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Washington Apple Pi

The Journal of Washington Apple Pi, Ltd.

Volume 6 June 1984 Number 6

Highlights

LOGO VIRUS PART II
MACINTOSH AND HIS SISTERS
APPLEWORKS: A Review
RULES FOR AN EXPERT SYSTEM

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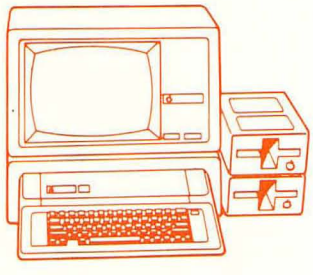

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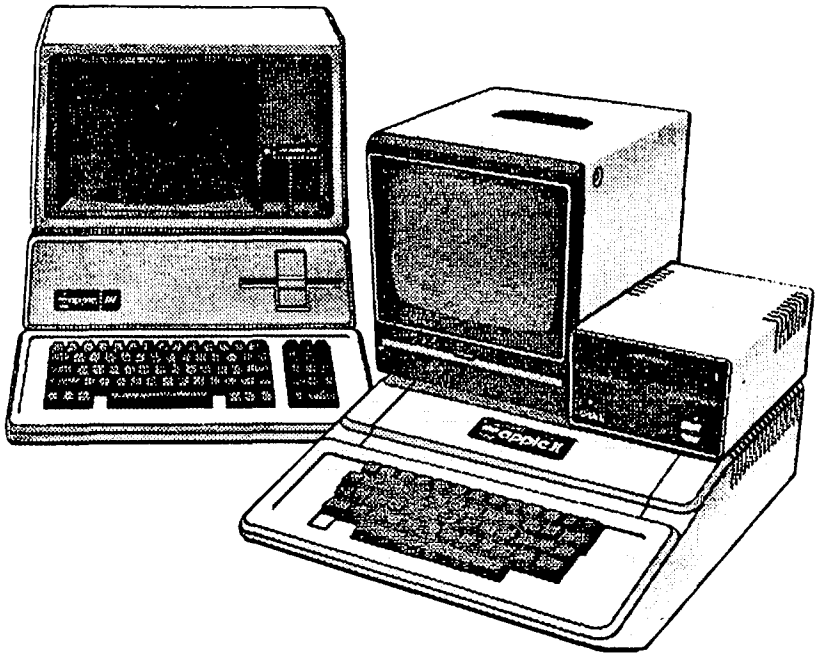

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MICROSOFT BASIC PROGRAMMING I. 6 hrs. $65. May 17, 24, 31. 6pm-8pm. Hands-on instruction in basic programming for CP/M-based computer users. Classroom exercises and optional homework assignments.

MICROSOFT BASIC PROGRAMMING II. 6 hrs. $65. June 7, 14, 21. 6pm-8pm. Learn additional programming techniques in CP/M Microsoft Basic. Classroom exercises and homework assignments. Prerequisite: Microsoft Basic Programming I or equivalent.

COMPUTER CAMP FOR KIDS. 10 hrs. $110. June 2, 9, 16, 23, 30. 2-4pm. Optional Lab with instructor, 4-5pm. Introduce your child to the world of small computers! Hands-on programming and instruction in practical applications.

INTRODUCTION TO SPREADSHEETS. 2 hrs. $40. April 26 or June 28. 6-8pm. Create useful financial models for your business using two popular spreadsheet programs: VisiCalc and Multiplan.

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The Learning Center also provides custom-designed instruction on-site or in our classroom. Course discounts available with system purchases. For details and inquires, contact us at either one of our two locations: Clinton, Maryland; 301/856-2500 or Alexandria, Virginia; 703/838-9718.

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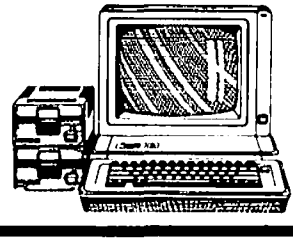

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EDITORIAL

Amidst the confusion and uncertainty of the current meteorological season (is this spring, winter or summer?) and amidst the sneezing, coughing and tearing brought on by a most bountiful splendiferous supply of histamines from the oaks and grasses, another issue has been put to bed. "And what do we have?", you may ask. Why, we have a plentiful supply of something for everyone.

Bruce Field fields your questions in his Q & A column, often before you formulate them. Ron Murray furthers his spread of the Logo Virus (but to a good end, he assures one and all), and Jay Thal covers ways to enable the disabled. Bob Platt with ruffles, flourishes and considerable fanfare announces the first Mac disk in his Page from the Stack, and hits his stride with a thumbnail sketch of the new //c. Walt Mossberg gives us an excellent introduction to AppleWorks (we'll hear more on this from others later...). John Love loves the way Charlie Brown does macros, and Joan B. Dunham brings screwdriver and deductive logic to fix your ailing printer. Walt Francis comes running with the WD-40. Gary Mugford is against IF junkies and Ray Hobbs delves into the architectural innards of several chips. Fred Naef continues to outguess the Senators, and Dana Schwartz does do windows.

PRESIDENT'S CORNER

by David Morganstein

THE SPECIAL MEETING. While the crowd at the special meeting was not as large as a regular meeting, the input was invaluable. Tom Warrick, acting as secretary, took almost ten pages of notes from the attendees. Let me mention a few things we learned and have reacted to already. We could not understand why attendance at the Tuesday night tutorials has fallen off. We discovered that printing the course outline in the journal every five months does not inform most new members. To deal with this, the new member packet now has a seven page update put together by Gena and Bernie Urban and Bob Platt. The update includes an outline of the Tuesday night tutorials so every new member will be informed of the introduction to the Apple series of four evenings.

We did not know why attendance at the Thursday evening help sessions was so small. We discovered that the name, NEWSIG, was misleading even to the leaders of the sessions. Too much time was spent in describing club services and not enough in actually helping. These sessions, held EVERY Thursday night at the office by enthusiastic, knowledgeable volunteers, will be renamed "NEW OWNERS MEETINGS". Their purpose: to provide answers to new Apple owners' questions. We may have the session leaders pick specific, attendee selected topics for a few of the sessions and publicize these in the journal.

CALENDAR. Our Editor has spent considerable effort to pull together club events into a single calendar format describing activities scheduled during the subsequent two months. It was our feeling that this will simplify finding out what is going on when. Are we correct? As soon as this feature appears in the Journal, please give us some feedback so that we can determine whether to include it monthly.

VOLUNTEER CO-ORDINATOR. Sue Roth has offered to act as a volunteer co-ordinator. If you want to help but don't know what help is needed, give her a call. Her phone number is listed in the masthead.

APPLE TECH NOTES. Due to a busy schedule, Ed Schenker is unable to continue an Apple Tech Notes column on the Technical Updates we occasionally receive from Apple. We all appreciated Ed's efforts and extend a thanks to him and the several volunteers who stepped forward to carry on with this service. Richard Langston will be putting selected tech notes into an article format so we can all benefit from them.

FACILITIES COORDINATOR. Jim Taylor has been doing a marvelous job as facilities co-ordinator at USUHS. His help has been sorely needed. If you need resources for a meeting, contact Jim.

SIG CHAIRMEN. The previous message is particularly important to SIG Chairmen. If you need a meeting space, please contact Jim two months in advance to insure you will have a room. This is particularly important since we are paying a guard to be available so that we can have space in a second building. If this space is not needed, we must tell the protection service six weeks in advance.

ARTICLES. Two messages: (1) keep those marvelous contributions to the Journal coming. (2) Get them in by the second weekend of the month if you want to see them in that month's journal. We want and need every article you have: reviews of products, programs you wrote, experiences you had, advice (both do's and don'ts), programming tips, tutorials. The printer is pressuring us to get the copy in earlier than we have been due to increasing numbers of issues and the two color cover process. Please help move up the schedule just a bit so that Bernie and Gena are not under such last minute pressure.

AFFILIATE CLUBS. The Frederick, Md. and Bethlehem, Pa. users groups have raised the question of an affiliate relation with us. If a relation which is of mutual benefit can be worked out, we will establish such an arrangement with any local users group. So far, there is no consensus of the Board as to how to handle this. Discussion has included: sharing the annual dues by bulk shipping the Journal to a single location (thus saving WAP the mailing expenses which can be passed back to the local group). This appears to be about $3 to $5 dollars per member. Other possibilities include bulk shipping quantity orders of disks, library or blanks, to a single location, thus saving the local user the cost of shipping. We will continue to discuss this subject. In the meantime, if you belong to a local group that would be interested in such an arrangement, please let us know. Would your local group members be willing to pick up the WAP journal and library disks at your local meeting place?

TUTORIALS FOR YOUNGER MEMBERS. On several occasions during the past year, we have asked for volunteers to organize a program for younger members (aged 7 to 12) to take place while our main meeting is going on. We have been unsuccessful at getting three or four people to volunteer. We want to know how much interest there is for such a session and whether parents would be prepared to pay a modest amount (perhaps $2.50) for it. We have heard from several people that they would take responsibility for organizing and presenting short tutorials so long as there is some compensation for their efforts. What is your interest?

HARDWARE/SOFTWARE REVIEWS. Two members have volunteered to co-ordinate a more organized effort to review new products. Ray Hobbs will act as software review co-ordinator; Scott Rullman will do the same for hardware. They will be writing to vendors for review copies and will work with volunteer reviewers to prepare an article for the Journal. If you would like to help them, call them or leave your name at the office.

GARAGE SALE. We will hold our semi-annual garage sale at our June meeting. Joe Fuchs who has served so effectively as co-ordinator will again be your host. Gather up your worn out adventure and arcade games and other underused software and hardware items. When you come into the USUHS facility you will need to check the items in with the guards and get a sticker to show it was brought in for the sale.

One small change in procedures. Only two people per display will be allowed in the cafeteria before 10:45. We are doing this to solve a problem which has occurred in the past. Displayers (and their "assistants") have been permitted into the cafeteria to set up before all others are allowed, and are thus granted an early opportunity to view all items for sale. We continue to have displayers show up with five "assistants", each carrying one "heavy" arcade game. By limiting the "assistants", we hope the participation before 10:45 will be set-up only.

contd.

MULTIPLE BULLETIN BOARDS. We are discussing the feasibility of breaking out some of the most popular subjects from the ABBS and putting them on single topic bulletin boards run by members throughout the area. We have ten volunteers willing to make their computer available for 10 to 15 hours per week. We will try an experiment with a few of them to see if it works. Preference will be given to those who: (1) have a second phone line already, or (2) can provide evening and weekend hours of use or (3) have all necessary equipment already (i.e. two drives and a modem). The first special topic board is buying and selling. Keep your eyes in the Journal for more announcements.

APPLE //c. What weighs a mere seven pounds, is portable, has 128K of memory and a built-in floppy disk, is compatible with the thousands of existing Apple][programs and will soon be equipped with an LCD flat screen? Give up? Apple's latest entry in the personal computer market will give a punch to the solar plexus of the IBM PC Jr. The //c demonstrates to all Apple][owners that the][remains an active product. When the flat screen and battery pack become available, we Apple owners will be one of the few groups who can take our current software collection on the road! Good work, Cupertino.

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, journal pickup, memberships, etc. are from 8:45 - 10:00 AM. From 9:00 to 10:00 AM there is 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. A sign interpreter and reserved seating are provided for the hearing impaired.

Following are dates and topics for upcoming months:

June 23 - Garage Sale

The Executive Board of Washington Apple Pi meets on the second Wednesday of each month at 7:30 PM at the office. All members are welcome to attend. Call the office for any changes.

WAP ELECTION

WAP's annual elections are underway. Ballots were distributed at our May 26 meeting and are being mailed to those members who did not pick them up on May 26.

All ballots must be returned by June 15 to be counted. Please remember to return your ballot to the WAP Office.

All WAP Officers and Directors are up for election to serve a one year term beginning July 1. We will elect a President, Vice President for SIGS, Vice President for Programs, Secretary, Treasurer and seven Directors-at-large. In addition, the ballot contains several non-binding referenda questions regarding the future course of the Pi.

Please vote!

SIGNEWS

APPLE /// SIG meets on the second Thursday of the month at 7:30 PM. The next meeting will be on June 13 at Universal Computers, 1710 Fern Street, Alexandria, VA.

APPLESEEDS is the special interest group for our younger members. They meet during the regular WAP meeting. See Appleseeds News elsewhere in this issue.

CESIG is the special interest group of computer entrepeneurs. They meet after the monthly WAP meeting at the club office.

DISABLEDSIG - See "DISABLEDSIG News" elsewhere in this issue.

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

FORTHSIG will hold its next meeting on Saturday, June 16 at 1:00 PM in the WAP office.

LAWSIG usually meets in downtown Washington, D.C. at noon once a month. For information call Charles G. Field, Chairman, 265-4040, or Jim Burger, 822-1093.

LOGOSIG meets monthly at 12:45 after the regular WAP meeting at the Barrie School, 13500 Layhill Road, Silver Spring, MD. See "LOGOSIG News" elsewhere in this issue.

NEWSIG will meet just after the regular Washington Apple Pi meeting and conducts a "drop-in" for new Apple owners on Thursday evenings from 7:30- 9:00 PM in the office. They will answer questions and try to help new owners get their systems up and running.

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

PI-SIG (formerly ASMSIG) has a new emphasis - program interface. They usually meet after the regular WAP meeting. For further details, including information on tutorials, see the PI-SIG news elsewhere in this issue or call Ray Hobbs at (301) 490-7484.

SIG Mac - see SIG Mac News elsewhere in this issue.

STOCKSIG meetings are on the second Thursday at 8:00 PM at the WAP office. Call Robert Wood, (703) 893-9591.

Telecomm SIG usually meets after the regular WAP meeting. A special June 11 meeting is planned - see details eleswhere in this issue.

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MINUTES

SUMMARY OF APRIL BOARD MEETING

The Executive Board of Washington Apple Pi, Ltd. met on April 18, 1984 at 7:30 PM at the WAP office. Information was given on USUHS guard payment, Treasurer's report on insurance coverage, tax liability and accountant report, membership trends, publishing latest versions of programs, applications for secretary-receptionist, calendar for the Journal, IAC, and Call-A.P.P.L.E. Old business discussed included a committee report on direction of WAP, and the Pascal publication. New business included Bylaws changes to expand the Board, an extra disk drive for software library copiers, software library request from Prince William County schools, selling WAP T-shirts, acquiring Echo II and preparation for a full audit.

APRIL GENERAL MEETING

WAP, Ltd. met at USUHS on April 28, 1984 at 10:00 AM. Q & A volunteers were introduced. A description of the beginner's tutorials which will probably start again in June was given. Other special tutorials were announced. Members were reminded to be sure that their children do not wander about the facility. The Community Computer Fair in Mt. Ranier, MD was announced, along with the reminder that school coordinators are listed in the Journal. The possibilities for providing a parallel educational meeting for younger members (ages 6 -12) were explored. Volunteers were sought to abstract the Apple Tech Notes for Journal publication, to assist Ray Hobbs and Scott Rullman with software and hardware reviews, and to serve as general volunteer coordinator. Staff for our booth at the May Computer Expo was arranged. A change in the Bylaws to provide for another Director-at-Large and a second Vice President was announced, and nominations for new officers were taken by Bob Kosciesza. A coordinator for the election procedures was sought. Group purchase reported. Assembly Language SIG has changed its name to PI-SIG (program interface) to reflect the new emphasis of the group. The Thursday night NEWSIG meeting will emphasize new users' problems. Volunteers were added to the WAP Hotline service. An idea for having multiple bulletin boards to provide more access to to ABBS users was discussed.

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, Fri	- 10 AM to 2:30 PM
Tue	- 12:30 to 2:30 PM & 7 to 9:30 PM
Thurs	- 10 AM to 2:30 PM & 7 to 9:30 PM
Sat	- 10 AM to 1 PM (except meeting Sat)
	- 12:00 to 3:30 PM (meeting Sat only)

CLASSIFIEDS

WANTED: A copy of Microsoft softcard CP/M operating system for an Apple][+. Am doing a college research project, willing to borrow, trade or swap. Call Don Mayes at (301) 589-4190 days, or (202) 282-0585, eves.

WANTED: Heuristics' "Speech Link" Voice Recognition System (VRS) or their "Speech Lab" VRS. Randy Zittel, (703) 491-5493.

FOR SALE: 20,000 volt power supply, variable output and an old rf signal generator. Both work great for hobbyist applications. Asking $10 for both of them. Don Mayes, (301) 589-4190 days or (202) 282-0858 eves.

FOR SALE: Heathkit Serial RS-232 printer, features include forward and reverse linefeeds, 80, 96, 132 characters per line, variable baud rate up to 4800, software selectable typefaces, self test and much more. Works great, excellent condition. Make offer or $300. Don Mayes, (301) 589-4190 days or (202) 282-0585 eves.

FOR SALE: NEC 8023A printer and Pkaso interface, 140 cps. $425. Call David or Linda Morganstein, (301) 972-4263.

FOR SALE: 256 RAM disk for Apple][or][+, new in maker's packing with documentation and preboot disk, $350. TI99/4A microcomputer, $50. TI expansion box, $80. TI Logo, $80. Call Peter Combes, 445-6188.

FOR SALE: Silentype printer with paper, $200; Screen-Writer II, $50; Wizardry, $20. Mark Allen, (703) 281-9293.

FOR SALE: Alphasyntauri synthesizer with five octave, velocity sensitive keyboard, interface cards, cables, and software. Hardly used, like new in original cartons. $1150. Fred Klappenberger (703) 838-5835 days, (301) 974-1244 eves.

FOR SALE: Macintosh with printer, MacWrite and MacPaint. Will sell at very low price. UPS delivery from the factory. Call Chalmers Gorman, (703) 533-7218, 7-9:30 PM, M-F.

FOR SALE: Macintosh computer, Imagewriter printer and MacWrite/MacPaint software, $2900. All in perfect condition. Call Bill Hershey, 588-1992.

FOR SALE: Wildcard copy card, $75. Multitech keyboard for][,][+, 90 keys (12 function keys, 10 user definable keys), 52 basic commands which can be entered with single keystroke, numeric keypad, detachable with cord, never used, $150. Call Lynn (301) 845-2651, eves. or wknds.

COMMERCIAL CLASSIFIEDS

CLEARANCE: Disk controllers, $27; 80-col. cards, $75; RF modulators, $19; disk drives, $235. 881-2543.

IBM Compatible (TAVA), runs Lotus, U.S. made. Call Jerry, 871-6962.

FOR SALE: Bufferboard by Orange Micro, print buffer with 32K. Unused, in original packing. $200 or best offer. 454-6729 days, 829-8863 eves.

APPLE HELP: Personal help with almost any Apple problem, including custom data bases, real-time control systems, hardware problems. Diversified experience, reasonable rates. Call Steve Knowles, 767-2891.

TELECOMM SIG NEWS

by Dave Harvey

The Telecomm SIG met after the WAP meeting on April 28. A number of items were discussed. One of the first was an announcement by George Kinal that he was looking for someone that could plan the programs for the Telecomm SIG meetings so that they could be more structured. There were no volunteers.

George announced that the serial cards that he had ordered had arrived and he will be picking them up next week. He ordered about six of the Apple Comm card clones. He said that maybe a session could be planned at the office to help people modify the serial cards for the 1200 baud and the interrupt capability. Some soldering is involved in modifying the boards for this capability and not everyone knows how to do this operation.

Someone asked for advice on what modem to buy. A number of brands were mentioned but the final conclusion was that the buyer must make his own decision on what brand and what type to buy since there are so many factors to consider when making that decision. It was also mentioned that even though 1200 baud is now very popular, we can look to 2400 baud as a future standard for business use. Someone related his experience with ASCII Express Professional. He stated that he had gotten an I/O error when running the program and so had sent the original disk back three months ago to Southwestern Data Systems explaining the problems. He has not heard anything from them since that time and has sent a follow-up letter. It was noted that Southwestern Data Systems no longer supports this program. It is now supported by United Software Industries, 1880 Century Park East, Suite 311, Los Angeles, CA 90067, (213) 556-2211. It was suggested that they be contacted about the problem.

Another item discussed is the experience with the WAP ABBS now that 1200 baud capability has been implemented. George has noted that before the implementation it was very seldom that the ABBS answered on the first ring. After the implementation it now seems that redialing is not required as much. It was noted that at present we have no way of knowing how many people are calling the ABBS and getting a busy signal. The establishment of time limits on the ABBS were also discussed. At present if someone is connected to the ABBS and they fail to give a command within 7 or so minutes they are disconnected. Someone suggested that that time could be cut down to 2 minutes. The consensus was that that reduction would not have that much effect on increasing the accessibility of the ABBS. George noted that when someone gets the capability of receiving data at 1200 baud from the ABBS, they should consider changing their usage habits when connected to the ABBS by not using the 'S' command but rather downloading all the messages left since the last time on and scanning off-line since this will actually result in less time spent on the ABBS.

Also discussed was additional WAP bulletin boards. One comment made was that maybe what we need is unattended Apples which could be used, for instance, to upload articles for the WAP Journal or to download programs which are now listed on the ABBS. The latter would free up at least part of the time now spent on the ABBS.

George Kinal announced that there are still some minor problems with the Anchor Mark XII in the answer mode and that a new PROM has been received by Tom Warrick and he will be checking it out over the next few weeks.

The meeting ended after the announcement that the meeting for June will be at the club office and will be announced in the WAP Journal.

TELECOMM SPECIAL MEETING & AE-PRO TUTORIAL

The Telecommunications SIG is holding a special meeting on June 11 (a Monday) at the WAP office. This will be a tutorial on the installation (initial configuration) and use of ASCII Express - "The Professional", which is probably the most popular advanced communications software package for the Apple][family. To be covered are:

Installation
Using AE-Pro, including the Editor
Writing AE-Pro Macros.

The session will begin promptly at 7:30 PM, and last until 9:30. Instructors will be George Kinal, Dave Harvey and Bill Cook. Fees will be $10 for WAP members, $15 for non-members. Up to nine registrants may bring an Apple, disk drive, monitor, working copy of AE-Pro, and factory-issued manual, but only one Apple will actually be connected to the telephone line. Registration will be limited to 25 people (see registration form in the back of this issue).

APPLESEEDS NEWS

At the March meeting, 45 members had the opportunity to participate in a hands-on demonstration of the Macintosh computer. Our members were enthralled by the creative potential and ease of use of MacWrite and MacPaint. We would like to thank Mr. Shuk of Falcon Systems for providing this demonstration.

We would also like to thank the Pascal SIG for providing a speaker on Pascal for the April meeting.

After three years as President of Appleseeds, David Stern has decided to direct his time and effort toward his job as Chairman of the IAC Family SIG. Mike Forman, past Vice-President of Appleseeds, will be directing Appleseeds in the future. Mike will appoint an Editor and Program Coordinator at the May meeting.

NOTICE

Margaret Cook of Byte magazine has received several responses from Pi members to her request for book reviewers that appeared in last month's WAP Journal. She has not had sufficient time to react to them, but they will all be individually acknowledged as soon as possible.

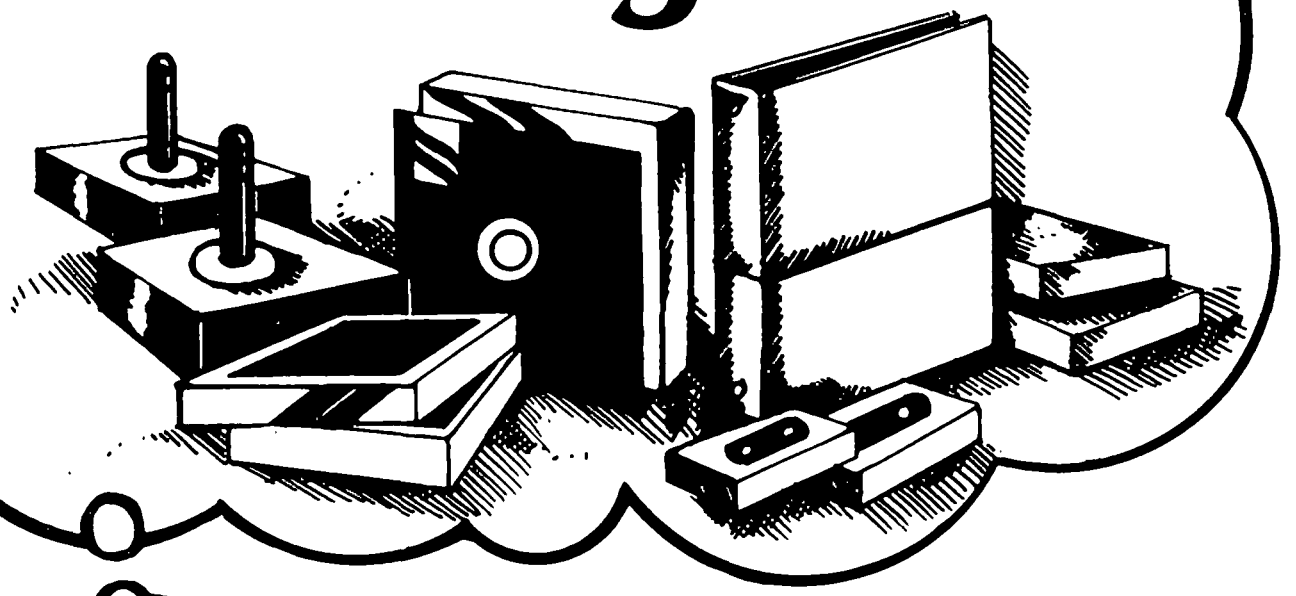
WAP HOTLINE

Have a problem? The following club members have agreed to help. PLEASE, keep in mind that the people listed are VOLUNTEERS. 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. If the person called has a telephone answering machine, and your call is not returned, don't assume that he did not try to return your call - perhaps you were not home. Try again.

