TZ) = BD(TZ - 1) + TL
1985 BE = BD(TZ)
1990 GOSUB 2000
2000 PRINT D$;"OPEN AR-";CH;"-FILE"
2010 PRINT D$;"WRITE AR-";CH;"-FILE"
2020 PRINT BE: REM BALANCE
2030 PRINT TZ: REM # TRANSACTIONS
2033 IF TZ = 0 THEN TZ = 1
2035 FOR X = 1 TO TZ
2040 PRINT DE$(X): REM DATE OF TRANSACTION
2050 PRINT CC$(X): REM CREDIT FLAG =P IF PAYMENT
2060 PRINT CCE%(X): REM INVOICE OR CK#
2070 PRINT AM(X): REM AMOUNT OF TRANSACTION
2080 PRINT OD(X):: REM AMOUNT OVERDUE
2090 PRINT FC(X): REM FINANCE CHARGE
2092 PRINT BD(X): REM BALANCE DUE
2093 NEXT X
2094 PRINT DA$
2095 PRINT D$;"CLOSE"
2099 RETURN
2100 PRINT D$;"OPEN AR-";CH;"-FILE"
2110 PRINT D$;"READ AR-";CH;"-FILE"
2120 INPUT BE: REM BALANCE
2130 INPUT TZ: REM # TRANSACTIONS
2135 FOR X = 1 TO TZ
2140 INPUT DE$(X): REM DATE OF TRANSACTION
2150 INPUT CC$(X): REM CREDIT FLAG =P IF PAYMENT
2160 INPUT CE%(X): REM INVOICE OR CK#
2170 INPUT AM(X): REM AMOUNT OF TRANSACTION
2180 INPUT OD(X): REM AMOUNT OVERDUE
2190 INPUT FC(X): REM FINANCE CHARGE
2192 INPUT BD(X): REM BALANCE DUE
2195 NEXT X
2196 INPUT T1$
2198 PRINT D$;"CLOSE"
2199 RETURN
3000 TEXT : HOME
3005 FOR X = 1 TO TZ:DE$(X) = "";CC$(X) = "";CE%(X) =
    0;AM(X) = 0;OD(X) = 0;FC(X) = 0;BD(X) = 0: NEXT
    X:TZ = 0:BE = 0
3010 VTAB 1: PRINT "M>ENU, V>IEW CUSTOMER FILE, OR
    ENTER CUSTOMER #1 TO ";CN%";: INPUT " TO
    UPDATE ACCOUNT. ";CH$:CH = VAL (CH$)
3015 IF CH$ = "M" THEN 10
3020 IF CH$ = "V" THEN X = 20: GOSUB 5200: GOTO 3000
3025 IF CH < 1 OR CH > CN% THEN 3000
3027 IF NOT CF THEN GOSUB 1300
3028 C% = CH
3030 VTAB 5: PRINT "YOU HAVE SELECTED:": PRINT :
    PRINT " ";CF$(CH): PRINT : PRINT "IS THIS
    CORRECT (N/CR) ? ";: GET CH$: PRINT CH$: IF CH$
    = "N" THEN 3000
3040 ONERR GOTO 3043
3041 GOTO 3060
3043 IF PEEK (222) < > 5 THEN 30000
3044 POKE 216,0
3045 PRINT "THERE IS NO FILE FOR ": PRINT : PRINT "
    ";CF$(CH): VTAB 23: HTAB 4: PRINT "M> ENU OR T>
    RY ANOTHER # ? ";: GET CH$: PRINT CH$: IF CH$ =
    "M" THEN 10:
3046 IF CH$ = "E" THEN END
3050 IF CH$ = "U" THEN 3000
3055 GOTO 3000
3060 GOSUB 2100
3100 TEXT : HOME
3110 PRINT "CUSTOMER #";CH:: HTAB 16: PRINT LEFT$(
    CF$(CH),23)
3115 IF BE < 0 THEN INVERSE
3120 PRINT "BALANCE $";:N = BE: GOSUB 510: PRINT N$;:
    HTAB 25: NORMAL : PRINT TZ;" ENTRIES"
3130 PRINT "CURRENT TO: ";T1$
3135 PRINT "# DATE INV# DEBIT CREDIT
    BALANCE";
3140 FOR K = 1 TO 40: PRINT "-";: NEXT : POKE 34,5
3150 FOR K = 1 TO TZ
3152 CV = PEEK (37): IF CV = 20 THEN VTAB 23: PRINT
    "PRESS ANY KEY TO CONTINUE ";: GET CH$: HOME
    H = 0
3155 N = K: GOSUB 600: HTAB 5: PRINT DE$(K):: HTAB
    13: IF FC(K) THEN HTAB 14: PRINT "FC";:N =
    FC(K): GOSUB 500: HTAB 24 - NL: PRINT N$:CV = CV
    + 1
3162 HTAB 13: IF CC$(K) = "D" THEN N = CE%(K): GOSUB
    650: PRINT N;

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contd.

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3165 IF CC$(K) = "P" THEN PRINT "PAID";:H = 32: GOTO
3180
3170 H = 24
3175 IF AM(K) < .01 THEN 3190
3180 N = AM(K): GOSUB 500: HTAB H - NL: PRINT N$;
3190 N = BD(K): GOSUB 500: HTAB 40 - NL: PRINT N$;
3200 NEXT
4000 VTAB 24: CALL - 958: HTAB 1: PRINT "A>NOTHER,
M>ENU, P>RINT, OR U>PDATE ? ";: GET CH$: IF CH$
= "M" THEN 10
4010 IF CH$ = CHR$( 27) THEN END
4020 IF CH$ = "M" THEN 10
4030 IF CH$ = "P" THEN 4500
4040 IF CH$ = "A" THEN 3000
4045 IF CH$ < > "U" THEN 4000
4050 IF CV > 18 THEN HOME :CV = PEEK (37)
4060 CV = CV + 2: VTAB CV: CALL - 958: POKE 34,22:
GOTO 4100
4100 :
4102 A = BE:: REM BALANCE
4106 A4 = OD(TZ): REM OVERDUE
4108 A6 = BD(TZ): REM BALANCE DUE
4109 A8 = BE
4110 TZ = TZ + 1: VTAB CV:H = 0:N = TZ: GOSUB 600
4120 VTAB 23: HTAB 1: PRINT "ENTER DATE OF
TRANSACTION OR RETURN FOR: "; MID$( W$,5,6);:
VTAB 24: HTAB 24: PRINT " ";: VTAB 24: HTAB
24: INPUT "";CH$: IF CH$ = "" THEN A1$ = MID$
(W$,5,6): GOTO 4135
4130 A1$ = CH$
4135 VTAB CV: HTAB 5: PRINT A1$
4155 GOSUB 4: PRINT "COMPUTE FINANCE CHARGES (Y/CR) ?
";: GET CH$: PRINT CH$: IF CH$ < > "Y" THEN A5
= 0: GOTO 4300
4160 VTAB CV: HTAB 14: PRINT "FC"
4175 GOSUB 4: PRINT "ENTER AMOUNT OVERDUE OR RETURN
FOR: $";:N = A: GOSUB 500: PRINT N$;:
INPUT " $";CH$:A4 = VAL (CH$): IF CH$ = ""
THEN A4 = A
4185 GOSUB 4: PRINT "USE 1.5% PER MONTH TO COMPUTE
FINANCE CHARGE (N/CR) ? ";: GET CH$: IF CH$ =
"N" THEN VTAB 22: HTAB 1: CALL - 958: VTAB 23:
INPUT "ENTER INTEREST RATE PER MONTH %";CH$:IR =
VAL (CH$) / 100: GOTO 4195
4190 IR = .015
4195 A5 = INT (A4 * IR * 100) / 100
4200 A7 = A5 + A6
4210 N = A5: GOSUB 500: VTAB CV: HTAB 24 - NL: PRINT
N$
4220 N = A7: GOSUB 500: VTAB CV: HTAB 40 - NL: PRINT
N$
4225 A8 = A7
4300 GOSUB 4: INPUT "ENTER AMOUNT PAID $";CH$:A3 =
VAL (CH$): IF A3 THEN A2$ = "P"
4305 VTAB CV + 1: HTAB 13: PRINT "PAID"
4310 N = A3: GOSUB 500: VTAB CV + 1: HTAB 32 - NL:
PRINT N$
4320 A8 = A8 - A3
4330 IF A8 < 1 THEN A8 = INT (A8 * 100.5) / 100.5
4340 N = A8: GOSUB 500: VTAB CV + 1: HTAB 40 - NL:
PRINT N$
4350 VTAB 22: CALL - 958: VTAB 24: HTAB 7: PRINT "A>
BORT, C> ORRECT OR S> AVE ";: GET CH$: PRINT
CH$;: IF CH$ = "A" THEN 4000
4353 IF CH$ = "C" THEN 4360
4355 IF CH$ = CHR$( 13) OR CH$ = "S" THEN 4400
4357 GOTO 4350
4360 VTAB CV: HTAB 1: CALL - 958:TZ = TZ - 1:A =
0:A1$ = "":A2$ = "":A3 = 0:A4 = 0:A5 = 0:A6 =
0:A7 = 0:A8 = 0: GOTO 4100
4400 BE = A8:DE$(TZ) = A1$:CC$(TZ) = A2$:AM(TZ) =
A3::OD(TZ) = A4:FC(TZ) = A5:BD(TZ) = A8: GOSUB
2000
4405 A1$ = "":A2$ = "":A = 0:A3 = 0:A4 = 0:A5 = 0:A6
= 0:A7 = 0:A8 = 0
4410 GOSUB 4: VTAB 23: PRINT "M> ENU, P> RINT, OR
UPDATE A> NOTHER ?";: GET CH$: PRINT CH$: IF CH$
= "M" THEN 5000
4420 IF CH$ = "A" THEN 3000
4430 IF CH$ < > "P" THEN 4410
4500 TEXT : HOME : VTAB 10: PRINT TAB( 5);"< OUTPUT
NOW DIRECTED TO PRINTER >": POKE 34,15
4510 IF NOT TZ THEN GOSUB 2100
4515 GOSUB 1100
4520 PRINT D$;"PR#1": PRINT PC$(1);PC$(2):PW = 1:
GOSUB 10600
4524 PRINT : FOR K = 1 TO 3: POKE 36,59: PRINT
AD$(K): NEXT
4525 PRINT PC$(4)
4530 PRINT PC$(3): PRINT : FOR X = 1 TO 6: POKE
36,15: PRINT PC$(4);C$(X): NEXT
4535 PRINT : POKE 36,11: PRINT "STATEMENT OF ACCOUNT
#";C$;" CURRENT TO ";W$: PRINT : PRINT
4540 PRINT UU$: PRINT : PRINT "TRANSACTION # DATE
INVOICE # DEBIT CREDIT BALANCE"
4545 PRINT UL$
4550 FOR K = 1 TO TZ
4560 N = K:H = 7: GOSUB 600: POKE 36,16: PRINT
DE$(K);YR$;: IF FC(K) THEN POKE 36,33: PRINT
"FC";:N = FC(K): GOSUB 500: POKE 36,49 - NL:
PRINT N$
4570 IF CC$(K) = "D" THEN POKE 36,32:N = CE$(K):
GOSUB 650: PRINT N;:H = 49: GOTO 4590
4580 IF CC$(K) = "P" THEN H = 62: GOTO 4590
4585 IF CC$(K) < > "P" THEN 4595
4590 N = AM(K): GOSUB 500: POKE 36,H - NL: PRINT N$;
4595 N = BD(K): GOSUB 500: POKE 36,75 - NL: PRINT N$
4600 NEXT K
4610 PRINT UL$
4620 POKE 36,20: IF BE THEN N = BE: GOSUB 500: PRINT
: PRINT PC$(4);" PLEASE REMIT THIS AMOUNT ==>
$";N$
4630 IF NOT BE THEN PRINT : PRINT PC$(4);"THANK YOU
FOR PAYING PROMPTLY"
4640 PRINT PC$(7)
4700 PRINT D$;"PR#0"
4710 TEXT : HOME : PRINT "RECONCILE ANOTHER (N/CR) ?
";: GET CH$: PRINT CH$: IF CH$ = "N" THEN 10
GOTO 3000
4720 PRINT D$;"PR#0"
4998 END
4999 END
5000 TEXT : HOME : PRINT : HTAB 17: PRINT "TIP (.)":
HTAB 9
5010 PRINT : HTAB 9: PRINT "> THE INVOICE PRINTER <"
5020 IF LEN (DA$) < 1 THEN GOSUB 90
5030 VTAB 6: HTAB 10: PRINT W$;: IF LEN (W$) < 11
THEN PRINT " 19"; RIGHT$( YR$,2)
5040 V = 11:H = 9
5050 VTAB 8: HTAB 4: PRINT CN$;" CUSTOMERS";: HTAB
25: PRINT IN$;" INVOICES": VTAB V
5055 VTAB 9: FOR K = 1 TO 40: PRINT "-";: NEXT :
PRINT
5060 HTAB H: PRINT "<E> XIT": PRINT
5070 HTAB H: PRINT "<I> NPUT DATA": PRINT
5080 HTAB H: PRINT "<P> RINT INVOICE": PRINT
5090 HTAB H: PRINT "<T> OTALS TO DATE": PRINT
5095 HTAB H: PRINT "<U> PDATE/VERIFY ACCT": PRINT
5100 HTAB H: PRINT "<V> IEW CUSTOMER FILE": PRINT
5110 VTAB 23: CALL - 868: POKE 34,23
5120 HTAB H + 5: PRINT "CHOOSE ONE: ";: GET CH$:
PRINT CH$
5130 IF CH$ = "T" THEN 8000
5140 IF CH$ = "E" THEN TEXT : HOME : END
5150 IF CH$ = "V" THEN CH$ = "":X = 23: GOSUB 5190:
GOTO 5110
5155 IF CH$ = "U" THEN 3000
5160 IF CH$ = "I" THEN 6005
5170 IF CH$ = "P" THEN FL = 1: GOSUB 6000: GOTO 6850
5180 GOTO 5110
5190 IF CN$ < 1 THEN VTAB 22: HTAB 10: CALL - 958:
INVERSE : PRINT "CUSTOMER FILE EMPTY": NORMAL :
FOR K = 1 TO 1000: NEXT K: RETURN
5200 IF NOT CF THEN GOSUB 1300
5210 CF$(0) = "*** PRESS SPACE BAR TO END LOOP ***"
5220 FOR K = 0 TO CN$
5230 VTAB X: HTAB 1
5240 CALL - 958: VTAB X: HTAB 5
5250 IF K = 0 THEN INVERSE : GOTO 5270

```

contd.

```

5260 PRINT K;" ";
5270 PRINT CF$(K): NORMAL
5280 FOR X1 = 1 TO 750: NEXT X1
5290 IF PEEK ( - 16384) = 160 THEN K = CN%:GH = 1
5300 NEXT K
5305 IF GH THEN GH = 0: VTAB X: RETURN
5310 GOTO 5220
6000 IF IN% < 1 THEN VTAB 23: CALL - 958: INVERSE :
HTAB 8: PRINT "*" NO INVOICES IN MEMORY *":
NORMAL : FOR K = 1 TO 1500: NEXT K:FL = 0: POP :
GOTO 10
6005 TEXT : HOME : PRINT "INVOICE #";US$;: HTAB 24:
PRINT "DATE: ";DA$
6010 VTAB 3: PRINT "SOLD TO:";: CALL - 868: HTAB 10:
PRINT US$: PRINT
6015 VTAB 5: HTAB 10: CALL - 868: PRINT US$
6020 VTAB 7: HTAB 10: CALL - 868: PRINT US$
6025 VTAB 9: HTAB 10: CALL - 868: PRINT US$
6030 VTAB 11: PRINT "SHIP TO:";: CALL - 868: HTAB
10: PRINT US$: PRINT
6035 VTAB 13: HTAB 10: CALL - 868: PRINT US$
6040 VTAB 15: HTAB 10: CALL - 868: PRINT US$
6045 VTAB 17: HTAB 10: CALL - 868: PRINT US$
6050 VTAB 19: PRINT "SHIP DATE: ";UD$;: HTAB 23:
PRINT "TERMS: "; LEFT$(US$,10)
6055 VTAB 21: PRINT "CARRIER: ";US$
6060 VTAB 22: FOR X = 1 TO 40: PRINT "=";: NEXT :
POKE 34,23
6065 IF FL THEN FL = 0: RETURN
6070 VTAB 23: CALL - 868: PRINT "<A> <C> <M> <V> OR
CUSTOMER #1 TO ";CN%: INPUT "":CH$
6075 IF CH$ = "A" THEN GOSUB 800
6076 IF CH$ = "C" THEN GOSUB 800
6080 IF CH$ = "V" THEN CH$ = "":X = 23: GOSUB 5190
6085 IF CH$ = "M" THEN 5000
6090 C% = VAL(CH$): IF C% < 1 OR C% > CN% THEN 6070
6095 N = C%: VTAB 1: HTAB 10: GOSUB 650: PRINT
C%:"-";
6100 IF FL THEN 6110
6105 IN% = IN% + 1: I% = IN%
6110 N = I%: VTAB 1: HTAB 15: GOSUB 650: PRINT I%;
6115 IF FL THEN 6125
6120 PRINT : GOSUB 1100
6125 VTAB 3: HTAB 10: PRINT C$(1)
6130 VTAB 5: HTAB 10: PRINT C$(2)
6135 VTAB 7: HTAB 10: PRINT C$(3)
6140 VTAB 9: HTAB 10: PRINT C$(4)
6145 VTAB 11: HTAB 10: PRINT C$(5)
6150 VTAB 13: HTAB 10: PRINT C$(6)
6155 IF FL THEN 6170
6160 GOSUB 5: PRINT "PRESS <RETURN> IF SAME AS SOLD
TO.": INPUT "SHIP TO: ";CH$: IF LEN(CH$) < 1
THEN FOR I = 1 TO 6:SH$(I) = C$(I): NEXT I:
GOTO 6170
6165 GOTO 700
6170 VTAB 11: HTAB 10: PRINT SH$(1)
6175 VTAB 13: HTAB 10: PRINT SH$(2)
6180 VTAB 15: HTAB 10: PRINT SH$(3)
6185 VTAB 17: HTAB 10: PRINT SH$(4)
6195 VTAB 19: HTAB 10: PRINT SH$(5)
6200 VTAB 21: HTAB 10: PRINT SH$(6)
6205 IF FL THEN 6225
6210 GOSUB 5: PRINT "SHIP DATE ("; MID$(DA$,5,6) +
YR$;": ";: VTAB 23: HTAB 25: INPUT
"":SD$
6215 IF LEN(SD$) > 9 THEN PRINT G$;: GOTO 6210
6220 IF SD$ = "" THEN SD$ = MID$(DA$,5,6) + YR$
6225 VTAB 19: HTAB 12: PRINT SD$: IF FL THEN 6245
6230 VTAB 23: CALL - 958: PRINT "TERMS (CASH) :
";: HTAB 16: INPUT "":TS$
6235 IF TS$ = "" THEN TS$ = "CASH"
6240 IF LEN(TS$) > 10 THEN PRINT G$;: GOTO 6230
6245 VTAB 19: HTAB 30: PRINT TS$: IF FL THEN 6260
6250 GOSUB 5: INPUT "CARRIER (UPS) : ";CR$: IF CR$ =
"" THEN CR$ = "UPS"
6255 IF LEN(CR$) > 30 THEN PRINT G$;: GOTO 6250
6260 VTAB 21: HTAB 10: PRINT CR$
6265 GOSUB 6
6270 TEXT : HOME : PRINT " ITEM QTY

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PRICE
SUBTOTAL=====
6275 V = 2: POKE 34,23
6280 FOR J = 1 TO 10
6285 IF FL THEN 6295
6290 VTAB 20: CALL - 958: PRINT " ITEM
#";J;: HTAB 19: PRINT "":
VTAB 20: HTAB 20: INPUT "":I$(J): IF LEN
(I$(J)) > 20 THEN 6290
6295 IF LEN(I$(J)) < 1 THEN J = 10: GOTO 6360
6297 IF FL THEN 6330
6300 VTAB 21: CALL - 868: PRINT " QUANTITY
";: HTAB 20: INPUT "":CH$: IF VAL(CH$) < 1
THEN 6300
6305 I(J,0) = VAL(CH$)
6310 VTAB 22: CALL - 868: INPUT " PRICE PER UNIT
$";CH$: IF VAL(CH$) < .001 THEN 6310
6315 I(J,1) = VAL(CH$)
6320 VTAB 23: PRINT " CORRECT (N/CR) ";: GET CH$:
PRINT CH$: IF CH$ = "N" THEN 6290
6325 VTAB 23: HTAB 20: PRINT "YES"
6330 I(J,2) = I(J,0) * I(J,1)
6335 IF FL THEN 6345
6340 TL = TL + I(J,2)
6345 VTAB V + J: PRINT I$(J);:N = I(J,0):H = 22:
GOSUB 600:N = I(J,1): GOSUB 500: POKE 36,30 -
NL: PRINT N$;:N = I(J,2): GOSUB 500: POKE 36,39
- NL: PRINT N$
6350 NI = J
6355 CALL - 958
6360 NEXT J
6365 VTAB V + J + 1: CALL - 958: POKE 34,23
6370 VTAB V + J: PRINT
"=====
SUBTOTAL $";
6375 IF FL THEN 6390
6380 IF TL < 0 THEN TL = 0
6385 ST = TL
6390 N = ST: GOSUB 500: POKE 36,39 - NL: PRINT N$
6395 IF FL THEN 6411
6400 GOSUB 5: INPUT " ENTER DISCOUNT %";CH$: IF CH$ =
"" THEN DC = 0: GOTO 6415
6405 DC = ( VAL(CH$) / 100) * TL
6410 VTAB 15: HTAB 18: PRINT CH$;"%";
6411 N = DC: GOSUB 500: VTAB 15: HTAB 22: PRINT
"DISCOUNT";: HTAB 40 - NL: PRINT N$
6412 IF FL THEN 6417
6415 CG = TL - DC
6417 N = CG: GOSUB 500: VTAB 16: HTAB 22: PRINT
"SUBTOTAL";: HTAB 40 - NL: PRINT N$
6420 IF FL THEN 6440
6430 TL = CG
6435 GOSUB 5: INPUT "SHIPPING AND HANDLING FEE
$";CH$:SF = VAL(CH$): IF SF < .01 THEN 6445
6440 N = SF: GOSUB 500: VTAB 17: HTAB 9: PRINT
"SHIPPING AND HANDLING";: HTAB 40 - NL: PRINT N$
6445 IF FL THEN 6460
6450 GOSUB 5: PRINT "STATE TAX AT 5% (N/CR) ";: GET
CH$: PRINT CH$: IF CH$ < > "N" THEN TX = CG *
.05: GOTO 6460
6455 GOSUB 5: INPUT "ENTER STATE TAX %";CH$:CH = VAL
(CH$):TX = CG * (CH / 100)
6460 N = TX: GOSUB 500: VTAB 18: HTAB 21: PRINT
"STATE TAX";: HTAB 40 - NL: PRINT N$
6465 VTAB 19: HTAB 34: PRINT "-----";
6470 IF FL THEN 6500
6475 TL = TL + TX + SF: IF TL < 0 THEN TL = 0
6480 SL = TL
6500 VTAB 22: HTAB 34: PRINT "=====";
6505 IF FL THEN 6515
6510 IF TL < .01 THEN TL = 0
6515 VTAB 23: CALL - 958:N = TL: GOSUB 500: HTAB 16:
PRINT "DUE THIS ORDER $";: HTAB 40 - NL: PRINT
N$
6520 IF FL THEN VTAB 20: HTAB 1: PRINT "<M> ENU OR
";: VTAB 21: HTAB 1: PRINT "<P> RINT INVOICE ";:
GET CH$: PRINT CH$: IF CH$ = "M" THEN 10
6525 IF FL AND CH$ = "P" THEN 7000
6530 IF FL THEN GOTO 6520

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contd.

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6535 VTAB 20: HTAB 1: PRINT "<A> BORT OR";: VTAB 21:
HTAB 1: PRINT "<S> AVE ";: GET CH$: PRINT CH$
6540 IF CH$ = "A" THEN IN% = IN% - 1: GOTO 10
6545 IF CH$ = "I" THEN END
6550 IF CH$ = "S" THEN B(IN%) = C%: POKE 34,23: VTAB
20: HTAB 1: PRINT " ": VTAB 21: HTAB
1: INVERSE : PRINT "SAVING DATA": NORMAL : GOTO
6565
6555 VTAB 21: HTAB 8: PRINT " ";
6560 GOTO 6530
6565 FL = 1: GOSUB 1400
6570 PRINT D$;"OPEN INVOICE FILE-";YR$;"L575"
6575 PRINT D$;"WRITE INVOICE FILE-";YR$;"R";I%
6580 PRINT C%: REM CUSTOMER #
6585 PRINT SD$: REM SHIP DATE
6590 PRINT ST: REM ITEM SUBTOTAL
6595 PRINT DC: REM DISCOUNT
6600 PRINT CG: REM SUBTOTAL2
6605 PRINT SF: REM SHIP & HANDLE
6610 PRINT TX: REM STATE TAX
6625 PRINT TL: REM TOTAL DUE
6630 PRINT DA$: REM INVOICE DATE
6635 PRINT TS$: REM TERMS
6640 PRINT CR$: REM CARRIER
6645 PRINT NI: REM # ITEMS
6650 FOR K = 1 TO 6: PRINT SH$(K): NEXT K
6655 FOR K = 1 TO NI: PRINT I$(K): PRINT I(K,0):
PRINT I(K,1): NEXT K
6660 PRINT D$;"CLOSE"
6662 CH = C%: GOSUB 1900
6665 VTAB 20: HTAB 1: PRINT "<M> ENU OR ": VTAB
21: HTAB 1: PRINT "<P> RINT INVOICE ";: GET CH$:
PRINT CH$: IF CH$ = "M" THEN 10
6670 IF CH$ = "P" THEN 7000
6675 VTAB 21: HTAB 18: PRINT " ": GOTO 6665
6680 PRINT D$;"OPEN INVOICE FILE-";YR$;"L575"
6685 PRINT D$;"READ INVOICE FILE-";YR$;"R";I%
6690 IF FL THEN 6485
6695 INPUT C%: REM CUSTOMER #
6700 INPUT SD$: REM SHIP DATE
6705 INPUT ST: REM ITEM SUBTOTAL
6710 INPUT DC: REM DISCOUNT
6715 INPUT CG: REM SUBTOTAL2
6720 INPUT SF: REM SHIP & HANDLE
6725 INPUT TX: REM STATE TAX
6740 INPUT TL: REM TOTAL DUE
6745 INPUT DA$: REM INVOICE DATE
6750 INPUT TS$: REM TERMS
6755 INPUT CR$: REM CARRIER
6760 INPUT NI: REM # ITEMS
6765 FOR K = 1 TO 6: INPUT SH$(K): NEXT K
6770 FOR K = 1 TO NI: INPUT I$(K): INPUT I(K,0):
INPUT I(K,1): NEXT K
6775 PRINT D$;"CLOSE"
6780 RETURN
6850 GOSUB 5: VTAB 23: PRINT "M>ENU OR ENTER INVOICE
# (1-";IN%: INPUT " ) ";N$:I% = VAL (N$): IF N$
= "M" THEN 5000
6855 IF I% < 1 OR I% > IN% THEN 6850
6860 GOSUB 6680: GOSUB 1100
6870 FL = 1: GOSUB 6095
7000 PRINT D$;"PR#1": PRINT PC$(1);
7010 PRINT PC$(2);:PW = 1
7020 GOSUB 10600: PRINT : FOR K = 1 TO 3: POKE 36,59:
PRINT AD$(K): NEXT K: PRINT
7030 PRINT PC$(3);:PW = 0
7040 PRINT "INVOICE #";:N = C%: GOSUB 650: PRINT
C%;"-";:N = I%: GOSUB 650: PRINT I%: POKE
36,62: PRINT DA$;YR$
7050 PRINT : PRINT "SOLD TO: ";: POKE 36,40: PRINT
"SHIPPED TO:"
7060 POKE 36,5: PRINT C$(1);: POKE 36,45: PRINT
SH$(1)
7070 POKE 36,5: PRINT C$(2);: POKE 36,45: PRINT
SH$(2)
7080 POKE 36,5: PRINT C$(3);: POKE 36,45: PRINT
SH$(3)
7090 POKE 36,5: PRINT C$(4);: POKE 36,9: PRINT
C$(5);: POKE 36,45: PRINT SH$(4);: POKE 36,49:

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PRINT SH$(5)
7100 POKE 36,5: PRINT C$(6);: POKE 36,45: PRINT
SH$(6)
7110 PRINT : PRINT "SHIP DATE: ";SD$;: POKE 36,24:
PRINT "TERMS: ";TS$;: POKE 36,40: PRINT
"CARRIER: ";CR$: PRINT : PRINT UU$
7120 POKE 36,13: PRINT "ITEM";: POKE 36,47: PRINT
"QUANTITY";: POKE 36,62: PRINT "PRICE";: POKE
36,70: PRINT "SUBTOTAL": PRINT UL$
7130 PRINT : FOR J = 1 TO 10: IF LEN (I$(J)) < 1
THEN J = 10: GOTO 7190
7140 IF J < 10 THEN PRINT " ";
7150 PRINT J;" ";I$(J);
7160 N = I(J,0):H = 51: GOSUB 600
7170 N = I(J,1): GOSUB 500: POKE 36,66 - NL: PRINT
N$;
7180 N = I(J,2): GOSUB 500: POKE 36,76 - NL: PRINT N$
7190 NEXT J
7200 NI = J
7210 PRINT UL$: PRINT
7220 POKE 36,55: PRINT "SUBTOTAL $";:N = ST: GOSUB
500: POKE 36,76 - NL: PRINT N$
7230 POKE 36,55: PRINT "DISCOUNT";:N = DC: GOSUB 500:
POKE 36,76 - NL: PRINT N$
7233 POKE 36,70: PRINT "-----"
7235 POKE 36,55: PRINT "SUBTOTAL";:N = CG: GOSUB 500:
POKE 36,76 - NL: PRINT N$: PRINT
7250 POKE 36,42: PRINT "SHIPPING AND HANDLING";:N =
SF: GOSUB 500: POKE 36,76 - NL: PRINT N$
7260 POKE 36,54: PRINT "STATE TAX";:N = TX: GOSUB
500: POKE 36,76 - NL: PRINT N$: POKE 36,70:
PRINT "-----": PRINT
7290 POKE 36,48: PRINT "DUE THIS ORDER $";:N = TL:
GOSUB 500: POKE 36,76 - NL: PRINT N$
7300 PRINT PC$(2): PRINT "** A FINANCE CHARGE OF 1.5%
PER MONTH WILL BE ADDED TO ACCOUNTS OVER 30 DAYS
OLD.": PRINT PC$(3)
7310 HTAB 15: PRINT PC$(4);"THANK YOU FOR YOUR ORDER"
7320 PRINT PC$(3);PC$(6);PC$(7)
7330 PRINT D$;"PR#0"
7340 GOTO 10
8000 IF IN% < 1 THEN VTAB 23: CALL - 958: INVERSE :
HTAB 8: PRINT "** NO INVOICES IN MEMORY **:
NORMAL : FOR K = 1 TO 1500: NEXT K:FL = 0: GOTO
5110
8010 TEXT : HOME : VTAB 12: PRINT "THIS OPTION
REQUIRES A PRINTER IN SLOT 1 THAT IS CAPABLE OF
132 COLUMNS. PRESS <RETURN> TO CONTINUE OR <ESC>
FOR MENU.": GET CH$: PRINT CH$: IF CH$ = CHR$
(27) THEN 5000
8020 IF CH$ = CHR$ (13) THEN 8040
8030 GOTO 8010
8040 TEXT : HOME : VTAB 12: HTAB 3: PRINT "<OUTPUT
NOW DIRECTED TO PRINTER>": POKE 34,20: IF B(1) >
0 THEN 8110
8100 GOSUB 1500
8110 IF NOT CF THEN GOSUB 1300
8120 PW = 1: GOSUB 9000:PL = 16: REM PRINT HEADING
8130 FOR K = 1 TO CN%
8140 GOSUB 9100:PL = PL + 5: REM CUSTOMER NAME AND
TITLES
8150 FOR J = 1 TO IN%
8160 IF B(J) = 0 THEN 8270
8170 IF B(J) < > K THEN 8270
8180 B(J) = 0:PL = PL + 1
8190 PRINT D$;"OPEN INVOICE FILE-";YR$;"L575"
8200 PRINT D$;"READ INVOICE FILE-";YR$;"R";J
8210 INPUT L$: INPUT L$
8220 FOR C = 1 TO 6
8230 INPUT L(C): NEXT C
8240 PRINT D$;"CLOSE"
8250 FOR C = 1 TO 6:LL(C) = LL(C) + L(C): NEXT C
8260 GOSUB 9200:PL = PL + 1: REM DATA FOR EACH
INVOICE
8270 NEXT J
8280 GOSUB 9300:PL = PL + 3: REM SUBTOTALS ALL
INVOICES FOR EACH CUSTOMER
8290 FOR C = 1 TO 6:TT(C) = TT(C) + LL(C):LL(C) = 0:
NEXT C

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contd.

```

8300 NEXT
8310 GOTO 9400: REM PRINT FINAL TOTALS ALL CUSTOMERS
      AND ALL INVOICES
9000 PRINT D$;"PR#1": PRINT PC$(1);PC$(2):PW = 1:
      GOSUB 10600
9010 PRINT PC$(3): POKE 36,22: PRINT "TOTALS AS OF
      "W$;YR$: FOR X1 = 1 TO 78: PRINT "*"": NEXT X1:
      PRINT
9020 PRINT D$;"PR#0": RETURN
9100 PRINT D$;"PR#1": PRINT
      PC$(1);PC$(2);PC$(4);"CUSTOMER #";K;"
      ";CF$(K)
9105 PRINT PC$(3)
9110 PRINT : PRINT "INVOICE #";: POKE 36,11: PRINT
      "SHIP DATE";
9112 POKE 36,22: PRINT "ITEM COST";: POKE 36,33:
      PRINT "DISCOUNT";
9115 POKE 36,43: PRINT "SUBTOTAL";: POKE 36,53: PRINT
      "SHIPPING";: POKE 36,63: PRINT "ST TAX";: POKE
      36,71: PRINT "TOTAL DUE";
9117 IF SU THEN PRINT : GOTO 9122
9120 PRINT : PRINT "====="";: POKE 36,11: PRINT
      "====="";
9122 POKE 36,22: PRINT "====="";: POKE 36,33:
      PRINT "====="";
9125 POKE 36,43: PRINT "====="";: POKE 36,53: PRINT
      "====="";: POKE 36,63: PRINT "====="";: POKE
      36,71: PRINT "====="";
9130 PRINT D$;"PR#0": RETURN
9200 PRINT D$;"PR#1": PRINT PC$(1);PC$(3);
9210 N = K: GOSUB 650: PRINT K;"-";:N = J: GOSUB 650:
      PRINT J;: POKE 36,11: PRINT L$;:L = 28
9220 FOR C = 1 TO 6:N = L(C): GOSUB 500: POKE 36,L -
      NL: PRINT N$;:L = L + 10: NEXT C
9230 PRINT D$;"PR#0": RETURN
9300 PRINT D$;"PR#1": PRINT PC$(3);
9305 L = 20
9310 PRINT PC$(1): PRINT PC$(4);"SUBTOTAL";PC$(6);:
      FOR C = 1 TO 6:N = LL(C): GOSUB 500: POKE 36,L -
      NL: PRINT N$;:L = L + 10: NEXT C
9320 PRINT : FOR X = 1 TO 80: PRINT "-";: NEXT X:
      PRINT
9330 IF PL > 55 THEN PRINT PC$(7):PL = 0
9350 PRINT D$;"PR#0": RETURN
9400 PRINT D$;"PR#1": PRINT PC$(1);: POKE 36,24:
      PRINT PC$(4);"=> T O T A L S <="
9401 FOR X = 1 TO 80: PRINT "*"": NEXT X: PRINT
9402 SU = 1: GOSUB 9112:SU = 0
9406 L = 28
9408 PRINT D$;"PR#1": PRINT PC$(1);
9410 FOR FF = 1 TO 6
9415 N = TT(FF): GOSUB 500
9420 POKE 36,L - NL: PRINT N$;
9425 L = L + 10
9430 NEXT FF
9440 PRINT CHR$( 12)
9450 PRINT D$;"PR#0"
9460 GOSUB 150
9999 GOTO 10
10000 TEXT : HOME : GOSUB 10500
10010 U$ = " - "":D$ = CHR$( 13) + CHR$( 4)
10020 US$ = " "
10030 UD$ = " "":YR$ = " 82"
10040 IF C% = 0 THEN C% = 1
10050 DIM I$(10),I(10,4)
10060 G$ = CHR$( 7)
10070 UZ$ = " "
10080 UP$ = " / - "
10090 Z1$ = "0":Z2$ = "0"
10110 REM * YOUR ADDRESS HERE *
10120 AD$(1) = "4524 TUCKERMAN STREET"
10130 AD$(2) = "RIVERDALE, MD. 20737"
10140 AD$(3) = "PHONE 301/###-####"
10150 PC$(1) = CHR$( 9) + "80N": REM PRINT 80
      COLUMNS
10160 PC$(2) = CHR$( 15): REM COMPRESSED MODE ON
10165 PC$(3) = CHR$( 18): REM COMPRESSED MODE OFF
10170 PC$(4) = CHR$( 14): REM DOUBLE WIDE ON
10180 PC$(5) = CHR$( 9) + "132N": REM PRINT 132

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COLUMNS
10185 PC$(6) = CHR$( 20): REM DOUBLE WIDE OFF
10186 PC$(7) = CHR$( 12): REM FORM FEED
10190 U$ = "*****"
      "*****"
10200 UL$ = "=====
      ====="
10210 GOTO 11000
10500 TEXT : HOME : SPEED= 200: PRINT
10510 FOR X = 1 TO 40:T$(1) = T$(1) + CHR$( 126):
      NEXT
10520 T$(9) = T$(1)
10530 T$(2) = CHR$( 124) + "
      " + CHR$( 124)
10540 T$(8) = T$(2)
10550 T$(3) = CHR$( 124) + " TTTTTT I I I I I
      P P P P P " + CHR$( 124)
10560 T$(4) = CHR$( 124) + " TT II
      P P P P " + CHR$( 124)
10570 T$(5) = CHR$( 124) + " T T T T T I I
      P P P P P " + CHR$( 124)
10580 T$(6) = CHR$( 124) + " TT II
      P P " + CHR$( 124)
10590 T$(7) = CHR$( 124) + " TT I I I I I
      P P (.) " + CHR$( 124)
10600 PRINT : FOR X = 1 TO 9
10620 IF PW THEN POKE 36,30
10630 PRINT PC$(4);T$(X): NEXT
10640 SPEED= 255
10650 POKE 34,23: RETURN
11000 HOME : VTAB 21: HTAB 19: PRINT "BY JAMES T.
      DEMAY, JR.": GOSUB 90
11010 VTAB 23: PRINT "INSERT DATA DISK AND PRESS ANY
      KEY...": GET CH$: PRINT CH$: VTAB 23: CALL -
      958: PRINT "READING DATA FILES...": POKE 34,23:
      GOSUB 1000: GOSUB 1500
11020 DIM DE$(50),CC$(50),CE$(50),AM(50),OD(50),
      FC(50),BD(50)
11030 DIM CF$(CN% + 100)
11035 TQ% = CN%
11040 DIM QQ$(13)
11050 IF IN% > 1 THEN GOSUB 1500
11060 IF CN% < 1 THEN 808
11070 GOTO 5000

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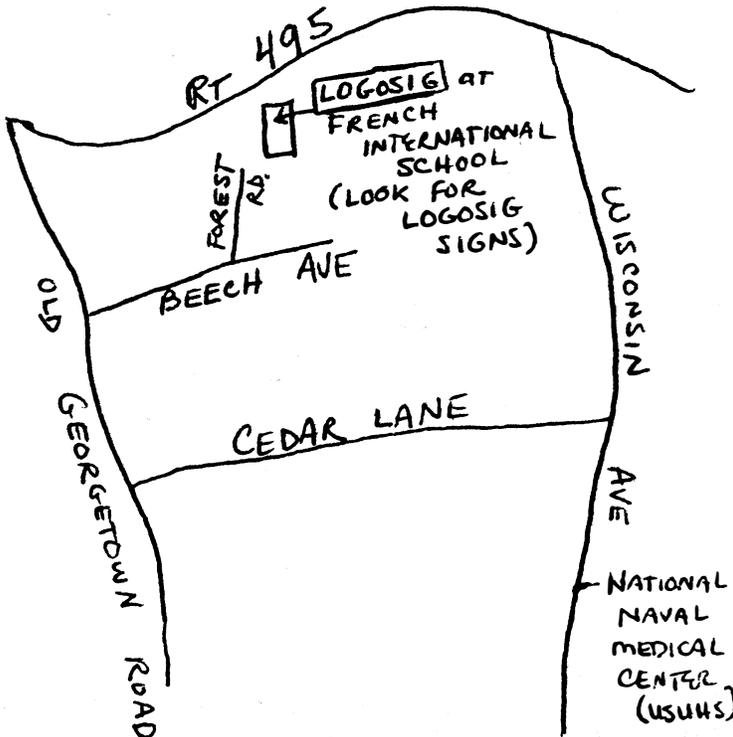
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by Nancy C. Strange

ATTENTION all LOGOSIG members: there is a new temporary location for our meetings for the months of June and July. The new location is just several blocks from the previous location; just continue down Beech Avenue, turn Left onto Forest Rd and go to the French International School. Watch for LOGOSIG signs. See map below. We will still meet at 12:30 p.m.



JUNE MEETING

Plans for a celebration to commemorate LOGOSIG's first anniversary at the July meeting will be made. Everyone is invited to bring their favorite Logo programs, that they have written or discovered.

The National Educational Computing Conference was recently held in Baltimore. Some of those attending will be sharing their experiences with us.

Our tutorial series using Harold Abelson's book, APPLE LOGO, continues this month. Ron Murray will present Part II of List Processing, Numbers, Words and Lists.

The LOGOSIG Reference Library which is being set up at the WAP Office will be discussed. It will consist of the basic Logo Reference Works as listed in the May WAP Newsletter as its core. The library will be available to all interested readers during the office hours. Logo articles are also being gathered and we will be subscribing to several of the key publications (such as, National Logo Exchange and Classroom Computer News). Since Logo is an educationally oriented language, we will be developing this reference library in conjunction with EDSIG. Anyone wishing to make a contribution of book, article, magazine, memo, or suggestion, etc. should contact David Moses, 270-1117 or me.

LOGOSIG is currently developing a WAP Library disk of

some of the programs created by LOGOSIG members. Programs and their documentation are now being gathered -- if you have any please let us know.

NEW RELEASES

LEARNING WITH LOGO by Dan Watt has finally arrived. I received my copy last week. There are 2 versions of the book and each one has an additional disk available for \$15.95. The two versions are LEARNING WITH LOGO (to be used by Terrapin and Krell Logo owners) and LEARNING WITH APPLE LOGO (for the Apple Logo version). The book itself retails for \$19.95. A review of these will be in an upcoming issue.

A PAGE FROM THE STACK by Robert C. Platt

The library is making excellent progress, and I would like to report on our plans.

CONTINUED GROWTH

The library received seven disks of donated software at our May meeting. Please continue to contribute! Members can donate either their own programs or programs which they have typed in from magazines (so long as the programs are not copyrighted.) Remember, you get a free library disk for every disk that you contribute.

DIVERSIFICATION

We want to expand the scope of the library so that it can offer at least a few disks on every major Apple language and application. Hence, we seek your Pascal, CP/M, Forth, Fortran, and PILOT programs. The PIG, Pascal Interest Group, has extended its activities to include Volitional System's MODULA II compiler, and the library will distribute MODULA II programs as a part of the PIG collection. In addition, the library has obtained a public domain C compiler for the Z80, and plans to distribute the compiler and C source programs through our CP/M collection. We are also seeking a volunteer to process disks of LOGO programs.

We are also expanding the library through trades with other clubs. WAP recently signed an exchange agreement with NOVAPPLE, and Disk 140 (to be released next month) is the first product of that exchange. We have also received a number of disks from the San Francisco club and from the IAC. Further, we just purchased additional Eamon disks from Call-A.P.P.L.E., and will be adding them to the library over the summer. (Any Eamon-fan volunteers interested in helping?)

In addition to diversifying the library, we are also attempting to improve its quality. First, Bruce Field has written a new "WAP CHECKER" program to verify that the copies we distribute are as good as our originals. Bruce's program calculates a hash-sum on each library disk which can be used to compare the incoming copies with our masters. Unfortunately, we do not have a

contd. on pg 21

INTERFACING WITH AN INTERFACE

by Jonathan S. Vaupel

One of the oldest adages is, "The more gadgets you have on a car, the more there is to go wrong." Could this possibly be true in this modern day and age concerning, of all things, the computer peripheral?

I would like to discuss an encounter with one of the most imaginative products available for the Apple computer, the Mountain Computer CPS Multifunction Card. This device sports a parallel interface, a serial interface, AND a clock. Without getting technical, the installation of the card is relatively easy for anyone who is regularly pulling the cover off of their Apple. The documentation is easy to follow and accurate.

Some of the documentation that deals with specifics is good and some is bad (one of the sections that deals with setting up the card for an Epson printer using the parallel interface function of the card starts off fine until you notice that they begin talking about an IDS printer and never mention the Epson). If you shuffle through the manual there is enough information to connect the printer. Follow the detailed directions carefully; one parameter incorrectly set and unpredictable results are imminent.

There are several pieces of good news and several pieces of bad news. First the software provided to configure the card itself is very good and works quite well. It even has a very nice analog clock program on it that turns your computer into a clock (where are the Westminster Chimes though?). There are several utility programs on it as well as date and time functions. Something else that might be helpful would be a means of calibrating or adjusting the clock (I did notice a VERY small trimmer pot on the board by the clock circuitry but since there was no documentation on it I left it alone). I bring this up because after several checks with the National Observatory I found the clock running about 3 1/2 seconds slow in 24 hours (that's over a minute and a half a month).

Now we'll get to the core of the bad (?) news. The package comes with a plethora of configuration programs so that you may set up your Apple Pascal and CP/M disks in a manner that will allow them not only to function through the CPS card, but just run as well. As those of you who are familiar with Pascal and CP/M know, these operating systems "look around" during boot up to see how the system is configured. This is done so that they may function with video boards and other devices that have been installed. When they run into a device they don't recognize they usually have a tendency to hang, if not lock up altogether. Mountain Computer has gone to great lengths to provide driver programs so that you can configure your disks to operate with the CPS board installed.

Here is the real heart-breaker. There are some protected software packages that are out on the market that cannot be gotten into in such a manner as to configure them to recognize the CPS card. Mountain Computer is STRIVING with diligence to work with software manufacturers so that their product is compatible with the multifunction card, and their customer service department is very nice to deal with (even though overworked). This also is a valuable clue.

Several words to the wise before I sign off. Find out what hardware and software WILL and WILL NOT work

BEFORE you purchase the card, and consider that some reconfiguration must be done. If you are looking for a card to plug in which would be immediately functional and "transparent", a simple generic parallel and/or serial card would be a wiser choice. The CPS multifunction Card is like a beautiful bouquet of roses for the capabilities it has, but like always one must watch for the thorns.

Page From the Stack contd. from pg 20

good set of masters for some of our early disks and cannot protect against copying errors which have crept into those master copies over time. However, Bruce's program will guard against additional errors in the future. We're adding Bruce's program to the library so that you can use it to check the integrity of your own disk collections.

A second major project is the conversion of our DOS 3.2 disks to DOS 3.3 format. In addition to MUFFINING each disk into 3.3 format, we will be adding new documentation to each disk and will be checking the programs for errors. Also, Tom Warrick and Dave Weikert have written a new menu-driven Hello program for these disks. The result will be a DOS 3.3 version of each of our present 3.2 disks as well as a separate DOS 3.2 disk for utilities specifically designed for 3.2 operation.

The third project is to improve the library's documentation. (The program list in the New Member Reference Book is a first step in this direction.) Ideally, a well-indexed set of written documentation should be available to cover all of the library's disks.

As you can see, these projects require many volunteers. If you can help, please see me at the meeting or call me at 202-223-1588.

DISK NUMBERING

Each library disk is assigned a unique volume number. For your reference, here is the current scheme:

Volume	Contents
1-40	Former DOS 3.2 disks
41-99	DOS 3.3 Utility disks
100-179	DOS 3.3 General
180-199	Eamon Adventures (DOS 3.3)
300-399	Pascal & Modula II disks
400-499	CP/M Format disks
700-799	Forth disks

EAMON ERRATA

Joel Cranston reports several bugs on our Eamon disks. On Disk 193, file MAIN PRG, line 19030 should have a quote mark (") after the string literal "BOTTLE". On Disk 182, file THE MINOTAUR'S LAIR, line 14500 has a logical error. That line should include: IF ... <>"WATER" AND RIGHT\$(S\$,3)<>"SEA" THEN

REGRESSION VIA HOUSEHOLDER TRANSFORMATIONS

by Walter Liggett

Linear regression and consequently the algorithms to perform linear regression are an important part of statistical analysis. In most cases, regression computations should be performed with the highest numerical accuracy achievable. A regression algorithm that gives high accuracy results for a wide range of problems can be obtained through the use of Householder transformations. The purpose of this article is to show that these transformations can be programmed easily in Applesoft BASIC.

The numerical accuracy of regression algorithms varies widely, and problems caused by the lack of accuracy are not hard to illustrate. Consider the following example:

```
10 Y(1)=99999:Y(2)=100000:Y(3)=100001
20 N=3:SM=0:SS=0
30 FOR I = 1 TO N
40 SM=SM+Y(I):SS=SS+Y(I)*Y(I)
50 NEXT I
60 PRINT "VARIANCE = ";(SS-SM*SM/N)/(N-1)
70 MN=SM/N
80 SS=0
90 FOR I = 1 TO N
100 SS=SS+(Y(I)-MN)*(Y(I)-MN)
110 NEXT I
120 PRINT "VARIANCE = ";SS/(N-1)
```

The variance printed by line 60 is 0, which is wrong; the variance printed by line 120 is 1, which is correct. The first variance is wrong because rounding occurs in line 40 when $Y(I)$ is squared. This problem is avoided in computing the second variance by centering $Y(I)$ before squaring. The variance printed by line 60 is given by the much-maligned textbook algorithm, the one found in many cookbooks for four-function calculators. The variance printed by line 120 is given by an algorithm that makes two passes through the data. Two passes require more work but are usually appropriate if the data set is small enough to be held in memory. This example is so simple that it might not be considered regression. General regression algorithms exhibit more complex problems and offer more complex alternatives, but they do have the features of this simple example. If a regression algorithm forms sums of squares and cross-products, then it is subject to the rounding problem exhibited by line 60. A regression algorithm based on Householder transformations performs operations analogous to centering.

Linear regression algorithms have been the subject of considerable research during the last twenty years. Some references are:

Dongarra, J. J.; Moler, C. B.; Bunch, J. R.; Stewart, G. W. LINPACK User's Guide. Philadelphia: Society for Industrial and Applied Mathematics; 1979. 351p.

Kennedy, William J.; Gentle, James E. Statistical Computing. New York: Marcel Dekker; 1980. 591p.

Lawson, Charles L.; Hanson, Richard J. Solving Least Squares Problems. Englewood Cliffs, NJ: Prentice Hall; 1974. 340p.

These references explain which algorithms are suitable for a particular application and how these algorithms will perform. Further, these references contain FORTRAN code that can be translated into BASIC. The

first reference is in part the source of the code presented below. These references should be of considerable help to programmers who code regression algorithms for their own use or for the general use as part of a database management or graphics package.

Despite their numerical stability, Householder transformations are not always recommended as the correct approach to regression. In particular, implementing them when the data set is so large that it cannot be held in memory may result in a program that is so slow that an alternative would be better. Alternatives are presented in the references listed above.

For the Applesoft programmer, an introduction to Householder transformations in terms of code instead of matrices seems appropriate. In the following program, the data are held in the matrix $D(I,J)$, where $I = 1, \dots, N$ and $J = 0, \dots$. The transformation to be applied will be specified by the data in column 0. The transformation is applied to one of the other columns. The result of the transformation will be written back into the same column. The program starts with

```
10 DIM D(18,3)
20 N = 18
30 FOR I = 1 TO 18
40 D(I,1) = RND(1)
50 D(I,2) = RND(1)
60 D(I,3) = D(I,2)
70 NEXT I
```

The random number generator can be replaced by whatever data source seems interesting.

The Householder transformations needed for regression are those that transform part of a column to zero. The following code specifies the Householder transformation that will zero elements $P0+1$ to N of column $P1$:

```
1000 FOR I = P0 TO N
1010 D(I,0) = D(I,P1)
1020 NEXT I
1030 E2 = 0
1040 FOR I = P0 TO N
1050 E2 = E2 + D(I,0)*D(I,0)
1060 NEXT I
1070 E2 = SQR(E2)
1080 IF D(P0,0) <> 0 THEN E2 = E2*D(P0,0)/
ABS(D(P0,0))
1090 D(P0,0) = 1 + D(P0,0)/E2
1100 FOR I = P0+1 TO N
1110 D(I,0) = D(I,0)/E2
1120 NEXT I
1130 RETURN
```

Only elements $P0$ to N of $D(I,0)$ are involved in the specification. Lines 1000-1020 copy the last $N-P0+1$ elements of column $P1$ into column 0. Lines 1030-1070 compute the square root of a sum of squares. The code given by these lines could be improved to protect the user from underflow and overflow. Alternative code can be obtained from the LINPACK User's Guide. Lines 1080-1120 complete the specification.

Now we need some code to transform column $P2$:

```
1200 T0 = 0
1210 FOR I = P0 TO N
1220 T0 = T0 + D(I,0)*D(I,P2)
```

contd.

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```

1230 NEXT I
1240 TO = TO/D(P0,0)
1250 FOR I = P0 TO N
1260 D(I,P2) = D(I,P2) - TO*D(I,0)
1270 NEXT I
1280 RETURN

```

Note that this code depends on P0, the index that specifies how much of column P1 is to be zeroed. We can now see if the Householder transformation performs as it should:

```

200 P0 = 1:P1 = 1:GOSUB 1000
210 P2 = 1:GOSUB 1200
220 FOR I = 1 TO N
230 PRINT "D(";I;";";";1;") = ";D(I,1)
240 NEXT I
250 PRINT "E2 = ";E2

```

Upon running this program, we see that except for rounding error the Householder transformation does zero elements P0+1 to N of column P1. If we were to vary P0, we would further see that the first P0-1 elements are not changed and that element P0 is -E2, where E2 is a quantity we calculated while specifying the transformation. This shows that in practice there is no need to actually apply the Householder transformation to the column it is supposed to zero.

Two other properties of Householder transformations are important. First, Householder transformations do not change the length of the column to which they are applied. (The length of a column is the square root of the sum of the squares of the elements.) To see this, add the following code to the program:

```

300 P2 = 3
310 E2 = 0
320 FOR I = 1 TO N
330 E2 = E2 + D(I,P2)*D(I,P2)
340 NEXT I
350 PRINT "LENGTH BEFORE = ";SQR(E2)
360 GOSUB 1200
370 E2 = 0
380 FOR I = 1 TO N
390 E2 = E2 + D(I,P2)*D(I,P2)
400 NEXT I
410 PRINT "LENGTH AFTER = ";SQR(E2)

```

Second, applying the same transformation twice returns the original data. To see this, add:

```

420 GOSUB 1200
430 PRINT "BEFORE","TWICE TRANSFORMED"
440 FOR I = 1 TO N
450 PRINT D(I,2),D(I,3)
460 NEXT I
470 END

```

In linear regression, the object is to predict a dependent variable using a linear combination of independent variables. Consider the case in which there are P independent variables $X(I,J)$, $J = 1, \dots, P$ and a dependent variable $Y(I)$. In least squares regression, the P components of $B(J)$ are to be chosen to minimize the length of

$$R(I) = Y(I) - X(I,1)*B(1) - X(I,2)*B(2) - \dots - X(I,P)*B(P)$$

Householder transformations can be applied to $Y(I)$ and $X(I,J)$, $J = 1, \dots, P$ without changing the length of $R(I)$. For this reason, the values of $B(J)$, $J = 1, \dots, P$, that minimize the length of R before transformation will minimize it after transformation. Thus, we can apply Householder transformations to $Y(I)$ and $X(I,J)$, $J = 1, \dots, P$ in such a way that computing the least-squares values of B is easy.

The proper sequence of Householder transformations starts with the transformation that zeros components 2 to N of $X(I,1)$. This transformation is applied to all the independent variables and the dependent variable. Next comes the transformation that zeros components 3 to N of (transformed) $X(I,2)$. This transformation is applied to all the variables but, as shown above, it does not affect (transformed) $X(I,1)$. This process is continued until there are no independent variables with non-zero elements in the range P+1 to N. This process will fail if for some I, $X(I,1)$ is transformed to zero, an occurrence that indicates a problem with the choice of the independent variables. Otherwise, the values of $B(J)$ that minimize the length of R can now be derived easily. Values of B can be chosen to zero the first P components of R . Further, changes in B do not affect the last N-P components of R . Thus, the values of B that zero the first P components of R are the values of B that minimize the length of R . These values are unique. Since the equations

$$Y(I) = X(I,1)*B(1) + X(I,2)*B(2) + \dots + X(I,P)*B(P), \quad I = 1, \dots, P$$

are triangular ($X(I,J)=0$ for $I>J$), they can be easily solved.

The foregoing discussion suggests a very naive regression program. Create an array D as in the above code. Store the independent variables in columns 1 to P and the dependent variable in column P+1. Then, perform the following steps:

- ```
FOR P0 = 1 TO P
```
1. Specify the transformation that zeros  $D(I,P0)$  for  $I = P0+1$  to N.
  2. Replace  $D(P0,P0)$  by -E2 and  $D(I,P0)$ ,  $I = P0+1$  to N, by 0.
  3. If  $P0 <> P$ , transform columns P0+1 to P of D.
  4. Transform column P+1 of D.

```
NEXT P0
```

The following code will solve the triangular system of equations:

```

B(P) = D(P,P+1)/D(P,P)
FOR I = P-1 TO 1 STEP -1
B(I) = D(I,P+1)
FOR J = I+1 TO P
B(I) = B(I) - D(I,J)*B(J)
NEXT J
B(I) = B(I)/D(I,I)
NEXT I

```

A good regression program computes much more than the values of  $B$ . In particular, it computes the untransformed values of  $R$  corresponding to the least-squares values of  $B$ . This computation requires saving the specifications of the Householder transformations. In the LINPACK code, these specifications are stored except for one element in the elements of D that have been zeroed.

A good regression program incorporates features designed to further enhance numerical accuracy and also to indicate to the user that problems with numerical accuracy may exist. Above we noted that if for some I,  $X(I,1)$  is zero after transformation, then special steps must be taken. Small  $X(I,1)$  indicates nearly linearly-dependent independent variables. This situation can be caused by various problems with the selection of the independent variables.

If you want to do your own programming, you should consider using Householder transformations. The above discussion shows that they are no harder to program in most situations than other less accurate and poten-

contd. on pg 27

# TWO POPULAR COMMUNICATION SOFTWARE PACKAGES: A Comparison

by G. Kinal and M. Arnold

## INTRODUCTION

This article is intended to be a comparison of two best-selling advanced communication software packages for the Apple II - ASCII Express - the Professional (AE-Pro) and TRANSEND II. These two programs will be described here by pointing out their respective advantages and disadvantages relative to each other.

A brief discussion about a new entrant in the telecommunications software market has been appended to this article, because of the uniqueness of the product for advanced semi-professional applications. There are, of course, many other communications software programs on the market. We hope that this article will make readers aware of the features to be kept in mind in evaluating these other programs. Since there seems to be no adequate substitute for "hands-on", "on-the-air" testing, the authors and the WAP Telecommunications SIG would be interested in reports on how other such programs perform.

## WHAT IS AN "ADVANCED" COMMUNICATIONS PACKAGE?

The bare minimum software needed in order to use an Apple for over-telephone-lines communications is a "dumb-terminal" program. Such software simply allows the keyboard and screen display routines to be connected to a modem. What you type goes out over the line; what is received is displayed on the screen.

The first enhancement is to employ the computer memory as a "capture" buffer, so that everything which is received is not only displayed on the screen, but is also saved in RAM. Later, the buffer contents can be saved to disk in binary or text form, or sent to a printer. An elaboration of the capture buffer is to reverse the process and send material from your computer through the buffer to the now receiving computer. Typically, programs with capture buffers also provide the means for transfer of disk files to and from the buffer.

Many advanced communications packages provide for "macro" routines, and for terminal emulation. Typically, a "macro" can be established to automatically set program parameters to be compatible with a specific applications, and to control intelligent modems accordingly. For example, the correct baud rate, parity, and echo (duplex) modes would be set, the modem would be commanded to automatically dial the correct number, and any log-on entries (e.g., passwords) would be taken care of automatically. Terminal emulation has to do with configuring the Apple and modem so that they act like a specific type of industry standard CRT terminal, e.g., the DEC VT100. These modes are of importance to users who wish to access private computer centers which insist on a particular terminal protocol; most private and public systems will, however, accept the ordinary asynchronous terminal without special terminal emulation. Most advanced packages can also be configured to transfer data with various forms of "handshaking." The most common example is where the receiving computer sends XOFF (ASCII 19, or Control-S) to temporarily halt transmission, and XON (ASCII 17, or Control-Q) to resume. These protocols are rarely required in 300 Baud, local applications.

A very important and distinct feature of truly sophisticated communications software is the ability to transfer disk files in a "verified" mode. The receiving end checks the incoming data blocks for errors, and if it detects that transmission errors have occurred, it requests the sending end to repeat transmission of the erroneous data. Although this may not seem to be too important in the transfer of text files, it becomes critical in the transfer of software, especially binary programs, where even one character error may render the received data useless. (Most programs use either a check-sum or a cyclic redundancy check (CRC) error detection code; the CRC is more effective in detecting errors.)

Last, some communication software configures the computer so that it may be accessed remotely, while it is unattended. (This requires, of course, a modem with auto-answer capability.) This probably is of limited use to the average home computer user, but its possibilities for business and professional applications are many.

ASCII EXPRESS - The Professional  
Produced by Southwestern Data Systems, Santee, CA

---- Major Advantages (compared to TRANSEND II) ----:

Verified transfer uses the Christensen protocol, which is in widespread use, particularly by the CP/M community. The acquisition (synchronization) of the two ends seems to be faster and more reliable than TRANSEND's.

Tends to load (boot) and reconfigure faster than TRANSEND. Most function changes (e.g., going from terminal mode to verified transfer mode) do not require a disk read (i.e., most software is memory-resident).

AE-Pro has an unattended answer mode. That is, with an auto-answer modem, an Apple can be set up to be remotely accessed by another Apple or even by a plain terminal. The remote user can catalog the disk, send and receive text, and (if another Apple with AE-Pro) exchange files in verified mode. A password is required to gain remote access.

The AE-Pro editor is considerably more powerful and useful than TRANSEND's rudimentary one. For example, specific lines of text can be deleted or edited, and string searching can be performed. There is sufficient power and flexibility here that no separate word-processing program is needed to compose simple text files. As a matter of fact, this article was typed with the AE-Pro editor, and the text transferred among co-authors and reviewers using AE-Pro.

With a 16K card, AE-Pro expands its capture buffer to 27K (from 18K). TRANSEND does not take advantage of the additional memory, so its buffer size is always 21K.

AE-Pro is supplied on a standard DOS 3.3 disk. This has several advantages compared with TRANSEND's highly protected, non-DOS-compatible disk:

1) A backup copy is easily made without resort to nibble-copiers.

contd.

- 2) The files are easily transferred to another disk. This permits the user to prepare a customized disk, deleting those routines which are not needed, therefore freeing up enough disk space for realistic single-drive operation.
- 3) Users with higher capacity drives (Micro-Sci, Rana) can implement an extremely viable single disk mode. TRANSEND in single drive operation requires manual exchange of the system disk and the DOS 3.3 disk on which the files to be sent or saved are kept.
- 4) Several different versions of the program may be prepared. For example one disk can come up in unattended answer mode, another can go directly into a specified terminal emulation on boot-up.

AE-Pro has an automatic redial feature with an audible signal when a connection is established -- very useful for calling busy bulletin boards. TRANSEND will redial, but does not generate an audible signal upon connection.

AE-Pro allows "intelligent" macros, e.g., a macro can be established which will read messages or mail that has been sent to you, if there are any.

---- Disadvantages (compared with TRANSEND II) ----:

Does not support the Bell 202 half duplex 1200 baud modem (which is built into the Novation Apple-Cat, for example).

AE-Pro's prompts and screen information are succinct, not readily understandable or complete for the inexperienced user. The manual, though painfully complete, is more technically oriented and tends to intimidate some non-professional users.

TRANSEND II

Produced by SSM Microcomputer Products, San Jose, CA.

----Major Advantages (compared to AE-Pro) ----:

Sold with a Source membership included in price. (note: recently, AE-Pro has been sold with the same offer.)

Supports the Bell 202 half duplex 1200 baud modem, which allows two Apple-Cat users to transfer data at the higher speed without investing in the 212 upgrade or a new modem.

Can transfer an entire disk, without specifying each file separately.

Estimates the time that a file transfer will take. For example, a disk which had 113 active sectors was estimated by TRANSEND to require 20.8 minutes at 300 baud, 6.5 minutes with a 212 modem, and 8.4 minutes with a 202.

Has specific provision for using the Mountain Computer CPS Card's parallel port for a printer interface. (some AE-Pro users have had difficulty in using this interface.) On the other hand, TRANSEND does not yet support the Pkaso printer interface card.

Has provision for using a portion of the buffer space as a printer spooling buffer. The user can allocate the total 21K buffer to any combination of capture and printer buffering.

Has an off-line utility to compress text files, thereby shortening the time needed to transmit the file.

Is fairly foolproof to use. The reset key can be used to "bail out", back to a menu, if all else fails.

Program tells user if the wrong disk has been inserted, etc.

Uses CRC rather than checksum for error detection. CRC is somewhat more reliable in detecting unusual error patterns which can slip by a checksum undetected. Sends data 256 bytes at a time, instead of the 128 used by AE-Pro. This provides higher efficiency (see discussion on 'Blast' below).

Documentation is easy to follow for initial use of the program, though it is not well arranged for later reference.

---- Disadvantages (compared with AE-Pro) ----:

Has numerous menus, which user must select from in succession to reach the desired function. For example, to get on line in buffered terminal mode, the following selections must be made: From TRANSEND master menu, choose a. buffered terminal mode. Then.....from buffered terminal mode menu, choose a. terminal mode.

In contrast, AE-Pro can be set up to immediately come up in terminal mode.

Constantly and annoyingly asks you if this is what you really want. Thus, most menu choices take two inputs. (However, there is a provision in the system setup procedure to eliminate many of these double-checking questions.)

No unattended auto-answer provision in TRANSEND II. (TRANSEND III, an electronic mail system, can of course operate unattended.)

Does not have audible indications of busy signal, ringing, or connection establishment.

Does not use 16K memory card to advantage (total buffer size, for capture and printer, is 18K.)

Unverified mode file transfer is usable only for text files (no conversion utilities are provided, though they are easily written, at least for Basic to Text conversion).

The capture buffer editor is very crude. A separate text editor of some sort is almost mandatory to compose anything besides a very simple message in advance.

The terminal mode command reference table is not immediately available while on line; it must be loaded from disk. The user is encouraged to make a copy on his/her printer for ready reference.

Can only be copied with a "nibble" copier. (However, it comes with an original and a backup disk copy.)

'BLAST' - a new approach for reliable microcomputer communication...

The overwhelming majority of telecommunications use with the Apple now takes place at 300 baud, over local telephone lines, but increasing interest in 1200 baud (Footnote 1) communications has been evident of late as prices drop. 1200 baud is of the greatest interest to those who need to communicate via long distance, where the line costs are much higher. Although AE-Pro and TRANSEND II will function at 1200 baud, they have a drawback. At the higher speed and on long distance calls, the use of verified transfer becomes essential, because transmission errors are much more frequent. Long distance calls (Footnote 2) are often carried over satellite circuits, which have a round trip delay of about 1/2 second. The common forms of verified transfer employ "stop and wait": a block of data

contd.