General	Dave Harvey		(703) 527-2704
	Robert Martin		(301) 498-6074
Accounting Packages			
Accountant(Dec.Sup.)	Mark Pankin		(703) 524-0937
Home Accountant	Leon Raesly	*	(301) 460-0754
APPLE SSC	Bernie Benson		(301) 951-5294
Apple TechNotes	Lance Bell		(703) 550-9064
AppleWorks	Carl Eisen		(703) 354-4837
	J.J. Finkelstein		(301) 652-9375
Communications Packages and Modems-Telecom.			
Anchor Mark 12	George Kinal(7-10)		(202) 546-7270
	Jeremy Parker		(301) 229-2578
Apple CAT II	Ben Acton		(301) 428-3605
ASCII Express	Dave Harvey		(703) 527-2704
BIZCOMP Modem	Jeremy Parker		(301) 229-2578
General	Tom Nebiker		(216) 867-7463
	Tom Warrick		(301) 656-4389
Hayes Smartmodem	Bernie Benson		(301) 951-5294
Micromodem	Tom Warrick		(301) 656-4389
Omninet	Tom Vier (1-6 PM)		(703) 860-0083
Source & Transcend	Jerry Michalski		(703) 442-8835
VISITERM	Steve Wildstrom		(301) 564-0039
XTALK CP/M Comm.	Bernie Benson		(301) 951-5294
Corvus Hard Disk	Tom Vier (1-6 PM)		(703) 860-0083
Data Bases			
dBase II	Paul Bublitz		(301) 261-4124
	John Staples		(703) 759-3461
DB Master	Doug Daje		(301) 868-5487
	Dave Einhorn		(301) 593-8420
Data Perfect	Leon Raesly	*	(301) 460-0754
Data Factory	Bob Schmidt		(301) 736-4698
General Manager	Norman Bernache		(301) 277-6935
	Leon Raesly	*	(301) 460-0754
InfoMaster	Doug Daje		(301) 868-5487
List Handler	Jon Vaupel		(301) 977-3054
PFS	Bill Etue		(703) 620-2103
	Ben Ryan		(301) 469-6457
	Jenny Spevak		(202) 362-3887
QuickFile II	J.J. Finkelstein		(301) 652-9375
Expediter Compiler	Peter Rosden		(301) 229-2288
Graphics	Bill Schultheis		(703) 538-4575
Languages (A=Applesoft, I=Integer, P=Pascal, M=Machine			
A	Peter Combes		(301) 445-6188
A,I	Jeff Dillon		(301) 422-6458
A	Richard Langston		(301) 258-9865
A	Mark Pankin		(703) 524-0937
A	Leon Raesly	*	(301) 460-0754
A,I,P,M	Bill Schultheis		(703) 538-4575
A,I,M	Richard Untied		(703) 241-8678
M	Raymond Hobbs		(301) 490-7484
P	Dottie Acton		(301) 428-3605
P	Donn Hoffman	*	(202) 966-2616
LOGO	Ron Murray (eve.)		(202) 328-3553
LISP	Fred Naef		(703) 471-1479
Lisa	Don Kornreich		(301) 292-9225
Macintosh	Tom Warrick		(301) 656-4389
	Donald Schmitt		(717) 334-3265
Math/ O.R. Applns.	Mark Pankin		(703) 524-0937
Operating Systems			
Apple DOS	Richard Langston		(301) 258-9865
	Richard Untied		(703) 241-8678
CP/M	Robert Fretwell		(703) 971-2621
	Ray Hobbs		(301) 490-7484
ProDOS	Richard Langston		(301) 258-9865
Paddles	Tom Riley (eve.)		(301) 340-9432
Printers			
General	Walt Francis		(202) 966-5742
Anderson Jacobson	Bill Etue		(703) 620-2103
	Leon Raesly	*	(301) 460-0754
Apple Dot Matrix	Joan B. Dunham	*	(301) 585-0989
Daisywriter 2000	Henry Greene		(202) 363-1797
IDS 460	Jeff Stetekluh		(703) 521-4882
MX-80	Jeff Dillon		(301) 434-0405
NEC 8023	Bill Mark		(301) 779-8938
Okidata	Fred Feer		(703) 978-7724
	Scott Rullman		(301) 779-5714
Silentype	Bruce Field		(301) 340-7038
Spreadsheets	Leon Raesly	*	(301) 460-0754
	Walt Francis		(202) 966-5742
Lotus 1-2-3	Walt Francis		(202) 966-5742
	Roy Rosfeld		(301) 340-7962
Multiplan	Terry Prudden		(301) 933-3065
VisiCalc	Walt Francis		(202) 966-5742
	Leon Raesly	*	(301) 460-0754
Spreadsheet 2.0 (MagiCalc)	Leon Raesly	*	(301) 460-0754
Statistical Packages	Jim Carpenter		(301) 371-5263
	Mark Pankin		(703) 524-0937
Stock Market	Robert Wood		(703) 893-9591
Tax Preparer-H.Soft	Leon Raesly	*	(301) 460-0754
Time-Sharing	Dave Harvey		(703) 527-2704
Word Processors	Walt Francis		(202) 966-5742
Apple Writer II	Doug Daje		(301) 868-5487
	Dianne Lorenz		(301) 530-7881
	Leon Raesly	*	(301) 460-0754
	Tom Warrick		(301) 656-4389
Executive Secretary	Louis Biggie		(202) 296-1280
Format II	Henry Donahoe		(202) 298-9107
Gutenberg	Neil Muncy		(301) 251-9330
Letter Perfect	Cara Cira		(301) 468-6118
	Leon Raesly	*	(301) 460-0754
Magic Window and II	Joyce C. Little		(301) 321-2989
Peach Text	Carl Eisen		(703) 354-4837
PIE Writer/Apple PIE	Jim Graham		(703) 643-1848
ScreenWriter II	Peter Combes		(301) 445-6188
Supertext II	Doug Daje		(301) 868-5487
	Peter Rosden		(301) 229-2288
Word Handler	Jon Vaupel		(301) 977-3054
	Christopher Romero		(703) 471-1949
Work Juggler //e	Carl Eisen		(703) 354-4837
Word Star	Christopher Romero		(703) 471-1949

*Calls up until midnight are ok.

"I felt like a kid in a candy store."



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Q & A
by Bruce F. Field

Q. I recently purchased a used VISTA VISION-80 eighty column card. When I bought it, I thought I would be able to use it within Apple Writer II, but I can't figure out how to do it. My question is, what can I do to enable me to use this card with Apple Writer II? Is there a software patch I can apply that will permit me to use my card? Failing that, I have heard of the VIDEX 80 column pre-boot. Will that work with my card? One final question, if I obtain the Dan Paymar lower case adapter, will I be able to use it from within Apple Writer II? Thanks for your help.

A. To answer your questions in mostly random order, Apple Writer II and //e and most other commercial programs are copy protected. This means that you are prohibited from copying as well as "protected" from modifying the program. Thus it is not possible to apply software patches unless you first defeat the copy protection. There are some copy boards on the market to do this but you are still left with the problem of modifying the software and this is best left to an expert. So, you will not be able to use the Dan Paymar adapter nor your VISION-80 card without a pre-boot disk. A pre-boot disk is a disk that is used to start your system and then you run your program, Apple Writer in this case. The pre-boot disk temporarily modifies the program to work with the 80 column card. Every time you want to run the program you will have to start up with the pre-boot disk first. Unfortunately the VIDEX 80 column board works differently than your VISION-80 board and the Videx pre-boot disk will not work. You should contact Vista to see if they have a pre-boot disk for Apple Writer II and your card.

Q. Three questions regarding THE Spreadsheet 2.0. First: Can this program be set up to access a //e extended memory board for the additional 64K memory? Second: Is it possible for a @IF to return a blank cell? Note this is different from the NA function. Third: Is there a sort routine available? There was a program published in Nibble (January 84) to sort a VisiCalc DIF file by generating move commands that are then loaded in. Would this work with THE Spreadsheet?

A. THE Spreadsheet 2.0 will not work with the //e extended memory board plugged into the auxilary slot. It will however find almost any other kind of memory card plugged into the regular expansion slots. For your second question, @IF cannot return a blank cell. The sort routine published in NIBBLE will work with THE Spreadsheet 2.0. THE Spreadsheet 2.0 uses standard DIF files for information exchange so any utility that works on DIF files should also work with THE Spreadsheet 2.0.

Q. Is there a special statement needed to get the printer to print out in 80 columns on the Apple //e?

A. There is lots of confusion on this subject. (I am also somewhat confused by your question. Let me answer the general case of how to print 80 columns from the Apple.) If you are programming in Applesoft (][+ or //e) you can print lines up to the maximum length of your printer without any special statement. If you type PRINT " followed by 80 X's and end quote (") you will get 80 columns printed on your printer. If you list your Applesoft program it generally will be listed with a maximum of 40 characters per line. To change the listing to 80 characters maximum per line use the following Applesoft command: PRINT CHR$(9)"80N" after your have turned your printer on with PRINT CHR$(4)"PR#1". This will usually work but it does depend on your printer interface card. If you have a non-standard card and it doesn't work, look in your interface card manual (often this is only a few pages long) to find the proper command.

Since it's not clear whether the above answers your question or not, let me continue. If you want to print to your printer while in the 80-Column mode on the //e you should first deactivate the 80-column card and then turn on your printer. Apple says on page 26 of the 80-column Text Card Manual:

"Typing PR#0 or PR#6 on an Apple //e while the 80-Column Text Card is active causes unpredictable results and a confusing display. If you want to use peripheral cards such as for a printer in slot 1 or to use the PR#6 command, you must always deactivate the 80-Column Text Card first."

I have also had problems on occasion with printing from within a program with the 80-Column card active. If you are typing from the keyboard, to deactivate the card type ESC then Ctrl-Q. If you a running a program execute PRINT CHR$(21) before turning on the printer. When you are through printing return to the 80-column mode with PRINT CHR$(4)"PR#3".

Q. In Apple Writer //e I have trouble getting the second line of an indented sentence from tabbing to the previously made tab setting. In other words, when making an outline with a series of 5 spaces, 10 spaces, 15 spaces tab settings, the wrapped around line of a 10 space setting goes back to the left margin and won't move over to the 10 space setting. Any help would be appreciated.

A. You are exactly right! The tab settings are for convenience when typing in material. Think of them as a shorthand way of typing in a bunch of spaces. They have no effect on the next line. What you want to do is to change the left margin. This is not actually too difficult. Everytime you want to indent include .lm+5 in your text and the margin will be moved in 5 spaces to the right from it's present position. When you are done with that piece and want to outdent back to the previous position include .lm-5 in your text. You can include the .lm+5 in your glossary so you only have to type a single character to indent. Of course you could use the absolute value for the left margin, i.e. .lm10, .lm15, etc. but if you later decided to change the overall margin you would have to go back and change all the .lm commands.

Q. When using Apple Writer II with a //e how do you get the shift key to shift?

A. We seem to be getting a lot of Apple Writer ques-

contd.

tions - somebody must be writing a lot of letters. To use the shift key on a //e with Apple Writer II you need to put Apple Writer II into the upper-case-lock mode. You can do this by typing Ctrl-K. Now release the caps lock key on the //e and type away.

Q. Are power surge devices really needed in the average home? If so, what type? What cost?

A. There are a number of opinions on this; my feeling is that it can't hurt. If you have relatively clean power, and refrigerators, air conditioners and the like don't seem to bother your Apple when they turn on or off, maybe you don't need one. Most of the products on the market however will not help much if lightning strikes the power line. The best solution is not to use your computer during a thunderstorm, or better yet unplug it. Of course if lightning only strikes near the power line a power surge protector could help. There are various devices on sale; they fall into two basic catagories. The least expensive only have power surge devices (varistors) across the power line. This will protect against spikes on the power line and is usually all you need. These range in price from $20 to $70 and all are based on a $2 varistor. I don't see that the more expensive ones are any better. For really low cost you can buy varistors at Radio Shack and make your own out of an extension cord. The second class of protectors have varistors and EMI (ElectroMagnetic Interference) filters. If you live close to a TV station or have a neighbor with a CB it might be desirable to have an EMI filter. These devices usually run $70 and up. For the average household the EMI filter is probably not worth the money.

Q. I have an MX-80FT printer and the paper gets out of alignment and curls up. What can be done to keep it properly registered?

A. As far as I am aware the Epson doesn't have any particular problems with paper registration. However most printers that accept both friction feed and pin feed paper have a platen control lever. When the printer is used with pin feed paper the platen control lever should be set to release the rollers on the platen. Except for the holes on the side of the paper engaging the pins on the platen, the paper should move freely. Having this lever in the wrong position is usually the cause of paper jamming.

Q. What speed-up boards are available for the Apple? Do they work on binary programs or just Applesoft?

A. As of this writing (late April) there is only one board available, the Accelerator. This board was originally designed by Number Nine and is currently being sold by Saturn Systems, now renamed Titan Technologies, Inc. Other boards have been advertised but they are not delivering on a regular basis. The Accelerator contains a fast 6502 processor and 64K of high speed memory for use with the processor. The regular Apple memory cannot be used with the Accelerator because it isn't fast enough. If you have the extended 80-column text card the extra memory on that won't work either. The Accelerator will speed up all kinds of programs, binary as well as Applesoft, because the faster 6502 processor effectively replaces the one in your Apple. Titan claims the speed improvement is 3 1/2 times. This is the best it can do, if you have a lot of disk access the speed improvement will be less because the disk must continue to run at it's original speed. Titan advertises in the major Apple magazines and its address is 310 West Ann Street, Ann Arbor, MI 48104.

Q. I've got a //e into which I put a Micromodem II from a][+. It works fine in the 40 character mode, but I can't get a blinking cursor in 80. I presume this is a software problem. If so, is there any public domain software that will work?

A. The problem is that the Micromodem II firmware accesses only the 40-column screen. You would have to write you own routine to replace the firmware. The firmware in the Micromodem //e works similarly so no help there either. The Hayes Terminal program will handle 80-columns but of course is not public domain software. Any readers know of an 80-column terminal program for the //e and the Micromodem?

Q. I have an Apple //e with a Super-Serial card for interface with my printer. While I realize that the Super-Serial card can be used in either the Modem or Terminal modes, is it possible to use it for both purposes (one at a time) without changing the jumper block? In essence my question is this: Is it necessary to change the jumper block on the Super-Serial card from terminal to modem, if the cable connection is configured properly? What software is available for this purpose?

A. The jumper block reassigns some of the signals from the circuitry on the Super-Serial card to different pins on the connector. For example a terminal transmits data on pin 2 and receives data on pin 3. A modem is designed to connect to a terminal and thus receives data on pin 2 and transmits data on pin 3. This is a long winded way of saying yes, you can use the Super-Serial card in either way simply by properly wiring the cable. In fact most other serial cards require that you rewire the cable for each different device. Since the only difference is in the pin connections there is no special software needed other than what you would normally use to run your printer and modem.

Q. Is there a patch for Word Star for Apple CP/M to use two printers? I want to tell Word Star to look for the LIST device in slot 2 when I'm using my letter quality printer. I want to put my serial interface card in slot 2 and leave my parallel interface card in slot 1 rather than having to open up the Apple and change cards in slot 1 whenever I want to change printers.

A. I'm sorry, with CP/M there is no way to use two printers with two interface cards in different slots. There are some multi-function cards available that will run two printers (not simultaneously) from one card. You would have to have two versions of Word Star, each configured for the desired printer, and you could run whichever version you wanted. I know of two multi-function cards that have been made, but one company (SSM) has gone out of the card business, and the other (Mountain Computer CPS) may not work with CP/M. Make sure that the card you are interested in will work with CP/M before you buy it.

REMEMBER TO VOTE IN THE WAP ANNUAL ELECTIONS

Ballots are available at the May 26 meeting or will be mailed to you.

LOGOSIG NEWS
by Nancy C. Strange

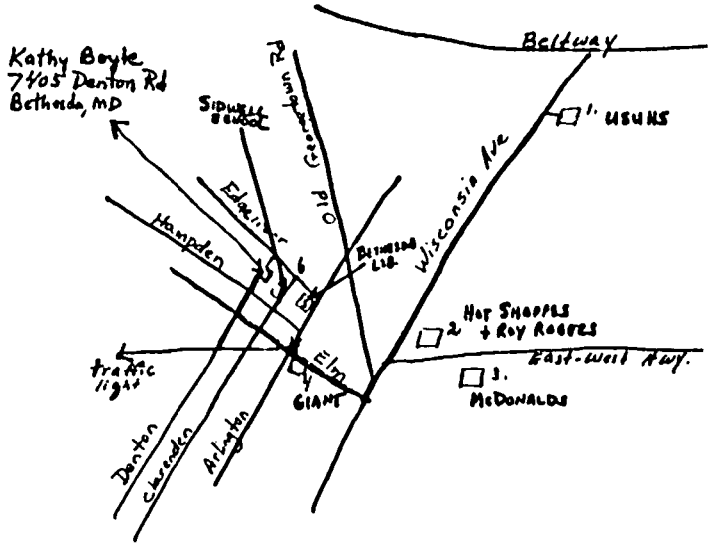
TURTLE TRACKS

LOGOSIG SCHEDULE:
- 26 May -- No Meeting, due to special May 5 Roundtable
- 23 Jun -- No Meeting
- 28 Jul -- LOGO SHARE, at Kathy Boyle's
- 25 Aug -- No Meeting
- 22 Sep -- LOGO CELEBRATION

The LOGOSIG has just completed a very active year, culminating in the Logo in Our Schools Roundtable. Since Barrie School will not be available during the summer and since most of our group will not be able to participate due to conventions, travel, vacations, courses, etc., LOGOSIG has decided to meet only in July during this Summer. That meeting will take place on July 28 at 12:45 pm at Kathy Boyle's at 7405 Denton Rd., Bethesda, MD. See the following map for directions, and/or call Kathy at (717) 245-0030 until June 30 and after 1 July at (301) 652-2755.

Directions from USUHS are:

1. Turn left onto Wisconsin Ave.
2. Turn right onto Elm
3. Turn right onto Denton
4. 7405 Denton Rd.



April LOGOSIG Report

At the April LOGOSIG meeting Kathy Boyle's husband, Dr. Robert Boyle, demonstrated the AtariLab which will soon be out for the Apple as well. Here is Kathy's write up:

AtariLab(TM) DEMONSTRATION

Do crickets chirp faster on warmer evenings? Will my coffee stay hotter if I add cream when it is first poured, or should I wait until I am ready to drink it? Is the temperature difference between night and day smaller when it is cloudy? Dr. Robert Boyle of the Department of Physics and Astronomy, Dickinson College, Carlisle PA, demonstrated the first of the AtariLab(TM) Science Series Modules, which allows scientists of all ages to carry out simple experiments to answer these questions.

Developed by physicist Dr. Priscilla Laws and other scientists, writers and artists of the Dickinson community, and manufactured by Aardvark Enterprises, Inc. of Carlisle, PA, the AtariLab (TM) Science Series will be marketed by Atari in versions for the Atari, Apple][family, and Commodore 64 computers.

The Starter Set demonstrated by Dr. Boyle consists of a temperature sensor, an interface box (to allow the easy connection of this and other sensors, light sources, and other devices to the computer), sophisticated software to help the user design and carry out temperature experiments, and an extensive manual with suggestions to get the novice experimenter going. Central to the AtariLab (TM) philosophy is the idea that the only way to learn science is to do science, so the temperature software is designed to facilitate temperature experiments without dictating certain particular experiments to the user. In his demonstration, Dr. Boyle used the temperature software to determine the dew point in the room (the temperature at which the room would fill with fog), and to give a visual tutorial on graphing temperature versus time measurements. He also showed how the software could be used to measure and graph temperature variations over time periods ranging from 10 seconds to 24 hours. In addition, Dr. Boyle demonstrated Logo procedures that can be used to measure temperatures with the AtariLab (TM) hardware. A Logo or BASIC programmer could design very specialized applications.

Other modules currently under development include a light module which will allow experiments involving the measurement and absorption of light, a Crimelab module which will allow experiments in forensic science, and a timekeeper module which provides general purpose timing functions.

APPLE LOGO II & APPLE //c

There is not only a new Apple, the //c, but a Logo to run on it. The //c is the extremely slim and portable][, which just arrived in April, with 128K. Although it has extra memory it is still an 8-bit processor. It comes with a built-in drive but has no expansion slots. Like the Mac it comes prepackaged with lots of interfaces for printer and modem. It offers upper and lower case text and 40 and 80 columns.

The Apple Logo II (A.L. II) by Logo Computer Systems, Inc is an upgrade of Apple Logo that takes advantage of the 128K. The program does the bank switching. I am an Apple][+ owner and would love to have the 7000 instead of 2500 nodes of user space. Oh for 128K!

A.L. II has better file management with fast savepict and loadpict capabilities. It uses ProDOS that allows hierarchal subdirectories to be created. Now each child can have his own directory. There is a call command which assists in interfacing machine language routines. There is a new "Help" command which allows the user to ask "help commandname" to get information regarding that command. In addition there is a help menu that comes built-in with a mini reference card that summarizes commands. The user can even make his own help menu.

Copydef now goes from old to new. It is easier to edit Logo files. The editor can be used better as a word processor, and its contents can be easily displayed with PO "filename. There is a "dribble" file

contd.

capability that sends all commands entered into a history file on a disk or to the printer. The dribble can later be edited.

The A.L. II still has property lists, packaging and burying. Burying can now be done just by saying Bury "procname or Bury with a list of procedures. No longer must you package before burying. In addition, the garbage collection feature is more efficient, with less lost atoms (parts of nodes).

If you are an Apple //e owner with 128K, you will be glad to discover that Apple Logo II will work on it too. Unfortunately if you're like me, an Apple][or][+ owner, even with 128K the new Logo II will not work. Oh well, I guess I finally found a reason to move up to the //e. Before now I felt my improved Apple][+ could do just about anything the //e could. Why, you must be asking, don't I want to move up to a //c. Simple - there are no slots and if there were the case is too short to accommodate my Sprite Board, and I couldn't do without that.

Since LCSI is the creator of this version too, there are many similiarities to Apple Logo, Atari Logo, IBM Logo and Sprite Logo, but also some incompatibilities due to different machine capabilities. A.L.II will not replace Apple Logo. Both cost the same, $99, and are available from authorized Apple dealers.

PS. Attention Schools: There is an Apple school package for Logo. It contains ten Logo language diskettes, one set of manuals, one set of the Apple Logo Tool Kit and Sampler diskettes and one hardcopy of the accompanying documentation for $399 from Apple dealers.

Upcoming Logo Reports

Due to space limitations, reports of the Logo in Our Schools Roundtable and the AEDS Convention presentation of Dan Watt regarding Logo in the Elementary Schools will be in the July WAP newsletter.

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A LOGO VIRUS: Part II

by Ron Murray

In last month's episode we were introduced to a set of Logo procedures that could delete, copy, change, and insert things into other Logo procedures. This was done under the guise of constructing a procedure that behaved like a virus, injecting "messages" into other procedures, possibly altering their behavior. We will first discuss this capricious use of those Logo procedures, before moving on to more socially redeeming (and infinitely more interesting) uses.

A listing of the virus looks like this:

```
 TO VIRUS :MESSAGE
 (LOCAL "ATTACK.AREA "SAFE.AREA "VICTIM)
 MAKE "SAFE.AREA 212
 MAKE "ATTACK.AREA (COUNT .CONTENTS) - :SAFE.AREA
 MAKE "VICTIM ITEM (RANDOM :ATTACK.AREA) + 1 .CONTENTS
  IF (AND (DEFINEDP :VICTIM)(NOT PRIMITIVEP  :VICTIM))
[INJECT  :MESSAGE  RANDOM ((COUNT .TEXT :VICTIM) +  1)
:VICTIM]
```

This procedure finds out which procedures exist by looking through the .CONTENTS list (the list which contains all the words that Logo "knows". You can view your own .CONTENTS list by typing in pr .CONTENTS. If observed from time to time, this list will increase in length.

Whenever you define a new procedure, variable, or merely mistype a word, a new word is added to the .CONTENTS list. Words and procedure names are added to the front of the list, so if you want a procedure name to be close to the primitives, it must be defined or LOADed first; conversely, if you want it to be near the beginning of the list, define or LOAD it last. However procedures that are created and later redefined keep their original place in the list. We will take advantage of this placement of procedure names in .CONTENTS later.

If a word in the .CONTENTS list is defined and is not a primitive, it follows that it must be one which was defined by the user, and is a fair target for the virus, or for other procedures that operate on procedure definitions.

To keep the procedure from attacking every procedure in .CONTENTS, we will designate areas in .CONTENTS to be "attack.areas" and "safe.areas". The "safe.area" will be the area closest to the original .CONTENTS list (the one you get when you first load Logo). If we know the size of the original .CONTENTS list, we can then add a number representing the number of words (procedures) that are not to be attacked.

For example, if the original .CONTENTS list has 201 elements (determine by using COUNT), and there are 11 procedures or words that are not to be disturbed, then the variable "safe.area" will be set to 212. This is the origin of the mysterious 212 in the VIRUS procedure definition. This turns out to be necessary, because VIRUS will eventually (believe me) attack one of it's own subprocedures, or something equally critical. :Safe.area is therefore the size of a portion of .CONTENTS that will not be disturbed.

The "attack.area" will be the number of procedure names and words left when :safe.area is subtracted from the current length of the .CONTENTS list. We can then use this number (plus one to keep from getting zero) with the RANDOM operation to generate a set of numbers. When we use these numbers with ITEM, we can then randomly pull from the beginning of the .CONTENTS list words for examination and manipulation. The words that are to be protected will never be pulled because ITEM will never be given a number large enough to reach the safe area.

For example, if our :safe.area is 212 elements in length, and the current size of the .CONTENTS list is 235 elements, the :attack.area will be 235-212, or 13 elements long. When generating a random number with 13 (:attack.area) as an input, we add one, so that we will never end up with a zero result. We will only be able to access the first 13 elements of .CONTENTS, and those elements beyond ITEM 13 are quite safe from "viral infection".

Now that we can choose our victim with some degree of selectivity, we need only inject our message into some randomly selected position in a list that happens to be the definition of the hapless victim (obtained by TEXT). The modified list is then redefined as the victim, and the process is complete.

INJECT looks like this:

```
 TO INJECT :MESSAGE :POSITION:LIST.NAME
  DEFINE  :PROC.NAME  INSERT :MESSAGE  :POSITION  TEXT
:PROC.NAME
```

Inject uses our old friend, INSERT.

The VIRUS procedure is defined in a way such that any message (in list form) may be injected, such as [PRINT [HI, FREDDY]]. More complex messages, such as procedure definitions, can also be injected. With our virus now described, it is time to turn our attention to the "environment" in which our virus will operate.

A Logo workspace works quite different from our own happy situation. Our piece of the cosmos appears to be running all the time, without the need for constant input of instructions. In the time and space-limited computer cosmos that exists inside our Apple when we boot Logo, waiting for instructions is rather the rule than the exception.

For any Logo procedure to execute, it's name must be referred to within another procedure or be typed in by the user. If we want our virus (or any procedure) to run in the background, without our knowledge or attention we will need to create a procedure that simulates a Logo TOPLEVEL.

Logo TOPLEVEL is where we can type in Logo commands, operations, and their inputs, and observe the results. From here we can also enter the editor, and save and load procedures and variables, etc. A useful way of viewing this level is that we see a familiar ? prompt, and we type in a list of instructions, which are then executed. After execution, the ? prompt returns, and we go on.

Logo can be made to simulate a such a TOPLEVEL condition:

```
 TO TOP
 (LOCAL "DUMMY.LIST)
 TYPE "?/
 MAKE "DUMMY.LIST READLIST
 RUN :DUMMY.LIST
 TOP
```

contd.

That's it (?) This procedure will accept any Logo command and execute it, after which it will type the ? prompt and await another command or commands. One can enter the editor, create procedures, and exit; one can also use all the special commands (such as control-w and control-g) to pause or halt execution. To find out if any procedures were changed, merely print out all procedures POPS, and take a look. Since the virus randomly samples the .CONTENTS list, the item chosen will not always be a user-defined procedure and will therefore not get injected.

If the injected message is benign (without outputs), the procedure will appear to operate normally. If, however, the message returns an output, or if it includes a PRINT instruction, then trouble will ensue. As a final act of malice, think of a message that would erase the containing procedure.

If control-g is pressed one too many times while operating within the TOP TOPLEVEL simulation, however, you really will find yourself back at TOPLEVEL. It should go without saying that you could have a TOP running within a TOP, within a..., and still have it seem like the regular Logo TOPLEVEL, but with lots of interesting things sneaking around at each different level. Wheels within wheels...