# INTRODUCING THE MEGABIN

(e.g., 128 bytes) is sent, along with the error checking bytes. The sending end then pauses until the acknowledgement (or rejection, a "nak") is received from the other end. On a satellite circuit, the pause of 1/2 second after each block reduces the actual transfer speed by about 40%. similar delays in acknowledgement occur in packet networks.

The 'Blast' communication software, produced by communications research group, Baton Rouge, LA was developed to accomodate such transmission delays without a loss in throughput. The sending end transmits a continuous series of numbered blocks of data with CRC bytes. Acknowledgements from the receiving end must eventually be received, but not immediately. Because the two directions of transmission are in a sense independent, Blast can also transfer files in both directions simultaneously.

Blast can also be configured in a buffered terminal mode, where it provides all of the "usual" features, though it lacks the variety of special modes and features of AE-Pro. It permits the loading of a file to buffer before the link is established, and then subsequent transmission. In the verified file transfer mode, it reads (and writes) 10K of file at a time from/to the disk, unlike AE-Pro which only buffers a few sectors. If transfer is interrupted, and later the connection is re-established, Blast continues the rest of the transfer at the point where it was interrupted. Blast is similar to AE-Pro in one important respect: an Apple running Blast can exchange files in verified mode (not just text in terminal mode) with any mini or micro also running Blast. AE-Pro can exchange files with any machine using the Christensen protocol.

Blast uses the CRC error detection technique. In current form, it can be set up to act as an unattended computer in the "slave" mode, but only for one transaction (call). All kinds of disc files (not just text) may be transferred.

At the date of writing, Blast has not yet been released in its DOS 3.3 version, though this is imminent. We tested the CP/M version using an inexpensive Z-80 card. Reflecting its professional application orientation, the list price is \$250, though this might come down as sales increase.

## CONCLUSION

We draw no absolute conclusions here as to the "best" software. We hope that we have presented enough of the most prominent pros and cons of each so that a reader can select his/her own "best" choice according to the criteria most significant to him/her, and will know what to look for in evaluating other contenders.

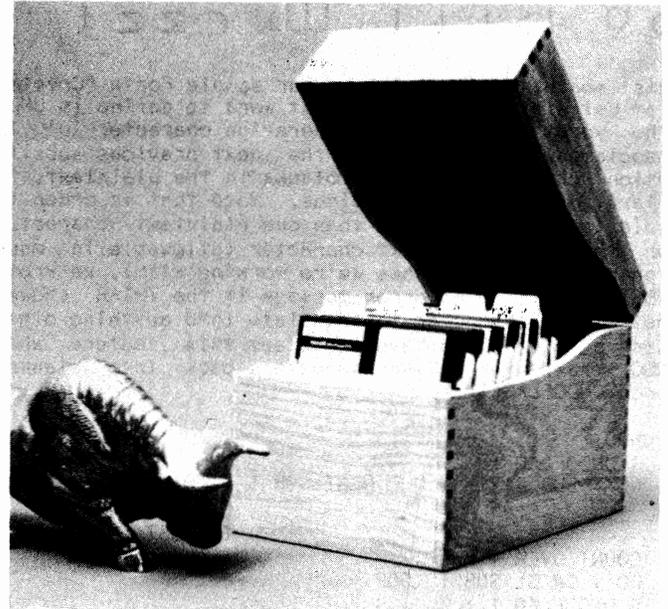
Footnote 1 - technically, bits per second (bps) is the correct terminology for the 212 modem, not (1200) baud.

Footnote 2 - especially international calls, as well as those provided by the "alternate carriers", though AT&T also routes some of its domestic calls via satellite.

Regression contd. from pg 24

tially embarrassing algorithms.

Creation of a good regression program may require more effort than you are willing to spend. Thus, you might choose a statistical package written by someone else. Even if you do this, you should have a regression algorithm available that has high accuracy so that you can check your statistical package.



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# GETTING STARTED IN FORTH: PUTTING IT ALL TOGETHER - III

by Bill Wurzel

This month, we'll finish up our sample Forth "Cryptogram Relief" program. The next word to define is UNDO (the word with which the operation character 'U' is associated). It translates the next previous substitution characters back to blanks in the plaintext, to a level of three substitutions. Note that in order to avoid substituting more than one plaintext character for the same ciphertext character (allowable in many ciphers but not the ones we're working with), we wrote SUBST to issue an error message if the TRTAB showed the cipher character to translate into anything other than a blank. We have to defeat this feature when UNDO translates these characters back into blanks, hence UNDOFLAG.

```
: UNDO
 1 UNDOFLAG !
 NEXT-SUB @ 2 - @ DUP NEXT-SUB ! (POINT TO
 PREVIOUS)
 (SUBSTITUTION)

 COUNT OVER + SWAP
 DO 1 C@ BL SUBST LOOP
 0 UNDOFLAG ! ;

: TRANSLATE (CALLED FROM SHOWNEW)
 (GENERATE CHARACTERS IN PBUF FROM CBUF
 VIA TRTAB)
 0 NUMLINES @ 0
 DO
 1+ LINELEN @ OVER OVER TRANSLINE +
 LOOP DROP ;

: TRANSLINE (DISP COUNT ---)
 0 DO
 DUP 1 + DUP CBUF + C@ TRTAB + C@ SWAP PBUF + C!
 LOOP DROP ;
```

The logic of these two words closely parallels the logic of PRINTBUFS and PRINTLINE discussed last month. Note that TRANSLINE might profitably be rewritten as a machine language primitive since it is primarily responsible for limiting the program's response time (and fast response time is one big reason for not writing this program in BASIC!)

```
: GETCODE
 BEGIN
 GETLINE LASTLINE @
 UNTIL ;

: GETLINE
 QUERY 0 WORD HERE DUP COUNT NEXTCODE @ SWAP CMOVE
 C@ DUP HERE + C@ CHAR * =
 IF
 1 - DUP LASTLINE !
 THEN
 DUP NEXTCODE +! 1,NUMLINES +! NUMLINES @ LINELEN! ;
```

Remember that NEXTCODE is a variable containing the address within CBUF where the next line of cipher should be moved. It is initialized to the address of the first byte of CBUF's parameter field. Notice Forth's convention for Boolean variables. Any word equal to arithmetic zero is considered FALSE; any non-zero word is TRUE. When the test for end of input ('\*') is made in line 3, the top of stack holds the length of the current line. If end of input is true (i.e. CHAR \* = ), then this value (minus 1 for the '\*' itself) is a convenient nonzero number to store into

LASTLINE. This practice, however, makes the Forth code harder to read. It would probably be better to define two constants:

```
0 CONSTANT FALSE
1 CONSTANT TRUE
```

and store them explicitly into Boolean variables where needed. I did it the other way just to demonstrate that it could be done - but:

```
NEEDLESSLY OBSCURE CODE
CAUSES HEARTACHE
DOWN THE ROAD! (Anon.)
```

Finally, we're finished with the processing routines - just initialization and storage definition left!

```
: INIT-VARS
 CLEARCBUF 0 UNDOFLAG ! 0 QUITFLAG !
 INIT-SUBS INIT-TRTAB ;

: CLEARCBUF
 0 LASTLINE ! 0 NUMLINES ! CBUF NEXTCODE ! ;

: INIT-SUBS (SETUP POINTERS IN RING BUFFER)
 SUB1 SUB2 LINK-SUBS 0 SUB1 4 + !
 SUB2 SUB3 LINK-SUBS 0 SUB2 4 + !
 SUB3 SUB1 LINK-SUBS 0 SUB3 4 + !
 SUB1 4 + NEXT-SUB ! ;

: LINK-SUBS
 OVER OVER 4 + SWAP ! SWAP 4 + SWAP 2+ ! ;

: INIT-TRTAB (INITIALIZE TRANSLATE TABLE)
 TRTAB 256 0 DO 1 OVER OVER + C! LOOP DROP
 TRTAB CHAR Z 1+ CHAR A DO BL OVER 1 + C! LOOP DROP ;
```

Line 2 of TRTAB sets each of the 256 ASCII characters to translate to itself. This preserves numbers and punctuation marks, which are usually not part of the cipher. Line 3 then sets the ASCII characters 'A' through 'Z' to blanks.

```
0 VARIABLE CBUF 500 ALLOT
0 VARIABLE PBUF 500 ALLOT
0 VARIABLE TRTAB 256 ALLOT
0 VARIABLE LASTLINE
0 VARIABLE NUMLINES
0 VARIABLE QUITFLAG
0 VARIABLE UNDOFLAG
CBUF VARIABLE NEXTCODE
```

```
0 VARIABLE SUB1 28 ALLOT
0 VARIABLE SUB2 28 ALLOT
0 VARIABLE SUB3 28 ALLOT
0 VARIABLE NEXT-SUB
```

```
0 VARIABLE CSTRING 26 ALLOT
0 VARIABLE PSTRING 26 ALLOT
```

```
: ARRAY <BUILDS 1+ 2 * ALLOT DOES> SWAP 2 * + ;
10 ARRAY LINELEN
```

```
: MAKEOPTABLE
 <BUILDS BEGIN [COMPILE] CHAR DUP 0 =
 IF BLK @ 0= IF QUERY ELSE 1 BLK +! 0 IN ! THEN
 ELSE DUP CHAR $ =
 IF DROP 1
```

contd. on pg 33

# DISABLEDSIG: New Projects by Curt Robbins

During the DISABLEDSIG meeting of May 12, we had two guests who spoke briefly about HEX (Handicapped Educational Exchange) and especially about ways of making the Apple system a telecommunication device for deaf Apple owners. Their concern is that many deaf and hearing impaired individuals own an Apple and at the same time have a teletypewriter (TTY) or separate telecommunication device (TDD - an electronic version of the TTY). Many of those who do expressed dissatisfaction over the fact that current commercially available modems for the Apple are not compatible with the present deaf telecommunication networks. Yet, Novation's APPLE-CAT II is advertised to be compatible with such networks via its "Deaf Firmware". Unfortunately, it has received poor reviews and enormous disillusionments because Novation has turned a "deaf ear to us" when my friends approached them about the problems.

TTYs and TDDs utilize the 5-level Baudot code at a baud rate of 45.45 in 2-way simplex mode. This is based on the Weitbrecht modem. By comparison, ASCII telecommunications that we are most familiar with are based on BELL-103 system with a baud rate of 110/300 in full or half duplex mode. For those who are interested in learning more about this, more detailed information was made available at the June 9 meeting of the DISABLEDSIG.

Dick Barth, an electrical engineer and a member of AMRAD, created the Handicapped Educational Exchange, a CBBS system which utilizes both ASCII and baudot codes, especially for those who have a TDD or TTY. He spoke about the possibility of the WAP ABBS operating in ASCII/Baudot mode for TDD handshakes for the benefit of hearing impaired individuals who may be interested in purchasing an Apple or Apple-compatible system. Although he does not use an Apple system, he'd be glad to assist in this project.

Afterwards, Barry Strassler, Executive Director of the Telecommunications for the Deaf, Inc. and an Apple owner/user, spoke on the possibility of converting an Apple system to a more versatile TDD than is available in the market today. He works closely with Dick and AMRAD in their projects related to telecommunication needs for the deaf. They agreed that the Apple system is, by far, the most adaptable system for the current telecommunication networks for the deaf. However, he feels that most modems for the Apple systems are not very compatible even if more hardware and/or software are connected to the TDD or TTY. Barry uses the Micromodem on his Apple with an interface between his TTY modem in order to communicate with other TTYs and TDDs. This interface was designed by AMRAD. (The January, 1982 issue of BYTE has an article, "An Apple Talks with the Deaf", by Ned Rhodes. It explains how the system works.) Barry would like to see WAP design and develop a system that will allow the Apple to function as a TDD with or without the use of either APPLE-CAT, Micromodem or any other telecommunication device.

Both Barry and Dick would be available to serve as consultants if the project gets underway. I would serve as liaison with the other deaf Apple owners in this vicinity and try to recruit them to join WAP, as well as get feedback on their telecommunication needs.

The DISABLEDSIG does not have all the expertise to undertake this project singlehandedly. We are in the

process of negotiating with the Telecommunications SIG and other SIGs to assist us. Also, we're asking for any non-SIG member in WAP who thinks he/she may be of assistance to join us, too. Please call John Molleneaux at 341-7412, Jay Thal at 244-3649 or Curt Robbins at 953-7352 (TDD only) or leave a message on the WAP ABBS FOR WAP428, if you are interested in assisting us with this project.

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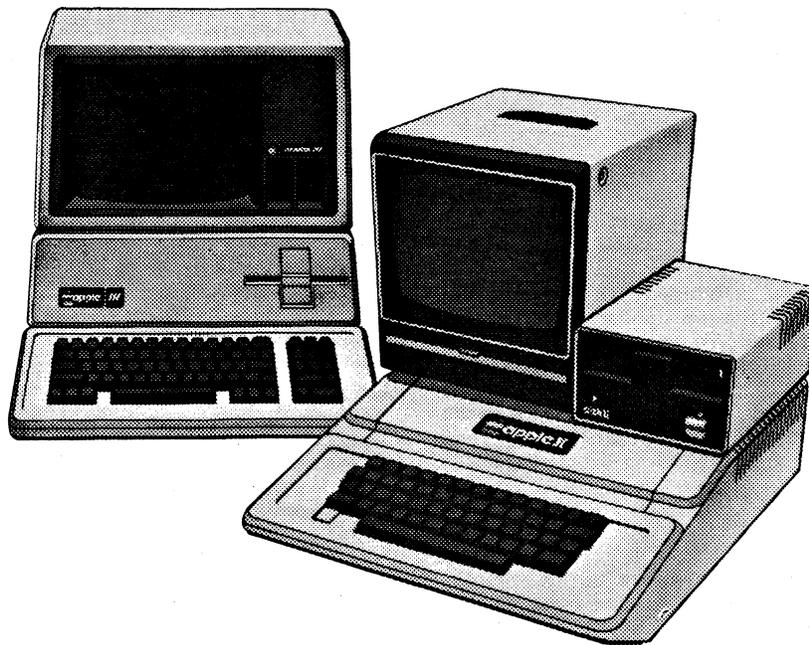
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# INTRODUCTION TO APPLESOFT 3

## by David Morganstein

In the second installment we discussed additional features about the PRINT statement and we introduced the INPUT statement for the entry of data into variables. We described the general form of a BASIC program as consisting of numbered statements to be performed by the computer. To see program lines, we mentioned the LIST statement and to edit the lines we discussed the use of the ESC key followed by the IJKM keys to move the cursor on the screen.

In this session we will talk about the IF/GOTO and IF/THEN statements, logical expressions and the array structure.

### IF/GOTO.

An important concept which greatly extends the BASIC language is the ability to change the flow of program execution. Remember in the second installment, we mentioned that the BASIC interpreter (whatever that is) executes each line of code in numeric order from lowest line number to highest, unless told to do otherwise. The first command we will describe for "doing otherwise" is the IF/GOTO command (the IF/THEN can be used to do the same thing.)

It works like this:

```
IF logical statement GOTO line number to transfer to
```

(You get the same results by substituting THEN for GOTO).

BASIC evaluates the "logical statement" and if it is true, transfers to the given line number instead of moving on to the next statement in ascending line number sequence. Logical statements are mathematical statements which are either true or false (sounds a bit binary doesn't it?) For example, the statement "two and two is four" would be evaluated as true (right?); whereas, "two and two is five" would be judged false.

### Logical Statements.

Logical statements are about variables being equal, not equal, greater than, less than or some combination of these ideas. We can make logical statements about a variable and a constant or about two variables. We denote these four concepts as "=", "<>", ">", and "<". A few examples are:

```
I=J, is I equal to J?
A1<5, is A1 less than 5?
B%>10, is B% greater than 10?
N$<>"NO", is N$ not equal to "NO"?
```

To obtain complex combinations of these ideas, we can "AND" or "OR" several such statements together. When we "AND" them together, we are asking if all the individual statements are true, if so, then the overall "logical expression" is true. The "OR"ing of statements asks if any one of them is true; if so, the overall statement is true.

Some examples of these are:

```
I=J AND A1<5, if I equals J and A1 is less than 5
then the statement is true.
I=J OR A1<5, if either I equals J or A1 is less
than 5, the statement is true.
```

### IF/THEN.

To simplify the flow of the program, we might like to make a logical test and perform some action on the spot without transferring program control. The IF/THEN statement can be used for this purpose, as well as transferring to another line. It works like this:

```
IF logical statement THEN action statement(s)
```

The action statement(s) can be any legal BASIC statements (if more than one statement is given, they should be separated by colons). It might, for example, be used to change the value of a variable, print results or input something from the keyboard. If you wanted to print the name of someone if their balance is greater than \$100.00, you might use a statement like:

```
IF BA>100 THEN PRINT NA$
```

Practically, the logical statement contains one or more variables whose values are changing within the program. In a short program to follow, we have two variables. One variable, I, is an index; it is counting names as we enter them. It begins at one and increases for each name entered. The second variable, N, is the number of names to enter. The logical statement we will use is:

```
IF I<=N GOTO line number
```

### An Aside.

The IF/THEN or IF/GOTO construct is a restricted version of a more useful programming tool. Other BASICs, such as BASIC-80 or CBASIC, as well as, other languages, such as Pascal, use an IF...THEN...ELSE statement which is more powerful. After you have written a few programs, you will see that IF/THEN forces you into contortions. You can only test for one condition and if it is true, do something. Programming life would be much easier if we could simply determine if the statement were true or false and take one of two actions depending on the answer. The IF...THEN...ELSE approach does this. IF something is true THEN we do one thing, ELSE we do another. (An even more general construct would allow you to do one of a multiplicity of things depending on the value of a variable...but then we need material for another installment, so we won't go into that now.)

### Arrays.

In the first installment, we discussed simple variables. These were described as one or two character labels for memory locations which could hold a single numeric or alphanumeric entry (the latter we call strings). If that is the most complex variable we could store, programming in BASIC would be difficult indeed.

Let us say that you wanted to store and retrieve descriptive information on a large number of items (such as stereo records, computer software, employees or whatever...) By information we mean a number of variables such as name, publisher, function etc. on each of a number of items, the record, software, or employee. You could not do this easily with variables like A1 for the first variable of the first item, A2 for the first variable of the second item and so forth. First you could use only 9 meaningful labels

contd.

(after which you would have to use AB for the first variable of the 10th item.) We could move on to B1 for the second variable of the first item, B2 for the second variable of the second item, etc.

Arrays are an ordered data structure which allow you to store many entries under one variable label. Further, arrays are randomly accessible so that you can reach into the middle of one hundred items and pluck out the 73rd one. In BASIC, arrays are defined as the usual one or two character label (plus variable designator such as a \$ for strings) followed by a pair of parentheses in which we have a number or an expression.

The number or expression in parentheses identifies which array element we want. For example, A(9) refers to the ninth entry of the numeric array named A. If the variable I has the value 5, then NA\$(I\*2) refers to the 10th item of the string array NA\$. If you change the value of I to 6, the expression refers to the 12th item. Perhaps you are beginning to appreciate the power of arrays in programming.

Let us write a short program to INPUT some names from the keyboard and store them in an array named NA\$(.) We use the name NA\$ as a mnemonic for the data we are storing, NAMES. First, we must decide the maximum number of names we will need to store. We must tell this number to BASIC so that it can set up a sufficient number of memory locations for the storage. We do this with the DIMENSION statement. For example, DIM NA\$(100). says that we may store as many as 101 different strings in the NA\$(.) array. Why 101? Because BASIC permits a 0th element, we can use NA\$(0) as the first item. (Many folks use NA\$(1) as the first item to avoid confusion.)

Try the following short program. The REM statements are BASIC's way of allowing us to comment on the meaning of the statements. They are ignored during the execution of the program.

```
100 DIM NA$(100): REM A MAX OF 100 ITEMS
110 INPUT "HOW MANY NAMES SHALL WE READ ";N
120 I=1: REM SET UP AN INDEX FOR THE ITEMS
130 INPUT "ENTER THE NEXT NAME ";NA$(I)
140 I=I+1: REM INCREASE I FOR THE NEXT NAME
150 IF I<=N GOTO 130
```

When you run this program, it asks for the number of names to be entered, then requests each of the N names. Select a small number, say 5 so that you won't have to spend all day typing! Do you see how line 150 transfers program control back to line 130 until we have read all N names? The interpretation of line 150 is "if the number of the current name plus one (I has had a one added to it) is less than or equal to N, then we should go back to line 130 to read another name". To see the names you have entered, add the following lines, rerun the program and re-enter some names.

```
200 I=1: REM RESET I FOR PRINTING THE N NAMES
210 PRINT NA$(I)
220 I=I+1: REM INCREASE I FOR THE NEXT NAME
230 IF I<=N GOTO 210
900 END
```

This works just like the first part of the program. After the program is finished and the names have been displayed on the screen, try printing one of the NA\$(.) entries like this:

```
? NA$(2)
```

Notice an important feature of BASIC, the variables are still identified even though we are in the immediate mode. This characteristic can be very useful when

debugging a program. When the program stops, or you stop it, the variables pointers are still active and you can display the variable contents. As soon as you change one line, however, the variables are reset to their start-up values (0 for numbers and blank for strings).

Summary.

In this month's discussion, we described the IF/GOTO and IF/THEN statements and their uses. We defined logical expressions used by the IF statements. Arrays were discussed as an ordered method for assembling data; a method which greatly extends the capability of BASIC.

In the next installment, we will describe a number of applications for arrays, extend their use into more than one dimension and talk about another program control statement, the loop.

Forth contd. from pg 28

```
ELSE , [COMPILE] ' CFA , 0
THEN
THEN
UNTIL 0 , 0 ,

DOES> SWAP >R 4 -
BEGIN 4 + DUP @ DUP
IF R = 0= THEN 0=
UNTIL R> DROP 2+ @ ;
```

All that's left now is to define HOME and BOTTOM. The definitions of these words depends on what sort of 80-column card you're using, if any. Here are the definitions for the standard 40-character Apple:

```
: HOME -936 CALL ;
: BOTTOM 23 37 C! -990 CALL ;
```

For the ALS Smartterm card, they are:

```
: HOME 12 EMIT ;
: BOTTOM 54 33 30 EMIT EMIT EMIT ;
```

And that's it! After everything compiles okay (just watch out for the order in which you enter the Forth words - everything must be defined in terms of previously defined words!), the program can be invoked by entering the Forth word CRYPTO. I've been using this word for several months without any glitches so far - so at least on my Apple it works okay!

There are two other features it would be nice to have. First, the program might keep you informed of the current substitutions by printing an alphabet under each of whose letters is the current substitution, if one exists. This requires two additional lines of screen and can be easily implemented right above the command line at the screen bottom. I've called this word SHOWALPHA. In the current implementation it's a null word - try to make it work!

The second desirable feature is a frequency count of the ciphertext characters. Some letters occur more frequently than others in English and a frequency count can be a real help in suggesting substitutions. Call this word FREQ and its associated operation character 'F'. If I have time this month, I'll work on them! In the meantime,

MTFBWY!