For our virus to operate invisibly, we simply place it within a TOP procedure:

```
TO TOP
(LOCAL "DUMMY.LIST)
TYPE "?/
MAKE "DUMMY.LIST READLIST
RUN :DUMMY.LIST
VIRUS [PRINT [ HI, FREDDY ]]
TOP
```

To start things going, type in TOP; for your efforts you will see... nothing unusual. Regular Logo commands and operations are executed openly, while the virus goes to work in the background. (In Apple Logo, the / character indicates that control-q was pressed to insert a special character, in this case a space " ".) Be aware though, that background procedures that take some time to execute will slow down the TOP procedure. In cases like VIRUS, which works only randomly, there will be little change in speed of execution.

The procedure copying and changing functions that were used in the virus can be put to much more interesting uses. Pursuing our original genetic inspiration, one of the more interesting sources of genetic variation is a mechanism called "crossing over", which involves the exchange of genetic material between chromosomes that have the same morphology and which contain genes controlling the same characteristics. In the 1930's, it was thought that paired chromosomes were broken during the set of cell divisions that form the sex cells (the sperm and egg) contraction. The chromosomes somehow rejoined in a crossways fashion, creating new combinations of genes on the involved chromosomes.

More recent theories suggest some kind of sequential copying process that begins at one end of the chromosome and copies its way toward the other. If such a process is at work on a pair of chromosomes, and each gets derailed over to the other chromosome, similar results would ensue.

If we recall that a Logo procedure is a set of instructions arranged in a linear sequence, we can (with pure Logo abandon) describe to ourselves how we can make a list (procedures are only a special type of list) which is composed of portions of one list and portions of another list. Having done so, we can create a procedure that will "cross over" a pair of lists.

The final (I hope) part of this series will focus on the creation of lists which bear a "family resemblance" to one another, and of procedures which can "evolve" to match certain demands of our Logo environment.

Notes:

Last month, I stated, inaccurately, that viruses had chromosomes; they are entirely too small for that sort of structure. "Genetic material" would be more appropriate.

The procedures listed above use a procedure described last month.

The procedure definitions listed above are expanded somewhat to improve their readability. If a more compact version is desired, eliminate the use of local variables, and shorten the name of the input.

DEALER'S CORNER

Good news for AJ letter quality printer owners (see back cover of the Journal). The cost of an AJ maintenance contract has been drastically reduced. New price on shop maintenance is $12/month and for on-site maintenance is $29/month. Call Sean Belanger at AJ, 840-5700 for further details.

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DISABLEDSIG NEWS
by Jay M. Thal

* *

DISABLEDSIG JUNE MEETING
THURSDAY, JUNE 14, 1984, 7:00 P.M.
SUBJECT: Hardware interfacing, specialty switch construction, bring soldering irons, parts, & plans.
Chevy Chase Community Center
Connecticut Ave. & McKinley St., N.W., D.C.

* *

The May meeting of the DisabledSIG provided an interesting set of demonstrations by Susan Brummel. Ms. Brummel is a linguist who is devoted to assisting individuals gain control over their environment through the use of microcomputers.

Often, cost is a major consideration to her clients. While the versatility of a computer like an Apple might make it ideal, that ideal comes at a price. (See WAP's May 1984, DisabledSIG article on prescribing communication devices.) In many cases Susan Brummel finds that the diminutive Sinclair/Timex fits the bill for single purpose applications.

The secret of success is learning to be your own programmer and electrical engineer. For Susan, those specialties have become acquired skills - necessary to tailor programs to the need and hardware interfaces to the abilities of her clients. With deft control over a soldering iron Susan makes controls that can be actuated by the tilt of the head or erratic movement of a palsied hand.

Ms. Brummel also demonstrated the Bliss Apple system on a][+. The system was developed by the TRACE Center at the University of Wisconsin, and is based upon a system of symbolic pictograms designed by the late Dr. Bliss, who believed, in part, that the languages of mankind kept them apart, raised antipathy between peoples, and was a major cause of conflict. But he felt that concepts were more universal and if people could communicate in concepts they would be better understood - sort of like Chinese pictograms, which are understood throughout China though local dialects and speech patterns are not.

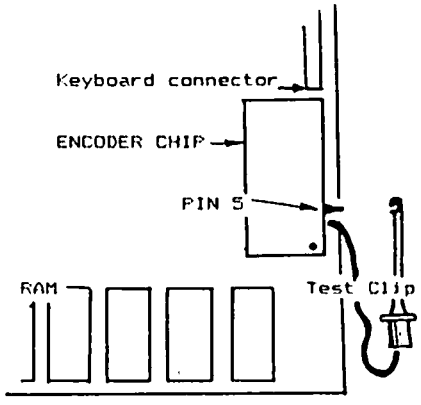
Bliss symbolics have been developed so that handicapped individuals can more quickly communicate concepts rather than arduously spell out their desires letter by letter, word by word. Adapted to the Apple, a cursor scans across the digits 0 to 9 so that a single switch entry, or string of entries, can access concepts from a personalized (or universal) lexicon of concepts. Thus, an individual who has a limited communicative ability, due to physical limitations, with the flick of a microswitch can make needs, desires, and feelings known.

Ms. Brummel works at the Gloria Nelson Association, and may be reached at (703) 978-0505.

HARDWARE MODIFICATION
DISABLING THE //e's AUTO-REPEAT

Those of you whose Apples precede the //e remember the difficulties in not having automatic repeat keys. A little digging into the Apple's innards, solder, and $2 worth of parts rectifies the problem. But, some people have a different problem. The automatic repeat on the //e causes them difficulties. If they linger too long on a key an unwanted string of characters is generated. This is a particular difficulty for persons who lack muscular control. So, here's how to rectify the situation:

Turn off your //e, and remove the top. On the right front quadrant you'll find the Encoder IC; it's marked KR 3600-017. GENTLY remove this chip from its socket. Pin 1 of the chip is identified by a dot on the case. Count back to PIN 5 and GENTLY bend this pin outward 90 degrees. So that the repeat function is not permanently disabled, attach a short wire to a mini test clip (Radio Shack 270-372) and strip 4mm of insulation from the wire. Insert the bare wire into the 5th socket and reinsert the Encoder chip CAREFULLY into its socket. When you want to activate the repeat function you merely have to attach the test clip to PIN 5 which is sticking out.



A RESOURCE GUIDE

Apple has recently issued a very short publication entitled: Personal Computers and the Disabled - A Resource Guide. The publication can be obtained from your Apple dealer (A2F0170). The dealers we know of only received two each. So, if your dealer's stock has been depleted have them inform Apple that there is a need for more.

Nevertheless, the publication is an improvement over Apple's only other publication on the subject - way back in 1981. It will provide some people with a starting point - if the dealers are sufficiently sensitized to needs to remember that this 24 page guide is tucked away in a file drawer. I would have preferred if it went into a little more detail. For example, as a reference, it would have been useful to have mentioned that the Adaptive Firmware Card was designed by Paul Schwejda and described in detail in BYTE, September 1982; or that Prentke Romich Co. makes a vast array of products; or that E. Paul Goldenberg authored Special Technology for Special Children and the type of information necessary for a librarian to access it. But then again I'm mighty demanding. I think that Apple's publications should reach the same level of quality that their computers do.

NATIONAL SOFTWARE SEARCH

The Council for Exceptional Children has completed its software search and at the end of April, at its national convention, announced the winners. We will review the results in more detail in a later issue. Of the 104 entries, 72 were for the Apple - scoring well over little blue's four. 36 programs addressed themselves to the learning disabled, 16 to persons with communication disorders, and 16 to the mentally retarded.

EDSIG NEWS
by Peter Combes

EDSIG Calendar

Tuesday, June 5, at 7.30 p.m.

"Are there computers after feminism?" Mary Brown chairs a discussion of:

- the differences in how girls and boys approach computers,
- how to interest women and girls in using computers.

Come prepared to discuss your experiences.

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

Meeting Report

Tuesday, May 1, at 7.30 p.m.

"Applications of Commercial Software in Education" - Betty Manchak.

Betty Manchak is media specialist at the Bethesda/Chevy Chase High School, a school with 1800 "very diverse" students, of fifteen nationalities.

When the microcomputers first arrived at the school, very few members of the staff knew anything about computing, but now fully half of them have taken courses in computer literacy and in computer languages. There are 21 computers in the school building, 15 in the laboratory, 4 in the science department, one in "alternative education", and one in the media department. All are Apples. In the lab, the pupils learn BASIC, problem solving, the use of word processing (Apple Writer), Quickfile and PFS File, DB Master, VisiCalc (now taught to all students), and Pascal.

By agreement between the companies and the computer department, each machine has its own disk of VisiCalc. There are fifteen sets of PASCAL, and the pupils get into some complex programming - "the current expert is a ninth grader". Much of the learning is informal; some students simply take the manual off into a corner and learn it all from that. "Of course, they have time to read things - we don't."

When teachers use software in courses they must evaluate it, using a standard evaluation form. These forms are collected by the central MCPS office in Rockville.

Children rapidly adapt to word processing. They find Bank Street Writer limited, and AppleWriter rather easier. The favorite, however, is ScreenWriter, which is enjoyed for its versatility. The media center uses the word processors for notices to faculty, for form letters, for "overdue notices" to students, and for updating the "vertical file" of cuttings and documents available in the library.

Database programs are used for making a file of non-print materials, for holding data on magazine subscriptions by department, materials to order, and for documenting anthologies, which can then be searched, for example, for plays, short stories, and so on. Other programs that are used include "Crossword Magic" - a program to write crosswords, a "word finding" game from MECC, a program to measure the "readability" of a text, a program to make bibliographies, and a program for speedreading. Graphics programs include Versawriter, Graphics Magician, Slide Show, and 3-D Graphics. One use of the graphics programs is to make graphics and bylines at short notice for the school's television production.

Databases which allow "college scan" and "career scan" are popular. College Scan IV is derived from data tapes from the National Center for Education Statistics, and is said to contain over 385,000 searchable pieces of information. Various SAT programs are available. The recent one from Portnato has had a good reception, including as it does a diagnostic overview.

Data Capture is used to access Dialog - at a special rate of $15 an hour for students - and to log on to the MCPS Department of Instructional Resources Bulletin Board. This "offers online information about meetings, deadlines, news and resources for media specialists and teachers in MCPS", and is open to all schools in Montgomery County.

Use of the computers is intensive. The most used programs are PFS File Report and ScreenWriter, both used daily. The juniors use the SAT programs a great deal, and the seniors use "College Scan". The bottleneck continues to be the small amount of computer time per student, and more machines are eagerly awaited.

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A PAGE FROM THE STACK

by Robert C. Platt

I bring exciting news from the WAP library. This month not only marks the start of our MacSoftware collection, it also brings an expansion of our Eamon and CP/M offerings. But our growth can only continue with your help. Please donate your latest creations! Remember, for each 5 1/4" disk of software that you donate, you get a free Apple // or Apple /// library disk. Similarly, you can get a Mac library disk for each 3 1/2" disk you donate. I will be at the Disketeria", our sales table, from 9-10 before the monthly meetings to discuss possible contributions. I look forward to meeting you.

CP/M COMMUNICATIONS

Disk 409 is a valuable addition to our CP/M library. Irv Hoff wrote an excellent communications package that will send or receive disk files. His latest version, with many bells and whistles is called "Modem 730." Text files on the disk document Modem 730's many features. Irv includes auxiliary files and overlays to support the Apple Super Serial card and the CCS card. Bob Hicks reports that the program works well with an Anchor Mark XII modem.

EAMON DISKS

In 1982, Apple PugetSound Program Library Exchange (A.P.P.L.E.) sponsored a contest to see who could write the best new Eamon adventure game. (Eamon is a text adventure game system which responds to one or two word commands.) A.P.P.L.E. got Eamon's creator, Donald Brown to judge the contest. Brown announced his decision in the March Call-A.P.P.L.E., and we are proud to add the five finalists to WAP's Eamon collection.

Disk 203: FEAST OF CARROLL (E-32) by Daniel and Jonathan Lilienkamp (St. Louis, Mo., First Prize) - You and your friends, Otho the Dragon Slayer and Morlok the Wizard, spent last night together in the Main Hall celebrating the feast of Carroll, the one day each year that all three moons of Eamon are full. You wake up bewildered in a very mysterious place with riddles engraved on the walls....

Disk 204: THE MASTER'S DUNGEON (E-33) by Jeff Seeck (Itasca, Il., Second Prize)

Disk 205: THE CRYSTAL MOUNTAIN (E-34) by Ken Hoffman (Seattle Wa., Honorable Mention)

Disk 206: THE LOST ADVENTURE (E-35) by Jeff Seeck (Honorable Mention -- I guess that multiple entries from the same author were allowed.)

Disk 207: THE MANXOME FOE (E-36) by Ray Olszewski (Menlo Park, Ca., Honorable Mention) - You awake in an ornately furnished victorian parlor and the first thing that you see is a kitten walk through a mirror....

HOW TO USE AN EAMON DISK

Disk 181 is required to play any of the Eamon adventures. Boot Disk 181 and you will automatically run a greeting program that asks your name, sex, etc. Your character will then be checked against a file of previously played characters, and if the character is new, he or she will be added. Every character has attributes such as agility and charm which grow with experience. You may then enter the Main Hall where you can purchase arms and supplies. After your shopping spree, you will be prompted to insert a program disk and type a "C" to continue. At this point, you may remove Disk 181 from Drive 1 and place another adventure (Disks 182-207) in that drive. The program will continue using that second disk and will store data about your character on that disk (the "fresh meat" file.)

Disk 180 can be used to design your own Eamon adventure.

WAP'S FIRST MAC DISK

SIG Mac's two librarians, Tony Anderson and Ron Grognet have been hard at work assembling a preliminary version of our first Macintosh/Lisa disk. The disk offers about 150K worth of Microsoft Basic programs, many of which were downloaded from CompuServe by Al Knapp. This disk will be sold before the montly meeting for $7 per copy. Hurry while supplies last! Tony offers the following list of highlights:

MACTEP - (by Dennis Brothers) All the software you need to turn your Mac into a telecommunications terminal. It even includes the pin connections for the cable to attach any modem to the connector on the back of the Mac. This is Version 1.8, which supports auto-dialing for modems that support that feature. Other features include file uploading and downloading with a special download mode designed just for BASIC programs. Don't wait for MacTerminal; telecompute today.

MOUSE MACTEP (by Dennis Brothers and Loftus Becker) - Lofty Becker took MacTep Version 1.8 with all of its great features and made it even better by adding mouse control of all the menus.

MACGLOBE (by Carl Koffel, Andrew Tuline, and Christopher Allen) - Learn how to animate with MS-BASIC or just impress your friends wiht this 3-D rotating globe. Plus, it moves under mouse control.

DISK DUMP (by R. H. Nicholson) - If you're a programmer, you have probably wondered what secrets are hidden out there on that little 3.5 inch disk. Well, now you can know what's there in all of its gory hexadecimal detail. This program allows you to look at any of the 800 or so blocks on the disk. Share your discoveries with the rest of us in the form of a MacWrite document.

SHAPE (by Mike Cohen) - This program allows you to draw with the Mouse and save your creation to the disk. The saved file can then be used later by another MS-BASIC program to load an array for screen display.

MAC ERROR LIST - The complete unexpurgated list of all the things that your Mac can do wrong. We hope that you never need it.

Q DRAW NOTES - Those with MS-BASIC most likely have noticed by now Appendix E of the manual. It lists the calls to the Macintosh ROM routines, but that is all. No description of their function, no examples -- just a reference to an unavailable Apple manual. Well, here are some of the details that Microsoft left out.

And many more!

SIGMAC NEWS

by Ellen L. Bouwkamp

SIG Mac will meet after the main meeting to discuss general topics of interest to SIG members. There will also be a second meeting on the first Thursday of each month at 7:30 PM in the WAP office. This second meeting will focus on programming, and no special expertise is needed to participate.

At our last meeting one member brought his copy of Inside Macintosh, which describes the Mac's ROM routines. It appears that you do not have to be an Apple Certified Software Developer to receive a copy. Just send $150 to Apple and wait. (Inside Macintosh was described as a "philosophy manual written in assembler.")

Creative Logic has released the first version of Forth for the Mac, at a cost of $150. This is an elementary program. MacFORTH uses standard Mac concepts. The tutorial on the disk is not very good - if you don't know Forth you will have to learn through another manual. MacFORTH uses 32 bit integer arithmetic. It supports the Imagewriter, and you can create you own pull-down menus. Creative Logic is good on updates, and all disks can be copied. MacFORTH Version 2 will contain assembler and advanced graphics for $250. For software developers, there will be a third version for $2,500 that will also provide licensing for several hundred copies of developed software.

Two versions of the Finder (the operating system) are now available. The version on the system master disk is 1.0. Apple Finder 1.1 is now available. Another program, Disk Copy, will allow copying of disks in 4 swaps rather than 9. Most dealers are not charging for this upgrade. A revised MacWrite will also allow superscripts and subscripts.

Ellen Bouwkamp has acquired a list of proposed Macintosh software provided by the U.S. Department of Agriculture Information Technology Center. This list is available in the WAP office.

A font editor is being distributed to developers. Compuserve's "MacTEP" is public domain software which is undergoing constant improvement so that it will soon be better than MacTerminal for communicating over modems, e.g. to Compuserve. When MacTEP is running, however, desk accessories cannot be used because of memory allocation conflicts. You need Microsoft BASIC to run this program. An earlier version of MacTEP was published in A+. However, typesetting errors were made. Users can correct by inserting "greater than" and "less than" signs into the A+ program.

The second issue of MacWorld is more substantive than the first issue, and provides a review of Microsoft Chart, a plotting program. This software is reported to be powerful but slow.

Version 1.01 of Microsoft Multiplan will soon be available at dealers. Owners can exchange the earlier (and error prone) version.

Two members brought their Macs and gave demonstrations of Microsoft BASIC (which lists for $150 but costs less through WAP's group purchase). The upgrade to the 1.01 versions will cost in the vicinity of $25 to 1.0 owners. Version 2.0 will have substantial documentation and will cost $50 to upgrade. A bug in the 1.0 version causes the "SAVE" process to abort if you press any key. When LISTing a program, Microsoft BASIC places the list window on the right of the screen. Almost always this box must be moved left to see the entire line of programming. When the programming line is too long, the scroll bar must be used. Also, using "NEW" from the pull-down menu does not reset the title in the output window, but typing "NEW" in the command line does. Microsoft BASIC for the Macintosh is a standard implementation of Microsoft's BASIC for, among others, the IBM PC.

As soon as possible, SIG Mac hopes to be able to provide 3 1/2-inch Mac disks to interested new members in lieu of the 5 1/4" disks now distributed in new member packets. Since the programs on the current new member disk are not compatible with the Mac, other software will have to be provided. Bob Platt solicited public domain software from all SIG members. Anyone who has written such programs should contact him.

MacBASIC, MacPASCAL and an assembler/debugger will be out this summer. Microsoft BASIC 2.0 will also be out this summer. It is supposed to include many of MacBASIC's features.

Tom DeMay is offering "home-grown" carrying cases for the Mac. Contact him for further information.

Late breaking news ...

- Computer Age has started a "Capital Macintosh Users Group" at its store at 9431 Georgia Avenue, Silver Spring, MD. No fee will be charged for membership. For further information contact Danny at 588-6565.
- MAC'S SUCCESS STORY was highlighted in USA Today on May 3. Stories list other users groups: Macintosh Users Group of San Francisco (415) 441-8648, Betsy Radford, newsletter $30/year; ClubMac, Boulder, CO (303) 449-5533, Rick Barron, newsletter $35/year; Macintosh Users Group of Boston Computer Society, (617) 367-8080, newsletter $24/year.

DESIGN THE WAP LOGO

The Special Interest Group Macintosh is sponsoring a contest to create a version of the "Pi in the Apple" logo of Washington Apple Pi using MacPaint or MousePaint. The winning logo may be used in club activities, on club stationery, or for other uses. Entries should be submitted in hardcopy form with the author's name, address and telephone number. The entry should fit on one screenful of MacPaint or MousePaint. The winning entry will become the property of WAP and the winner will be asked to donate the logo in machine-readable form to the club. A suitable prize (a WAP T-shirt? Disks?) will be awarded. Entries should be submitted by mail to:

WAP Logo Contest
Washington Apple Pi, Ltd.
8227 Woodmont Avenue, Suite 201
Bethesda, Maryland 20814

Entries may also be submitted to Tom Warrick at the June meeting.

MACINTOSH AND HIS SISTERS

by Loftus E. Becker Jr.

There is at the moment considerable confusion about the relationship between Macintosh and his big sisters (all of whom, confusingly, are named Lisa). The confusion has been confounded by the excitement surrounding Macintosh's delivery, and ambiguous and sometimes misunderstood press releases. What follows is, I believe, all accurate (and verified by observation) except when it is clearly labeled rumor. It may be helpful to those contemplating the adoption of one of the members of the family.

Macintosh is the baby and much written about. It comes with 128K of RAM and a single, 400K, internal disk drive. Apple has announced plans to make an 800K, double-sided disk drive available, but has not announced a date, and speculation suggests this will not come out until 1985. An external (currently 400K, later 800K) disk drive will be available within months. Other manufacturers have announced hard disk drives for the Mac (5MB and up); nothing has yet appeared. Operation with the single disk drive requires many disk swaps for serious work, and takes about 5 minutes to copy a single, full disk.

Apple has designed the Macintosh to be upgradable to 512K of RAM, and indeed, some "value-added" retailers have sold 512K Macs. However, Apple's own release of these high-memory machines is awaiting a price drop in 256K RAM chips. Rumor now says this will not be before 1985. Early purchasers will be able to upgrade, at a charge said to approximate the cost of the new chips. Since the RAM chips are soldered onto the board, the upgrade will be performed by a dealer, who will swap motherboards and return the original Apple for credit.

Most of the software announced for the Mac is designed to run with 128K. In some cases there may be an improvement when 512K is available, but whether or not this is so will depend on the software. At least one announced program - an upgraded version of Lotus 1-2-3 - will require 512K to operate. This presumably will not be released until 512K Macs are readily available.

The cheapest Lisa is the Lisa 2/0, sometimes described as "Big Mac" or a "Mac in a Lisa case". This is not quite accurate. The internal hardware of the Lisa 2/0 is all Lisa; it does not, for example, contain the Macintosh ROM. At least for the "first hundred days," the Lisa 2/0 comes with MacWorks, a program to allow the Lisa to emulate a Macintosh. This is necessary since the Lisa 2/0 - which comes with 512K of RAM - will not run any Lisa software.

The Lisa 2/0, which lists at $3495, or $1000 more than the Mac, deserves consideration by anyone eager for more memory in a Mac or desirous of running Mac programs with a larger screen. The Lisa screen is about 3" larger than Mac's (on the diagonal), and at least some programs (MacWrite and Multiplan are two I have seen) can use the extra space to display more information than is visible on the Mac. However, the Lisa 2/0 is not 100 percent compatible with the Mac. The screen aspect ratios are not the same - hence, in MacPaint, circles appear as ellipses, and everything is vertically stretched. Whether all Mac software will run under MacWorks is unknown and, at this time, unknowable. The preliminary version of MacWorks would not run either Microsoft Basic or Multiplan (except for some demonstrations). Presumably the official release version will run these programs, but future compatability may depend on the extent to which programmers follow Apple's protocols. And for graphics programs, the screen aspect ratios may be a problem. Apple has stated that software can be written to take this into account, but it is obviously not a simple matter - as witness the fact that Apple's own MacPaint does not do so.

A more serious problem may be hardware incompatability. The Lisa simply does not have the same outputs on the back that the Macintosh does. Hence, peripherals designed for the Macintosh will need adaptation for the Lisa. In some cases, the adaptation may be as simple as changing the shape of the connector. In other cases it may be impossible unless Apple releases a card for one of the three Lisa slots that will give Mac-like interfacing. I do not know whether this is even technicaly possible, and Apple has said nothing on the matter. Among the interfaces missing on the Lisa is the Mac's connector for a second micro disk drive. Lisa owners hence may be limited to the internal drive, plus whatever hard disk drive they may choose to acquire.

For an extra $1000 (thus totaling $4495), one can buy a Lisa 2/5. This is a Lisa 2/0 (512K RAM) with a 5MB ProFile hard disk drive included. Since the ProFile normally costs about $2000, this appears to be a good deal. It is not quite as good as it seems, however, since purchasers of the Lisa 2/5 will normally have to pay extra for the MacWorks operating system.

Except for the ProFile, the 2/5 is identical to the 2/0. The first version of MacWorks, Apple has announced, will not allow use of the ProFile! Hence, at the moment, the hard disk is virtually useless. Apple has stated that later releases of MacWorks will allow use of the hard disk for program and data storage, but there is no firm word when that will happen. Hence, anyone who buys a Lisa 2/5 is in some sense gambling on the future. At the moment the ProFile is virtually useless in such a configuration.

You will note that I said "virtually". Although Apple has not said this - and indeed its literature denies the fact - it appears that Lisa programs (the Desktop, LisaWrite, and so forth) will operate on a 512K Lisa with the hard disk installed. At least one dealer has reported that he has successfully installed and run the Lisa Desktop and associated programs on a 512K machine. The bad news, however, is that the programs in that environment run so slowly as to be almost unworkable. The Desktop, for example, takes over 5 minutes to load from the hard disk. This fact, however, leads to speculation that Apple may be rewriting the Lisa software to make it operable in a 512K environment. If so, the Lisa 2/5 can become an important computer, able to run Lisa software and much if not all Macintosh software. However, at the moment, at best this is a gleam in the programmers' eyes. It has not been announced, and it is even possible that it will turn out not to be workable at all.

Hence, right now the minimum configuration that will allow the operation of Lisa software (and use of the hard disk) is a Lisa 2/5 with an additional 512K of RAM, giving the machine a full megabyte (or a "full gallon"). The full-gallon Lisa will run the Desktop and all associated Lisa software, somewhat faster than the original Lisa would. However, it is not cheap. The extra 512K costs $1495, bringing the price of the

contd.

machine alone to $6000. To this must be added the software cost - $295 for the Desktop and most of the programs (LisaDraw and Lisa Project are $395, and LisaList is $195). MacWorks is an additional charge if you want it. Hence, a full working system sans printer will cost upwards of $7000, most likely close to $8000.

And that's just the 2/5. The top of the line is the Lisa 2/10, which instead of the (external) ProFile has an (internally mounted) 10 megabyte disk drive. It is not clear whether the 2/10 has actually been released or is only available in demonstration models. It costs $1000 more than the 2/5, or $7000 for the hardware alone if purchased with the full megabyte of memory.

The 2/10 has several advantages over the 2/5. First, of course, the hard disk has twice the storage capacity. Moreover, it is internally mounted and can't slip off the top of the machine or take up desk space. Finally, although the speed of the ProFile was improved in the latest release of the Lisa operating system (and is said to be improved even more in a forthcoming release), the internal drive is significantly faster than the ProFile. Those who have seen demonstrations have estimated that it is two to five times as fast. If so, given the extra space and the large storage requirements of the Lisa Desktop and programs (about 2.3 megabytes), the 10 megabyte drive is well worth the extra $1000 for those who can afford it.

That's the rundown as of the end of March. Those on the edge between buying a Macintosh or a Lisa are probably best advised to wait until fall, when the uncertainties should mostly be cleared up. If the best of the rumors comes true - MacWorks fully compatible, few hardware incompatabilites, aspect ratio problems solved, and the Lisa Desktop rewritten for 512K - then the Lisa series will be truly spectacular buys for those willing to sacrifice portability. If worst comes to worst, however, Lisas will remain wonderful computers, but more as an alternative to rather than as an extension of the Macintosh. The carefully spaced price ranges suggest that Apple is working towards full compatability, and a true "family" of 32-bit computers. Let's hope they attain it.

** NEW ABBS **

WAP has set up a new special ABBS - For Sale/Wanted to Buy. This is an information only bulletin board and will be on the air from 7:30 PM to 7:30 AM. The number in Silver Spring is (301) 871-7978. Watch the Journal for notices of other special bulletin boards as they go on the air.

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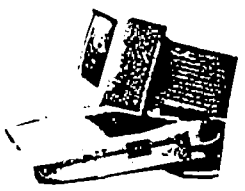
AN APPLE OWNER'S GUIDE TO THE //c



by Robert C. Platt

On April 24, Apple introduced the latest member of its growing family, the //c.

Although the theme at the debut of the //c was "Apple][forever," a natural concern for all][and //e owners is whether the new //c will make their models obsolete. Also,][owners who are considering an upgrade may be considering the purchase of a //c rather than a //e. This brief discription of the differences between the //c and its forefathers will address these concerns.

PHYSICAL DESCRIPTION

The //c has a striking design. Traditional Apple beige has been replaced with an off-white. It looks spiffy. The //c is designed to be portable and easy to set up. It weighs only 7.5 pounds and is just 12" x 11" x 2". It easily fits into a carrying case. Because the //c will ultimately work with either batteries or a power cord, the main transformer is a separate unit that plugs into the back of the machine. An RF modulator for attaching a TV is also included as a detachable unit. This will permit direct attachment of a color or black/white monitor if a TV is not used. Apple also plans to offer an optional "flat panel" display next fall.

The //c case cannot be opened. Instead, all connections are through standardized plugs and sockets located on the back or side of the case. The //c keyboard is built into the case and offers a full-action contoured set of keys with a layout identical (except for placement of the 'reset') to the //e. A single disk drive is included in the main unit. When in use, the carrying handle on the back of the //c case can fold down to prop up the keyboard on its intended angle (and to provide ventilation through the bottom of the case.)

TECHNICAL DIFFERENCES

An open case and slots are unnecessary on the //c because the standard input/output circuitry is already built into the main unit. As a result, the ROM programs usually provided on interface cards are incorporated into the monitor ROMs of the //c.

The //c is the functional equivalent of a //e with a disk controller and one drive attached in Slot 6. A socket in the back of the machine provides for the connection of another 143K drive in Slot 6, Drive 2. (Apple offers a new Disk //c, which is functionally identical to the old standard Disk][, except that it has a different plug on the end of the cable.)

Slot 1 corresponds to an Apple Super Serial Card configured for a serial printer. (Note that because the ROM for this "slot" does not have the standard identification, it will not be recognized by Pascal.) The ROM routines will recognize control character sequences to change baud rate, the number of data bits, parity, and printer width. (Because a serial printer is necessary, //c owners will not have access to the competitive printer market created by the][, Radio Shack and IBM PC compatibles. However, some manufacturers, such as Okidata sell printers that will operate with either serial or parallel input, and a large number of serial printers are already on the market.)

Slot 2 corresponds to an Apple Super Serial Card configured for a modem. Control characters can also be used to modify the performance of this port. Both serial "cards" connect to their peripheral devices through a 5 pin DIN connector on the back of the //c.

Slot 4 corresponds to the recently-announced AppleMouse card. However, unlike the separate AppleMouse, the Mouse for the //c plugs into the game paddle socket. The monitor ROM includes routines that permit the mouse to be used as game paddles, and to "read" mouse movements from Applesoft programs.

Note that these are the only means for connecting input/output devices. No memory cards, coprocessors (such as the Z80 or 68000 cards), or other interfaces can be easily connected to the //c. This limitation is the major advantage of a //e over the //c.

MEMORY. The //c includes 128K of RAM, and looks exactly like a //e with an extended 80 column card. Hence, the //c supports "double hi-res" graphics. The //c also has a different character generating ROM that defines 32 new "mouse" characters. These icon characters contain symbols that are useful in designing mouse oriented input routines. The Apple literature implies that these same symbols may someday be available on future //e's that are "icon supported." The mouse characters are displayed as a part of the special 80 column mode available through the PR#3: PRINT CHR$(27) command in Applesoft.

PROCESSOR. Unlike the earlier][family, the //c uses a 65C02 chip. The 65C02 not only uses less power than the older 6502, it also has 27 added machine language instructions.

MONITOR ROM. Apple has rewritten the //e monitor to make the routines more efficient. In addition, the monitor has been revised to permit interrupts to be supported on the //c. This means that programs which are written especially for the //c can run faster, because the program need not waste time in loops waiting for input. Instead the //c can perform one task while waiting for another event, such as moving the mouse. Under the new //c monitor, DOS, Pascal and ProDOS can all support interrupts.

SOFTWARE COMPATIBILITY

Apple is publishing a list of software that has been tested for //c compatibility. Given the minor differences between the //e and //c, most //e programs will run on the //c. However, the opposite will probably not be the case. For example, if a machine language program uses the 27 new instructions, or relies upon interrupts to handle mouse input, then it will have to be rewritten for the][and //e. (WAP will support each model, but please indicate whether software is for //c only when you donate to our library.)

EVALUATION

The //c is well-suited for its primary market: homes and schools. The price will prove very competitive against the IBM PC Jr. However, if you are a][owner thinking about upgrading your system, I suspect that you will be happier with a //e.

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APPLEWORKS: A Review

by Walt Mossberg

With all the talk lately about integrated software for the IBM-PC and the promises of same for the Mac, Apple //e owners may have had reason to feel a bit jealous, or glum. But no longer. Apple has just issued a powerful, elegant integrated software package for the //e that puts that machine in a class by itself among 8-bit, $1000-price range computers. The package is called AppleWorks and it may be the single most important piece of software ever written for the venerable Apple][series.

Produced for Apple by a company called Haba, AppleWorks combines a full-featured word processor, a roomy and potent spreadsheet and a sophisticated database management program in one product, for the incredible price of $250 ($199.95 at some stores hereabouts). The three programs are resident on a single disk, and interact with each other via a "desktop" file management system that can juggle up to a dozen files in memory simultaneously - any combination of up to 12 Word Processing documents, spreadsheets, or data reports. Overlapping "windows" - or effects that behave just like windows - are employed.

Like any program, AppleWorks has some shortcomings, and these will be discussed later. But AppleWorks' Word Processor, Database and Spreadsheet would be considered first-rate as stand-alone software. Together, they constitute a program few Apple owners will want to do without.

Requirements

AppleWorks requires an Apple //e or //c. Sorry, no][or][+ can run it. For Apple ///'s, Haba markets on its own an identical program called III Easy Pieces. On Apple //e's, an 80-column card is required. An extra 64K, while not technically required, is nearly essential. Without it, only about 6K of files can go onto the "desktop" because the integrated programs take up so much RAM. With 128K, the desktop contains about 55K.

Only one drive is required, so new //c owners can start right in. But two drives save a lot of disk-swapping, as the program disk can reside in drive 1 and the data disk in drive 2. The program uses the Apple DMP as its default printer setting, but an installation menu allows easy use of the other Apple printers (Imagewriter, Daisy Wheel, Silentype); Epson MX, RX and FX; and Qume Sprint 5 and 11. Non-listed printers can be installed through a "custom printer" routine with easy prompts. There have been some problems with Grappler and certain other printer cards, but Apple has issued a new disk to fix some of these (see Shortcomings, below.)

The Package

AppleWorks comes with five disks: a boot or startup disk, the program disk, a sample files disk and a two-disk on-screen tutorial. All the disks are unprotected. In addition there's a main 280-page manual and a second 159-page "Tutorial" manual, which uses the sample files but is separate from the two-disk on-screen tutorial.

Compatibility

The program, like all new Apple software, runs under ProDOS rather than DOS 3.3, but users don't need to be ProDOS experts. The ProDOS file-naming conventions are covered in the manuals, and ProDOS' habit of naming disk volumes is a handy feature. AppleWorks can read and convert to its own use any ASCII Text file, VisiCalc or DIF file provided it has first been converted from DOS to ProDOS via the utility on the ProDOS User Disk (not included with AppleWorks). So your precious documents and models can live on in AppleWorks. Quickfile //e files can be used by AppleWorks' database with no conversion at all. Even WordStar files on CP/M can be used by AppleWorks after a two-step conversion: first into DOS 3.3 and then to ProDOS.

Managing Files on the "Desktop"

Switching among the files on the "desktop" is almost effortless. AppleWorks presents users with screen displays that mimic the "window" overlays of Lisa/Mac or Microsoft WINDOWS. For instance, the main menu commands (for saving or retrieving files, cataloging data disks and the like) are represented by overlapping file-folder images on screen. If you select "Add Files" from the Main Menu "folder", a second folder, labeled "Add Files", appears on top of the first one, with a choice of file sources listed in it (you can still see the top and left of the first Main Menu folder, though, so you can tell where you came from). If you choose to get a file from your data disk, a third overlapping folder, called "AppleWorks Files," appears atop the first two, bearing a disk directory from which you can select up to 12 files.

From within any file (of any of the 3 types), the command OPEN-APPLE-Q opens a window at mid-screen that lists all other files on the desk top. Selecting one from the list, and hitting return, switches you to it instantly, without returning to the Main Menu.

Command Structure

The three programs share a command set that is 95% identical, and is customized for the //e keyboard, for easy learning and quick execution. For instance, to delete blocks of word processor copy, or columns or rows on a spreadsheet, or records on the database, you just use OPEN APPLE-D. One simple two stroke command is all you need learn for most important functions in all of these programs. (No more memorizing separate command lists for, say, Apple Writer, Quickfile and VisiCalc.) In all three programs, OPEN-APPLE-S will SAVE your file and OPEN-APPLE-H will do a simple screen dump to the printer. All cursor moves are also common, and simple (they use the arrows and - for big scrolls - the OPEN-APPLE key.)

At all times, in every program, the user can toggle between an "insert" cursor (which requires use of the delete key before replacing text) and an "overstrike" cursor (with which you can simultaneously write over and delete existing text). The screen format for all three types of files is standardized, too, along the model of Quickfile //e. Thus, each screen bears a header identifying the file name, the portion of the program you're in, and what will happen if you hit ESCAPE (it often returns you to Main Menu). It's very tough to get lost in AppleWorks.

Documentation and On-line Help

The manuals, printed and disk tutorials, and on-line

contd.

help screens are excellent. Help can be obtained any place in AppleWorks by hitting OPEN-APPLE-?. Any user should be able to stop using the manual after a while, especially those familiar with other programs.

The Clipboard

AppleWorks allows you to cut or copy portions of any Word Processor, Database or Spreadsheet file and paste them into any Word Processor file. Just like Lisa and Macintosh, it performs this feat by means of a "Clipboard," a special holding buffer in which material resides after being cut out of or copied from one file, but before it's inserted (or pasted) into another. Unlike on Lisa or Mac, the AppleWorks Clipboard is never represented on screen, but prompts guide the user on how to employ it. This feature, activated via a common OPEN-APPLE-M (Move) command in all three programs, allows you to create perfectly formatted documents with detailed database or spreadsheet tables included in the middle of text. It also lets you create boilerplate text passages that can be held in the Clipboard and used as needed in letters, reports, etc.

The Word Processor

AppleWorks' word processor is far superior overall to AppleWriter //e ($195), heretofore the most popular Apple][word processing program. It wins hands down as well over Magic Window and the several simple "home" word processors issued lately (i.e. Bank Street Writer, Home Word, Cut & Paste). Compared to the $300+ WordStar, it still looks very good. It has most of WordStar's most desirable features, and what it lacks is more than offset by its infinitely greater ease of execution and speed.

Unlike Apple Writer, AppleWorks' WP is of the what-you-see-is-what-you-get variety. That is, as margins change, so does the width of text on-screen. Another Apple Writer deficiency remedied here is that the writer can call up dotted-line page breaks, as in WordStar, to see what text will be on what page. The page break marks don't stay visible all the time, and the screen text doesn't show double or triple spacing. But Appleworks' word processor doesn't make you guess what your printed copy will look like, or force you to figure it out while it speeds by.

As mentioned above, writers using AppleWorks get a full choice between an insert-type and an overstrike-type cursor. Moving blocks is a snap. There's no arrow direction to set, no complex control codes to go through. You just put the cursor at the start of the block, hit OPEN-APPLE-M, move the cursor to the end of the block (the intervening text turns to inverse characters), hit return, then put the cursor at the new location, and hit return again. Voila! Essentially the same procedure is used to delete big blocks.

The find-and-replace function is excellent. But there's no WPL as in Apple Writer, and no mail list merge feature...yet (Apple says maybe in a future version). A partial substitute, for small batches of letters, is a feature whereby you can make the printer stop at specified points and accept copy typed from the keyboard, such as new names or addresses. Tab-setting is a breeze and one-line headers and footers are allowed.

Print formatting is a snap. Embedded "dot" or CTRL-V commands and separate print menus are out. Instead, OPEN-APPLE-O brings up a vast options menu at the bottom of the screen from which all format features can be set: margins, size of type fonts, justification type, line spacing, underlining, boldface, sub-and-super scripts, headers and footers, automatic page numbering, forced page breaks, controlled indents, print pause, setting of markers, skipped lines, and more. These settings can be read at the points where they take effect in the text by simply hitting OPEN-APPLE-Z. AppleWorks will print multiple copies, and the printing process can be made to pause or abort with a single keystroke.

Word Processor files are limited to 2250 lines on a 128K Apple (though the manual erroneously puts the limit at 1536 lines). That's about 40 single-spaced pages, and uses most of the desktop's 55K of space. Long documents must therefore be broken up into several files.

The Database

This part of AppleWorks is simply a somewhat beefed-up, slightly faster version of QuickFile //e. But that's not faint praise, as QF is a very fast, versatile database program. On a 128K //e, the database can hold about 850 records of 75 characters each in an average file. Each record can have 30 categories, with entries of up to 76 characters in length. Maximum size of each record is 1024 characters, or 1K.

The AppleWorks database produces table-style or address-label-style reports, with very flexible layouts and the ability to "zoom" in on a record in a table and read its entire contents, including categories you've deliberately left out of the table. One file can be manipulated to produce a variety of reports, printed either to disk or paper. This can be done by sorting in different ways, selecting different records, changing the categories included in tables, etc. The Database also does column totals and creates new categories by calculating relationships among others.

Printing is done via an options menu that allows changes in all four margins and in the size of the typeface, and then instantly calculates the effect of the changes so you can tell if they still allow the table or label you created to fit.

The Spreadsheet

The AppleWorks spreadsheet has many of the advanced calculating functions and most of the formatting features of the $400 VisiCalc Advanced Version. And it sorts rows alphabetically and numerically, and has a "Find" feature, to boot. What's more, the AppleWorks spreadsheet boasts 127 columns and 999 rows, versus 63 columns and 254 rows on VisiCalc Advanced (according to my VisiCalc manual, p. 3-119). Yet it's blindingly fast compared to Advanced VisiCalc. VisiCalc AV's main advantage is the "macro" feature that links several commands in one. But AppleWorks' speed makes this less useful. Also, Visicalc can accept somewhat longer formulas than the AppleWorks spreadsheet. But AppleWorks, like Advanced VisiCalc, has individual column widths, split worksheets, fixed titles, protected cells, special formats including dollar signs and % marks, lookup tables, and manual or automatic calculation.

AppleWorks has fewer functions available, but it includes ABS, AVG, CHOOSE, COUNT, ERROR, INT, LOOKUP, MAX, MIN, NA, SQRT, SUM, NPV and IF. Those with specialized accounting or scientific interests may miss some others from VisiCalc, but most users should find these adequate.

Editing and cursor movements are a snap on the spreadsheet. Copying (Replicating) and Moving columns and rows are similar to those functions in other parts of AppleWorks. As in the database, there's a print options menu with margin settings, spacing, and type font size choices. And AppleWorks calculates whether the spreadsheet still fits on the page after changes are made.

contd. on pg 51

HELP - MY PRINTER DOESN'T WORK

by Joan Bixby Dunham

"Help, my printer doesn't work", is a question I find I am asked frequently as the WAP hotline Apple Dot Matrix printer consultant. I put together some suggestions to help determine what is wrong with a malfunctioning printer, and maybe even how to make it work. I have tried to generalize the comments so that they will apply to all dot matrix printers, and not just the ADM. The comments are arranged in order of decreasing severity, starting with nothing happening when the printer is turned on, and proceeding to the printer working fine with some programs but not all.

1. Printer will not turn on.

With many dot matrix printers, when the printer is turned on, the printer head should move to the right, to the left, and stop at the left margin, with some indicator lights on, perhaps labeled POWER and SEL. If nothing happens when the printer is turned on, check the following:

Is the power cord plugged in? Is the circuit it is plugged into working? Try another electrical appliance on that circuit. Has the fuse blown in the printer? Check the manual to see where it is. Some printers may have two. Unplug the printer, take out the fuse, and see if it is OK.

Is the power cord OK? Borrow another cord and see if it works. If nothing else seems to be wrong, there could be a problem with the printer circuitry. The printer on/off switch could be broken, for example.

2. Print head will not move.

The print head is the part that forms the characters and sits inside the ribbon cartridge that moves across the paper. If the print head doesn't move, or only moves part of the way across the carriage, something could be in the way, or malfunctioning in the mechanism used to make it move.

Is there something inside the printer in the way? Cardboard packing material? The head should be free to move from one side to the next. You should be able to push it by hand along the bar. Turn the printer off, and try, but do not force it. Moving the head should make a sound like gears turning. If you can't move it, or if the motion is very rough, the printer may have a serious problem.

Is the head pulley wire OK? Most dot matrix printers, along with typewriters that move the printing element and not the paper, use an arrangement of wires, pulleys, and a motor to pull the head back and forth across the paper. Look at the wire, and make sure it is firmly attached, and not loose, detached, or broken. If you try moving the head and find it very loose, with little or no resistance to being moved, this may be where your problem lies.

If the print head was taken out for any reason, was it properly replaced? The print head has a cable that carries information to it, and attaches underneath, or on a side away from the paper. Was it disconnected if the head was taken out?

3. Printer does not "select" when turned on.

This means that the printer is on, but not able to receive communications from the computer. If it has a "select" or "SEL" light, the light is probably off. If there is a "select" (or SEL) button, try pushing it.

(a) If the light turns on, the printer is probably set to power-on deselect. You may want to set it to power-on select, and will have to see your printer manual for how to do that.

(b) The SEL light just flickers when the SEL button is pushed, but doesn't stay on. Do you have paper in the printer? Some printers have a paper detector to prevent their use without paper. Your printer may have a carrier cover switch to keep the printer from working when the cover is off. Is the cover on correctly? If it is, and the SEL light is still not staying on, take off the cover and try to find where the cover switch (sometimes called a case interlock switch) is. Hold it down and try the SEL button again. This button switch could be broken.

(c) The SEL light doesn't even flicker but the printer seems OK. The light could be burnt out.

4. Printer self-test produces bad results.

Some printers have the capability to do a self-test, producing a nice repeating pattern of all of the print characters. This is a good way to check for problems with the printer. If, instead of the pattern, you get

(a) Nothing. The button pushed for the self-test may be broken. The ribbon cable bringing power to the print head may not be correctly plugged in, or may have a break in the line. The printer head may not be correctly inserted, or may be broken.

(b) Only the top or bottom half of the characters prints. The thin metal shield which rides along in front of the print head on some printers may be pushed slightly out of position (which can happen while changing ribbons). It should be level. Try pushing it back to a level position. The ribbon may not be correctly inserted. Check to see that it is not folded over. It may be defective, and be miscut or partially uninked. Try another.

(c) A horizontal line in the characters does not print. The printer pins are not all firing; you may need a new print head.

(d) The print appears patchy, with areas of light and dark. Try another printer ribbon, this can be the symptom of an improperly inked ribbon.

(e) Prints some, but stops without being turned off. The printer probably needs repair.

(f) Only particular characters fail to print. This shouldn't happen, but there may be a defect in the printer's character generator ROM. Some self-tests do not print all the characters, but the manufacturer should provide you with a sample of a good self-test.

(g) A vertical line is light, or doesn't print. If it is on every character, the printer head may need replacing. If it only happens on certain locations on the paper, check for holes in the printer platen.

5. No communication from computer to printer.

contd.

Run program DUMB TYPER (listed below), or from Applesoft BASIC enter PR#s, where s is the slot number of the interface card. For example, if the interface card is in slot 1, type PR#1<cr>. If it prints what you type on the keyboard, you're in business. (The Apple may complain about SYNTAX ERRORs if you use PR#s, but that is normal. It wants you to enter BASIC commands, and will notice if you don't.) If you get something like one of the following:

(a) Nothing. Check your slot number and make sure you used the right one for the interface card and the printer. Make sure the interface card is correctly inserted into the slot. Make sure the cable from the printer to the card is correctly inserted at both ends. (Turn off the Apple and the printer and wiggle things to make sure they are firmly in place.) If you can't get any improvement, try borrowing another cable and/or interface card and see if it works then. Your cable could have a break, or the card may be bad. If you are using a "fancy" interface card, one with a buffer, or with phantom slots (Versacard, for example) try the printer with a plain vanilla parallel card. It could be that, if you have a card which requires some configuring, you may not have it configured correctly. Other things to try are to move your interface card to another slot, or to take every other card you have out, and leave the printer card as the only one. It is possible for additions to the Apple to conflict.

(b) The result is garbled in some way -- what is printed is not what is typed or what shows on the screen. There are doubled characters, or, more likely, missing characters. There is something wrong in the communication between the Apple and the printer. Try moving the interface card to a different slot, try the printer with a different computer, different cable, different interface card and see if the problem disappears. Try removing other cards, too. If your printer still does not work correctly when using a different computer, interface card, and cable, then it probably needs repair.

(c) The result is garbled in a different way - garbage (but the same garbage) shows up on both the screen and the printer, but it is not what is typed. The problem may be with the Apple keyboard, and not the printer. Turn off the printer and see if the problem is still there.

(d) Stuff comes out on the printer when it isn't wanted, but not when it is. Asking for the printer seems to turn it off. The printer may not be configured the way you need it. Check to see if you have DIP switches labeled "remote select/deselect" or "DC1, DC3" and "power on select". Try setting them different ways, to see which works best for you.

(e) ESC printer control sequences do not seem to get to the printer. If your printer is using control sequences of the type ESC + some character, you must enter them with a program. DUMB TYPER should allow them, but just using PR#s and then typing the ESC + character command will not work. That is because the Applesoft BASIC interprets the ESC as a lead-in to editing commands (ESC A, ESC I, etc.), and doesn't send it on to your printer. Instead, you need to write programs which contain statements like PRINT CHR$(27) "E", where CHR$(27) is the ESC.

6. DUMB TYPER, and PR#s work just fine, but not other programs.

If DUMB TYPER works, your printer is OK for printing text. (DUMB TYPER and PR#s do not help in testing printer graphics capabilities.) Commercial programs are often set with printer defaults, usually an Epson, sometimes others too. Every printer type, even others from the same manufacturer, has different control commands. You need to configure your programs to work with your printer. How to do that depends on the program, and will be explained in the program documentation. I am sorry not to be of much help (this is where most people have trouble), but it really is very specific to the programs. What works for one program will, in general, not be what to do for another.

7. Perforated paper rips and jams.

This is a problem I have found when using lightweight (15 lb) grade paper. One solution is to buy heavier (more expensive) paper. Another is to watch the printer as it prints, and interrupt the printing at the first sign of a jam.

8. No manual

Printer first and manual later seems to be the style. Pester the manufacturer, shipper, and/or dealer until you get a manual. You paid for your printer, you deserve decent documentation on how to use it. Also, watch the newsletters and journals for articles and suggestions on using your printer. The WAP journal, Nibble, inCider, Softalk, and Call-A.P.P.L.E. are all good places to look. Articles, programs, and hotline consultants, however, are all only supplements to a good manual on how to use your printer, and can never take the place of one.

This is based on a documentation file which will be provided on a diskette of programs for the Apple Dot Matrix printer which I am donating to the WAP library. The diskette will also have a version of Master Catalog for the ADM, and programs to set the printer to use some of its features. The programs should work for the Imagewriter printer, also.

This is program DUMB TYPER. It has the same effect as typing PR#n, except that, by being a program, it will avoid getting SYNTAX ERROR messages on each line.

```
10  REM  DUMB TYPER
20  PRINT "DUMB TYPER, JUST PRINTS EXACTLY WHAT YOU
    TYPE ON THE APPLE KEYBOARD ON THE PRINTER"
25  PRINT "THE PRINTER WILL PRINT WHEN THE BUFFER IS
    FULL, OR WHEN A <CR> IS SENT."
26  PRINT "THERE IS NO CORRECTING ANY TYPOS"
30  PRINT "WHAT SLOT (1, 2, 3, 4, 5, 6, OR 7)?";: GET
    A$: PRINT A$:A =  ASC(A$) - 48: IF A < 1 THEN
    GOTO 30
40  IF A > 7 THEN  GOTO 30
50  HOME
60  PRINT  CHR$ (13) + CHR$ (4) + "PR#";A
70  GET A$: PRINT A$;
80  GOTO 70
```

COMMERCIAL SOFTWARE LIBRARY

The following programs have been added to the Commercial Software Library since the original list was published in the April Journal.

Bank Street Writer
ScreenWriter //e
C.I.A. (Confidential Information Advisers) - Golden Delicious Software
Microsoft Multiplan for][+ and //e
" " " " - CP/M
The Routine Machine (Southwestern Data Systems) with utilities: &Chart, &Array, &Sampler I, &Screen.

PI-SIG NEWS

by Raymond Hobbs

PI-SIG held its first meeting under its new name last month (it was formerly called ASMSIG), and although there were a few latecomers, apparently everyone who was looking for us eventually found us. We should be easier to find in May - just look for our signboard.

The subjects of discussion were "Making Good Use of Your Resources" and "Structured Program Design", two topics which properly belong under a single heading, because structuring data and code is the key to optimizing resources on a computer. Perhaps this felt a little awkward for the "old hands" at assembly language, but as the discussion turned toward Pascal and C, everyone seemed to be more at home.

We will be continuing our discussions of data and program structures, in all languages (including BASIC), and invite anyone who is interested to come and take part. In the meantime, here is a tip that we'd like to share - it's called the STUB:

When writing a complicated program with numerous subroutine calls, it's frequently difficult to follow the program logic through all of the subroutine code (especially in debugging!). Just write a STUB. A stub is simply a RETURN - that is, your subroutine contains no code other than the return (or sometimes enough code to print a message indicating that the program arrived safely at the subroutine). That way the program logic can be tested easily and quickly, and the code for the subroutine itself can be added later, after the main program logic has been worked out. Here's a simple STUB that should be fun to try on your MAC:

```
10 ROUT = 108282: POKE 108282,78: POKE 108283,117
20 CALL ROUT
30 PRINT "Entered machine language subroutine and
   returned."
40 END
```

The CALL in line 20 goes to the stub, which we POKEd in line 10 (the routine is simply a 68000 RTS). The program doesn't do much, but you'll be one of the first people in the world to gain control of the MAC's CPU!