(Ed. Note: This is the eighth and last article in this series on Forth. We thank Bill for his tremendous efforts in putting this series together. We understand he is moving from the DC area, and we wish him well. We hope he will have time to continue with some further articles in the near future.)

# SOFTVIEWS

by David Morganstein

IDS (An Integrated Development System for the Apple II Plus, Michael Rohrer). IDS will be of interest to Applesoft programmers writing software which requests data from the user via labelled "screen displays", and which stores the data on disk or prints reports in a formatted style. The package contains machine language subroutines for performing these functions; the routines are called from your BASIC program. The development of the screen displays, record layouts or output formats are very simple. In fact, they are accomplished using forms generated by IDS.

The definitions for the screen displays include the row and column of the labels and of the variables associated with the contents of the labelled fields. The content lengths, as well as the BASIC variable names, are a part of the definition which the user supplies. Field attributes such as protected fields (display only), required fields (must be entered before leaving the screen), full fields and all character fields (no numerics permitted) may be assigned. A useful field repeat count permits easy entry of array variables on the same screen.

One of Applesoft's greatest deficiencies is in the area of formatted printing. IDS remedies this through the definition of print formats which allow for: number of decimal spaces, zero suppression, floating dollar sign, trailing minus sign, use of commas after each three digits, and left padding with a selected character such as a blank.

The disk record structure contains the BASIC variable name, the length of the data and the repeat count for arrays. Interestingly, the user can save storage space by defining one byte integers, and three or four byte reals (with resulting limitation on range for integers and significance for reals). The records may be read or written in sequential or random access structure much as Applesoft DOS permits. Rather than exchanging an entire record, the user may specify a get or put option for selecting variables to read or write.

Screen formats, print formats and record structures can be assembled into a library for later use as a single package.

The user must sacrifice space in memory for the IDS machine language routines which are located at \$7600. The record and print formats are loaded below the machine language subroutines. The defined screen formats may reside on disk or may be placed either in a 16K RAM card or in main memory to speed up the processing. When the subroutines are initialized, they reset the necessary pointers so that HIMEM, the top of string space, is below the routines and formats. Thus, the user will lose at least 8K of memory space.

The manual is well written. It begins with a tutorial which takes the user through the definition of a screen, a record and a printline. An example BASIC program is to be entered and run by the user to demonstrate how to interface the structures with Applesoft. The next sections contain a more detailed description of the edit operation required to create the structures. A reference section on the machine language subroutines follows; short examples are included to demonstrate their application. The last chapter contains a discussion on program development built around IDS. A reference card is included to remind the user of the names of the various subroutines. R. R. Michaels, Inc., Box 565, Leesburg, Va. 22075. Phone

(703) 777-1933. \$85.00.

Litmas (Ed Puckett). Litmas was designed for rapid filing and cross-indexing of material. While it has many of the features found in a data base package, it specializes in key-word access to text descriptions. Let us say that you want to assemble all of your software into a format for retrieval of text information about the package. You would begin by thoroughly evaluating all of the keywords that would be used to identify eligible packages. In the framework of a data base, you would think of variables such as distributor, price, operating system, function and a host of other descriptors. After establishing the keyword list and putting it in machine readable form, you would, for each package, enter its list of relevant keywords and its description.

Litmas performs the above operations smoothly and quickly with ample screen prompts. The individual screens you see while running the program are tagged in the upper right corner with a name and number. The name refers to the Litmas sub-system and the numbering is sequential within the operation. This labelling, which is keyed to the manual, provides for easy learning by the non-programmer.

For each application you require, a program disk and a data disk are created. You begin by defining the keywords (up to 512 are permitted). Keywords may contain synonyms to extend their capability. For example, "GAMES/ADVENTURE/FANTASY/ARCADE" counts as one keyword and four synonyms. 2048 synonyms are permitted per application. After constructing the keyword file, the data on individual items (e.g. the recipes, programs, slides, etc) with keyword entries and descriptions are entered. A simple full-screen editor makes this task easier.

Once the data and keywords have been entered, searches may be performed to locate all items containing various logical combinations of the keywords. If you wanted price to be a keyword, you would classify it into several levels (e.g. under \$20, \$20 to \$50, etc.) since each entry uses up one keyword. To search on programs for under \$100, you would supply a condition which "OR"s the under \$100 entries. In a more traditional data base program, you would have one variable for price, which would be coded exactly. The report generated would give a limitation on the price variable as under \$100. The items identified can be displayed on the screen one at a time, or sent to your printer.

The accompanying manual begins with an easy to understand description of the program and several example applications such as recipes, library books and slides. The 150 page manual was prepared with the non-programmer in mind as it uses little computer jargon. The manual contains an index and includes a reference page on the back cover with the edit keys identified.

The potential buyer of Litmas will have to select between the unique features of text retrieval offered and the more traditional approach of a data base package. The only competitive package I am familiar with is VisiDex. It features date stamping and retrieval using a clock card. However, the keyword definition is limited to words within the descriptive text (or the date) and the manual has considerably more jargon to wade through. Eric Sohr, Worden Montana, 59088. (406) 657-7680. \$145.00.

**IDS** lets you create screen forms like this

```

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FUNCTION _ ID _ _ _ _ PRIVACY _

NAME
STREET
CITY
STATE _ _ ZIP _ _ _ _ PHONE _ _ _ _

DATE OF MEMBERSHIP _ _ / _ _ / _ _
DATE FOR RENEWAL _ _ / _ _ / _ _
ACCOUNT BALANCE
HARDWARE OWNED

CURRENT POSITIONS INTERESTS AND SKILLS

_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

```

to be used in your Applesoft programs like this

```

CALL ZFD:1 :REM ... DISPLAY THE FORM
CALL ZFR :REM ... READ ALL DATA FROM THE FORM AND
 STORE IT IN PREDEFINED VARIABLES

```

**IDS** lets you create disk record layouts which greatly simplify and considerably shorten the Applesoft code required to use disk files.

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# QUESTION, QUESTION, WHERE'S THE ANSWER?: WAP Q & A Index

by Paul Koskos

## INTRODUCTION

In November, 1980, a new column appeared in the Washington Apple PI magazine. It was called "Questions, Questions, Questions", and it was written by Mark Crosby. Since then, 30 such columns have appeared (through June, 1983). Mark retired from the column in March, 1982, and was succeeded by Bruce Field, who changed the names to "Q & A". Obviously, typing "Questions" three times every month was too much work for Bruce. (Ed. Note: Actually it was I who suggested a shorter title.)

The thirty columns which have appeared have contained much useful information, as I discovered while compiling the INDEX referenced in the title. However, paging through thirty issues (if you had them) to find a question to which you needed an answer NOW, is obviously not practical.

After some discussion with David Morganstein, the writer undertook the distillation of the questions to a one-line summary, short enough so that a CATEGORY keyword, an ISSUE NO., and a QUESTION NO. reference could also be included on the same line. Additionally, the summary begins with a second keyword which is located alphabetically within the CATEGORY. While it is WAP's intention to publish soon a separate compilation of all the questions and answers, in chronological order, the present INDEX allows immedi-

NOV 1980 thru JUNE 1983

ate use for those having back issues of Washington Apple PI. (Ed. Note: For those issues you don't have, use the reference copy in the WAP office.)

A few comments are in order. Some of the questions (and some of the answers) are obviously dated. We decided to include them all, because:

- Not every member has the latest hardware (or software).
- Even the dated answers contain nuggets which could be useful to a desperate seeker of TRUTH.
- This should be a complete listing. Who am I to decide that a particular Q & A won't be useful to someone?

You will also note a few cases of identical Questions with different answer references. Here, the various answers may be corrections of an earlier answer, or completely new solutions. Take your pick.

Lastly, assignment of CATEGORIES to the various questions was not always easy. If you can't find your problem in the CATEGORY you first look in, try another. My own first choices are not necessarily yours.

Happy hunting.

| <u>CATEGORY</u> | <u>QUESTION DIGEST</u>                                     | <u>ISSUE</u> | <u>Q#</u> |
|-----------------|------------------------------------------------------------|--------------|-----------|
| APPLESOFT       | ACCURACY: Differences in "Identical" Numbers               | APR 83:      | 7         |
| APPLESOFT       | BASIC: Split Program Across HI-Res Memory Area             | SEP 81:      | 10        |
| APPLESOFT       | BOOLEAN/LOGICAL OPERATORS: Tips on Use of                  | FEB 83:      | "4"       |
| APPLESOFT       | BREAK: From Running Program, Modify w/o Changing Variables | MAY 81:      | 3         |
| APPLESOFT       | CHAIN: Define Funct, CHAIN to Next Program, Using Function | DEC 81:      | 6         |
| APPLESOFT       | CURSOR: POKE Off                                           | JAN 82:      | 4         |
| APPLESOFT       | DELETE: from Disk from Within Program                      | JUN 81:      | 3         |
| APPLESOFT       | DELETE: from INTEGER/APPLESOFT programs- unable to         | JUN 83:      | 1         |
| APPLESOFT       | DISK Commands: Misfire After Using "GET" Statement         | NOV 80:      | 2         |
| APPLESOFT       | FRE (X): Use of                                            | JAN 81:      | 9         |
| APPLESOFT       | GET Statement: for A = VAL (A\$), A not = A\$              | OCT 82:      | 1         |
| APPLESOFT       | GOTO or GOSUB: Avoid Line # Search from Program Beginning  | SEP 81:      | 12        |
| APPLESOFT       | HIMEM/LOMEM: Normal Setting, Changing, Difference          | MAY 83:      | 13        |
| APPLESOFT       | HI-RES CHAR GEN: Run 2d Prog on Same Disk w/o Char Gen     | MAR 82:      | 2         |
| APPLESOFT       | IF: Interference with Remaining Statements                 | MAR 82:      | 4         |
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| APPLESOFT       | LINE NUMBERS: Why Is Max Line Number 63999                 | SEP 82:      | 3         |
| APPLESOFT       | LINE NUMBERS: Why Is Max Line Number 63999                 | NOV 82:      | "0"       |
| APPLESOFT       | LIST: Print Listing with More Than 40 Characters per Line  | AUG 82:      | 3         |
| APPLESOFT       | LIST: Preventing Listing                                   | SEP 81:      | 13        |
| APPLESOFT       | MEMORY: Out of Memory Error, when FRE(0)= 30K              | MAR 83:      | 4         |
| APPLESOFT       | INew: Recover Program in RAM After Typing "INew"           | DEC 82:      | 2         |
| APPLESOFT       | PEEK/POKE: Reference Sources                               | DEC 80:      | 3         |
| APPLESOFT       | PEEK/POKE: Reference Sources: Update                       | DEC 82:      | 1         |
| APPLESOFT       | PRINT-USING: Fast Capability with APPLESOFT                | MAR 81:      | 5         |
| APPLESOFT       | PROGRAMS: Diff. Between "Identical" Programs               | NOV 81:      | 11        |
| APPLESOFT       | PROGRAMS: Diff. Between "Identical" Programs- ERRATA       | JAN 82:      | "6"       |
| APPLESOFT       | PROGRAM: Size, Start Point, Free Space Location            | NOV 80:      | 7         |
| APPLESOFT       | PROGRAM: Binary Files- Find Start, Length; Save            | NOV 80:      | 3         |
| APPLESOFT       | RAM APPLESOFT: Using " & "                                 | JAN 81:      | 5         |
| APPLESOFT       | RENUMBERING: Using DOS 3.2, 3.3, in RAM or ROM             | MAR 81:      | 7         |
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| APPLESOFT       | RESET: Language Card Problems                              | MAR 83:      | 3         |
| APPLESOFT       | RIGHT ARROW: Enter as Part of Program Statement            | NOV 81:      | 2         |
| APPLESOFT       | ROUNDING Numbers: Procedures for                           | APR 83:      | 4         |
| APPLESOFT       | ROUNDING Numbers: Level of Accuracy vs No. of Digits       | APR 83:      | 5         |
| APPLESOFT       | SHAPE Tables: Location in Memory                           | MAY 83:      | 12        |
| APPLESOFT       | SORT: Fast Routine                                         | NOV 81:      | 1         |

| CATEGORY  | QUESTION DIGEST                                             | ISSUE   | Q#  |
|-----------|-------------------------------------------------------------|---------|-----|
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| APPLESOFT | SPEED: Reduction, to Upload APPLESOFT to IBM Mainframe      | MAR 83: | 1   |
| APPLESOFT | STRINGS: How to INPUT with Commas, Colons, and Quotes       | JUN 81: | 4   |
| APPLESOFT | STRINGS: Non-equivalence of Apparently Identical Strings    | JUL 81: | 6   |
| APPLESOFT | TEXT: Centering on Screen for Unknown String Length         | MAY 81: | 5   |
| APPLESOFT | TEXT SCREEN: Multi Windows                                  | FEB 81: | 4   |
| DOS       | APPEND: Fix for DOS 3.2 and 3.2.1                           | DEC 81: | 5   |
| DOS       | BASICS DISK: Function of, with DOS 3.3 and Language Card    | MAR 81: | 4   |
| DOS       | BOOT: CATALOG/Cursor Control                                | MAY 82: | 4   |
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| DOS       | BOOT13 and DOS 3.3 BASICS Disk: Difference                  | SEP 81: | 11  |
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| DOS       | CTL-D and PR#1 Commands: Use of                             | JUL 82: | 5   |
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| DOS       | DISK DRIVE: When is Cleaning Needed                         | JUN 82: | 3   |
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| DOS       | DISK: Use of Single Sided Disks in Double Sided Mode        | NOV 81: | 7   |
| DOS       | DISK: Explain Double Density, 40 Track, etc                 | APR 83: | 8   |
| DOS       | DISK: Hub Rings - Purpose of                                | SEP 81: | 2   |
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| DOS       | KEYBOARD: Input, Write to Disk, with File Open              | MAR 81: | 1   |
| DOS       | LANGUAGE CARD BOOT: INTEGER BASIC Loading in DOS 3.3        | MAR 82: | 3   |
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| DOS       | LOADING Programs: From within a Program, without Losing     | SEP 81: | 9   |
| DOS       | NIFFUM: Copy of                                             | SEP 81: | 1   |
| DOS       | PROGRAMMER'S AID: Programs on DOS 3.3 BASICS Disk           | DEC 81: | 3   |
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| DOS       | READ File, WRITE to New File with Different Format          | JUL 81: | 4   |
| DOS       | RELOCATE DOS (WAP Disk 101): Error with                     | APR 82: | 1   |
| DOS       | RENUMBER: Problems with DOS SYSTEM MASTER DISK PROGRAM      | MAY 82: | 6   |
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| DOS       | RESET: Defeat REBOOT on RESET for DOS 3.1                   | DEC 81: | 4   |
| DOS       | SAVE: Check for Same Name Before Saving                     | APR 83: | 6   |
| DOS       | SAVE: Syntax Error from 80 Column Mode                      | JUN 83: | 5   |
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# APPLE /// SIGNEWS

by Bill Hershey

In April Apple /// users met at Universal Computers in Alexandria. Kevin Parks, an Apple marketing representative, discussed future developments for the Apple /// and testified to Apple Computer's continuing commitment to the ///. Apple has published an "Apple /// Software Resource Guide" listing over 300 software products for the ///, most of them of fairly high quality. Parks and others in the audience gave Quark Engineering, in particular, high marks for their excellent software. Parks also mentioned the following anticipated Apple products:

- Apple Speller to work with Apple Writer ///
- SOS Reference Manual and /// schematics
- Record Processing System (RPS), being used by software developers to write relational data base management systems and other programs
- The long-awaited clock chip
- A modified version of Access /// allowing the Apple /// to emulate an IBM 3270 terminal

In the second part of the meeting, Win Remley of Universal Computers gave a jaw-dropping demonstration of the new Lisa.

The May meeting at the Walter Reed Institute of Research was an open discussion on data base and file management. Members debated the pros of programs like Personal Filing System and Quickfile and the cons of programs like the BASIC-based Data Manager ///. A portion of the discussion focused on the use of dBase II with the Apple /// CP/M card. There was general agreement that a high-quality relational DBMS, designed specifically for the Apple ///, is badly needed.

Apple /// technical wizard Ron Askew was SIG ///'s featured speaker at the June 9 meeting at Universal Computers. Ron presented one of the most-used and least-understood features of the Sophisticated Operating System (SOS): device drivers. He covered some of the subtleties of the use of the System Configuration Program and outlined the necessary steps for adventuresome souls who wish to write their own drivers.

The next meeting of SIG /// will be Thursday, July 14, 7:30 at the Walter Reed Institute of Research. (From the main 16th Street entrance, go 3/4 around the circle. The 4-story brick building on your right is it. Go in the north entrance and ask the guard for directions to Room 3092.)

We now have 73 SIG /// members. To get your name on or off the SIG /// mailing list, call Bill Hershey at 588-1992. 

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# EDSIG NEWS

## by Peter Combes

### EDSIG Calendar

Tuesday, July 5th at 7.30 p.m.

"Three Approaches to Educational Programming" -- David Wyatt

All EDSIG meetings are held in Lecture Room A, Building A, of the Uniformed Services University of the Health Sciences, on the campus of the National Naval Medical Center, 4301 Jones Bridge Road, Bethesda, MD.

### Meeting Reports

Tuesday, June 7th at 7.30 p.m.

In order to allow several of the speakers to take part in the Baltimore conference, the scheduled Round Table was postponed, and a software session took its place.

#### Bank Street Writer

We have had considerable publicity about "the first word processor to be designed specifically for children", and glowing stories about how word processing can help children's development, but this was the first time that the SIG had actually seen Bank Street Writer. The screen layout is clear and easy to use. The big menus that are continuously displayed are reassuring, though they don't leave too much room for the text display. The word processor resembles ScreenWriter in that upper and lower case are software generated on the hi-res screen, and so can be used on an Apple II or II Plus without hardware modification. However, some features are reminiscent of Apple Writer, such as the use of the IJKM keys for cursor movement. Deletion using the backspace key is a nice touch borrowed from Apple Writer. Since most word processors have difficult manuals, it is nice to report that Bank Street Writer can just about be used without using the manual at all. The command UNERASE is a good touch and is easier to use than Shift-Control-W, which is one of Screenwriter's clumsier implementations. A shock, however, is that Bank Street Writer uses BINARY files for the text, cutting you off from dictionaries, terminal programs, and so on. DOS text files are a workable standard -- even Apple Writer II uses them, and it is a pity to find a new program departing from this standard. Every word processor for the Apple II or II Plus has difficulty with deciding what key to use as a shift key -- Bank Street Writer's use of SHIFT-N as a shift key is particularly awkward. The program we reviewed appeared to have the record minimal modification for the //e -- one small sticker on the box, no mention of the //e in the manual, no mention of the DELETE key or of the vertical cursor keys. However, the program is transformed when you run it on a //e. Rather engagingly, it starts with an apology for the manual, and then proceeds to run using the four //e cursor keys -- no more IJKM nonsense -- and the grotesque SHIFT-N is replaced by normal use of the shift key. Although the DELETE key does not appear to operate, the program is so much better on the //e that it might be an argument for delaying its introduction until //e's are available in the classroom.

Storyboard was our first trilingual program -- with sections in English, French and German, diacritical marks and all generated in hi-res. All this work has gone into a rather odd program. A piece of text

appears, and then the letters are replaced by \*, one to each missing letter. The user is invited to type in the words he can remember from the text. If he is right, the word reappears. What is this program for? One might use it to memorise verse, but a method that ignores the verse rhythm is unlikely to be popular with English teachers. One of the members suggested it might come in handy for learning lines of a script. Teachers may type in other pieces of text -- English, French or German -- to be used in this way.

Sticky Bear from XEROX has some nice, Sesame Street style graphics. The programs in the set give pre-schoolers experience with the keyboard, with letters, and with numbers. Single-key entry produces instant colorful results, and there are in fact two hi-res pictures per key. Our thanks to Computer Workshop in Rockville for loaning the demonstration disks.

We sampled some programs from an appealing collection soon to be published in the WAP library as WAP 140 "EDUCATION 4". The programs came from NOVAPPLE, and included some old favorites. We enjoyed Oregon Trail, though the values we typed in as requested did not seem to change the outcome much -- surely the point of any simulation.

Betty Hansen reports on in-field evaluation of "Context Clues" by Learning Well. "The manufacturer states that the appropriate reading ability is 3.5 to 5.0 level, and this seems accurate. It has a game setting in which the players uncover a treasure by following a pathway. The pathway has certain places which require the players to read a paragraph in order to advance. One word in the paragraph is highlighted. The player chooses one of three meanings for the highlighted word.

The meaning choices are not various meanings of the highlighted word, which would require reading of the text in order to establish which meaning fits as the game name suggests -- Context Clues -- rather the meaning choices are other words that would fit grammatically in the sentence. Consequently most of the students who used this disk simply looked at the highlighted words, jumped to the answer choices, and skipped the text altogether, because most of the words were within their own vocabulary of meaning. The game is in color. The pathway that appears on the screen gives a very busy looking screen. The instructions at the beginning, if you ask for them, tend to skip to instruction #4, not giving instructions 1-3; this seems to be a small bug in the program. Players use the return key and the arrow keys to move along the pathway. The boys and girls who used this disk were in grades 4 and 5, of average and above average reading abilities. They were interested in the game and they all played for the ten or fifteen minutes that they were asked to play it, and they all had to be asked to stop.

The educational effect of the disk is not, it appears, for using context to derive word meaning but more just in vocabulary skill. If you wanted to use that type of a game setting, then I think I would tend to eliminate the context clues or the paragraph itself, and just use vocabulary and word meanings. I would not buy the disk for my school because I feel that it does not really give the children practice in using context to develop meaning. It is more of a vocabulary drill."

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# QUADRAM'S PRINTER BUFFER:

A Review by Loftus E. Becker Jr.

Almost everyone who owns a printer wants a printer buffer. Not even garbage collection will slow an Apple down as much as waiting for the printer to work its way through a substantial amount of output. A short article (10 or 15 pages of double-spaced text) will take my printer, an Epson MX-80, about 8 minutes or so to print out in its fastest, least-attractive mode of printing. Anyone using one of the new, cheap and slow letter-quality printers could stop for a meal while waiting for this relatively small amount of text to print out.

Two solutions have been devised for this problem. One solution is the "software spooler", implemented on several word processors, and by Diversi-DOS as an option on its fast DOS system.

Neither of these is entirely successful. The best that I have seen comes with ScreenWriter II. It prints from a special disk file, and hence will take documents of almost any size (I haven't tried it with more than 30K). However, it works only while you are running ScreenWriter, and works only on ScreenWriter text files. Hence it won't dump a long listing, and won't help you speed up printing on other programs you have written. Moreover, it requires two disk drives, takes up footnote (or Index) space in ScreenWriter, causes loss of occasional characters typed in, and if run with only two drives requires you to use the non-optimal setup for saving your files to disk. The only other word processing spooler I have used comes with Wordstar. As implemented on the Apple, this is not nearly as good as ScreenWriter's spooler. It is impossible to do any serious editing with Wordstar while printing a file.

Diversi-DOS, an excellent fast DOS, comes with a free extra that allows use of a 16K card as a print buffer. This, of course, means that the RAM card can't be used for anything else at the same time. It also limits buffering to 16K, or about 10 double-space pages.

A more satisfactory solution is a hardware printer buffer. These come in a variety of flavors, from plain vanilla (nothing but a buffer) to fancy ones that will allow you to store text and dump it selectively to a printer, in any order you want, under software control.

One plain vanilla buffer is the Quadram Microfazer in its simplest configuration. As provided, the buffer is a small box about the size of two decks of cards. A plug at one end takes the cable from your printer interface card; a plug at the back can either attach directly to your printer, or be connected to it through a short cable (at extra cost) if you prefer the box to stand alone. It can be powered either from the printer (more about this later) or from an external source. The only control on the buffer is a small button which, when pushed, clears its memory: useful if you have dumped a large amount of text and suddenly decide you don't want it printed after all.

The Microfazer, set up for 8K of buffer space, costs about \$150. This is too small for any serious use, but it can be expanded up to 64K by the addition of up to 7 extra 64K memory chips. The chips are available locally for \$9 or less each, and by mail order for as little as \$4 if you search around. If your printer does not provide power at the connector (and Epsoms do not), you must either solder one jumper wire in your

Epson - instructions are provided with the Microfazer - or (my preference) buy a 9V transformer similar to those used with electric razors, \$7 at Radio Shack. Installation is simple, about 10 minutes including reading the instructions. Operation is even simpler; you forget it is there, and it does its job. You have 64K of buffer for your printer at a cost of about \$200.

I have had my buffer for about two weeks now. It worked perfectly on installation and has ever since. It is not a panacea for all ills. On occasions that I want to print documents one sheet at a time, rather than on continuous-feed paper, I still have to be present to feed the paper. Envelopes - that bane of computerized word processing - are no easier than they ever were. Programs that do a great deal of processing of information (such as my fancy program listing formatter) run only slightly faster. But long listings dump to the print buffer in seconds, and long word processing files in a fraction of the time they used to require. I know of no alternative buffers that can give this much memory at such little cost.

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Let it be noted that Learning Well loaned us Context Clues for evaluation and review -- other manufacturers please copy!

## Some Forthcoming Events

### Spring Conferences and Workshops

Evening and Saturday classes in Introduction to Microcomputers, BASIC, COBOL, PASCAL, FORTRAN, Data Communications and Systems Design, by the Fairfax County Public Schools. Call 893-1090 for information.

Computer Camps for Children - Camps in the Washington Area

The Summer Computer Camp by Computer Workshop, Rockville. A daytime camp for ages 8-14. Learn programming by designing video games. Further information from Tony Carey, Computer Workshop. (301) 468 0455.

The Clarke School for Deaf Children in Northampton, Massachusetts is holding a summer computer camp for Oral Hearing Students aged 11-15, July 4-16 and July 17-29.

### Summer Courses

Catholic University will offer three courses on microcomputers this summer, each six days long and carrying two graduate credits:

June 27-July 2 - "Financial Planning and Selection of Microcomputers--What's Best for Schools?" will be taught by Neil Murphy of Creative Computing.

July 11-16 - "How the Small Computer Can Maximize Teacher Capabilities" will be taught by Larry R. Mathes of the Acton School.

July 18-23 - "How the Small Computer Can Help in Educational Administration and Record Keeping" will be taught by Eileen Kuhns of Catholic University School of Education.

For further information, please call 635-5256.

# USING THE SYNETIX SOLID STATE DISK WITH THE UCSD P-SYSTEM

by Ed Knepley

The size of the UCSD operating system places a premium on disk space. You often find yourself swapping disks, even with a two drive system. A large solid state disk is just what the doctor (Wo?) ordered for this situation. Further, if you have a way to make this big, fast, quiet drive emulate your p-system boot disk, then you have the best of all worlds. This article describes how to get to p-system heaven.

The steps necessary to emulate the p-system boot disk using the Synetix 294K solid state disk (SSD) are fairly straightforward:

- First - a device driver is required for the SSD. One that works (although efficient assembly code is not my strong suit) is provided at Listing 1. See the Attach-BIOS publication and the Synetix documentation for details. An article by Dr. Wo (December 1981 WAP Newsletter) may provide a little more insight. This driver will work for both Apple Pascal 1.1 and for the Modula-2 system from Volition (more on this later). If you have Version IV.1 of the p-system from Softech, this driver will get you started but will not work as is (see the Softech installation guide for the Apple II for details - the IV.1 version is actually simpler to write, but requires different implementation).

- Second - you must have access to the Attach-BIOS software (available on WAP disk PIG0). The attach software is used to create two files - ATTACH.DATA and ATTACH.DRIVERS - per the attach documentation. I won't describe the process here since it is lengthy and well documented (a manual is on the disk).

- Third - the two attach files from the previous step are placed on your p-system boot disk together with the file SYSTEM.ATTACH from the Attach-BIOS disk. When the system is booted, SYSTEM.ATTACH is recognized by the system during the boot process and executed. (If you have a SYSTEM.STARTUP file on your boot disk also, SYSTEM.ATTACH is executed before SYSTEM.STARTUP.) At the completion of this step, your new device driver is attached to the BIOS.

- Fourth - If all went well (not Modula-2), you can enter F(iler and Z(ero the appropriate volume. (Assuming the SSD is in slot 5, the normal assignment would be #11: for Version 1.1, including Modula-2; and #9: for Version IV.1). At this point, the system recognizes the SSD as a disk drive. If you don't want to use the SSD as the boot disk, your setup operation is complete and you're ready to go. (Note - if you do a V(olumes command before Z(eroing, the system gives no indication that volume #11: exists.)

- Fifth - Everything up to here involves nothing very tricky. However, now we want to have the operating system think that the SSD is the boot drive (i.e. volume #4:). Several things are necessary in order to make this happen:

i) - The necessary system files must be T(ransferred to the SSD from #4:; the operating system reference manual describes what files you will need. BE CERTAIN that SYSTEM.PASCAL is placed in the same location (i.e. same starting block number) when it's moved to the SSD or the system will not work. This may also be true for SYSTEM.LIBRARY and SYSTEM.MISCINFO in Version

1.1, but I'm not sure and am too lazy to check; I just put them in the same place as they came from also and I don't worry about it. In Modula-2, you don't have to worry about the location of any file except SYSTEM.MODULA. The simplest way to handle this is to place the files that you need at the start of your boot disk, and then transfer them in the order that they appear. If you have a duplicate directory on your boot floppy or on the SSD, it must appear on both or your operating system files will be 4 blocks off in their location (with unhappy results).

ii) - This is where the trickery enters. The assignment of physical drives (including the SSD) to logical units must be changed. The operating system has no provision for this sort of nonsense; it's up to us. Version 1.1 physical vs logical drive assignments are as follows:

| PHYSICAL | LOGICAL |
|----------|---------|
| 0        | 4       |
| 1        | 5       |
| 2        | 11 (9)  |
| 3        | 12 (10) |
| 4        | 9 (11)  |
| 5        | 10 (12) |

where the figures in ( ) are version IV.1 assignments. Assuming that the SSD is in slot 5 (i.e. physical unit 2; 0 and 1 are drives 1 & 2 of slot 6 - confusing isn't it??), we will make the operating system associate physical 2 with logical 4; physical 0 (our original boot drive) with logical 11; and 1 with 12 (assuming that we have a second floppy). If there is a 2nd floppy, then assign logical 5 to physical 3 so that there aren't two logical units associated with physical drive 1. The way that this is done is to change the contents of the memory locations that BIOS refers to as DISKNUM. Attach-BIOS documentation contains the info that we need; the program in Listing 2 gets it done. You will need to make changes to the program if your slot/device assignments are different. Specifically, the "PEEK" to find ABYTE is needed to determine the memory location of the driver that we just attached a few steps back. The BIOS expects to find \$FF in this address if the unit is not a disk drive; if the high byte is zero then it assumes that the low byte is the PHYSICAL drive number; otherwise it assumes the two bytes are the address of an attached driver (and this is what we're after). The PEEK is done at the address of the 2nd physical unit and if your SSD isn't there you've got a problem. We finish up by shifting DISKNUM data around per our plan above. Using a program like the Pascal Memory Unit of PIG6 to compare the contents of memory in this area with the description in Attach-BIOS is helpful in understanding what is going on.

iii) - One final but crucial step remains. The identity (in memory) of the boot disk must be changed. It must coincide with the name given to the SSD way back when we entered F(iler and Z(eroed the volume. If this isn't done, the system thinks that the wrong disk is in the boot volume and prompts you to put in the proper disk. At this point you're stuck because putting a floppy into an SSD is a tough thing to do. To avoid this problem, the program in Listing 2 changes the names of the boot and prefix disks before ending.

contd.

I name the SSD, SSD, (never claimed to be original) and so that's what the program does; change it to suit your style. The names of the boot and prefix disks are stored at memory locations -22000 and -22008 respectively in Version 1.1.

And finally - we're done. Do F(iller and V(olumes and admire your handiwork (don't worry that the first time you get a warning that volumes 4 & 11 have the same name; the system adjusts immediately). There you have it, a 576 block boot disk that's both fast and quiet. Absolutely great for segmented programs and large data structures!! Add a co-processor such as the Mill (Accelerator II?) and you have a real machine.

Several notes -

- If SYSTEM.FILER (or EDITOR, ASSMBLER, LINKER, COMPILER) are in one of your floppies the system will find the file on the floppy before the SSD. Adjust accordingly.

- If you want to do this in IV.1, the concept is the same, but the implementation specifics are considerably different. Generally, things are easier due to the SBIOS (vice Attach-BIOS for 1.1) and utilities such as CONFIG. However, it isn't a piece of cake either.

- The process for Modula-2 is the same as 1.1 except for one key addition. The pointer to the DISKNUM area (\$EA) is supposed to contain \$FEB0 in Version 1.1; however, Modula-2 has \$FE6C at this location (and \$FE6C at times, too). Unfortunately, DISKNUM is, in fact, still living at \$FEB0. The impact of this is that when you try to Z(ero the volume (I wish someone would explain why this is necessary and exactly what gets changed where), the operating system says - "#11: - no such volume on line". What to do? Well, the contents of \$EA are \$6C (\$EB has \$FE) and we want \$B0 instead; so we must change it BEFORE executing SYSTEM.ATTACH. Change it by whatever is your normal "POKE" technique in Pascal (or use the program PMU on PIG6). A method would be to eX(ecute PMU and C(hange \$EA to contain \$B0; eX(ecute ATTACH.CODE (you must change the name of SYSTEM.ATTACH or the system will execute it for you); continue as before. OOPS - almost forgot!! There is one more change here. The addresses for the names of the boot and prefix disks have been changed in Modula. Instead of being at -22000 and -22008 respectively as they are in Pascal 1.1, Modula has them at:

```
Boot address = -22962
Prefix addr = -22970
```

Change the two constants in the program of Listing 2 and you're ready to go if you want to make the SSD your Modula boot disk.

- Through the use of the p-system's turnkey option (i.e. SYSTEM.STARTUP) and using EXEC files, the entire process for Versions 1.1 and IV.1 can be done with "no hands". That is, you can have everything that you need on the original boot disk so that all you have to do is boot your Apple and enjoy p-system heaven. Listing 3 is an example of a STARTUP program. Listing 4 is the EXEC file that it calls. The EXEC does the Z(ero and system file T(ransfer, and then it eX(ecutes the program in Listing 2. Since, as was mentioned earlier, the SYSTEM.ATTACH is executed before SYSTEM.STARTUP, it all works (in particular, when the EXEC Z(eros our SSD, the driver has been attached already - or else we'd be lost). A few wrinkles remain in the Modula-2 version of a turnkey operation. Hopefully, someone's got the answer.

- The procedure is dependent on at least three addresses which have been discussed and which are

given as constants in the program in Listing 2 (the address -336 is hex \$FEB0 that gets pointed to by \$EA). You can expect all of these addresses to change from one version of the operating system to another (e.g. the new Apple 1.2), and must change accordingly.

- The Synetix SSD differs from RAM cards that emulate the Apple language card. Specifically, it cannot be used as a language card in slot zero (or any other slot). The reason has to do with how memory is addressed. The language card employs bank switching (as do all RAM cards, regardless of their size, that can be used as a language card); see Dr. Wo's article mentioned earlier for more details. The Synetix card does NOT use bank switching. It is a powerful, flexible device that has great potential for expanding the capability of your Apple beyond disk emulation. The price "per byte" can't be beat. However, if your application calls for a language card then this is not your answer. In case you're interested, the power consumption is minimal. My system has an Apple language card and parallel interface card, Hayes MMII, Videx card, 1 empty slot, SSD, disk II controller, and Mill coprocessor - reading from slot zero to seven. The SSD was the most recent addition (6 months ago), and I was concerned that it might be the proverbial "straw". A \$10 Radio Shack fan sitting on the desk at the rear of the Apple is the sole concession to heat/power and I've never had a problem.

Enjoy. The benefits of WAP membership can be counted in \$\$\$\$. Synetix will charge you \$50 for the above capability (\$50 for each version, that is - albeit more efficient and done better - but then 10 days ago I didn't even know how to spell BIOS). This is NOT a slam at Synetix, who I feel makes an excellent product and who were most attentive when I called them with the Modula problem (they're still working on it). My thanks to Dave Neumann who noticed the problem with the data at \$EA (how did he do that??) in the Modula-2 version that led to the fix. As of this writing, neither Volition nor Synetix have the SSD working with Modula-2; we must be doing something right. The above programs will be put on a PIG disk. How about someone going to work on the driver? The Synetix version is 1/2 the size and 2.5 times faster (for Version 1.1 where it works). Can't someone out there match that? Also, the process to zero the volume and transfer the files could be faster and more elegant than the EXEC approach.

### Listing 3

SSD:STARTUP.TEXT - PAGE 1

4/30/83

```
PROGRAM START;
USES CHAINSTUFF;

BEGIN
 SETCHAIN('EXEC/SSD')
END.
```

### Listing 4

SSD:SSD.TEXT - PAGE 1

5/7/83

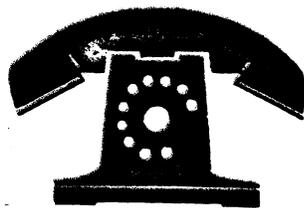
```
ZFZ#11:
N576
SSD:
YT=CAL,SSD:$
T=RARY,SSD:$
T=ILER,SSD:$
T=ITOR,SSD:$
QXSTART
XXXX
```

contd.

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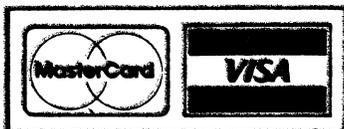
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## Listing 1

SSD:SSDDRV.R.TEXT - PAGE 1

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```

;SSD driver, version 1 - see synetix p 15-18
;see wap 12/81 p 24-30, and attach-bios p 13-15

SSDPTR .EQU 0C0D0 ;slot 5, so addr are $C0D0 - $C0D7
BLOCK1 .EQU 0C0D2 ;addr of bytes in block 1

```

```

;temporary registers, interfere with type ahead

```

```

RETURN .EQU 00
STATPNTR .EQU 02
CTRLWORD .EQU 04
BLKNUM .EQU 06
BYTECNT .EQU 08
BUFFADRS .EQU 0A
UNITNUM .EQU 0C
COUNT .EQU 0E
DUMMY .EQU 10
TEMP .EQU 12
BLKOFFST .EQU 14
TCOUNT .EQU 16

```

```

.PROC SSDDRIVER

```

```

PLA ;save return addr
STA RETURN
PLA
STA RETURN+1

CPX #2 ;call for init?
BEQ INIT
CPX #4 ;call for status?
BEQ STATUS
CPX #0 ;call for read?
BEQ IOSTUFF
CPX #1 ;call for write
BEQ IOSTUFF
LDX #3 ;illegal operation, i-o error

RET LDA RETURN+1 ;restore return addr
PHA
LDA RETURN
PHA
RTS ;back to callins routine

```

```

INIT LDX #00
BEQ RET

```

```

STATUS PLA ;pull control word
STA CTRLWORD
PLA
STA CTRLWORD+1
PLA ;pull status buffer

```

SSD:SSDDRV.R.TEXT - PAGE 2

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```

STATPNTR
PLA
STATPNTR+1
LDA #00
LDY #00
STATLOOP STA @STATPNTR,Y
INY
CPY #08
BNE STATLOOP
LDY #03 ;512 bytes per "sector"
LDA #02
STA @STATPNTR,Y
LDY #04 ;32 "sectors" per "track"
LDA #20
STA @STATPNTR,Y
LDY #06 ;18 "tracks" per "disk"
LDA #12
STA @STATPNTR,Y
LDX #00
BEQ RET

READLOOP JSR TESTCOUNT ;test in case 0 bytes are to be transferred
CPX #00
BEQ RET ;bytecnt bytes transferred?
LDY COUNT ;no, xfr one byte from disk to buffer
LDX TCOUNT
STX SSDPTR ;update ssd addr pointer
LDX BLKOFFST
LDA BLOCK1,X ;read the next byte from the ssd
STA @BUFFADRS,Y
JSR BUMP COUNT ;increment the xfr count
JMP READLOOP

WRITELOOP JSR TESTCOUNT ;test in case 0 bytes are to be transferred
CPX #00
BEQ RET ;bytecnt bytes transferred?
LDY COUNT ;no, xfr one byte from disk to buffer
LDX TCOUNT
STX SSDPTR ;update ssd addr pointer
LDA @BUFFADRS,Y
LDX BLKOFFST
STA BLOCK1,X ;write the next byte to the ssd
JSR BUMP COUNT ;increment the xfr count
JMP WRITELOOP

IOSTUFF PLA
STA BLKNUM
PLA
STA BLKNUM+1
PLA
STA BYTECNT
PLA
STA BYTECNT+1
PLA
STA BUFFADRS
PLA
STA BUFFADRS+1

```

contd.

SSD:SSDDRV.R.TEXT - PAGE 3

5/5/83

```

PLA
STA UNITNUM
PLA
STA UNITNUM+1
PLA
STA CTRLWORD
PLA
STA CTRLWORD+1
JSR TESTBLK ;test for block number in limits (0..575)
JSR GETOFFSET ;which ssd block is this? (1..6)
JSR SETSSDHIADR ;convert block nmb to high order addr
JSR INITCOUNT ;zero the data byte counter
TXA
BNE WRITELOOP
JMP READLOOP

BUMPCOUNT INC COUNT
 INC TCOUNT
 CPX #02 ;ssd block offset (x set in read & write)
 BEQ BUMP16 ;this is a 16K block
 CPX #05
 BEQ BUMP16 ;the second 16K ssd block
 ;this is a 64K ssd block (1,2,4 or 5)
 LDA COUNT
 BNE BUMPRTS ;256 bytes xfrd? (crossed page boundary?)
 INC DUMMY ;yes, so increment pointers to new pages
 LDA DUMMY
 STA SSDPTR+1
 INC BUFFADR+1
 INC COUNT+1
 LDA COUNT+1
 ROR A
 BCS BUMPRTS ;did we cross a disk block boundary?
 JSR TESTCOUNT ;yes, test if done with io
 CPX #00
 BEQ BUMPRTS ;bytecnt bytes xfrd?
 INC BLKNUM ;no, so increment the block counter
 LDA BLKNUM
 BNE UPDATE ;need to incr hi block counter?
 INC BLKNUM+1 ;yes
 JSR TESTBLK ;test if in range 0..575
 JSR GETOFFSET
 JSR SETSSDHIADR
 RTS
 ;this is a 16K ssd block (3 or 6)
 LDA TCOUNT
 BPL BUMPRTS ;128 bytes xfrd?
 INC DUMMY ;yes, so incr ssd hi addr & zero low addr
 LDA DUMMY
 STA SSDPTR+1 ;hi addr
 LDA #00
 STA TCOUNT ;low addr counter
 LDA COUNT ;must check for 256 bytes & incr other
 BNE BUMPRTS ;hi page counters if this is 256
 JMP DATAPAGE

INITCOUNT LDA #00

```

SSD:SSDDRV.R.TEXT - PAGE 4

5/5/83

```

STA COUNT
STA COUNT+1
STA TCOUNT ;counter for incr of ssd low addr pointer
RTS

TESTCOUNT LDA BYTECNT
 CMP COUNT
 BNE LOWCOUNT
 LDA BYTECNT+1
 CMP COUNT+1
 BNE LOWCOUNT
 LDX #00 ;io completion code, bytecnt bytes done
 RTS ;back to caller
 LDX #0FF ;io incomplete

LOWCOUNT TESTRTS

TESTBLK LDA BLKNUM+1 ;is blk nmb in range 0..575?
 CMP #00
 BEQ BLKOK ;yes, it is < 256
 CMP #01
 BEQ BLKOK ;yes, it is < 512
 CMP #02
 BNE BADBLK ;no, it is >= 1024
 LDA BLKNUM ;maybe - check low order byte for < 64 since
 CMP #40 ;512 + 64 = 576
 BCC BLKOK

BADBLK PLA ;pull rts addr from stack and discard
 PLA ;load device error, bad block
 LDX #40
 JMP RET
 RTS

BLKOK

GETOFFSET LDA BLKNUM+1 ;which ssd block? (1..6)
 STA TEMP+1
 LDA BLKNUM
 STA TEMP
 LDY #00
 ROR TEMP+1 ;16 bit divide by 32 (16K = 32 "disk blk")
 ROR TEMP
 INY
 CPY #05
 BNE DVDBY32
 LDY #00
 LDA TEMP
 AND #1F
 CMP #04 ;ssd blk 1 = 1st 128 (4x32) "disk blocks"
 BCC FOUNDIT
 INY
 CMP #08 ;blk 2 = 2nd 128
 BCC FOUNDIT
 INY
 CMP #09 ;blk 3 = next 32
 BCC FOUNDIT
 INY
 CMP #0D ;blk 4 = next 128
 BCC FOUNDIT
 INY

```

contd.

```

 CMP #11 ;blk 5 = next 128
 BCC FOUNDIT
 INY ;blk 6 = last 32
FOUNDIT STY BLKOFFST
 RTS

SETSSDHIADR LDA BLKNUM ;find the ssd startins high order addr
 LDY BLKOFFST
 CPY #00 ;ssd blk 1 = 64K
 BEQ TIMES2
 CPY #01 ;ssd blk 2 = 64K
 BEQ TYPE128
 CPY #02 ;blk 3 = 16K
 BEQ TIMES2
 CPY #03 ;blk 4 = 64K
 BEQ TYPE32
 CPY #05 ;blk 6 = 16K
 BEQ TYPE32
TYPE160 SEC
 SBC #0A0
 JMP TIMES2
TYPE128 SEC
 SBC #80
 JMP TIMES2
TYPE32 SEC
 SBC #20
TIMES2 CLC ;2 times the startins block number
 ROL A
 CPY #02
 BEQ TIMES4
 CPY #05
 BEQ TIMES4
JUST2 STA DUMMY ;addr must be stored in temp memory to
 STA SSDPTR+1 ;incr & write/rewrite ssd "write only"
 RTS
TIMES4 CLC ;16K ssd block is mult by 4
 ROL A
 JMP JUST2

 .END

```

## Listing 2

```

PROGRAM SSDTRIX;
USES CHAINSTUF;
CONST
 PREFIXADDR = -22008;
 BOOTADDR = -22000;
 DISKNUMADDR = -336;
TYPE
 BYTE = 0..255;
 TRIARRAY = PACKED ARRAY[0..0] OF BYTE;
VAR
 TRIX : RECORD CASE BOOLEAN OF
 FALSE : (ADDRESS : INTEGER);
 TRUE : (POINTER : ↑TRIARRAY);
 END;
 I : INTEGER;
 ABYTE : BYTE;

```

```
PROCEDURE POKE(VALUE : BYTE; ADDR : INTEGER);
```

```

 BEGIN (poke)
 WITH TRIX DO
 BEGIN
 ADDRESS := ADDR;
 POINTER↑[0] := VALUE;
 END
 END; (poke)

```

```
FUNCTION PEEK(ADDR : INTEGER) : BYTE;
```

```

 BEGIN (peek)
 WITH TRIX DO
 BEGIN
 ADDRESS := ADDR;
 PEEK := POINTER↑[0];
 END
 END; (peek)

```

```
BEGIN
```

(This program makes the ssd the p-system boot drive. Make the ssd, unit #4; the oris boot drive, unit #11; & the 3rd drive becomes unit #12. Since the ssd driver is written for unit #11, we have to set into the attach-bios disknum vector & shift things around abit.)

```
FOR I := 0 TO 1 DO (read addr of ssd driver & subst for drive #0 (unit 4))
```

```

 BEGIN (see descrip of disknum vector in attach bios for details)
 ABYTE := PEEK(DISKNUMADDR + 20 + I);
 POKE(ABYTE, DISKNUMADDR + 6 + I);
 END;

```

```

POKE(3, DISKNUMADDR + 8); (make unit 5 drive #3 (this is the 4th drive))
POKE(0, DISKNUMADDR + 20); (make unit 11 drive #0 (oris boot drive))
POKE(0, DISKNUMADDR + 21); (ditto)
POKE(1, DISKNUMADDR + 22); (make unit 12 drive #1 (oris unit 5))

```

(As a final step, must change the names stored for the boot and prefix disks to coincide with the name of the ssd, so that when the system looks at at the "new unit 4" it finds the right boot disk. -- Oh what tansled webs we weave when we ...)

```

POKE(3, PREFIXADDR); (1st byte is # of char in disk name)
POKE(3, BOOTADDR);
POKE(83, PREFIXADDR + 1); (S - 1st char of name)
POKE(83, BOOTADDR + 1);
POKE(83, PREFIXADDR + 2); (S)
POKE(83, BOOTADDR + 2);
POKE(68, PREFIXADDR + 3); (D)
POKE(68, BOOTADDR + 3);
END.