ARQUIMEDES was announced as PI-SIG's on-line technical help BBS (number is 332-9512). ARQUIMEDES is a two-level BBS, and PI-SIG will have access to the higher level, where there's plenty of space. Our thanks to Sam Hargadine, who is the SYSOP of ARQUIMEDES. For passwords, call the PI-SIG chairman.

A Z-80 card is available for use in the WAP classroom, enabling us to offer instruction in 8080 and Z-80 Assembly Language. If anyone is interested, contact PI-SIG to let us know which assembly language(s) you are interested in seeing offered.

People with assembly language programs, utilities or ideas for such to be put into the WAP library are encouraged to contact PI-SIG's new librarian, Mike Vore (992-4953). Assembly language problems are welcome, too, since it is the problems that get us to generate the solutions.

SAVE SAVE SAVE SAVE SAVE SAVE SAVE

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HARDWARE HELPERS

If you are having hardware problems with your Apple and/or peripheral equipment, the following persons have agreed to help. It will be at the discretion of the Hardware Helper just how involved he becomes. He may only suggest things for you to do, or he may actively assist in cleaning, removing or replacing parts.

Tilghman Broaddus
Rt 1, Box 246
Mechanicsville, VA 23001
(804) 779-2553 (till 10)

Gene Cartier
6026 Haverhill Court
Springfield, VA 22152
(703) 569-8450 (till 10)

J.T. (Tom) DeMay Jr.
4524 Tuckerman Street
Riverdale, MD 20737
(301) 779-4632 (till 11)

Bruce Field
1402 Grandin Avenue
Rockville, MD 20851
(301) 340-7038 (till 10)

Lyman Hewins
Route 2, Box 26
Leonardtown, MD 20650
(301) 475-9563 (till 11)

Pete Jones
1121 N. Arlington Blvd.
N. Arlington, VA 22209
(703) 430-1606 (7-10)

Bob Kosciesza
2301 Douglas Court
Silver Spring, MD 20902
(301) 933-1896 (till 10)

Mark Pankin
1018 North Cleveland St.
Arlington, VA 22201
(703) 524-0937 (till 10)

Richard Rowell
1906 Valley Stream Drive
Rockville, MD 20851
(301) 770-5260 (7-11)
(202) 651-5816 (9-4)

Jim Taylor
16821 Briardale Road
Derwood, MD 20855
(301) 926-7869 (till 10)

Ron Waynant
13101 Claxton Drive
Laurel, MD 20708
(301) 776-7760 (7-10:30)

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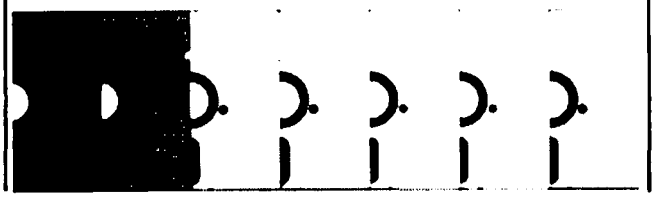

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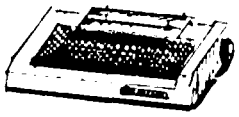

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I AM WHAT I AM. . . AND WHAT I AM, I AM

by John A. Love III

Almost this entire article is devoted to an absolutely exhilarating program written by Dr. Charlie Brown and presented in the December 1983 issue of Washington Apple Pi. This program, "User-Defined Programmable Function Keys", allows the operator to generate Macros via Charlie's utility. Once generated, you BSAVE each set of Macros to disk for use anytime later. Not only that, but the byte-length of each Macro set is limited only by the depth below DOS ($9600 for a 48K system) that you're willing to push HIMEM.

I will delve more deeply into Charlie's Binary code later on. But for now, suffice it to say that the resultant memory map looks like this:

```
      $9600 ---------------- DOS
Macros ) ---------------- Binary Code
Leader ) ---------------- Binary Code
   HIMEM ---------------- Applesoft Code
```

So, each Macro set actually consists of both the 139-byte Binary Leader that sets up access to your Macros and the Macros, themselves. (As I will point out later, the 140th byte is the Special Function Key for the very first Macro in your set.)

Charlie, you saved me some $$$ with this one! Some of the products on the market today, such as Videx's Function Strip, generate Macros via hardware and software control. However, here one is limited to 512 bytes for the total length of each Macro set. The opposite side of the same coin is that the Videx product does not interfere with Motherboard memory as their requisite 512 memory bytes are on the hardware they provide.

So there appears to be a trade-off. Aha !!! You've got an Apple][+ with a 16K Language Card, you say. Or, you've got an Apple //e. Why not load Charlie's program-generated Macros into the recesses of this additional 16K? No more interference with Motherboard memory, at least until needed. Folks, there's another great program to accomplish this, free just for the typing. Authored by Bill Christ, this program is called RAM MANAGER and was published by "Nibble" magazine in their Volume 4/Number 4 issue.

RAM MANAGER permits you to load any group of programs into this upper 16K. Let's say that this group consists of ten Macro sets, the cumulative memory of which is less than or equal to 12K. (This latter is a firm requirement with RAM MANAGER because only 12K of the 16K Language Card can be accessed at one time - see Bill's article for a thorough explanation of this.) Once RAM MANAGER loads all ten Macro sets into this 12K, then you use RAM MANAGER to selectively down-load, say, your VisiCalc Macro set; in short, only the Macro set you need at the time. At this juncture, or really when you generated this Macro set using Charlie Brown's utility, you must make sure that the Macro set's BSAVE address and length do not interfere with VisiCalc itself. (Statement #500 of the Applesoft Driver allows customization of this address and length just in case of conflict. If the memory map described above suffices, however, leave Statement #500 alone.) Yes, your Macro set is stored on the Motherboard, but only when actually used. So, there is still the trade-off mentioned earlier. However, customization of Statement #500 will eliminate any interference with the program you are using the Macro set with, such as VisiCalc. In this sense, then, the trade-off effectively disappears.

Speaking of the Applesoft Driver, I would suggest some minor modifications that pertain to data retrieval via GET versus via INPUT. This Driver retrieves the following:

1) The "End Input Symbol" (Statement #200).

2) The "Special Function Key", one byte long, such as "0" which could stand for PRINT CHR$(4);"OPEN FILENAME" (Statements #230,240).

3) The Macro "Function Definition" beginning at Statement #260.

As you notice, all three use GET for data retrieval. GET has its definite advantages. However, if you make a mistake on data entry, you'll have to start over from the beginning of the whole Macro set. Via GET, once the key is pressed, the ASCII value of the character is immediately POKEd into memory. Not so with the INPUT key; not until <CR> is pressed is the data POKEd into memory and, therefore, unretrievable without starting over. INPUT allows you as much time as needed to examine your data on the Monitor before pressing <CR>.

In this light, I suggest the following changes/additions for Statements #190 through #280, inclusively:

```
190 HOME : PRINT : PRINT : INPUT "ENTER END OF INPUT
    SYMBOL <RETURN> = ";EE$: REM <CR> IS THE DEFAULT
    VALUE.
200 PRINT : PRINT : PRINT
210 INPUT "SPECIAL FUNCTON KEY = ";M$
220 IF LEN (M$) = 0 THEN GOTO 290: REM END OF INPUT.
230 I = I + 1: POKE I, ASC (M$) + 128: REM START AT
    $708B.
240 PRINT : INPUT " FUNCTION DEFINITION = ";FD$
250 FOR CHAR = 1 TO LEN (FD$)
260 DF$ = MID$ (FD$,CHAR,1):I = I + 1: POKE I,
    ASC (DF$) + 128.
270 NEXT CHAR
280 POKE I, ASC (DF$): PRINT : PRINT : GOTO 210:
    REM LOW BYTE MARKS END OF THIS FUNCTION --
    MOVE TO NEXT ONE.
```

Notice that the default value of the "End of Input" Symbol is the <CR>, making it compatible with the test in my Statement #220. If you wish a CTRL-Q, for example, as this Symbol, then my Statement #220 should read:

```
220 IF ASC (M$) = 17 THEN . . . . . (etc.)
```

All in all, the above changes are very minor with respect to Charlie's super utility. They may not be worth the effort, especially considering the one-and-only-one drawback of using INPUT versus GET. INPUT will not permit a trailing <CR> to be an actual part of your Macro. This is to say, with INPUT, your Macro will be only displayed on the Monitor, not executed. After display of the Macro, to execute it you will then have to press <CR> yourself. The choice is yours. Quite frankly, the primary benefit my "digging into" this utility granted me was the increased understanding of DOS and Assembly language. I am simply trying to pass on some of the same benefit to you kind readers.

contd.

The largest dose of this increased understanding came when I dis-assembled Charlie Brown's Binary code. As Dr. Brown explained, the Applesoft Driver is RUN only once - when you first create your Macro set. After that, you simply BRUN the resultant Binary code to access a particular set. After adding the appropriate labels, together with prolific comments, the Assembled code becomes as shown at the end of this article. Let's examine it:

After we stipulate the Execution and Assembly addresses, Lines 14-29 specify the various addresses of important ROM routines, temporary storage registers, pointers and ASCII Character Codes. Rather than describe each of them now, let's save their descriptions for when we actually use them in the following.

What do we really have with this Binary code? Examination of the Applesoft Driver reveals that the resultant Binary code consists of a sequence of independent Macros. Each of these Macros leads with the one-byte Special Function Key that singularly stands for a Macro, such as: RUN COPYA,D1 ; PRINT CHR$(4) "OPEN FILENAME" ; or PRINT "SEE JANE RUN". The unique leading characters for these three Macros might be C,O, and J, respectively. Immediately following these single-byte descriptors is the actual Function for which each descriptor stands. Examination of this Driver further reveals that the very first single-byte descriptor is located at $708B (before movement of the whole Macro Binary code to just under DOS at $9600 - see the beginning of this article). The first Function byte then follows at $708C, with the Function continuing until its done. Each Function byte has its high bit set by the Driver, except for the very last byte of each Function. For the latter, the high bit is clear. So, that's how we tell when we are through with each Function - we simply test the high bit. Once we detect a byte with its high bit clear, we know that the very next byte is another one-byte descriptor, with its Macro Function following behind.

Now that we've seen the sequential pattern of Macro single byte descriptors and Macro Functions, we simply put these descriptors and Functions behind Charlie's 139-byte Leader to make a totally self-sufficient code that can be BRUN. The Applesoft Driver is used only once , and that is to create and then store the desired descriptor - Function pairs behind the 139-byte Leader. Once these pairs are stored, the Driver is no longer required. The remaining Binary code stands alone - a 139-byte "engine" and your Macros in the "caboose."

In general, this "engine" is nothing but a sophisticated filter through which all keyboard INPUT must pass. Under normal conditions, when you press a key, the ROM routine at $FD0C checks if any key has been pressed. If so, then it loads into the Accumulator the ASCII Character Code of the pressed key. Subsequently, the value in the Accumulator is transmitted to whatever output device the operator has selected. To filter or intercept the Keyboard input we need to investigate this ROM routine at $FD0C. We find that this routine executes an indirect JuMP to the Key input SWitch (KSW) located at $0038,39. With DOS not active, the address stored in KSW is $FD1B which is the ROM routine that checks for an honest-to-goodness keypress, any key. So, all we "gotta" do is place the address of our handy-dandy filter at KSW to intercept the input. There are only two firm requirements for our filter in order to perfectly imitate the normal (non-intercepted) scenario - start with a JSR $FD1B and finish with an RTS. That certainly sounds easy enough. We now know the beginning and the end of our filter. Charlie Brown has essentially already described the missing middle:

1) Test for a <CTRL-F>. A <CTRL-F> is the alert signal that we are coming to a Macro. The next byte following this <CTRL-F> specifies which Macro. Charlie Brown's "engine" then searches all the single-byte descriptors until a match is made. Once a match is made, all bytes following the correct descriptor are displayed on the Monitor (up to and including the byte whose high bit is clear). Another key is pressed - another <CTRL-F>, followed by a unique one-byte descriptor. And so forth UNTIL . . . . .

2) <ESCape> turns off access to Macros. Our filter is de-coupled from KSW. The address $FD1B is put back into KSW and everything is normal again, UNTIL . . .

3) <RESET> puts our filter's address back into KSW. Now, a <CTRL-F> serves once again as a Macro alert signal. (Note: I've got an Apple][+ and only <CTRL-RESET> works as if it were an Apple //e per Charlie's article.)

All of the above is done by a paltry 139 bytes. Let's look further. This time assume that all of our Macro single-byte descriptors and Functions are in the "caboose". In other words, assume that we are BRUNing a self-sufficient code. That which is actually BRUNing consists of the 28 bytes of code between lines 33-47, inclusively. All that is accomplished by these 28 bytes is to store the proper addresses at the correct intercept points.

We should recognize the last 11 of these 28 bytes, starting at the label "CONN". Here we place the BEGinning address of Charlie's filtering routine at the Key input SWitch (KSW). Immediately following this, we return to Applesoft via the equivalent of "CALL 976". If we failed to do this, DOS would tenaciously re-hook itself, place the address $FD1B back into KSW and, thereby, wipe out the presence of Charlie's filter. The same effect can be had via "JMP $03EA", or "CALL 1002"; however, "JMP $03D0" also initializes registers that enable <RESET> to accomplish what it's supposed to. With this in mind, then, "JMP $03D0" is used.

The leading 17 bytes of the 28-byte string pertains to the function of <RESET> (or <CTRL-RESET>) described above. We want <RESET> to re-establish the presence of Charlie's filter. We institute this effect by placing the address of "CONN" within the Applesoft Warm Start Vector located at $03F2,3. Examination of the Autostart ROM Listing in the Apple][Reference Manual shows that pushing <RESET> BRUNs the ROM code starting at $FA62. This portion of the ROM code eventually effects an indirect JuMP to $03F2,3. So, we press <RESET> and, thereby, execute the code of Charlie's filter beginning with "CONN". So, pressing <RESET> puts us "back in business", re-enabling <CTRL-F> as the Macro "wake-up" Key.

Once again, when we BRUN our "engine-caboose" combination, all we are doing is storing our focal addresses in the correct places of memory. So, we're all set after "BRUN VISIMACRO", say. We press a key. The ReaD KEY ("RDKEY") routine at $FD0C effects an indirect JuMP to KSW, wherein is stored $701C, the address of the beginning of Charlie's filter. As previously described, we do a mandatory JSR $FD1B to test for an honest-to-goodness keypress. In the process, we load the ASCII Character Code of the pressed key into the Accumulator.

The first section of the INPUT filter checks for two keys - <CTRL-F> and <ESCape>. If neither, then we return - in and out of the filter, with the keypress being treated normally. If the <ESCape> key, the JSR $FE89 unhooks Charlie's filter by placing $FD1B back into KSW. We then hook-up DOS and JuMP back to Applesoft.

contd.

Now, the <CTRL-F> and we branch to the label, "MACRO". We immediately read in, and store in a safe place, the keypress that follows the <CTRL-F>. We need to save it for comparison later.

Remember when I said earlier that the Special Function Key, the one-byte descriptor, of the very first Macro is stored at $708B? Well, Charlie Brown loads that address in the PoinTer at the location $0006,7 (not used by DOS or Applesoft and, therefore, free for the taking). Charlie then does several things - the order is not sacred, but all must be accomplished:

1) Test for a "0", the presence of which indicates the very end of our Macro set (see the earlier discussion of the Applesoft Driver). If a "0" and, therefore, at the end, we JuMP back to $FD0C which treats the keypress (following the <CTRL-F>) as just an ORDinary key and processes it normally.

2) If not at the end and, therefore, non-"0", we compare the saved keypress to the ASCII Code stored in $708B - again, ignoring the fact that the Applesoft Driver has moved the entire Binary code to just under DOS. If not a match, we scan the ensuing bytes in the "caboose". In the process of scanning we are only interested in the one-byte descriptors; and these follow the last byte of the previous Function Description. As you recall, the Applesoft Driver clears the high-bit of this last byte - so lines 74-76 quickly skip over all Function bytes wherein the high-bit is set. Okay, we've jumped that hurdle and look at the next byte, the last Function byte we've been looking for. Line 77 skips this last byte with the PoinTer now resting on the second one-byte descriptor. We, therefore, branch back to the label, NEXT, and start the process all over again:

- o test for the end by looking for a "0".
- o if not the end, comparing the key pressed after the <CTRL-F> with this next descriptor.
- o if not a match, quickly stepping through the Function bytes (high-bit set).
- o and so forth, and so forth.

As you've probably discovered by now, lines 79-81 do the stepping through of the bytes in the "caboose".

When executing the above scan, what if a match is found between our keypress (following the <CTRL-F>) and one of the descriptors in the "caboose"? We then branch to the label, "YES". We first store in KSW the address of the label, "DFN", which stands for "Display FunctioN" as we shall see shortly. Then the very first byte of the matched Function is retrieved. Its high-bit will be set; otherwise, we would have reached the end of the Function. Although we still have business to conduct with the first Function byte, we have the presence of mind to set up access to the second, etc., byte(s) of the Function in line 102. With current business still before us, however, we then quantify the distance from the left margin of the Monitor (line 103). Note that we've still got the first Function byte in the Accumulator; and it's with that byte that we execute the mandatory RTS at the "end" of our filter (line 107). As a direct result, it's this Function byte that gets displayed on the Monitor. The reason for this is revealed by further examination of the above-mentioned Autostart ROM Listing.

Not only have we left our intercept routine with the Function byte in the Accumulator; but , we also (lines 90-93) put the address of the label "DFN", into the KSW. Okay, we've left. But, only for a momemt because upon the next (automatic) iteration of looking for more input, we're in the second pass through the filter and a second indirect JuMP to KSW is effected. But, this time KSW points to "DFN", whereupon the first Function byte is displayed. With the first pass through, line 102 sets up access to the second Function byte. With the second pass, then, line 100 loads this second byte - the latter being displayed on the third pass. And so on, and so on UNTIL the last Function byte whose high-bit is clear. Line 101 then effects a branch to the label, "OVER". First, the old address, "BEG", is stored in KSW; and, second, the high-bit of this last Function byte is set. The reason is because upon the next (automatic) iteration of looking for still more input, the indirect JuMP this time is to line 51 which then treats this last Function byte as a normal one. Unless its high-bit is set, the JSR $FD1B on line 51 will not output this last byte to the screen.

Well, the above is quite alot "stuffed" into a meager 139 bytes. Excellent job, Charlie.

Next month I will present some major alterations to Charlie Brown's utility. Some of the "problems" I wish to "fix" include:

1) INPUT versus GET -- I definitely like the error-correcting capabilities that INPUT provides. However, how do I effect the execution of a specific Macro without having to additionally press <CR>?

2) Speaking of execution, maybe I don't want to display the actual command before execution. Let's say I press "<CTRL-F>", followed by "A". Given my solution of "problem" #1, you would see on the Monitor, for example:

```
PRINT "A"
A
```

The solution of this challenge would result in only:

```
A
```

being on the Monitor.

3) In this utility, <ESCape> negates the efficacy of a Macro. However, <ESCape> is also widely used for program editing. For example, "<ESCape> I" moves the cursor up. <ESCape> is also widely used by many word processors for editing. Therefore, perhaps some other key would be more appropriate for negating the efficacy of displaying and/or executing a Macro.

For these and other changes/additions, stay tuned until next month . . . . .

ASSEMBLED CODE

```
:ASM
                 **********************
              2  *                    *
              3  *  "FUNCTION  KEYS"  *
              4  *                    *
              5  *   USER - DEFINED   *
              6  *    PROGRAMMABLE    *
              7  *   FUNCTION  KEYS   *
              8  *                    *
                 **********************

             11         ORG  $7000  ;Execution Address.
             12         OBJ  $8000  ;Assembly Address.

             14  KEYIN  EQU  $FD1B  ;Keypress ?
             15  SETKB  EQU  $FE89  ;Re-connects KSW.
             16  WAPV   EQU  $03F2  ;Applesoft Warm Start.
             17  SETWM  EQU  $FB6F  ;Set Bits of "WAPV".
             18  DUPV   EQU  $73    ;Dupes "WAPV".
             19  RDKEY  EQU  $FD0C  ;Reads Keyboard.
             20  KSW    EQU  $38    ;Key input SWitch.
             21  DOSHK  EQU  $03EA  ;Re-connects DOS.
             22  APPLE  EQU  $03D0  ;Return to Applesoft.
             23  PT     EQU  $06    ;Special Keys Ptr.
             24  SAVE   EQU  $08    ;Stores Keypress.
             25  CP     EQU  $28    ;Cursor position.
             26  LEFT   EQU  $24    ;Left Margin.
```

```
                    27  CTRLF   EQU  $86     ;"Heads-up" for Macro.
                    28  ESC     EQU  $9B     ;Escape from Macro.
                    29  CTRLU   EQU  $95     ;Forward Arrow.

                    31  *--------------------

7000: A9 11         33  ON      LDA  #<CONN  ;Turn Function Keys
7002: 85 73         34          STA  DUPV    ;back on via <RESET>.
7004: 8D F2 03      35          STA  WAPV    ;Activated ROM routine
7007: A9 70         36          LDA  #>CONN  ;@ $FA62 indirect
7009: 85 74         37          STA  DUPV+1  ;JuMPs to (WAPV).
700B: 8D F3 03      38          STA  WAPV+1
700E: 20 6F FB      39          JSR  SETWM   ;Set Bits of "WAPV+1".

                    41  *--------------------

7011: A9 1C         43  CONN    LDA  #<BEG   ;Connect to KSW.
7013: 85 38         44          STA  KSW
7015: A9 70         45          LDA  #>BEG
7017: 85 39         46          STA  KSW+1
7019: 4C D0 03      47          JMP  APPLE

                    49  *--------------------

701C: 20 1B FD      51  BEG     JSR  KEYIN
701F: C9 86         52          CMP  #CTRLF
7021: F0 0D         53          BEQ  MACRO
7023: C9 9B         54          CMP  #ESC    ;Press <ESCape> to
7025: D0 32         55          BNE  RET     ;turn off Function
7027: 20 89 FE      56  OFF     JSR  SETKB   ;Keys, undoing KSW
702A: 20 EA 03      57          JSR  DOSHK   ;and pointing it
702D: 4C D0 03      58          JMP  APPLE   ;back to $FDIB.

                    60  *--------------------

7030: 20 1B FD      62  MACRO   JSR  KEYIN   ;Save key after
7033: 85 08         63          STA  SAVE    ;CTRL-F. Pointer
7035: A9 8B         64          LDA  #<SPEC  ;to 1st Macro Key,
7037: 85 06         65          STA  PT      ;($07,$06) = $708B.
7039: A9 70         66          LDA  #>SPEC
703B: 85 07         67          STA  PT+1
                    68  *
703D: A0 00         69  SCAN    LDY  #0      ;Scan Macro Keys
703F: B1 06         70  NEXT    LDA  (PT),Y  ;until match  found.
7041: F0 17         71          BEQ  ORD     ;"0" marks end.
7043: C5 08         72          CMP  SAVE    ;This one??
7045: F0 16         73          BEQ  YES
7047: 20 53 70      74  NO      JSR  INCR
704A: B1 06         75          LDA  (PT),Y
704C: 30 F9         76          BMI  NO      ;Hi = Part of Fnct.
704E: 20 53 70      77          JSR  INCR    ;Lo = End of Fnct.
7051: D0 EC         78          BNE  NEXT    ;Always!!
7053: E6 06         79  INCR    INC  PT      ;Step thru
7055: D0 02         80          BNE  RET     ;Function
7057: E6 07         81          INC  PT+1    ;Bytes.
7059: 60            82  RET     RTS

                    84  *--------------------

705A: 4C 0C FD      86  ORD     JMP  ROKEY   ;Not Spec Fnct Key!!

                    88  *--------------------

705D: A9 6A         90  YES     LDA  #<DFN   ;Found Macro Key!!
705F: 85 38         91          STA  KSW     ;New KSW pointer.
7061: A9 70         92          LDA  #>DFN
7063: 85 39         93          STA  KSW+1
                    94  *
7065: 20 53 70      95          JSR  INCR    ;Access 1st Fnct Byte.
                    96  *
7068: D0 02         97          BNE  GO      ;Always!!
706A: 91 28         98  DFN     STA  (CP),Y  ;Display Fnct Byte.
706C: A0 00         99  GO      LDY  #0
706E: B1 06        100          LDA  (PT),Y  ;Load Function Byte.
7070: 10 0C        101          BPL  OVER    ;Lo Byte = End.
7072: 20 53 70     102          JSR  INCR    ;Access next Byte.
7075: A4 24        103          LDY  LEFT    ;Dist. from left margin.
7077: C9 95        104          CMP  #CTRLU  ;If Byte = forward
7079: D0 DE        105          BNE  RET     ;arrow, jump over
707B: B1 28        106          LDA  (CP),Y  ;one notch.
707D: 60           107          RTS

                   109  *--------------------

707E: 48           111  OVER    PHA          ;After Function
707F: A9 1C        112          LDA  #<BEG   ;ends, set up
7081: 85 38        113          STA  KSW     ;old KSW pointer.
7083: A9 70        114          LDA  #>BEG
7085: 85 39        115          STA  KSW+1
7087: 68           116          PLA          ;Set Hi Bit
7088: 09 80        117          ORA  #$80    ;of last Byte.
708A: 60           118          RTS

                   120  *--------------------

708B: 00           122  SPEC    DFB  00      ;Special Fnct Key.

--End Assembly, 140 bytes, Errors: 0
```

LETTER TO THE EDITOR

(A REVIEW OF THE AJ 831 PRINTER)

Dear Editor:

The Club arrangement for discount purchase of an Anderson Jacobson printer is an extraordinary chance to get a fine letter quality printer at a low price. Two years ago I bought a bargain letter-quality printer (then about $900), and suffered with it until I could no longer abide the lack of double-strike, underlining, or speed - it chugs along at about two minutes per page, and has no option for tractor-feed, so each page must be fed by hand. When the renovated AJ's, a bargain at $995, were made available through the WAP for $712 I could not resist, and after a month of heavy use am most satisfied. It might help others to know what you get for that investment.

The most attractive feature to me is the keyboard - the AJ can be run as an electric typewriter, for filling in forms, typing a quick envelope, or when it just does not seem worth cranking up the computer. Or you can, with care, white out and correct a single error rather than running a whole page through the word processor again.

It is fast. Its rating is 30 cps, but that is taking carriage return time into account, and it goes faster on the straightaways. It is logic-seeking (it goes directly to the next place to be printed); and although it is not bi-directional (won't print backwards) its return to the left margin for a new line is so quick you would not want to get your fingers near it.

It does the whole range of double-strike, bold (triple-strike with the third one offset for bulkier print), underlining, and sets pitch (horizontal spacing) at anything from letters overlapping to letters inches apart. And it does graphics, in dots or any chosen letter, from the computer or from the keyboard. The keyboard has key-repeat and a numeric pad.

The machine is called an 831, which is a reconditioned 832. Mine looks virtually new, and seems built by the same company that did Stonehenge. Perhaps one drawback to some is its bulk. It comes fixed to a rolling stand, containing its brains in a box under the printer, and it cannot be put on a table top. However, it rolls around easily. Options include paper tray attachments, and a used tractor feed for $105.

The club merits our thanks for arranging this fine bargain.

Bill Fry

A CATALOG POKER
by C. Swift, Prop.

As every good programmer knows (I just learned it last week), a disk normally has a catalog of the files stored on it. We can see this catalog by ordering the computer to "CATALOG". (I used to plead, but now I order - my][+ treasure no longer intimidates me.)

There is no magic involved. Somewhere on a sector on some track or other (you know which ones, and I'm going to look it up next week) there are little bytes that add up to all sorts of information about the files: names, types, length, locked or not, etc. Just find that sector (actually it's easier to let your computer find it), and there is all you ever wanted to know about that disk (including its origin and cost, if you want to get picky and include dummy files!).

Here is a little trick you can play around with. It may even teach you a few things about catalogs that you didn't already know.

A) Start with an expendable disk.
B) Boot DOS. Type NEW.
C) Type in this program*

```
10  HOME: PRINT : PRINT CHR$ (4) "RUN APPLESOFT
    UNLOCKED"
```

D) Type INIT APPLESOFT LOCKED and press RETURN
E) When the whirring has stopped, type
   LOCK APPLESOFT LOCKED and press RETURN
F) Now write this little program:

```
10  FOR I = 0 TO 255
20  HOME : PRINT : PRINT
30  PRINT "THIS IS POKE 44513, "I
40  PRINT : PRINT
50  POKE 44513,I
60  PRINT : PRINT CHR$ (4) "CATALOG"
70  VTAB 23 : HTAB 40 : CALL - 678
80  NEXT
```

G) SAVE this program under the name APPLESOFT LOCKED
H) Next type BSAVE BINARY LOCKED, A$2000,L1
I) Press RETURN
J) Type LOCK BINARY LOCKED and press RETURN
K) Type BSAVE BINARY UNLOCKED, A$2000,L1
L) Press RETURN

Now you have a disk's worth of nothing except to demonstrate some weird things with CATALOG. Boot this disk and you will note a flashing cursor in the lower right corner of the screen (that's the CALL -678). Everytime you press RETURN you will automatically get a catalog with location 44513 POKEd with an incremented value, starting with zero and heading on up.

* * * * * * * * * * *

DO NOT READ ON UNTIL YOU HAVE COMPLETED THE ABOVE DIRECTIONS

* * * * * * * * * * *

Now that you have done the above (you aren't reading this too soon, are you?), you have found that the program bombs after a certain number of runs. What to do about it? Simple: press RESET, type PR#6, press RESET, type

```
10  FOR I = 18 TO 255
```

press RETURN, type RUN, and off you go again. You might try this on the later bombs, just changing the "18" to the next higher value than the one that bombed.

If you have a short attention span, and just want to have some fun, try this trick. Press RESET, type (in immediate mode)

```
A = 44513.
```

Press RETURN, type

```
POKE A,0
```

press RETURN, and then CATALOG. Try replacing 0 with such numbers as 2, 67, 90, 130, 160, 190, 201, 211 and 230. These give some rather special results.

QUESTION FOR HOMEWORK:

1. What is location 44513?
2. What is the normal default for this location?
3. How do Integer and Text files catalog in various POKE 44513's?
4. What happens if you INIT a disk after typing POKE 44513,67?
5. could you hide files with this trick?

There will be a quiz Thursday morning. ¢

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THE CHEAPEST RE-INKER by Walton Francis

I have grumbled mightily for several years at the rate at which my Epson uses ribbons. Several commercial re-inkers exist, but these cost an arm and a leg and could only be justified for very heavy printer use. Hand reinking is both messy and dangerous - use of the wrong ink could jam the wire hammers and destroy the printhead.

To my amazement, I have found in recent months three persons all recommending the same miraculous and inexpensive technique - the use of WD-40 lubricant. One of these users mentioned the technique in his brand new Macintosh book (a very good book, by the way, newly added to the WAP reading library).

WD-40 is a lubricant, typically used for loosening rusted metal parts. It is available in all hardware stores and is typically sold in a spray can costing a dollar or two. To re-ink using it, one lifts the cover from the used ribbon cartridge and lightly sprays the ribbon. The ribbon should then sit for several hours to allow the lubricant to spread evenly. Quality is not quite as good as the original ink, but perfectly acceptable. Used this way, one user claims up to six or seven cycles before the ribbon gets tattered and must be thrown away. Keeping one or two re-inked ribbons in reserve (and some packrats have many more old ones saved away) and recycling them in order will end the out-of-ink problem for months or years of use.

The only problem with this technique that I can conceive is that it might jam the printhead. However, unlike re-inking as such, one is not adding gunk but simply a penetrating liquid which "lifts" the existing ink from the pores of the cloth. Regardless, after three recommendations, one from a person claiming over a year of experience, I think that this risk is minimal or nonexistent. (My own experience, for what it is worth, is that the first ribbon I re-inked has created no problems.)

So - unless I have sparked a controversy as heated as the great "whether to use both sides of the single-sided disk" debate - happy economizing on ribbon purchases.

References:

Cary Lu, The Apple Macintosh Book, 1984, page 209.

A. Kleider, "Open Discussion", Softalk, April 1984, page 16.

James H. Simpson, "Letters", Popular Computing, February 1984, page 11.

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S-C MACRO ASSEMBLER REVIEW: The Author Replies

Hi, Bernie!

You are continuing to put out a great newsletter! Oops, I guess it is now called a journal.

I am glad to see a review of six assemblers in your April WAP. That there is still so much interest in Apple assemblers is exciting, and foreshadows the production of more and more truly great software for Steve's brainchild.

As Raymond Hobbs noted, reviewers are often the target of vicious slings and arrows. However, I have no complaints about any particular biases. All in all, the review was quite favorable of my product, the S-C Macro Assembler. I appreciate how much effort goes into an article of this kind.

I would like to correct some errors of fact, though. Let's start with price. Version 1.0 of S-C Macro is $80, not $60 (perhaps it is available through discounters at $60). Version 1.1, which has been available for over a year now, is $92.50. (Owners of 1.0 can upgrade to 1.1 for $12.50.)

Ray says that comment lines must be delimited by <ESC>L. Comment lines are indicated in the normal standard way that I have been using for over 20 years on all sorts of computer systems: if the first character in the label field is either "*" or ";", it is a comment line. <ESC>L is a shorthand feature which is used to generate a special comment line which is an asterisk followed by a series of dashes; these are used to visually beautify listings, but of course are in no way required.

Ray is not alone in his distaste for my use of Ctrl-I as a tab character, but Ctrl-I is the ASCII code for tab, and the TAB key on the Apple //e generates Ctrl-I.

Version 1.1 does support 80 columns, in three versions: Apple //e, Videx, and STB-80.

Line numbers can be generated the way described, but we also have a fully automatic mode.

The macro capability is more complete than Ray observes. He said, "you cannot pass string parameters to a macro." However, you can. Although the macro library included on the release disk includes only simple macros, we have published many powerful and fancy uses in our monthly newsletter (Apple Assembly Line).

The S-C Assembler family never uses error "codes". It uses error messages. If errors are encountered during pass one, the assembler will stop at the end of that pass. If you really care what is in the symbol table, you can see it with the SYM command. If no errors are found in pass one, assembly proceeds through pass two. If errors occur during pass two, assembly continues to the end. Error messages are printed as they occur, with the line that caused them. The symbol table DOES print at the end. If the listing has been turned off (.LIST OFF directive), all that will list are the erroneous lines and the error messages.

Ray seems to believe that assembler power correlates directly with the number of directives (pseudo-ops) available for specifying "memory and data definition". Since by his count S-C Macros has only 6 of these and ORCA/M has 19, one might think ORCA/M must be at least 3 times better in this area. However, S-C does more with less, simplifying the directives so that fewer are required. For example, .DA supplies all the functions of DFB, DFW, DW, DA, DDB, and others used in various assemblers. Besides, other directives are important. Altogether, version 1.0 has 20 directives; version 1.1 has 25.

A feature not covered in the review, but which I believe is very important, is on-going support. We have provided upgrades periodically since the original version in August 1978. We have also provided a free hotline to all our customers since that time. We publish a monthly newsletter which is highly acclaimed by users of many different assemblers. Optional products published by us and by other software houses support the S-C Assembler including: a full screen editor from Laumer Research; a full two-pass disassembler from Rak-Ware; a cross reference generator from S-C.

The summary table at the end of Ray's article indicates that no step-trace is available with the S-C Macro. That depends... If you have the old Apple monitor ROM, you still have Step/Trace. Also, you can use any of the debug packages on the market such as QuickTrace, BugByter, and others. The table suggests that a 16K card is required. It is not, but if you have one you can put S-C into it.

Another feature: the ten or more cross assembler modules available with the S-C Macro Assembler allow you to use your Apple for software development on most of the other chips. Many of these are in use throughout the industry. One of these supports all of the extended opcodes found in the 65C02.

By the way, you can purchase the entire source code for version 1.1.

Although as a competitor I am glad the article rated S-C above Lisa 2.5, I suggest that Ray may have come down too hard on that product. Anyway, Lisa 2.5 is no longer on the market. And On-Line Systems does not sell any version of Lisa. Randy Hyde is now publishing Lisa 2.6, under his Lazerware label.

In the same issue of WAP, there is a brief review of Data Capture 4.0. The author says his copy failed to function 2 out of 3 times, and implies that the product is not good. Not fair. I am sure that many WAP members can straighten him out on this.

Bob Sander-Cederlof

(Ed. Note: For further information or pricing contact S-C Software Corporation, 2331 Gus Thomasson, Suite 125, P.O. Box 280300, Dallas TX 75228. 214-324-2050.)

APPLE DONATES PRODOS TECHNICAL MATERIALS

by Thomas S. Warrick

Apple Computer, Inc., has donated to the hardcopy library of Washington Apple Pi, Ltd., a set of materials from the course Apple offered on ProDOS to commercial hardware and software developers. ProDOS is Apple's new disk operating system for the Apple][,][+, //e and //c computers, and is the successor to DOS 3.3.

The materials donated are almost-finished drafts of the four principal ProDOS manuals: the ProDOS User's Manual, Basic Programming with ProDOS, The ProDOS Technical Reference Manual, and The 6502 Assembler/ ProDOS Tool Kit. These manuals are bound in a single black pressboard binding, and contain virtually all of the text of the manuals as they will be printed. Graphics and program listings, however, are not included.

Finished versions of the ProDOS User's Manual comes with ProDOS and is now available from authorized Apple dealers. The other manuals, with accompanying software, will soon be for sale as well.

Apple has also donated a copy of "Apple //e Design Guidelines," a short but nevertheless very useful publication for software authors both professional and amateur. It gives instructions as to how authors should design "user interfaces," based on Apple's extensive (and expensive) work in human systems engineering. For example, Apple recommends that the "Q" command always be used to quit a program so that the user not think "Q" means "query" or "question" and exit a program by mistake. This publication, which is not generally available through dealers, should be read by everyone who is interested in writing software, whether for the Apple //e, //c, Macintosh, or even (shudder!) the IBM PC.

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*Floor sample. Price slashed

APPLE TRACKS: ProDOS Prose

by Richard Langston II

I have seen the future, and the future is ProDOS. Apple's new disk operating system, ProDOS, brings the Apple into the 1980's, allowing more freedom and flexibility.

ProDOS is much like UNIX, in that it uses hierarchical directories. In English, that means that ProDOS can store more than one catalog on a disk. Each catalog is a volume, and it is referred to by a name. A disk can contain up to 32 megabytes of data, but a volume is limited to merely half that, or 16 megabytes. At the moment, there are no mass storage devices for the Apple that can contain that amount of information, so ProDOS really is the future!

Using the UNIX-like file system, directories are nested in each other, with an almost unlimited number of directories stored on one disk. This makes it especially easy to use a hard drive, or other mass storage device.

AN OVERVIEW

The ProDOS catalog command is formated for an 80-column screen, with a shorter version, cat, for the 40 column screen. Information included in the catalog includes file name, type, the number of blocks of storage space it occupies, when it was last modified (day, month, year, time), when it was created (same information), endfile and subtype information.

No spaces are allowed in ProDOS filenames: instead, periods are used. There are are several file types used under ProDOS: SYS, for system files, BAS, for Applesoft Basic files, BIN, for binary files, TXT for text files, $0F for custom user files, CMD for command files, REL for relocatable files, and VAR for Applesoft variable files. Command files are not yet used, but they may be used in the future to increase the power of ProDOS. The VAR type allows Applesoft variables and arrays to be stored on disk and are retrieved easily into memory.

Since ProDOS belongs to the future and not the past, Integer Basic has been totally eliminated from ProDOS.

Along with the new file types, several DOS commands have been added or extended. The commands "store" and "restore" have been added to deal with Applesoft variables. If a variable or array needs to be stored on disk, the command ?CHR$(4);"STORE VAR" is used, and ?CHR$(4);"RESTORE VAR" is used to bring the variable back into memory. An aspect of this command that is particularly interesting is its ability to store arrays. This makes it much easier to write programs that store data in arrays onto diskette, since it eliminates the need to write a text file.

Another new command, flush, helps protect text files. If a program is interrupted while it is writing a text file, the command FLUSH FILE will write all the data currently in the buffer onto the disk. This avoids possible data loss due to an interruption in the program.

Another variable, E, has been added to the BSAVE command. E, end, can be used instead of L (length) when a file is being saved. The L parameter can also be used with BLOAD in ProDOS. This allows the user to select the part of the file to load into memory.

The command FRE has been added to ProDOS to decrease the time necessary for Applesoft to do a garbage collection.

One of the most impressive features of ProDOS is the enhancement of the PR and IN commands. It is now possible to specify an address for these commands. PR#3,A$300, for instance, sends all output for slot 3 to address $300. Another possibility for this feature is reconfiguring the computer system in any way desired, simply by changing the addresses to which ProDOS sends output.

The CHAIN command works with Applesoft, transferring all variables from one program to another.

PREFIX serves a function similar to specifying drive and slot defaults in DOS 3.3. Prefix selects a directory used as the default directory, or the directory that is used unless a separate pathname is used.

The "-" command is the most commonly used ProDOS command. It will run, brun, or exec a file, as well as execute System files.

Unfortunately, ProDOS is not very compatible with DOS 3.3. Most assembly language programs will have to be rewritten, since most of the entry points and DOS routines have been changed. Some Applesoft programs may also have to be rewritten, depending on whether or not they rely on DOS code.

Currently, Apple is offering "ProDOS User's Kits" for $40. They include ProDOS, and the ProDOS User's Manual. Basic Programming with ProDOS includes a book on using ProDOS in Applesoft, as well as a disk of programming examples. The ProDOS Technical Reference Manual is priced at $25, and includes the "ProDOS exerciser disk."

ON THE TECHNICAL SIDE...

ProDOS is much faster than DOS 3.3 in respect to disk I/O; however, it is slow when it comes to computing. DOS 3.3 took 174 seconds to write a 64K text file, while ProDOS takes only 36 seconds. Similarly, DOS 3.3 requires 210 seconds to read the same file, while ProDOS needs only 34 seconds. On the other hand, ProDOS requires 166 seconds to solve a 5000 element matrix of prime numbers, while DOS 3.3 needed only 114 seconds. The program used came from BYTE, January 1982, page 54.

ProDOS automatically stamps the day, month, year, and time a file is created and when it was last modified in the catalog. The "official" ProDOS clock is the ThunderClock. It is possible to write a patch to read this information from another clock simply by modifying the three bytes from $BF06-$BF08 and writing your own routine. The actual date is stored in bytes $BF90-$BF93 (49040-49043). The format of these bytes is as follows: bytes $BF93 and $BF92 store the hour and minute, and bits 1-7 of $BF91 contain the year. The MSB (most significant bit) of the month is stored in bit 0 of $BF91, with the rest of the month stored in bits 7-5 of $BF90, with bit 5 the LSB (least significant bit). The day is stored in bits 0-4 of $BF90. The following program will store the date in ProDOS, for users without clock cards.

contd.

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1 . . . DOWNLOAD FONT
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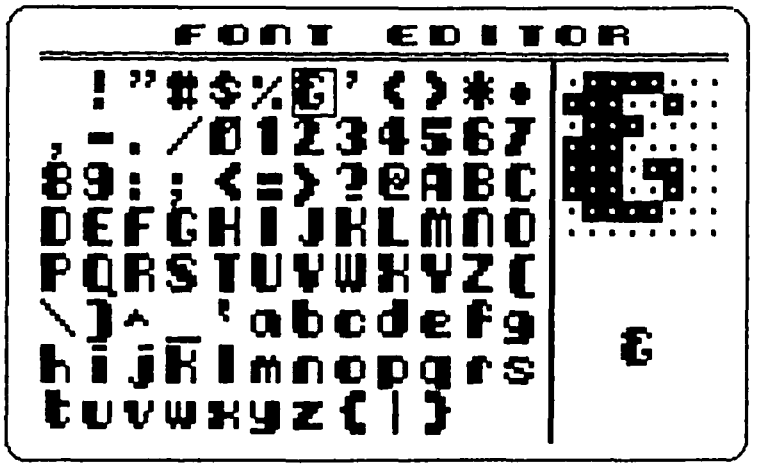
3 . . . RUN DEMO
4 . . . INSTRUCTIONS
5 . . . CONFIGURE I/F
        (DUMB)
```



<ESC>	ENTERS EDIT MODE
J I K M	CHARACTER SELECT
<RTN>	MOVES CURSOR TO NEXT CHAR
R	REPLACE CHAR - ENTER EDIT
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```
10  REM  PRODOS DATE STAMPING PROGRAM
20  REM  4/22/84 BY RICHARD LANGSTON
30  DIM  A$(3)
40  HOME : VTAB 10: PRINT "Enter date:"
50  HTAB 1: VTAB 11: PRINT "DD-MMM-YY"
60  VTAB 11: FOR I = 1 TO 2: GET A$(I): PRINT A$(I);:
    NEXT
70  IF A$(1) =  CHR$ (8) OR A$(2) =  CHR$ (8) THEN
    GOTO 50
80  IF  VAL (A$(1)) = 0 AND A$(1) ]  [ "0" THEN  PRINT
    CHR$ (7): GOTO 50
90  IF  VAL (A$(2)) = 0 AND A$(2) ]  [ "0" THEN  PRINT
    CHR$ (7): GOTO 50
100 D =  VAL (A$(1) + A$(2)): IF D = 0 THEN  PRINT
    CHR$ (7): GOTO 50
110 IF D [ 31 THEN  PRINT  CHR$ (7): GOTO 50
120 REM  MONTH
130 VTAB 11: HTAB 3: PRINT "-MMM-YY";: HTAB 4
140 FOR I = 1 TO 3: GET A$(I): PRINT A$(I);: NEXT
150 IF A$(1) =  CHR$ (8) OR A$(2) =  CHR$ (8) OR A$(3)
    =  CHR$ (8) THEN  GOTO 50
160 M$ = A$(1) + A$(2) + A$(3)
170 IF M$ = "JAN" THEN M = 1
180 IF M$ = "FEB" THEN M = 2: IF D [ 29 THEN  PRINT
    CHR$ (7): GOTO 50
190 IF M$ = "MAR" THEN M = 3
200 IF M$ = "APR" THEN M = 4: IF D [ 30 THEN  PRINT
    CHR$ (7): GOTO 50
210 IF M$ = "MAY" THEN M = 5
220 IF M$ = "JUN" THEN M = 6: IF D [ 30 THEN  PRINT
    CHR$ (7): GOTO 50
230 IF M$ = "JUL" THEN M = 7
240 IF M$ = "AUG" THEN M = 8
250 IF M$ = "SEP" THEN M = 9: IF D [ 30 THEN  PRINT
    CHR$ (7): GOTO 50
260 IF M$ = "OCT" THEN M = 10
270 IF M$ = "NOV" THEN M = 11: IF D [ 30 THEN  PRINT
    CHR$ (7): GOTO 50
280 IF M$ = "DEC" THEN M = 12
290 IF M = 0 THEN  PRINT  CHR$ (7): GOTO 130
300 REM  YEAR
310 VTAB 11: HTAB 7: PRINT "-YY";: HTAB 8
320 FOR I = 1 TO 2: GET A$(I): PRINT A$(I);: NEXT
330 IF A$(1) =  CHR$ (8) OR A$(2) =  CHR$ (8) THEN 130
340 IF  VAL (A$(1)) = 0 AND A$(1) ]  [ "0" THEN  PRINT
    CHR$ (7): GOTO 310
350 IF  VAL (A$(2)) = 0 AND A$(2) ]  [ "0" THEN  PRINT
    CHR$ (7): GOTO 310
360 Y =  VAL (A$(1) + A$(2)): IF Y = 0 THEN  PRINT
    CHR$ (7): GOTO 310
370 IF M = 2 AND D = 29 AND Y / 4 ]  [  INT (Y / 4)
    THEN  PRINT  CHR$ (7): GOTO 50: REM  LEAP YEAR
380 GET A$: IF A$ =  CHR$ (8) THEN 50
390 REM  POKE INFO
400 Y = Y * 2: IF M [ 7 THEN Y = Y + 1
410 POKE 49041,Y
420 IF M [ 7 THEN M = M - 8
430 M = M * 32:D = D + M
440 POKE 49040,D
```

Another of ProDOS's useful features is machine identification. MACHID byte, located at $BF98 (49048), is set as follows:

```
IF BIT 3=0, THEN:
 Bits 7-6- 00=II, 01=II+, 10=//e, 11=/// in emulation
  mode
 Bits 5-4- 00=unused, 01=48K(not supported), 10=48K,
  11=128K
 Bit 3-    0=normal system id in bits 7-6, 1=future
  system id in bit 7-6
 Bit 2- unused
 Bit 1-   00=no 80 col. card, 01=80 col. card
  installed
 Bit 0-   00=no ThunderClock or equivalent,
  01=ThunderClock installed
```

Apple][+ users with lower case chips installed can POKE 49048, PEEK(49048)+64 to make ProDOS think it is running on a //e. This will allow display of lower case characters by system programs.

ProDOS has cured one of DOS 3.3's shortcomings, the GET statement. Under DOS 3.3, if a DOS command is executed after a GET statement, it will not work. Adding a print statement will fix this problem, but it does not exist at all with ProDOS.

Using DOS 3.3, it was possible to change the I/O hooks by changing the character-out vector and the key-in vectors on the zero page, and then jump to $3EA to save the changes. Under ProDOS, the vectors should be changed on the global page. $BE30-$BE31 contains the output address (normally $FDDO, the monitor COUT1 routine), and $BE32-$BE33 contains the input address (usually $FD1B, the KEYIN routine). Anytime they need to be changed, all that must be done is to place new values in these locations.

One of the strong points of ProDOS is its flexibility. It is possible to add commands to do almost anything under ProDOS. I will explain this more fully in a future column, but here is just one example. This command, PAGE1, will turn on hi-res page one, mixed text and graphics, whenever it is typed in the immediate mode, or preceded by CHR$(4) in a program.

```
 ORG $300
;"PAGE1" TURNS ON PAGE 1 HIRES PAGE WITHOUT CLEARING
 SCREEN
;WRITTEN 4-1-84 BY RICHARD LANGSTON II
INBUF EQU $200 ;GETLN BUFFER
EXTRNCMD EQU $BE06 ;EX CMD JMP VECTOR
XTRNADDR EQU $BE50 ; EX CMD IMP ADDR
XLEN EQU $BE52 ;LEN OF COMM-1
XCNUM EQU $BE53 ;CI CMD # (0=EXTERNAL)
PBITS EQU $BE54 ;COMM PARAM BITS
XRETURN EQU $BE9E ;KNOW RTS INSTRUCTION
 MSB ON ;SET MOST SIG. (HIGH) BIT
;Set intercepts
 LDA #[PAGE1 ;STORE EXTRNAL CMD
 STA EXTRNCMD+1 ;INTERPRETER ADDRESS.
 LDA #]PAGE1
 STA EXTRNCMD+2
 RTS
;CHECK FOR CMD
PAGE1 LDX #0
NXTCHR LDA INBUF,X ;STEP THROUGH
 CMP CMD,X ;INBUFFER, COMPARING EACH CHAR
 BNE RETURN ;IF THEY ARE DIFFERENT, EXIT
 INX
 CPX #CMDLEN ;CHECK FOR END OF CMD
 BNE NXTCHR ;IF NOT END, GO BACK
;CMD MATCH, COMPLETE HOUSEKEEPING
 LDA #CMDLEN-1 ;STORE CMDLENGTH-1
 STA XLEN ;IN XLEN
 LDA #[XRETURN ;STORE ADDRESS
 STA XTRNADDR ;OF A KNOWN
 LDA #]XRETURN ;RTS INSTRUCTION
 STA XTRNADDR+1 ;AT XTRNADDR
 LDA #0
 STA XCNUM ;STORE # OF CMD (0=EXTERNAL)
 STA PBITS ;SET ALL PARAMETER
 STA PBITS+1 ;BITS TO ZERO
;EXECUTE CMD
 STA $C050 ;GRAPHICS MODE
 STA $C054 ;PAGE 1
 STA $C053 ;MIXED
 STA $C057 ;HIRES
 CLC ;SUCCESSFUL EXECUTION
 RTS ;RETURN
;Command not found
RETURN SEC ;SET CARRY, CMD NOT FOUND
 RTS ;RETURN
CMD ASC "PAGE1"
CMDLEN EQU *-CMD
END
```

DON'T BE AN IF JUNKIE

by Gary M. Mugford

There is no doubt that the IF statement, when correctly used, is one of the most powerful commands in Applesoft. But like the old admonishment goes, too much of a good thing.

IF statements are branches in logic, and as such are usually easy to follow. Where the IF statement creates problems is when too many of them are put together, especially if they end up in the same statement. Sometimes this is necessary for complicated program logic. Most times it isn't. Here's a common usuage from gaming programs. It changes a variable, TURN, so that the program knows which player's turn it is:

```
1100  TURN=TURN+1:IF TURN=3 THEN TURN=1
```

This is a two player game, but it could just as easily be changed to include any number of players by changing the '3' to the number of players plus one. There's nothing wrong with statement 1100. It serves its function quite well. But what happens if you want to make some subsequent action, whichever player's turn it is? You have to put the action on the next line.

```
1100  TURN=TURN+1:IF TURN=3 THEN TURN=1:
      FOR I = 0 TO 700:NEXT:HOME:GOTO 200
```

The rest of statement 1100 won't execute if it is now player #2's turn. Actually, you have to take the original line 1100 out and make the remainder the next line. Or, you can take the IF statement out and replace it with another form of logic statement.

```
1100  TURN=TURN+1:TURN=(TURN<>3)+1:
      FOR I = 0 TO 700:NEXT:HOME:GOTO 200
```

The statement that replaced the IF statement, TURN=(TURN<>3)+1), works this way: If TURN is not equal to three, then the bracketed statement is true, a condition that the computer takes as meaning +1. If it is false, then the computer assigns a value of 0. So, in this particular case: TURN=2 coming in, therefore the bracketed statement is true (+1) and when added to 1, gives 2. If TURN=3 coming in, the bracketed statement is false (0) and when added to 1, gives 1. To show the full value of our new turn-maker, here's a subroutine where it is necessary. The routine simulates a wheel-spinning for a game I wrote.

```
500  FOR I = 1 TO 10:HOME
510  X=INT(RND(1)*21): PRINT WH(X);CHR$(7)
520  FOR II = 0 TO I*25:NEXT II
530  NEXT I
540  VLUE=WH(X)
550  X=INT(RND(1)*100)+1
560  IF X<20 THEN HOME: PRINT "LOSE TURN":
     TURN=TURN+1:TURN=(TURN<>3)+1: FOR I = 0 TO 700:
     NEXT I:HOME:GOTO 230
570  IF VLUE=0 THEN HOME: PRINT "YOU LOSE ALL
     YOUR MONEY AND YOUR TURN":PM(TURN)=0:
     TURN=TURN+1:(TURN<>3)+1:FOR I=0 TO 700:
     NEXT I: HOME: GOTO 230
```

Statements 500-530 simulate a wheel spinning using the values put into an array WH(). The final resting place of the 'wheel' is then put into the variable VLUE. Statements 550-560 create a situation where 20 percent of the time, the player will lose his turn, irrespective of what the wheel says. If the player doesn't lose his money, he must then run the risk of losing his money and his turn if the 'wheel' has come up with a 0. In each of the last two lines, using an IF statement to switch turns would have led to an error of logic.