```

# APPLE TECH NOTES

by Ed Schenker

DON'T FORGET TO KEEP THOSE CALLS COMING FOR TECH NOTE INQUIRIES...301-977-7349.

For those MODEM enthusiasts out there the Tech Notes offer a bunch of numbers for bulletin board systems. Bear in mind that this information may be outdated. Hopefully, some of these numbers will lead you to hours of useful, profitable and enjoyable communicating.

The following is a list of personal bulletin board systems provided by People's Message System and downloaded from the Source:

|                  |              |
|------------------|--------------|
| Anaheim CA       | 714-772-8868 |
| San Jose CA      | 408-263-0248 |
| Danbury CT       | 203-744-4644 |
| Washington DC    | 202-337-4694 |
| Ft Lauderdale FL | 305-462-8677 |
| Pensacola FL     | 904-477-8783 |
| Atlanta GA       | 404-939-1520 |
| Chicago IL       | 312-384-4762 |
| Lexington MA     | 617-862-0781 |
| Baltimore MD     | 301-655-0393 |
| Baltimore MD     | 301-337-8825 |
| Ellicott City MD | 301-465-3176 |
| Gaithersburg MD  | 301-840-8588 |
| Greenbelt MD     | 301-344-9156 |
| Silver Spring MD | 301-593-7033 |
| Detroit MI       | 313-585-1044 |
| Kansas City MO   | 816-931-9316 |
| Cranford NJ      | 201-272-1874 |
| Shrewsbury NJ    | 201-747-6768 |
| Long Island NY   | 516-698-8619 |
| New York NY      | 212-787-5520 |
| New York NY      | 212-933-9459 |
| Rochester NY     | 716-334-4604 |
| Akron OH         | 216-724-1963 |
| Cincinnati OH    | 513-671-2753 |
| Allentown PA     | 215-398-3937 |
| Columbia SC      | 803-771-0922 |
| Freeport TX      | 713-233-7943 |
| Falls Church VA  | 703-379-0303 |
| Reston VA        | 703-620-4990 |
| Seattle WA       | 206-546-6239 |

By the way, there are a lot more. If there is an area you are particularly interested in please feel free to contact me and if it's here I'll share it with you. I am also interested in any others you may have, so please share those as well. Happy communicating! ☺

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| EPSON MX 80 F/T PRINTER                                             | 459.      |
| PRINTER I/F CARD                                                    | 75.       |
| VERBATIM DATALIFE DISKETTE(SS, DD,<br>PLASTIC LIBRARY BOX INCLUDED) | 24.       |

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5. COD accepted by money order or cashier check (Add 1.50 COD charges)
6. Prices are subject to change w/ notice

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# THE BOTTOM LINE

by Leon H. Raesly



Hello there! This month's article is a potpourri of different subjects. Are you aware of all the changes happening out there in Appleland? To me the field has grown in so many ways. Appleland to me includes Apple Computer (of course), and also three more very large groups. These are the firmware/peripheral manufacturers, the software manufacturers, and us, the vast growing group of users! There must be a jillion people involved with the Apple in many different ways!

While many are waiting for the Macintosh from Apple Computer to be a big breakthrough, I think that the big breakthrough is happening now, as an accumulation of many disparate parts.

The more obvious one to those that have been around a while is the growing ease and flexibility and sophistication of the software. Simply compare the vast performance difference from CCA (one of the first commercial data bases) and The General Manager (an excellent current one), and the power and sophistication that is happening becomes evident!

Two things become clear to me as I examine the growth of software. The first is that I should not try to find the "Mr. Right" in terms of software. If I wait for the "right" one to happen, I will have lost a lot of useful time that I could have used to fulfill some of my needs. Buying a piece of software is not a marriage, although some seem to approach it as if it was.

To protect myself, I have gradually come to adopt the position that the software program must either use standard DOS text files, or else have an included routine that will convert from and to DOS. If this criterion is met, then I can purchase this program today, and WHEN a better one for my needs comes along in six months, I can purchase it, and still use all my old data.

I have also noticed something that seems to be happening for most users in general. As I have used my Apple these last two and a half years for many different things, then I too have grown in sophistication about the whole process! Uses and applications that I would not have been able to conceive of two years ago, are popping in my head all the time! Soooooo I have tried to take the attitude that when I purchase software, it is for my "known" use now, and I can use a different one later, and I don't have to feel "disloyal"! As I stated before, buying a piece of software is not a marriage, it is purchasing a tool, and while the tool is useful, I can use it, and purchase a different tool for other needs as they develop.

The other major area where the "big" change is happening (in many small ways) seems to me to be the peripherals. Printers and disk drives are the two most evident. When I bought my Epson MX-80 two years ago, it cost me \$645, PLUS an interface card (about \$195 more). Now, I can purchase a color dot matrix printer at discount for about \$450 that will directly dump a complete hires screen of anything directly to the printer, and print it in seven colors and thirty tones!

And the same holds true in terms of disk drives, and many other items. Costs are falling rapidly, and performance flexibility is increasing dramatically. There are several manufacturers of the standard 5 1/4

inch drives available at very low price, and some will even record 40 or 80 tracks of data!

This leads me to two more thoughts. The increasing popularity of CP/M, and software protection. I believe that there is some correlation between these two. One of the difficulties of using these new drives and other items stems from the software protection schemes used. Most such protected programs are unable to be used with many of the newer items, because of the protection schemes. I think that in the long run the program companies are doing themselves a great disservice by "locking up" their programs.

I also believe that a large part of the increasing popularity of CP/M is directly related to the fact that CP/M programs are not copy protected. Although it is as easy to copy protect CP/M as standard DOS, it doesn't sell if it is protected! I am confused by the fact the basically the same group of people will not buy a CP/M program if it is protected, but will buy a standard DOS program if it is protected!

Consequently, unprotected CP/M programs can use these new disk drives, printers and many other peripherals. As I have heard said before, CP/M doesn't operate any better than DOS, just differently. But that difference becomes very important when the programming industry unlocks their programs for CP/M.

I think it is very interesting that these programs are sold to the same group of people that have been using standard DOS programs, but somehow the programming industry sees them now as "trustworthy". But for the same group of people using standard DOS, they are seen somehow as "pirates".

## WAP BUSINESS SIG

The PI's Business SIG met as usual after last month's meeting. John New led a discussion on various ways that an Apple can be used to make money (other than printing your own!).

The group discussed the fact that several other SIGs have developed from the Business SIG, the most recent being the Stock SIG. Because of the garage sale coming up, and the summer schedule of many, it was decided that the Business SIG would not meet during the summer, but would resume its meetings in September. In addition, because of the press of other matters, John New announced that he would not be available to be our chairman in the fall, and that we would need to elect a new chairperson in September. I would like to express our SIG's appreciation to you, John, for all the work you have done in the past. You will be missed.

Well, that's it for now. Thanks for listening.

# AN IRATE LETTER

## by David Morganstein

The WAP recently received a copy of an article entitled "Pirating, Counterfeiting & Bootlegging" which appeared in the May 1983 issue of Software Merchandising. (We thank Ken Silverman, Executive Director of the IAC for bringing this to our attention.) The following two paragraphs appeared in the article.

"Clubs formed by purchasers of like brands and models of micros are often no more than 'pirates dens' for which the initiation fee is the contribution of a game or program that no one else has -- but not for long.

An example of an outstanding formally organized user group is the 2,000 member Apple PI club of the Washington, DC metro area which holds regular meetings and issues a monthly 50-plus-page newsletter, all for annual dues of \$18. The club conducts an educational and information program for members and has good relations with software suppliers and retailers, for which it carries advertising in its newsletter. Members are encouraged to share their own developed programs, but on occasion this inevitably includes swapping of copyrighted software."

While the second paragraph begins on a positive note, the purpose of the article and the preceding paragraph may leave the reader with a very poor impression of the WAP. The letter which follows was sent to both the Editor (Jim McCullagh) and the Publisher (Bill Slapin) of the magazine. We encourage our members to contact Software Merchandising to express their feelings about the reference to us.

June 6, 1983

Mr. Jim McCullagh  
Software Merchandising  
15270 Ventura Blvd, Suite 222  
Encino, CA

Dear Mr. McCullagh;

I received a copy of an article entitled "Pirating, Counterfeiting & Bootlegging" included in the May 1983 issue of Software Merchandising. This article contains a description of the Washington Apple PI. The description immediately follows a paragraph suggesting that clubs formed by purchasers of like brands are often no more than "pirate dens..." Since the WAP is the only club referenced in the article and since its mention follows this critical generalization, the reader is left to assume that the WAP is an example of such a club. The description of the WAP concludes with a statement that "Members are encouraged to share their own developed programs, but on occasion this inevitably includes swapping of copyrighted software."

Let me inform you and your readers of the WAP's stated and respected policy of NOT accepting or distributing copyrighted software unless permitted to do so by the author. There are many authors who copyright their work to prevent its use by others for profit-making ventures, yet are pleased to make a contribution to the public. Our public domain library of disks is just that, material put into the public domain for free distribution within the microcomputer user community. When an author contributes material which he/she has copyrighted, we complete a standard, written agreement which maintains the rights to the software in the hands of the author. If you or any of

your readers find material in our library which is copyrighted and which has not been authorized for inclusion, I can assure you that it will be removed immediately.

The Washington Apple PI is recognized by the Internal Revenue Service as a non-profit corporation whose sole purpose is to help educate microcomputer owners. We do not permit or condone the "copying" of commercial products for other than archival purposes at any WAP activity. While some of our 3000 members may engage in such activities, I have no reason to think that "copying" is any more frequent among people belonging to the WAP than in the microcomputer owner community-at-large. It certainly does not occur at any WAP functions. If I found that some employees of Software Merchandising engaged in such activities, I would certainly not conclude that it was with your permission or acceptance.

I request that you include this letter in the next issue of Software Merchandising, since I believe that the article in question has done the WAP a grave, unjustified disservice. Our organization, through its meetings, speakers, software reviews and tutorials has helped and continues to help the personal computer industry. I would very much like to hear from you regarding this matter.

Sincerely,

David Morganstein, President  
Washington Apple PI

6

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# SOFTDISK MAGAZETTE:

## A New User's Review

### by Michael P. Schemer

Softtalk Magazine frequently carries an ad for one of their related enterprises called SoftDisk Magazine, which is supposed to be a magazine on a diskette. It's about as close as you can get.

They must be lost, though, because their address is not in California:

SoftDisk Magazine  
3811 St. Vincent  
Shreveport, LA 71108

I recently broke down and sent them \$10 for their initial fee. (After you've dropped \$1800+ on an Apple and who knows how much more, what's another \$10?). I said initial fee because when you receive the next month's issue you send the old disk back with only \$5. Each month when you receive a new disk you send \$5 to get the next one. The disks arrived in a sturdy reusable cardboard mailer with velcro fasteners. On the front is a plastic pouch with a card in it. On one side is your address; on the other is a postage pre-paid label to send the old disk back.

Although I didn't realize it when I sent in my subscription, SoftDisk has started sending two double-sided non-copy protected disks out for the same \$5 price. That's hard to beat even before you realize you get to keep one! You can also subscribe annually and save \$5 or pay extra and keep the disks.

Side 1 has the menu. (All of the stuff is menu driven but not all the programs bring you back to the menu when they finish.) At almost every menu, you are given the opportunity to [Q]uit, print a [H]ardcopy, go [B]ack a menu, see [M]ore, or leave a [V]erbal response which the editors can read when you return the disk.

Selection "A" was a cover page which had a nice hi-res picture of Nasir Gebelli on it (but he's not much to look at!). "B" tells you about SoftDisk. "C" provides an opportunity for you to respond to a software poll. "D" is a brain teaser from "Games" magazine. "E" contains hi-res photos of Saturn taken by slow scan TV hams. "F" is one of the best pieces of music software I have seen (commercial or otherwise). You can create, edit, and play your own compositions with hi-res graphics of the notes. "G" explains that you now receive a 2nd disk which you may keep, thanks to the advertisers who pay for it. "H" lets you get "On With The Show".

"On With The Show" has its own menu as shown below:

- 1 = NAME & ZIP
- 2 = SOFTGAB
- 3 = HARVEST
- 4 = SUGGESTION BOX
- 5 = POLL RESULTS
- 6 = SOFT REWARD
- 7 = MORE

Selection 1 tells you how to respond with your name and zipcode. Responses from others appear at places on the disk as "20456 Smith". "2" was a gabfest. "3" is a jewel because it leads you into a "harvest" of contributed programs. (I'll come back to that in a minute.) "4" lets you respond directly to the company on whatever you like. "5" contains the results from last month's poll. Would you believe Frogger was near

the bottom? "6" is the one you should pay attention to because I get a free disk if any of you decide to subscribe because of my recommendation. All you have to do is give them my name and zipcode. (I never said this article was unbiased! Just be sure you get my zipcode right: 20601.) "7" leads you to another menu.

On the next menu, you find that the 2nd disk is made by Opus who will sell their disks to you for \$1.60 in quantities of 50, but wait...SoftDisk teases you that a better deal is coming! You also find a request for a comic strip writer, a brain teaser puzzle, some "pearls" of wisdom, and "bug spray". The last is their way of correcting bugs in previously contributed programs.

Now to talk about their "harvest" which the menu tells you is actually on side 2. It contains six categories of programs. First are three game programs including "One Foundation" to which I have become addicted. It is a solitaire game where each card has its value and suite shown in hi-res graphics. Next is a one-liner (like "Brian's Theme") adapted from the IBM (who?) PC. The third category contains five utility programs followed by the graphics category with two offerings. Two educational programs come next and things are wrapped up with three tutorials. All in all, 16 programs just on one side! None of them are real losers and the solitaire game alone is better than some they want \$25 - \$30 for.

Side 1 of the 2nd disk contains advertising and "Soft Pals". The ads are relatively informal but had some nifty programming tricks in them that gave me ideas for new subroutines. The Soft Pals section is where you get to ask for help, trade information, provide solutions to program bugs, or any of the sorts of things you usually see on a Bulletin Board System.

Side 1 of the 2nd disk is copy protected. It is totally reserved for a demo of Penguin Software's new hi-res adventure game called "The Quest". The demo starts the program and provides the input that a typical user might. In this sense, you don't have any control over the program... you just get to see how it responds and the general idea of the game. As many of you know, Penguin has recently reduced the price of all their games to \$19.95 but if you like this demo, you can order it through SoftDisk for only \$16.00. I'll reserve my comments on the game, but I do think it's a new twist on the "try before you buy" concept.

Granted, I've only received my first issue, but if the next ones are anything like this one, I'm hooked. They do have back issues and I think I'll try them, too. If you like to try new things with your Apple too are cheap (like me) my recommendation is --- "try it...you might like it". (Just remember to give them my name and zipcode when you try it!).



# THE SHIFT KEY MODIFICATION

## by Richard Langston II

How many of you Apple Writer II users like myself wonder what is needed to make the SHIFT KEY MODIFICATION the manual talks about? I wondered about this until I looked at my friend's "Superscribe II" manual. It explains this modification in detail, but I have made some changes you might be interested in.

**WHY?** The SHIFT KEY MOD allows the input of capital letters using the shift key, instead of the ESC-(key-stroke) method normally used. This modification will not affect the normal use of the keyboard in BASIC.

**WHO?** This modification should be of interest to anyone who owns a word processor that can take advantage of this feature, and is tired (as I was) of using the ESC key to get UPPER CASE.

This modification is supported by Apple Writer II, Superscribe II, Supertext 40/56/70, ScreenWriter II, and probably most other WP's (IT WILL NOT WORK WITH Apple Writer 1.0/1.1).

**HOW?** WARNING: THIS MODIFICATION WILL VOID YOUR WARRANTY, if you still have one!

1. First, turn off the computer, remove all the peripheral cards and game paddles.
2. Next, turn the computer over and remove 10 screws along the edge of your Apple.
3. Now, turn the APPLE over and lift the front end of the case a few inches. CAREFULLY remove the 16-pin connector and cable that comes from the keyboard to the motherboard. BE CAREFUL NOT TO BEND ANY OF THE PINS!
4. Remove the top of the computer and turn it upside down. If you have a newer Apple II or Apple II Plus, there is a piggyback board on the keyboard. The board has a 50-pin connector on it. The second pin from the far right (from the front) is the shift-key pin. It is directly under the asterisk (\*) key.
5. Now, either (A) clip a 13" number 22 wire to this pin, or (B) loop and solder the wire to the pin (as we did).
6. You can now either reassemble the case and insert the wire into GAME I/O socket pin-4 (see illustration), or solder the wire to the bottom of the motherboard.

### GAME I/O SOCKET

```

= * * =
= * * =
= * * =
= * * =
= * * <==== pin four
= * * =
= * * =
= * * =

```

To insert the wire in pin-4, just bare about .25" and push it into the hole. Then, bend back pin four on your paddles or joystick. Since pin four is button 2, most people should not have a problem

with this.

To solder the wire to the motherboard, first remove the motherboard from the body by squeezing the plastic pegs and lifting the motherboard out (IT IS BEST THAT SOMEONE WHO HAS DONE THIS BEFORE BE PRESENT, since if you break it....). Second, locate pin-4 of the GAME I/O SOCKET and solder the wire to it. It is best to put a snap-connector in the wire, so the modification can be deactivated if button 2 is needed for some other function or if you plan to take your APPLE apart again.

7. Now, reassemble to APPLE and test it with your word processor.

### APPLE WRITER AND THE SHIFT KEY MOD

Apple Writer II will use the shift key modification after the [Q17 ([Q] means CTRL-Q) command has been issued. An "S" should replace to "E" in the upper left-hand corner of the data line. This can be changed permanently by altering the system [Print/Program values. Just set [Q17 and then type [Q14 and enter SYS,D1 in response to the "Enter File Name prompt". This procedure saves all the Print/Program values in memory at the time, so be sure that these values are set normally.

### OTHER WP'S

Supertext and Superscribe II both need no changes to use the shift key (I couldn't even find mention of it in the Supertext manual!), so check your WP's manual to see if it is compatible with it.

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# THE SCREENWRITER HOTLINE

by Peter Combes

We have seen a beta test copy of the new ScreenWriter, prepared for the Apple //e. If you run it on an Apple II or II Plus you will not notice the difference from the previous version, except that there are a few more options in CUSTOMIZE. However, run it on a //e (it detects which machine it is running on) and it looks quite different. Gone is the distinction between "RAM CARD" and "NON RAM CARD" versions since all //e's effectively have a language card built in. It utilizes the 80 column card of the //e if it is fitted, though otherwise does not offer 80 columns at all (70 column display is still available on the II and II Plus). The vertical and horizontal cursor keys of the //e work beautifully with the new version, and the auto-repeat feature of the //e is very helpful. There have been a few changes in the control characters. "I" still takes you from Command to Insert, but the reverse is now accomplished with <CTRL> S, which is not quite as easy to remember. It is not clear why <CTRL> K, to delete a line, has become <CTRL> T, but it works just as well. Instead of deleting, the DELETE key produces an inexplicable symbol. Perhaps this will be explained in the new manual..... Otherwise, it is the same ScreenWriter with all those clever features like footnotes, indexes, and very large files.

CUSTOMIZE now includes macros and character sets, replacing the clumsy techniques of the past. The disk is now two-sided, and thus finds space for a version of Screenwriter for users of Integer-Basic-only machines (are there any left?)

Meanwhile, how do you use the current ScreenWriter II on an Apple //e? Lofty Becker suggests the following:

LOAD APP2

```
7031 POKE 16481,208:
 POKE 16482,4
```

```
8031 POKE 5211,208:
 POKE 5212,4
```

```
9031 POKE 17383, 234:
 POKE 17384, 234:
 POKE 17385, 234
```

SAVE APP2

RUN CUSTOMIZEA

Don't tell it you have a shift key modification!

If you have not yet made the shift key modification to your Apple, I would recommend Richard Langston's article in this issue. With my two year old Apple it was possible to clip the wire to the multi-pin connector without removing any screws, and without disconnecting the keyboard from the motherboard. The ScreenWriter manual has a useful suggestion that you should use a Radio Shack Micro Test Clip (#270-370). Once you have soldered the wire to this, you can make or remove the shift key modification in seconds. However, when you have made the modification, you must run the CUSTOMIZE option so that ScreenWriter is aware of what you have done.