ON LOGIC

The logic statement can be combined with the ON... GOTO... and ON...GOSUB... statements to make a very powerful replacement for the IF statement. Making menus often leads to a series of IF statements by the novice programmer. If the menu creates a numeric variable, then a whole series of IF statements can be replaced by one line, e.g. ON A GOTO 100,200,300,etc. More often, the menu has created an alpha variable, usually the first letter of the command. For example, the menu in my game looked like this:

```
(B)UY VOWEL
(G)UESS HIDDEN PHRASE
(P)ASS TURN
(S)PIN THE WHEEL
       CHOICE:
```

By using the logic statement, I was able to produce a one-statement branch:

```
200  ON ((CH$="B")+(CH$="G")*2+(CH$="P")*3:
     (CH$="S")*4) GOTO 1000,2000,3000,4000
```

This particular line serves two purposes. If in fact, CH$ is not equal to any one of the offered choices, the value of the statement is 0 and program execution will fall through to the next statement, which can be a statement sending the program back to the menu creation (after the nasty buzzer and admonishment, of course). If one of the required choices is made, that particular part of the logic statement will be true (+1) and all the rest will be false (0). Multiplying the true statement by a number will give the place in the ON list to execute.

CONCLUSION

Don't take this article as a condemnation of the IF statement. When properly used, it is a powerful tool. But there are alternatives that will serve you in better stead in certain situations.

1001 BINARY TALES: Architecture

by Raymond Hobbs

Apple owners sure have it lucky. Every time I think about the subject of computer architecture I take my hat off to the Wizard of Woz for giving us two things: the 6502 CPU on the Apple, and enough documentation to find our way around inside the machine. In fact, I understate the case, because we got a heck of a lot more than that for our bucks.

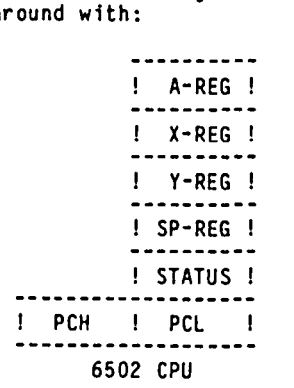
For those of you who are not familiar with the subject of architecture, it refers to the innards of the CPU (in this case, the 6502 microprocessor) and the RAM/ROM configuration that surrounds the chip.

There are five CPU's that figure pretty big in the personal computer industry, and they come out of the labs of four companies. For the record, the 6502 was the product of MOSTEK, the 8080 and 8088 come from INTEL, the Z-80 from ZILOG and the 68000 from MOTOROLA. These companies have produced numerous other microprocessors and coprocessors, but what personal computer owners have on hand to program is pretty much confined to the five chips that I cited above.

The chip (or CPU) is where all of the processing takes place (with a few exceptions), and it consists of data and address lines, or buses, and a number of internal registers (storage locations). As a program is executed, the registers are filled with data, addresses and instructions. I'm no engineer, and I still marvel at the fact that the device works at all, but in layman's terms, this is about what happens: an instruction is fed into one of the registers (the Instruction Register) and interpreted. If data must be fetched from or sent to memory, the address of that location in memory is calculated and placed on the address bus. Then the command is executed. Data itself moves along the data bus to or from the address on the address bus. During this time, another register (the Program Counter) is updated to point to the next instruction to be placed into the Instruction Register, so that the process can be repeated. Of course, this description of the CPU's inner workings is well-watered down, but it gives a general idea of the type of thing that must be accomplished within the chip.

The programmer has access to the data registers, index registers and program counters, but not the instruction registers. When talking about architecture, I will refer only to those registers to which the programmer has access (either READ or WRITE).

THE 6502. The 6502 chip is the smallest and slowest of the five chips I mentioned earlier (yes, I remember that I'm supposed to be praising the choice of the 6502 for the Apple, not burying it). The chip has seven 8-bit registers that the programmmer can play around with:

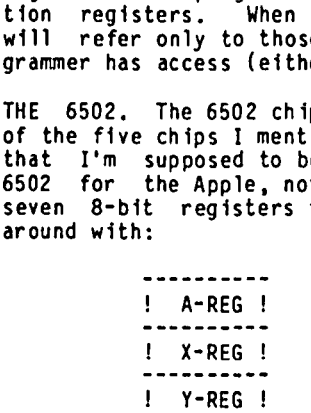


6502 CPU

the A-register (Accumulator), X-register and Y-register (index and data storage), SP-register (stack pointer), Status register (1-bit flags), PCH and PCL registers (program counter). Moreover, the programmer can alter the program counter only indirectly - there are no instructions available for directly changing the contents of the program counter, except as a side product of another operation. The Accumulator (A-REG) is where all the arithmetic, bit manipulation and input/output (I/O) operations occur, although it can also be used for data storage; the X and Y registers are general-purpose indexing and storage registers; the stack pointer (SP) maintains control of the 256- byte system stack (on page $01 in the Apple); the status register contains flags for determining results of operations (positive, negative, carry, overflow, equality) or mode-setting (decimal, hexadecimal, interrupt); and the program counter, as mentioned earlier, keeps track of where we are in the program.

With only three data registers available (A, X and Y) to the programmer, the 6502 appears to be poverty-stricken. This is true, as you will see when we go on to examine the other chips. There never seem to be enough registers available on the 6502. However, the 6502 is the only chip to allow a range of true indirect addressing (although only one level of indirection is available), and this wealth of addressing capability makes up for the lack of registers. Drawing no distinction between zero page and any other page, the 6502 allows for eight modes of addressing, including four indirect modes. After learning to use those eight modes of addressing effectively with the paucity of available data registers, it's really a cinch to learn any of the other chips - rather like going to automatic transmission after learning stick shift.

THE 8080. The 8080 chip from INTEL is a bigger and faster 8-bit microprocessor than the 6502. Use of the 8080 has been largely supplanted by its cousin from ZILOG, the Z-80. So why bother to study it, then? If you happen to have purchased Microsoft's Z-80 card with CP/M, you have an 8080 assembler available as part of the package (8080 programs are upward-compatible with the Z-80 chip). As a matter of fact, if you have a Z-80 card on your Apple, you can run programs for any one or all of the 6502, 8080 and Z-80 chips, which covers the waterfront for all the popular 8-bit microprocessors. Hmm. A fully-configured Apple is looking more like a bargain all the time.



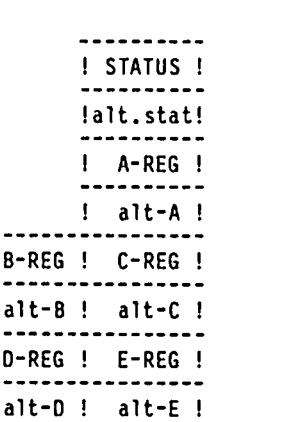
8080 CPU

At a glance, the 8080 looks larger than the 6502, and it is. The stack pointer is word-length (16 bits), and there are four more general-purpose data registers than on the 6502. Moreover, the B and C, D and E, and H and L registers can be used singly or in pairs, as a single 16-bit register. The 8080 has more instructions for moving data between registers than the 6502, as well as specific instructions for address manipulation, using the H/L register pair. However, the 8080 allows no true indirect addressing other than placing an address in a register pair and addressing the register pair.

THE Z-80. The Z-80 chip by ZILOG is what you get on your Z-80 card. As mentioned earlier, it accepts the

contd.

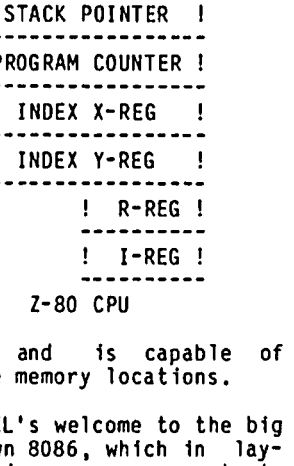
8080 instruction set (as a subset of its own instruction set). Architecturally, the Z-80 is an enhancement of the 8080. In addition to all of the registers of the 8080, the Z-80 has alternate A, B, C, D, E, H, L and STATUS registers. There are also two word-length index registers (X and Y), an interrupt vector register (I), and a refresh register (R). These latter two registers are not normally used by the programmer. They provide information to the CPU concerning the location of interrupt handling routines and dynamic memory address handling, respectively. The Z-80 instruction set includes the 8080 set (with different mnemonics), plus instructions to select alternate registers, exchange registers, and otherwise utilize the expanded register complement of the Z-80. Again, however, the Z-80 addressing modes are limited. Like the 6502 and 8080 chips, the Z-80 is an 8-bit microprocessor, and is capable of addressing 65,536 (64K) discrete memory locations.



Z-80 CPU

THE 8088. The 8088 chip is INTEL's welcome to the big leagues (the 8088 is a cut-down 8086, which in layman's terms means a 32-bit microprocessor cut to 16-bit capability).

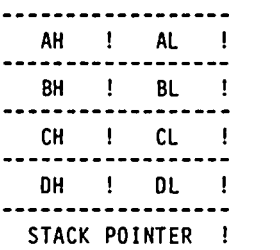
Since this chip is the one used by the competition (some computer manufacturer, whose name slips my mind at the moment, bought up a piece of the INTEL Corporation and started manufacturing Personal Computers), I will only give a brief overview of the functions of the microprocessor. In addition to the eight 8-bit data registers AH/AL, BH/BL, CH/CL, and DH/DL, all of which can be used singly or as a 16-bit unit register pair, there are four 16-bit pointer, or index registers, a 16-bit status register (of which 9 bits are significant) and a 16-bit instruction pointer (program counter). The remaining four 16-bit registers (segment registers) are used to augment the addressing of RAM in order to provide 20-bit addressing capability, thus allowing the computer to access 1,048,560 (1024K) discrete memory locations. The manner in which this is done is interesting: one of the segment registers is shifted left one nibble (4 bits), then added to the corresponding pointer or index to obtain the 20-bit effective address. Other features of the 8088 include instructions for register exchanges, signed and unsigned multiply and divide and double register indexed addressing (which yields one form of true indirect addressing when used properly).



8088 CPU

Why take a look into the other guy's CPU? Two reasons: first, it's good to know what the other guy is dealing with to get his work done; and second, the counterpart of this chip is available for the Apple as a coprocessor (but you need lots of RAM add-ons to make good use of it!).

THE 68000. Apple Computer Inc. uses Motorola's 68000 chip as the backbone of it's MacAnswer to the 8088 - based personal computers. The 68000 architecture is substantially different from that of the Intel or Zilog chips. It has eight 32-bit data registers, any one of which may be used for arithmetic, bit manipulation, or I/O operations; eight 32-bit address registers; a 32-bit stack pointer; a 32-bit program counter; and a 16-bit status (or flag) register. The programmer operates in one of two program modes - supervisor or user (this implies that the 68000 supports true multi-tasking, which is true.) In user mode, the eighth address register (A7) doubles as the user stack pointer. Also, the status register is divided into two 8-bit flag registers, one for user and one for supervisor.



Although the 68000 contains 32-bit address registers, only 24 bits are used for discrete addressing. This, however, gives the 68000 the capability of supporting a whopping 16,776,960 bytes of memory without paging (assuming, of course, that the RAM is on board!). This is 16384K, or 16 megabytes. The MAC's system board, however, presently comes with only 128K of RAM and 64K ROM (although later MACs will come with 512K RAM), leaving a lot of empty addresses (are you listening, Techmar?).

The 68000 supports several forms of indirect addressing in its instruction set, plus signed and unsigned divide and multiply, register exchange and arithmetic performed both in registers and in memory. In addition, direct memory-to-memory moves are supported. Most instructions allow the programmer to specify byte (8-bit), word (16-bit) or longword (32-bit) operands, word length being the default.

The 65C02. The latest addition to the Apple line is

contd. on pg 51

A SUGGESTION FOR PROGRAM DOCUMENTATION

by Joan Bixby Dunham

I wanted to find a fast and easy way to prepare program documentation that is to be displayed on the Apple screen. The documentation had to be easy to correct, could not take inordinate amounts of time to read or display, and had to be translatable to upper case for those who didn't have a lower case display. It occurred to me that my word processor should be able to help me. My word processor (PIE Writer) will send formatted text to a disk text file (type T), and I can use that as the disk documentation. I liked the idea of using text files, because that is a form accessible to many word processors.

I found that if I have the word processor format the text as closely as possible to what I want to display, I can read in the text a line at a time with INPUT statements and not take excessive amounts of time. I decided that I would limit the documentation to 39-column displays only (sorry, all you 80-column users. I prefer 80 columns myself, but it was just too much to provide that option as well). I decided to use a 39-column display, instead of a 40-column display, in order to avoid a series of tests to see if I had to issue a carriage return at the end of the display line or not. I could do the tests, but I wanted this fast and simple, and additional tests will slow the program. Also, this way the word processor is doing all the work and not the display program.

The Applesoft INPUT command has the disadvantage that it will ignore leading blanks, and it objects to commas and colons in the text. The nicely indented text my word processor will create was hashed until I learned to use a somewhat limited writing style. I use blank lines instead of indentation, and dashes for punctua- tion where I might want a comma, or write short sentences. (I find not using commas a particular strain.) I suppose I could have used an Assembly language inputs-anything routine, but I wasn't sure that having the commas and blanks was worth the effort.

I also found that, for the times when the text should be translated to all upper case, it is faster to read in the whole file, and then translate it. I used the Applesoft MID$ function to look at the text lines one character at a time to see if they needed to be translated. This would not work for very long files of documentation, but I am not sure that very long documentation is appropriate for screen presentation. I display the text as it is translated, so that the user knows something is happening. Here is a place where I am willing to admit that a machine code subroutine would improve the program.

The program listed is one which reads and displays a file called HELP.DOC, from a diskette of programs for the Apple Dot Matrix printer which I am donating to the WAP library. Once the text is read, the user can space backwards or forwards through the text a page (22 lines) at a time, 5 lines at a time, or quit. The instructions for the commands to do this are displayed by lines 60 and 70 so that the user may read them while the program reads file HELP.DOC. The conversion to upper case is done in lines 2000 to 2060. I found that the MID$ function will return an error if used for a string of zero length, so the test in line 2016 accomodates that by skipping to the end of the loop.

The best part about this scheme is that, when I display the text and discover an error, I can correct it easily. I do not need to worry about the number of characters on a line if I insert or delete something because my word processor does the job of reformatting the text.

```
10  REM  HELP MY PRINTER DOESNT WORK
20  GOSUB 1000
30  HOME : PRINT "LISTS THE FILE HELP.DOC"
40  PRINT "THIS LISTS A SCREEN OF DOCUMENTATION
    AND PAUSES FOR USER RESPONSE.": PRINT : PRINT "DO
    YOU HAVE LOWER CASE DISPLAY? (Y ";: GET A$:
    PRINT A$: IF ASC (A$) = 121 THEN A$ = Y$
50  PRINT : PRINT
60  PRINT "THE COMMANDS YOU WILL SEE WILL MEAN THE
    FOLLOWING:"
70  PRINT "  - = BACK UP 5 LINES": PRINT "  < = BACK
    UP A PAGE": PRINT "  + = MOVE FORWARD 5 LINES":
    PRINT " SP = MOVE FORWARD A PAGE": PRINT "  Q =
    QUIT"
80  PRINT : PRINT "    --   READING   --"
200  FI$ = "HELP.DOC"
300  PRINT  CHR$ (4)"OPEN"FI$
310  PRINT  CHR$ (4)"READ"FI$
320  ONERR  GOTO 800
325  J = 0
350  INPUT L$(J)
360  J = J + 1: IF J < 330 THEN  GOTO 350
800  REM
810  PRINT  CHR$ (4)"CLOSE"
820  PRINT  CHR$ (4)"PR#0"
825  IF A$ <  > Y$ THEN  GOTO 2000
830  K = 0:I = 21
835  HOME
840  FOR L = K TO I
850  PRINT L$(L)
855  NEXT L
870  VTAB 23: PRINT "-, < (BACK) +, SPACE (MORE),
     Q(UIT)";: GET A$: PRINT A$
871  IF A$ = Q$ THEN  GOTO 900
875  IF A$ = MI$ THEN K = K - 5:I = K + 21: GOTO 880
876  IF A$ = LB$ THEN K = K - 22:I = K + 21: GOTO 880
877  IF A$ = PL$ THEN I = I + 5:K = I - 21: GOTO 880
878  I = I + 22:K = I - 21
880  IF K < 0 THEN K = 0
882  IF K >  = J THEN  GOTO 900
885  IF I > J THEN I = J
886  GOTO 835
900  PRINT "DO YOU WANT TO SEE IT AGAIN? (Y ";
910  GET A$: IF A$ = "Y" THEN  GOTO 830
920  GOTO 3000
1000  REM
1010  DIM L$(330)
1020  Y$ = "Y":CR$ =  CHR$ (13):TT = 32:LC = 95
1025  Q$ = "Q":MI$ = "-":LB$ = "<":PL$ = "+"
1030  RETURN
2000  HOME : PRINT "THIS IS VERY SLOW.  THE PROGRAM
      IS TRANSLATING THE CHARACTERS TO UPPER CASE.
      THE DATA ARE FROM FILE HELP.DOC."
2001  PRINT "YOU WILL BE ASKED IF YOU WANT TO SEE IT
      AGAIN, AFTER THIS IS DONE, SO YOU WILL HAVE A
      CHANCE TO REREAD THIS"
2002  PRINT : PRINT
2003  ONERR  GOTO 3000
2005  FOR I = 0 TO J
2010  M =  LEN (L$(I))
2016  Z$ = "": IF M = 0 THEN  GOTO 2045
2020  FOR L = 1 TO M:C$ =  MID$ (L$(I),L,1)
2030  C =  ASC (C$): IF C > LC THEN C = C - TT:C$ =
      CHR$ (C)
2040  Z$ = Z$ + C$: NEXT L
2045  PRINT Z$
2050  L$(I) = Z$: NEXT I
2060  GOTO 900
3000  REM
```

DEVELOPING RULES FOR AN APPLE EXPERT SYSTEM

by Frederick E. Maef

This is the third in a series of articles about the use of the LISP language to develop a working expert program for the Apple][computer. An expert program is artificial intelligence (AI) software that emulates the reasoning process of the human mind and attempts to replicate human expertise through the use of if-then rules. The present effort is being developed on an Apple //e with DOS 3.3 and P-LISP Version 3.2.

The objective of this project is to contribute to the AI art by demonstrating that a meaningful expert program can be run on a microcomputer, and to expand the capabilities of the Apple][by developing a reusable expert system shell that can be adapted to other applications. It should be emphasized that the Apple][will never match the power of a dedicated LISP machine, but developing an expert program on an Apple can be a valuable educational experience and a good way to learn LISP.

PROJECT STATUS

The Senate Expert has been debugged and is running nicely. The knowledge base contains the attributes of thirty senators, each represented as a separate data frame. The frames are stored on a pseudodisk residing in the 64K Auxiliary Memory of the Apple extended 80-column card. This has been integrated with the expert program and frames management functions described in the earlier articles, and the entire program has been decomposed into three functional workspaces that share the same knowledge base (Fig. 1). Finally, preliminary rules have been written and are stored as frames that can be moved into the workspaces for sequential processing. At this time, only one of five voting criteria is being evaluated.

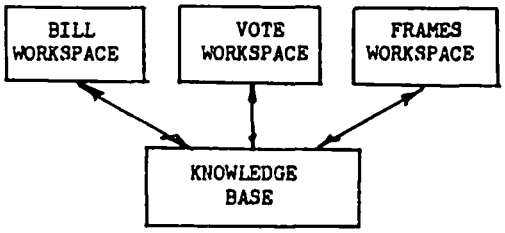


Figure 1.

The decomposition of the program into separate workspaces, combined with the frame management techniques, gives the illusion of infinite memory. This is a significant deviation from most artificial intelligence expert programs, which reside in RAM that must be expanded as the program grows. This program is not "core bound", but one pays for this with a loss in speed.

The project is evolving into an "Apple Expert System". The structure and functions are beginning to deviate from those of Winston and Horn (Ref. 4). While the program is still a toy compared to industrial expert programs, it is beginning to develop power and shows the potential to be useful for many applications.

HOW THE PROGRAM WORKS

The program is operated by booting the disk containing the attribute frames of the senators. This loads 100 individual frames into the pseudodisk. A systems disk is then booted to run P-LISP. Finally, the operator loads one of three workspaces to begin the session.

The Bill workspace leads the operator through an interactive dialogue to develop the attributes of a piece of legislation. Actually, the program backward chains through a set of rules, while using the operator as its reader and interpreter of the written bill. Once this is done, the program formats the attributes as a frame, displays the result to the operator, and when approved, saves the frame to disk, and overwrites the main RAM with the next workspace.

The Vote workspace uses the bill and senator frames, in conjunction with another set of rules, to determine how the senators will vote on the bill - provided they vote according to their attributes and provided the operator has correctly interpreted the legislation. The operator has the choice of evaluating individual senators or the entire senate. The program forward chains through the rules, deduces the vote, and stores the result on a blackboard frame. After all 100 senators are processed, the result is summarized and displayed. In the individual senator mode, backtrack and explanation functions are available to tell how the deduction was reached.

The third workspace is for frame creation, editing and maintenance. This is essentially the frame management system discussed in an earlier article, with the additional capability to load and save the frames to and from disk storage.

FRAME MANAGEMENT FROM VIRTUAL MEMORY

One of the strengths of an expert program written in LISP, is the separation of the inference engine from the knowledge base. This makes it easy to modify the rules, attributes and hypotheses without the recoding that would be required by other "line-numbered" programs. It should also be noted that the knowledge base involved here is different from the more familiar database. An AI knowledge base contains facts, rules, relationships, scripts, and other representations, all requiring symbolic processing. As discussed in Ref. 3, this is best done with a frames representation technique.

The heart of the frame management-pseudodisk procedure is a Beagle Brothers program called DiskQuik. This program makes the Apple //e operate as if a disk drive was plugged into Slot 3, and provides 238 sectors of storage that is software accessible, but does not interfere with the disk controller in Slot 6. Most of DiskQuik's routines are stored in the 64K auxiliary memory, so there is no conflict with Applesoft or DOS 3.3. More important, DiskQuik has the hooks to make it compatible with P-LISP. I have been using it for several weeks without problems.

However, the use of the auxiliary memory does require some modification to the expert program inference engine. The revised scheme for the Vote workspace is depicted in Fig. 2, and similar modifications were made for the Bill workspace. The new function CHANGEFRAME, should be installed as follows:

```
(DEFINE(CHANGEFRAME(LAMBDA()(PROGN(SETQ ACTIVE(CAR
SENATORLIST))(POKE -21910 3)(OPENSEQ ACTIVE)(READSEQ
ACTIVE)(SETQ FACTS1(READ))(CLOSE)(SETQ FACTS(CONS
FACTS(CDAR FACTS1)))(SETQ NAME(CAAR FACTS1))(SETQ
SENATORLIST(CDR SENATORLIST))))))
```

contd.

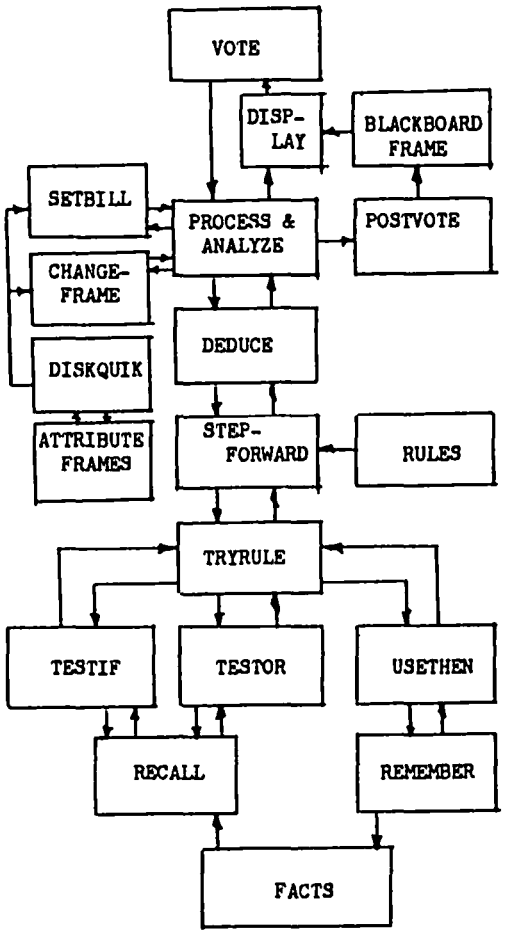


Figure 2.

In addition, in order to load the bill attributes, a new function SETBILL, should be installed as listed here:

```
(DEFINE(SETBILL(LAMBDA()(PROGN(POKE -21910 3)
(OPENSEQ "BILL")(READSEQ "BILL")(SETQ
FILE(READ))(CLOSE)(SETQ FACTS (CAR FILE))))))
```

Finally, to provide the blackboard and vote tally functions, the POSTVOTE function will be needed as follows:

```
(DEFINE(POSTVOTE(LAMBDA()(FPUT 'BLACKBOARD NAME
'ECOVOTE (CAADADA FACTS)))))
```

INTEGRATION WITH THE EXPERT PROGRAM

Another objective of this project is to create a reusable expert shell that can be used for other applications without major modifications. Some readers feel that senate vote prediction is a trivial problem and is unworthy of so much frame shuffling. This is a side effect of the effort to make the program reusable.