If, like me, you do a lot of jumping to and fro between EDITOR and RUNOFF, you will find the installation of a 16k memory card very useful. Option 4 or 5 on the main menu will then load both EDITOR and RUNOFF

into memory, and switching from one to the other is almost instantaneous. (The //e version does this as standard.) The disadvantage has been the long time it has taken to do this loading in the first place -- about 45 seconds. WAP member Bob Leedom has adapted Bob Sander-Cederlof's fast DOS LOAD/BLOAD patches to make EDITOR and RUNOFF load together in under 14 seconds. His recipe follows:

1. From BASIC, LOAD APP2

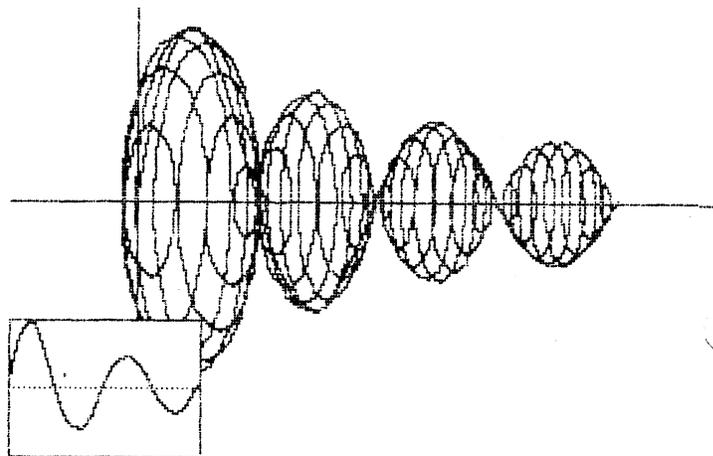
2. Type in lines 51-59 below, very carefully! (Personally, I am an expert typo-producer, so I typed 51-59 before loading APP2, ran it and corrected it until the error message in line 59 did not appear, captured it as a text file, loaded APP2, and EXEC'd the additional program into it. More effort, but much more foolproof! - PJC)

3. SAVE APP2

4. RUN CUSTOMIZEA

```
51 READ N: IF N = 0 THEN 59: REM Make this "THEN 60"
 when line 59 is deleted.
52 READ A:SUM = SUM + A + N
53 FOR I = 1 TO N: READ P: POKE A,P:A = A + 1:SUM =
 SUM + P: NEXT
54 GOTO 51
55 DATA 44, 47721, 173, 230, 181, 208, 36, 173,
 194, 181, 240, 31, 173, 203, 181, 72, 173, 204,
 181, 72, 173, 195, 181, 141, 203, 181, 173, 196,
 181, 141,204, 181, 32, 182, 176, 176, 3, 76, 223,
 188, 76, 111, 179, 76, 150, 172
56 DATA 33, 48351, 238, 228, 181, 208, 3, 238, 229,
 181, 238, 196, 181, 238, 204, 181, 206, 194, 181,
 208, 11, 104, 141, 204, 181, 104, 141, 203, 181,
 76, 150, 172, 76, 135, 186
57 DATA 2, 44198, 105, 186
58 DATA 0
59 IF SUM < > 153114 THEN PRINT "OOPS! DATA IS OFF
 BY ";153114 - SUM: STOP : REM Delete this line
 when you're SURE it works!)
```

When you have done all that -- and you only need to do it once -- you now have a fast-booting ScreenWriter. Our thanks to the S-C Software Corporation, Box 280300, Dallas, TX 75228, for giving us permission to include routines from "Apple Assembly Line" of April 1983.



# LIFE ON THE HOTLINE

by Leon H. Raesly

Wow! Has our Hotline expanded. And I notice that last month David Morganstein issued a call for additional volunteers for certain programs! To me, this is one of the most valuable features of our club. Whenever I buy a new program, the odds are that someone else has already "fought it out" with the program, and I can get help if I need it.

If you are thinking of volunteering, but are not sure what happens, let me share my experience with you. It may give you some insight into what it may be like for you.

First, and foremost for me, it has been a very positive experience! I get to talk with a lot of fine people that I would never get to otherwise. I average about 1 or 2 calls a week per program for which I am listed. I use an answering machine, and return all calls as soon as I can. Most of the calls are daytime, usually from someone's office. But I return them in the evening. I have noticed that when I fail to turn on the machine, I receive the calls in the evening. So I guess that when people get no answer in the day, they then call that night.

Sometimes I receive a call for a problem that I have not encountered before, but often simply stating the problem makes the answer seem clear to either the person asking or myself. I usually ask the individual to give me feedback after they try the answer that they and I have thought of, and they usually do. Thus, my own knowledge keeps growing as well!

There is one aspect of the Hotline that I had not thought of before, and that is long distance calls. I have received calls from New Hampshire, Michigan, St. Louis, and even from Washington state! It seems that a number of people have joined the PI because of the very positive reputation of our Hotline, and also the manner in which we operate it.

Apparently Call A.P.P.L.E. in Washington state has a central telephone number which is manned by a staff during certain hours. When you call, you wait on hold until someone is available. The man from Washington state (or near there) said that there are two advantages to belonging to Washington Apple PI in reference to the Hotline. The first is that out there he is also calling long distance, and sometimes has to wait quite a while. Thus, it is cheaper for him to call to the East coast, where he either reaches someone, or there is no telephone charge!

His one disadvantage is that he often has to call in the middle of the day because of time zone differences. He has from 3:00 PM until 7:00 PM his time to call. After seven there is after 10: PM here! But he reported missing dinner was worth it to get to talk with our Hotline people!

The other positive difference that he reported for our Hotline was the way our club officers structured it when it was set up. When he does reach someone out there, he will usually be referred to a "generalist" who knows about data bases in general, for example, but may not have used the particular program he was interested in, so often he gets "clues" to answers, rather than answers!

There has been one negative aspect of being on the Hotline for me. As I have expressed before, I have

very strong feelings about "borrowed" copies of programs, and also, on the other hand, about being able to make back-ups. I have in the past been on the Hotline for Locksmith, but have taken my name off. More than 80% of all the calls I received about Locksmith were from people that have "borrowed" copies of Locksmith. Apparently a group called "The Pirates Den" will provide a copy of many programs for only a couple of bucks if you provide the disk. Apparently Locksmith is the most popular "seller" for this group. But no documentation comes with the program.

So when the user tried to run it, he didn't have the necessary parameters to copy a certain program, and he called me! As gently as possible I would suggest that he go to the persons from whom he got the program, and ask them. But I had this sense of a growing number of people who thought I was some kind of "holier than thou" guy that wouldn't help them. One person even asked me if Locksmith would sell him a copy of the parameters! I said yes, I was sure they would. The price would be \$95, and Locksmith would throw in a free copy of their program! (I don't think he appreciated the humor of that!).

Well, I come to the end of my sharing. I have enjoyed being on the Hotline; it has been a lot of fun. I would encourage you to try it for your favorite program. Contact David Morganstein if you are interested. I am sure that he would like to hear from you. Come and join the fun, and meet some nice people of our group, the PI!

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# VISI COLUMN: CHOOSING A SPREADSHEET

by Walton Francis

We Apple users are so used to the association between Apple and VisiCalc that we sometimes forget that there are other spreadsheets out there, many of which run on our machines and most of which are better than VisiCalc in one or more ways.

As one of the earliest owners of VisiCalc (from the time when it was the only spreadsheet program in the world and available only on the Apple), I was until recently reluctant to switch, in spite of its weaknesses. However, I now use both Advanced VisiCalc and Multiplan and find them both so superior that I wonder how I could have waited so long.

I assume that you are familiar with the basic, classic spreadsheet functions which VisiCalc performs so well. On a scale of 0 to 100 it would still, in my estimation, rate an 85. But remember the frustrations. VisiCalc does not:

- In the Apple II plus version allow for more than 40 columns unless you get an expensive hardware fix (a digression--you may find, as I recently did, that it is almost as cheap to sell your old Apple and get a nice, new //e as it is to upgrade your old Apple);
- allow for variable column width (a great convenience in entering long labels and a necessity for some presentation formats);
- provide fancy formatting capabilities, such as lining up all numbers by the decimal point, even if some of them are integers and others have several decimal places;
- allow you to sort tables (except the manual way, by laboriously using the "move" command on each row) into ascending or descending order;
- contain fancy graphics routines to allow you to output your table directly into a graph or bar chart; or
- allow you to link multiple worksheets and hence avoid awkward overlay techniques and expensive memory boards in order to use very large models.

Most of the dozens of competing spreadsheets have at least one or two of these features, and a few have almost all of these features. Here are my impressions, and mini evaluations, of some of the alternatives:

- Advanced VisiCalc is the single best spreadsheet for fancy formatting and related features such as variable column widths. For relatively routine applications in an office environment, it cannot be beat. Unfortunately, it is only available on the Apple /// at this time (partly because it is a memory hog with its extensive "help" screens).
- SuperCalc and a large number of other CP/M spreadsheets have at least a few features missing from VisiCalc, such as variable column width. If you've got a CP/M card, or can't stand Multiplan, take a look. However, none that I have seen are quite as easy as VisiCalc, or have as good a manual, so don't go in this direction unless a particular feature vital to you is missing from VisiCalc.
- Multiplan is the Mercedes Benz of spreadsheets.

Except for fancy graphics, it has every feature mentioned above and others as well, and compares to regular VisiCalc and SuperCalc roughly as WordStar compares to Apple Writer. It is available in Apple DOS and has a fine manual. It is a bit harder to learn than VisiCalc (mainly because it has so many extra features) and has quite a different "feel". For example, all coordinates are in numbers. Some spreadsheet pros have told me they don't like to use it, but after only a few hours I find it fully as comfortable as VisiCalc.

- Lotus 1-2-3 is not and probably never will be available on the Apple. I list it here only to whet your appetite for 16 bit machines. Lotus is overall as strong a program as Multiplan and excels in sorting (it really is a rather nice data base management system for simple, number oriented applications) and graphics. Unlike MBA, another third generation spreadsheet which is as slow as molasses, Lotus is incredibly fast.

- The Incredible Jack is a mystery. I've been seeing the ads for months, but not one review nor any local store carrying the product. It claims a combination of word processing and spreadsheet capabilities, but who knows how it performs?

- MagiCalc is a recent addition to the short list of Apple specific spreadsheets. It sells for about half the price of VisiCalc, claims complete command compatibility, and has several useful features missing in VisiCalc, such as variable column width. Here too, I haven't seen a review or had a chance to try it, but I am reasonably sure that it is a best buy. The trouble is that the only local store that I have found which carries it is Frederick, so you can't as easily "try before you buy" as you can with most of the others.

VisiCalc is a perfectly acceptable spreadsheet for most applications and most users. But it is neither the cheapest nor anywhere near the most powerful. Consider your own needs carefully before you buy it without considering the alternatives--especially MagiCalc for the beginning user and Multiplan for the advanced user.

Reference: "Super Spreadsheets!" in Popular Computing, June 1983. Ⓔ

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# GRAFTRAX+ PRINTER DRIVER FOR SCREENWRITER II

by Loftus E. Becker Jr.

In the course of using ScreenWriter II with an Epson MX-80 equipped with Grafrax+, I have found that the control codes for special features on the Epson are quite inconvenient. Not only do many of them require quite a few keystrokes to enter into the file (although this can be handled by macros), but also since many of the commands involve "printing" characters, inserting them in the file messes up the justification feature on printout.

Accordingly I wrote a printer driver to allow me to access the special features I wanted with single-character, nonprinting control codes. This lets me toggle underlining, superscript, etc. with the simple use of a single control character embedded in the text. And since the character is a control charac-

ter, ScreenWriter ignores it when justifying (or centering, for that matter) so that text looks as it should on the printout.

The driver program, which is attached as a assembly listing, can easily be altered by anyone who wants to change the command characters or access different functions. Perhaps this would be a useful program for anyone using ScreenWriter with an Epson, and for that matter the general structure may be useful for anyone using ScreenWriter with any printer with complicated codes. If there is sufficient interest, I will write an article that would explain the program in more detail and how to personalize it to the user's preference.

```

:ASM
1 *****
2 *
3 * Graftrax + printer driver for *
4 * Screenwriter II. *
5 * *
6 * Adaptable to multiple commands *
7 * by additions to TABLE, ONLIST, *
8 * OFFLST, and length of FLAGS *
9 * storage space. *
10 * *
11 * Version 2.0 5/14/83 *
12 * By Loftus Becker *
13 * 3110 N St., N.W. *
14 * Washington, D.C. 20007 *
15 * (202) 338-5217 evenings *
16 *****
17 *
18 STATUS EQU %C1C3 ;Epson interface, slot 1
19 CHREG EQU %C090 ;Ditto
20 WHERE EQU %F9 ;Must be zero-page
21 *
22 ORG $300
23 *
24 *****
25 *Compare with command characters
26 *****
0300: A0 00 27 LDY #$00 ;Initialize Y-register
0302: D9 56 03 28 LOOK CMP TABLE,Y ;Compare with command table
0305: F0 07 29 BEQ COMMND ;If a match, go process it
0307: C0 03 30 CPY #ONLIST-TABLE ;Have we checked everything?
0309: F0 42 31 BEQ PRINT ;If so, go print character in A-reg
030B: C8 32 INY ;If not, increment counter in Y-
030C: D0 F4 33 BNE LOOK ;register and check next entry.
34 *****
35 *See if we turn feature on or off
36 *****
030E: B9 6E 03 37 COMMND LDA FLAGS,Y ;Flag for this feature
0311: 49 01 38 EOR #$01 ;If off, on; if on, off
0313: 99 6E 03 39 STA FLAGS,Y ;Store it
0316: F0 1D 40 BEQ FLAGDN ;If it's now zero, it was one
0318: A9 59 41 LDA #<ONLIST
031A: 85 F9 42 STA WHERE ;Put address of ONLIST in WHERE
031C: A9 03 43 LDA #>ONLIST ;so that we'll use the right
031E: 85 FA 44 STA WHERE+1 ;list of commands
45 *****
46 *Find location of command in list
47 *****
0320: C0 00 48 FINDIT CPY #$0 ;If y=0 then first command
0322: F0 1C 49 BEQ OUTCOM ;so no search needed
0324: 98 50 TYA
0325: AA 51 TAX ;If not, put command # in x-reg
0326: A0 00 52 LDY #$0 ;and zero Y-register
0328: B1 F9 53 TESTIT LDA (WHERE),Y ;Count through the list
032A: C8 54 INY ;until we find where command Y is
032B: C9 FF 55 CMP #$FF ;located
032D: D0 F9 56 BNE TESTIT ;If not $FF then more coming
032F: CA 57 DEX ;Start of new command so DEX
0330: D0 F6 58 BNE TESTIT ;and branch if still >0

```

contd.

```

0332: 4C 40 03 59 JMP OUTCOM ;Done: output commands
60 *=====
61 *Routine if flag was on
62 *=====
0335: A9 64 63 FLAGON LDA #<OFFLST ;Load address of OFFLST into
0337: 85 F9 64 STA WHERE ;WHERE so that the commands
0339: A9 03 65 LDA #>OFFLST ;to turn off the function will
033B: 85 FA 66 STA WHERE+1 ;be sent to the printer.
033D: 4C 20 03 67 JMP FINDIT
68 *=====
69 *This section outputs the commands
70 *=====
0340: B1 F9 71 OUTCOM LDA (WHERE),Y ;Get character to output
0342: C9 FF 72 CMP #FF ;If %FF, all done
0344: F0 0F 73 BEQ EXIT
0346: 20 4D 03 74 JSR PRINT ;Not %FF, go print it
0349: CB 75 INY
034A: 4C 40 03 76 JMP OUTCOM ;Go do next character
77 *=====
78 *Send the output to the printer
79 *=====
034D: 2C C3 C1 80 PRINT BIT STATUS ;Check status register
0350: 30 FB 81 BMI PRINT ;If negative, not ready
0352: 8D 90 C0 82 STA CHREG ;Output the character
0355: 60 83 EXIT RTS ;And go home
84
85
86 *Table of command characters, one byte for each
87
88
0356: 95 82 93 89 TABLE ASC "" ;^U,^B,^S
90
91 *Table of commands to turn functions on
92
93
0359: 1B 2D 01 94 ONLIST HEX 1B,2D,01,FF ;Underline
035C: FF 94 HEX 1B,47,FF ;Double-strike
035D: 1B 47 FF 95
0360: 1B 53 00 96 HEX 1B,53,00,FF ;Superscript
0363: FF 96
97
98 *Table of commands to turn functions off
99
0364: 1B 2D 00 100 OFFLST HEX 1B,2D,00,FF ;Underline
0367: FF 101 HEX 1B,48,FF ;Double-strike
0368: 1B 48 FF 101 HEX 1B,48,FF ;Superscript
036B: 1B 48 FF 102 HEX 00,00,00 ;Initialize to zero
036E: 00 00 00 103 FLAGS

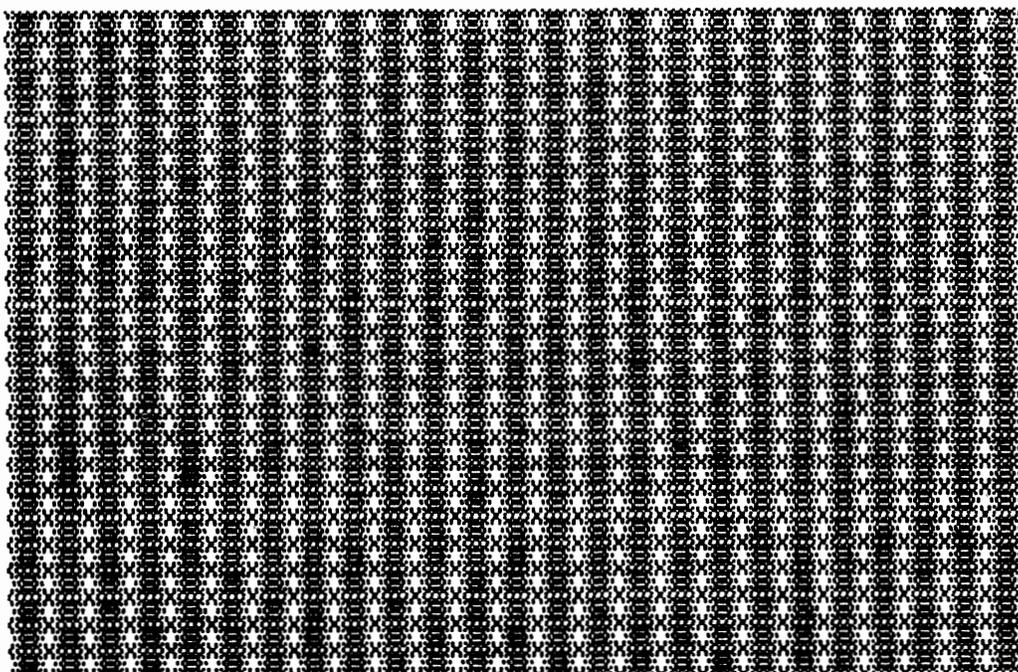
```

--END ASSEMBLY--

ERRORS: 0

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NEW APPLE OWNERS COURSE. \$150. 4 1/2 Hours. Saturdays, 9:00am-1:30pm.  
6/21 & 22. Sessions are 6:30-8:30pm.

Learn the basic operating procedures of the world's most popular small computer! Course also includes TEN BLANK DISKETTES, onto which students may copy software from our library of over 700 programs.

APPLE LOGO FOR TEACHERS. \$75. 10 Hours. 6/30, 7/7, 14, 21, 28.  
6:30-8:30pm. University of Maryland credit available!

Workshop for teachers with no experience with this programming language for children. Beginning concepts, and practical methods for teaching LOGO in the classroom.

BASIC PROGRAMMING. \$65. 3 Beginner Sessions, 6/27, 7/11, 18.  
\$65 for 3 Intermediate Sessions, 7/25, 8/1, 8.  
All sessions 6:30-8:30pm.

No previous computer experience needed. Individual attention, practical exercises, and homework assignments provided.

NEW CP/M OWNERS COURSE. \$100. 2 1/2 Hours. 6/6; 6/13. 6:30-9:00pm.  
Hands-on instruction in this operating system for owners of Dec, Kaypro, Morrow, Apples with CP/M and other CP/M-based systems.

APPLE WRITER IIe. \$60. 2 1/2 Hours. 7/13. 6:30-9:00pm.

An introduction to the uses of this word processing system. Learn how to create/revise letters and documents quickly and easily.

VISICALC (for Beginners). \$50. 2 Hours. 6/29. 6:30-8:30pm.

Discover how you can use the most popular business program to analyze your personal/business/department's financial status.

VISICALC (for Intermediate). \$50. 2 Hours. 7/6. 6:30-8:30pm.

Discover the advanced commands and special templates which can greatly improve your models and forecasting ability.

COMPUTER CAMP FOR KIDS. \$150. 15 Hours. Ages 9-12.

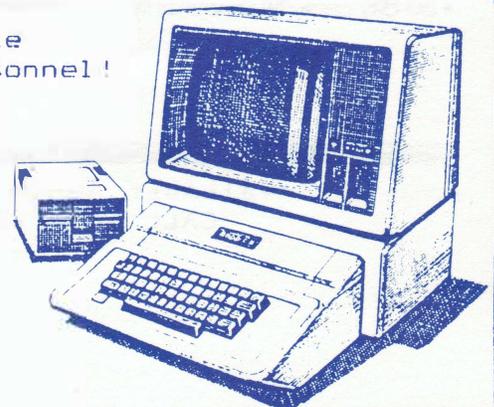
7/18, 19, 20, 21, & 22. 1:30-4:30pm. Includes: Lab time with teacher 12:30-1:30pm and 4:30-5:30pm daily.

In August, Camps for ages 9-12 and 12-15.

Introduce your child to the world of small computers! Course includes hands-on instruction in programming and popular applications.

## Clinton Computer Learning Center

The Learning Center also provides on-site training to government and business personnel! Call for details.



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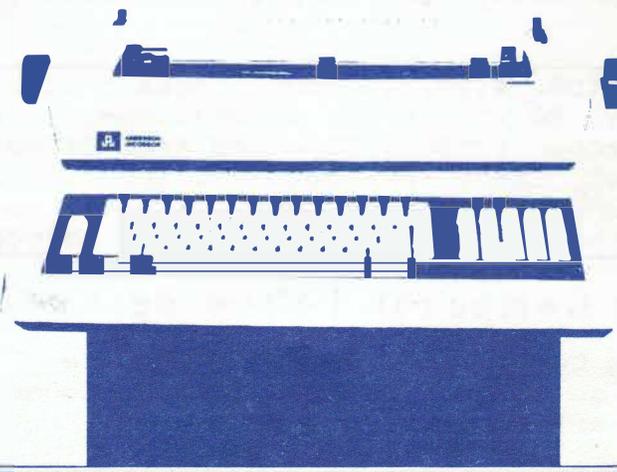
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\*Price excludes options and is subject to change without notice. Model shown includes certain options. Offer available only in the contiguous U.S.



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