The modifications to the basic Winston and Horn expert functions (Ref. 4) will be addressed in the same order as they are encountered in the program. Two simple functions, FLOAD and FSAVE, must be installed in both the Bill and Frames workspaces, as listed below:

```
(DEFINE(FLOAD(LAMBDA(TITLE)(PROGN(POKE -21910 3)
(OPENSEQ TITLE)(READSEQ TITLE)(PUT TITLE 'FRAME
(CAR(READ)))(CLOSE)))))

(DEFINE(FSAVE(LAMBDA(TITLE)(PROGN(POKE -21910 3)
(OPENSEQ TITLE)(WRITESEQ TITLE)(PRINT(LIST
(FGETFRAME TITLE)))(CLOSE)))))
```

BILL is a new function in the Bill workspace, where the other functions are the unchanged backward chaining diagnostic functions from Ref. 4. The listing of BILL is shown below with some of the print statements removed for brevity. A complete listing will be provided on request.

```
(DEFINE(BILL(LAMBDA()(PROG(BILLNAME BILLNUMBER)
LOOP(QPRINT "TO REVIEW CURRENT BILL - TYPE 'BILL'")
(QPRINT "TO EVALUATE A NEW BILL - TYPE 'NEW'")
(SETQ INPUT (READ))(COND((EQUAL INPUT 'BILL)
(FLOAD 'BILL))(T(DIAGNOSE)))(FGETFRAME 'BILL)
(QPRINT "ARE THESE CORRECT?")(SETQ INPUT1 (READ))
(COND((EQUAL INPUT1 'YES)(FSAVE 'BILL))(T(GO
                                        LOOP)))))))
```

Finally, in the same fashion, VOTE and ANALYZE are new functions in the vote workspace, and are listed below:

```
(DEFINE(VOTE(LAMBDA()(PROG(QPRINT "SENATOR OR ALL?")
LOOP(QPRINT "FOR INDIVIDUAL SENATOR - TYPE LAST
NAME")(QPRINT "FOR ENTIRE SENATE - TYPE 'ALL'")
(SETQ INPUT (READ))(COND((EQUAL INPUT 'ALL)(PROCESS))
(T(ANALYZE INPUT)))(QPRINT "DO ANOTHER - TYPE 'YES'")
(QPRINT "TERMINATE - TYPE 'END'")(SETQ INPUT1 (READ))
(COND((EQUAL INPUT1 'YES)(RESET)(GO LOOP))(T(QPRINT
"IT'S BEEN A PLEASURE WORKING WITH YOU, BE SURE YOU
SAVE THE WORKSPACE AND ATTRIBUTE FILES")))))

(DEFINE(ANALYZE(LAMBDA(SENATOR)(GC NIL)(SETBILL)
(OPENSEQ SENATOR)(READSEQ SENATOR)(SETQ FACTS1(READ))
(CLOSE)(SETQ FACTS(CONS FACTS(CDAR FACTS1)))
(SETQ NAME(CAAR FACTS1))(DEDUCE)(POSTVOTE))))
```

DEVELOPING THE SENATE EXPERT RULES

Several readers have questioned why anyone would attempt to write a vote prediction expert program, knowing that an expert program works best in a rules oriented situation, and that the senate votes in a highly unstructured fashion. Just as I want to see if an Apple][can be used to run an expert program, I also want to see if such a program can be useful to anyone trying to understand voting processes. Any rationale may be better than none. So the intent of this program is to act as an intelligent decision making assistant, not to make definitive voting decisions.

The rules that have been written are simple but functional. Refinement of the rules will continue in the future. This requires the active participation of experts, who operate the system, comment on its inadequacies, and lead the programmer to better rules.

Very early in the project it became apparent that it would be easy to determine the vote based on senator and bill attributes, but that the challenge was in correctly determining those attributes. Initially, this was done arbitrarily, but later a more accurate procedure was developed for use in the Bill workspace. This procedure starts with a set of hypotheses and backward chains through a set of rules to produce a bill attribute frame. The hypothesis frame, a typical rule, and the bill attribute frame are shown below:

```
((ECOREL(VALUE(CONSERVATIVE)))(ECOREL(VALUE
(LIBERAL)))(ECOREL(VALUE(NEUTRAL))))

(RULE ONE(IF(BILL INCREASES EMPLOYMENT)(BILL
REDUCES INFLATION RATE)(BILL REDUCES INTEREST
RATES))(THEN(ECOREL(VALUE(CONSERVATIVE)))))

((ECOREL(VALUE(CONSERVATIVE))))
```

The attributes of the senators were derived from the voting records maintained by the National Journal and the Congressional Quarterly, which rate each senator in five categories - economic, social, national security, party loyalty, and loyalty to the President.

contd.

A typical senator frame is shown below:

```
((BAKER(AKO(VALUE(SENATOR)))(NSRATE(VALUE
(CONSERVATIVE)))(ECORATE(VALUE(CONSERVATIVE)))
(SOCRATE(VALUE(CONSERVATIVE)))PARTY(VALUE
(REPUBLICAN)))(PTYRATE(VALUE(90)))(PRESRATE
(VALUE(88)))(STATE(VALUE(TENNESSEE)))))
```

At this time, the program is operating only on the economic ratings and economic relevance, but in the future the program will determine how the senator can be expected to vote in each of these five categories and will predict a composite vote based on the best of five. The following is a typical rule, and if you compare the rule with the senator and bill attributes, you will see that Senator Baker's economic vote should be aye.

```
((RULE ONE(IF(ECOREL(VALUE(LIBERAL)))(ECORATE(VALUE
(LIBERAL))))(OR(ECOREL(VALUE(CONSERVATIVE)))(ECORATE
(VALUE(CONSERVATIVE))))(THEN(ECOVOTE(VALUE(AYE))))))
```

This rule format required one final addition to the inference engine - the inclusion of TESTOR, a function to handle if-or-then rules. TESTOR should be installed in the Vote workspace as follows:

```
(DEFINE(TESTOR(LAMBDA(RULE)(PROG(ORS)(SETQ ORS
(CDADDD RULE))LOOP(COND((NULL ORS)(RETURN T))
((RECALL(CAR ORS)))(T(RETURN NIL)))(SETQ ORS
(CDR ORS))(GO LOOP)))))
```

WHAT NEXT?

Until now, much of the work has gone into the development of the inference engine and frames management functions. But most practitioners in this field point out that the real power of an expert program is in the knowledge base. Therefore future work will concentrate on refining the rules, expanding the rules to include all five attribute categories, using the numerical ratings, incorporating certainty factors and weighting mechanisms, and introducing the use of demons. Additional effort is required to write more elegant rules and functions, and perhaps to introduce a method for prioritizing the rules.

CONCLUSIONS

The Apple][can be made to handle meaningful expert programs, using LISP as a basic symbolic processing language. The RAM limitations of the Apple][can be overcome by decomposing the problem into modules and by moving data frames in and out of disk storage. Useful programs can be written for the Apple][, and although they will run slowly, these programs can perform many of the same tasks that are being developed for more powerful computers.

REFERENCES

1) Bruce, Harry and Hite, Gene, DISKQUIK, Beagle Bros Micro Software, Inc., 1983.

2) Cherry, Stephen, P-LISP Version 3.2 User's Manual, Gnosis/Pegasys Systems Inc., 1983.

3) Naef, Frederick E., "Integrating Frames With an Expert Program", Washington Apple Pi Journal, April 1984.

A) Winston, Patrick H. and Horn, Berthold K. P., LISP, Addison-Wesley Publishing Co., 1981.

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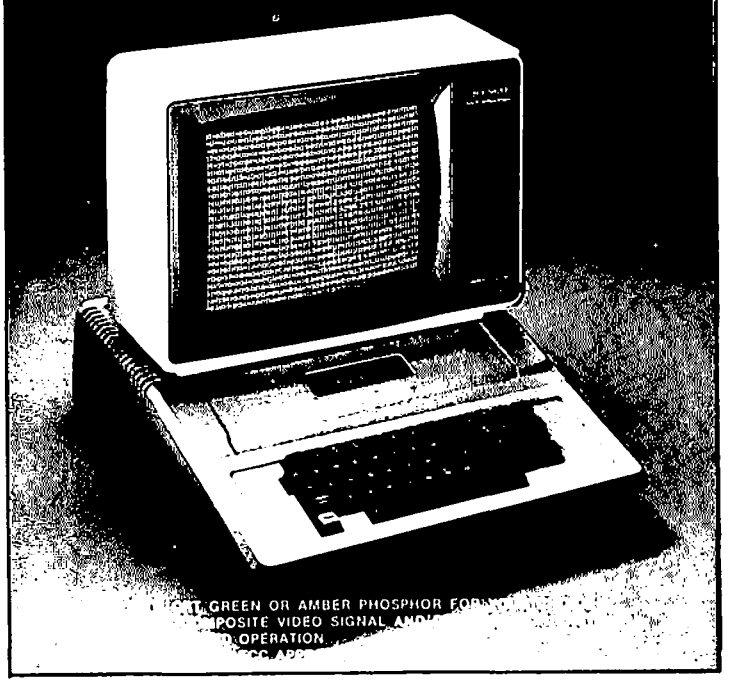


PASCAL TUTORIALS

by Robert C. Platt

Following in the proud tradition of Dr. Wo, the WAP's Pascal Interest Group is again offering an introductory course in Pascal. The tutorial will be held on four Saturdays June 2, 16, 30 and July 7. It is designed for people with no previous programming background.

WHY LEARN PASCAL?

After BASIC, Pascal is the most widely used language for programming micros. (For example, all system programming at Apple Computer is done in Pascal except when machine language code must be produced by an assembler.) The College Boards have selected Pascal as the language that high school students must learn to prepare for the Computer Science Advanced Placement Tests. Because of Pascal's structure, it is easier to read and write Pascal programs than BASIC programs. Finally, Pascal is more standardized than BASIC, with the result that a Pascal program can be converted to run on other computers much more easily that programs written in languages such as BASIC.

The course is open to anyone who has a UCSD Pascal compiler for their computer (computers other than Apple][s are welcome.) We will also try to point out differences with Mac and Lisa Pascal if owners of those machines enroll.

If you want to be a part of the "structured programming revolution," fill out the application form in the back of the Journal or call the office.

Here is a course outline. It is based upon Dr. Wo's prior WAP Tutorials. The basic text is "Apple Pascal: a hands on approach" by Luehrmann and Peckham, which is included with every copy of Apple Pascal.

PREREQUISITES:

(1) Bring your own Pascal compiler and text editor and know how to use the editor. (For example, if you have Apple][Pascal, master the first two chapters of Luehrmann and Peckham (L&P).

(2) Read Lee Raesly's article on the Pascal text editor in this month's issue.

(3) Understand how to use the filer. You should try the following housekeeping tasks before the first session:

- Formatting diskettes (bring a formatted disk with you.)
- Naming files and Volumes
- Copying disks
- Copying files
- Removing files
- Zeroing disks
- Setting the date
- Saving the workfile
- Renaming files

Apple Pascal is both a programming language and an operating system. Because our time is so limited, the tutorial will focus upon the Pascal language and will not cover operating system commands. (These commands will differ on the][, ///, Mac and Lisa, but there will be surprisingly few differences in the language on these machines.) So, if you want to get the most out of the tutorial, invest some effort in becoming comfortable with your editor and filer before the first session. Two texts to consult for the Apple][are: Beginner's Guide to the UCSD Pascal System by Kenneth Bowles (McGraw Hill) and Introduction to the UCSD P-System by Charles Grant and Jon Butah (Sybex).

SESSION #1

(Do not bring your machine to the first session.)

I. Introduction to Pascal Language

- A. Characteristics of Pascal
  - Data Structures
  - Program Structure and Procedures
- B. Comparison to BASIC

II. Declaring Data

- A. Concept of Data Type
  - Permissible values
  - Permissible operators
  - Strong data typing
- B. Constants and Variables
- C. Declaring Constants (L&P p. 139-143)
  - Examples
  - Syntax
- D. Declaring Variables (L&P p. 58-60)
  - Examples
  - Syntax

{break}

III. The Assignment Statement

- A. Expression
- B. Order of operations

IV. Data Types

- A. Integer Data Type (L&P p. 209-221)
  - Permissible values
  - Operators
  - DIV and MOD
  - Examples
  - Built-in Integer Functions

SESSION #2

(Bring your computer to this and remaining sessions: a][, ///, Mac, whatever. You will write and debug programs in class.)

I. Syntax of a Pascal Program

- A. PROGRAM
- B. BEGIN .. END

II. Elementary Input Output

- A. read and readln (L&P p. 156-158)
- B. write and writeln
- C. Input -[Action -[Output
- D. Sample programs using Integers

III. Data Type Boolean

- A. Permissible values
- B. Permissible operators
  - AND OR
- C. conditionals and Boolean data
- D. Boolean expressions

contd.

(Session #2 contd.)

IV. Character data type

A. Type CHAR
B. The ASCII character set
C. ORD and CHR

{break}

V. Strings (L&P p. 181-200)

A. Type STRING
B. The length can change
C. Built-in functions and procedures:
delete, insert, pos, length, copy
D. Strings vs. characters

VI. Programming examples

SESSION # 3

I. Scalar Types

A. Examples
B. Declaration
C. Use

II. Controlling the action: program control structures

A. Three basic control structures
B. Loops
WHILE .. DO (L&P p. 201-202)
REPEAT .. UNTIL
FOR .. DO
C. Branching
IF THEN ELSE (L&P 151-166)
CASE (L&P 169-173)
Using CASE in a menu oriented program

{break}

III. Programming with control structures

IV. Arrays (L&P p. 267-289)

V. Introduction to Procedures

A. What is a procedure?
B. Why use procedures?
C. Declaring procedures

SESSION #4

I. Procedure Parameters

II. Programming Examples

III. More About Procedures

A. Syntax of procedure declarations
B. Scope
C. Problem Refinement
D. Divide and Conquer
E. Procedures as Black Boxes: hiding data and action
F. Concepts
Top down development
Stepwise refinement
Nesting and levels of tasks
Scope of identifiers

{break}

IV. Records and Files (L&P p. 301-328)

A. Declaring records
B. GET and PUT

V. Where to go from here

A. Suggested texts
B. Modula-2

AppleWorks contd. from pg 25

Shortcomings

Here are the main problems I've encountered or heard about during a month of using AppleWorks:

1. The program wasn't written to accomodate many non-Apple parallel printer cards, at least for full use of printer features. Apple has rushed out a free supplementary disk that modifies the boot disk to take care of this, for the Grappler and some other boards. But a friend of mine running an Okidata off a board Oki sells itself still has problems. (Apple says it's working on these.) You're probably safe with an Apple or Grappler or other well-known card and one of the major printers. But you might want to check before buying. Easiest combo is the standard card and an Apple or Epson or Qume printer.

2. Because AppleWorks is in ProDOS, its ASCII text files can't be read by other text-reading software that's in DOS 3.3 (unless you convert them with the ProDOS-to-DOS conversion utility on the separate ProDOS system master disk). That also means most telecommunications programs (like ASCII Express or Transend) can't transmit AppleWorks files, at least until they are upgraded to ProDOS versions.

3. The word processor doesn't show double or triple spacing on screen, and it adjusts for line widths by moving only the right margin. Thus the lines are accurate in length, but not exactly as they'd be on paper.

4. The spreadsheet is larger and faster than VisiCalc, but lacks some calculating functions used by specialists.

5. Unlike some integrated software, AppleWorks lacks graphics.

6. For mouse fans, the current version of AppleWorks doesn't use the rodent. Future versions may do so, Apple hints.

Binary Tales contd. from pg 45

the Apple //c, which supports the 65C02 chip. This CPU is architecturally the same as the 6502, but the microcoding (the instructions which the chip understands) has been expanded from the 6502 version, allowing such operations as unconditional branches, pushing and popping the X and Y registers, and a more flexible structure for indirect addressing. (It may be worth noting that future tutorials on 6502 Assembly Language Programming will include a discussion of these extended features and their use.)

Looking back at these CPU's, I really come to appreciate the 6502 chip in my Apple (even though I also have the Z-80, 8088 and 68000 CPU's). If I had learned Assembly Language programming on any other microchip, the changeovers from one chip to another would have been more difficult for me, with more things to keep track of, more complicated addressing techniques to learn. As it turned out, the moves from chip to chip have all been rather easy - the addressing on the 6502 is more complex than the Intel chips - and I had fewer registers to play with, so using the other chips has been a form of luxury in that regard. But I guess that I'm most pleased with the wealth of information concerning the Apple's internals that has always been so readily available (especially now that I can't beg, borrow or steal any information on MAC internals), from Apple itself, users' groups like ours, and from independent sources who have enjoyed discovering how to peel the Apple, as I have.

NEXT MONTH: Macintosh - Inside the Box.

THE FORTH COLUMN

by Bruce F. Field

Whenever anybody gets a new computer the first thing they do is run a benchmark program to "see what it'll do". Last month's issue of the journal featured two such articles, one by David Morganstein and Dave Weikert, and a second by Richard Norling. Richard's article and especially his conclusion intrigued me - the fact that since MacBASIC programs run ten times faster on a Macintosh than Applesoft on the][+, this is another reason to buy a Mac. I on the other hand would argue that it is time to change your language. In proof I offer the following chart that is a copy of Richard's chart published last month with two FORTH languages added.

A word of explanation is in order for those who missed last month's chart. The first five benchmark programs were lifted from an article by Scot Kamins that appeared in the April 1984 issue of Byte magazine. Richard added the times for MS-BASIC which is Microsoft's Basic for the Macintosh, and for Applesoft. All the times appear reasonably consistent with the exception of benchmark #5 for MacBASIC. Kamins described this as an integer divide; however the critical line in his program was y = x div 3, where x and y are floating point numbers. There was no other explanation in the article and the time appears abnormally short compared to the other languages. Otherwise MacBASIC ranged from 1.7 to 10.4 times faster than Applesoft.

Now let us turn our attention to the two columns for FORTH. FORTH is in general an integer number only language; that is no provision is made for floating point numbers. However, in FORTH, data types can be defined as desired so that floating point numbers could be included in the language if you wanted, and some commercial versions of FORTH do include floating point numbers. But the arithmetic operations in FORTH are based on 16-bit integers. FORTH freaks would argue that there is no need for floating point numbers, that everything can be done in integer. I'm not quite willing to accept that yet, but many applications do not really require floating point. FORTH usually includes double precision (32-bit) operators; these numbers can range from -2,147,483,647 to +2,147,483,647 and this should handle most applications. Fig-FORTH is available in the WAP library (disk 105). We see that Fig-FORTH on the //e (or][+) is faster than even MacBASIC with the one exception of Integer Divides noted above.

If you really want high performance, look to MacFORTH. Using benchmark 6, Eratosthenes Sieve which has become something of a standard, MacFORTH is 15 times faster than MacBASIC, 58 times faster than Microsoft BASIC, and 157 times faster than Applesoft. MacFORTH does not exactly conform to any of the existing FORTH standards, most notably because it uses 32-bit arithmetic exclusively. The speed penalty on the Mac is small for using 32-bit arithmetic rather than the usual 16-bit.

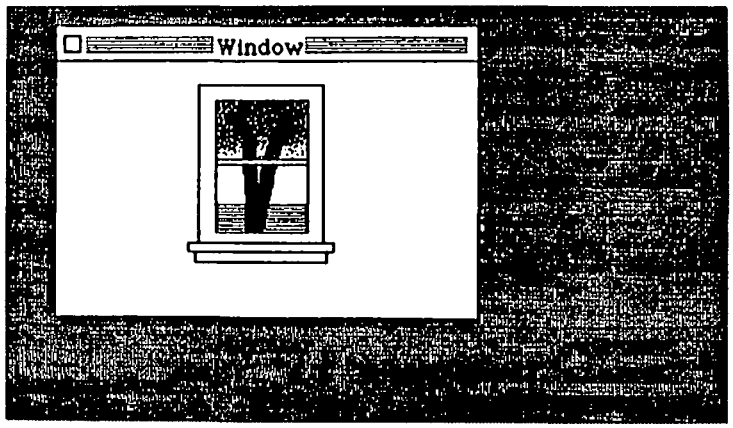
Given the above data I would like to modify Richard's last statement in his article to: Does this give anyone another reason to go FORTH?

SPEED COMPARISONS IN SECONDS

	Macintosh			//e	
	MacFORTH	MacBASIC	MS-BASIC	Fig-Forth	Applesoft
1. Empty GOSUBs	0.25	3.0	8	1.3	15.5
2. Empty loop	0.09	1.5	5	0.6	7
3. Midstring function	2.10	9.0	21	8.6	33
4. Real Divides	[]	18.0	31	[]	30
5. Integer Divides	2.51	3.0	13	22.8	[]
6. Eratosthenes Sieve	2.08	31.5	121	13.5	327

[] function not available

Note: MacForth uses 32-bit integers for all arithemetic operations
Fig-Forth uses 16-bit integers



By Dana Schwartz

Remember to Vote in the WAP Annual Elections

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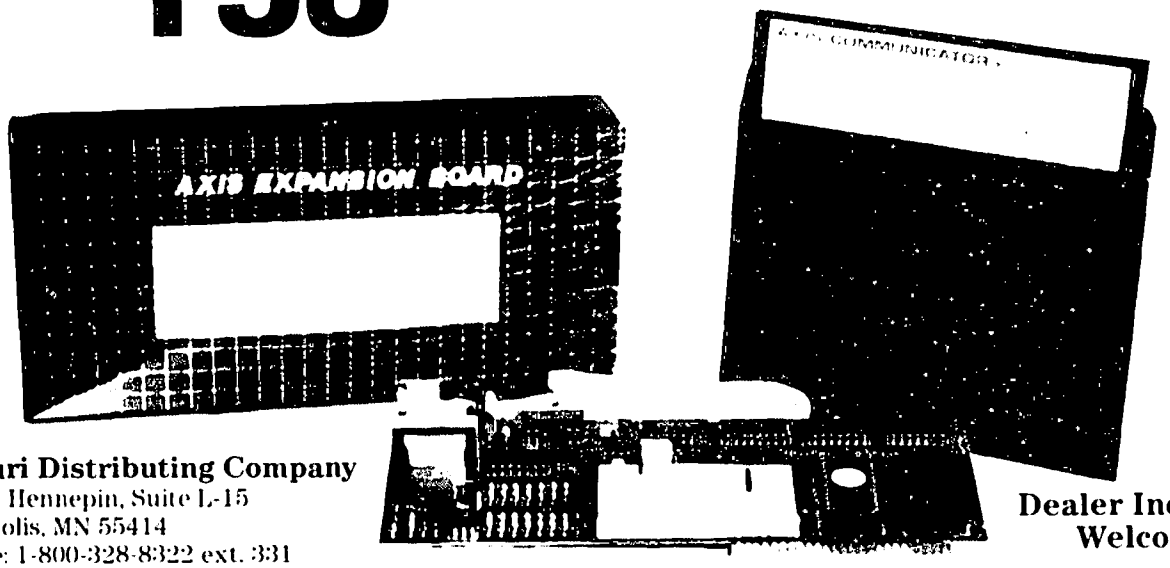

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BYLAWS AMENDMENT

by Robert C. Platt

The Executive Board adopted a series of amendments at its April meeting to add an additional Director to the Board and to divide the Vice President's duties between two Officers. The two new Vice Presidents for SIGs and Programs would both serve as voting members of the Board. These changes will go into effect on July 1, when our new directors and officers begin serving.

As a result, the current election will select two Vice Presidents and seven Directors at Large. Here is the text of the amendments:

1) Article VII, Section 2 (first sentence) shall be amended to read:

The Board of Directors shall be composed of 15 members: the President, the Vice-President for Programs, the Vice-President for Special Interest Groups, the Secretary, the Treasurer, the Past President, the Editor of the WAP Journal, the Head Librarian, and seven Directors-at-Large.

2) Article VII, Section 8 (first sentence) shall be amended to read:

The President, or in his absence, the Designated Vice-President, shall preside at meetings of the Board of Directors.

3) Article VIII, Section 1 shall be amended to read:

The officers of the Corporation shall be the President, Vice-President for Programs, Vice-President for Special Interest Groups, Secretary, Treasurer, Editor of the Journal, Head Librarian, Bulletin Board Operator, and Director of Group Purchase. The President, Vice-President for Programs, Vice-President for Special Interest Groups, Secretary and Treasurer shall be elected annually by the members pursuant to Article IX hereof.

4) Article VII, Section 3 shall be amended to read:

VICE-PRESIDENTS. The Vice-President for Programs shall serve as an administrative assistant to the President and shall oversee and coordinate the efforts of all committees and regularly scheduled programs, including the community bulletin-board. The Vice-President for Special Interest Groups shall serve as an administrative assistant to the President and shall oversee and coordinate the efforts of the Special Interest Groups and special publications. From time to time, the President shall designate one of the Vice-Presidents who shall, in the absence of the President, or in the event of the President's disability, perform the duties and exercise the powers of the President. Both Vice-Presidents shall perform other duties designated by the President or the Board of Directors.

5) Article VIII, Section 10 (first sentence) shall be amended to read:

If the office of President, Vice-President for Programs, Vice-President for Special Interest Groups, Secretary or Treasurer becomes vacant for any reason, the vacancy shall be filled by the Board of Directors.

6) Article IX, Section 3 (fourth sentence) shall be amended to read:

Each ballot may cast one vote for each office, except that up to seven votes (noncumulative) may be cast for Director-at-large.

7) Article IX, Section 4 (second sentence) shall be amended to read:

The seven eligible candidates for Director-at-large with the greatest number of votes shall be elected.

VISICALC DATA ENTRY TIP

by Merle Block

The VisiCalc Instruction Manual teaches that where a label is to be typed into a cell, and the first character of the label is not an alphabetic character, a <"> is to be typed. That requires that one finger on one hand hold down the <SHIFT> key while a finger on the other hand presses the <">. That can be done as a one-finger operation as follows: Press <Q> then <ESC>. Actually, any other alphabetic key will work, but <Q> is right next to <ESC>.

THE SHOW MUST GO ON by Richard Langston II

Beginning with the January Woz meeting, the club has been videotaping the main speakers at the monthly meetings. By doing this, the club is hoping to provide a way for members and nonmembers alike to see the meeting and benefit from the presentation. We would also like to begin videotaping the club's many tutorials, if we can get enough interested people.

We are also working on getting the meetings shown on local cable television public access channels. In this way, we hope to bring the meetings to the largest possible number of people. If anyone has any information about local cable services with public access channels, please give me a call at the number below.

We could use lots of help in this effort. Anyone with a VHS Video camera or portable video recorder who could bring their equipment to a meeting even once or twice a year would be a help. So far, we have been relying on Dave Morganstein, Gordon Stubbs, and John Jones for all of our equipment. We would like to have enough members helping so one person would not have to carry his equipment to every meeting.

If you have any equipment or knowledge of cable services, please give me a call at 258-9865 after 4:30 PM. You help will be greatly appreciated.

APPLESOFT PROGRAMMING TIP

by Merle Block

Have you ever put a <PRINT> command or an <INPUT> prompt in your BASIC program, only to have the Apple split some of the instruction or prompt works at the end of the line where you did not want the words to be split? Here is a tip to cure that problem.

After you put the <PRINT> or <INPUT> command into the program line, space over and enter the <"> in the last character position on that same line. The cursor will go to the first position on the next line. Then enter the words for your instructions, or the Input Prompt. Do not use the <RETURN> until you finish the full text of your instructions or Input Prompt; then finish with the end <"> and <RETURN>. Remember, for an Input Prompt, you must include a <;> and <variable name> before the <RETURN>.

I have found this technique to be much faster than counting characters and adjusting the number of alpha-numerics in a line. Try it! &

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Novation Cat II	$239
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WAP READING LIBRARY

by Walton Francis

One of the many benefits of having a club office is that it allows each member located in the D.C. area access to a microcomputer library of great scope and depth. We have dozens of magazine titles and thousands of magazine copies. Our book collection is far more limited but growing rapidly - at present about 150 titles.

Among the serial holdings are complete or almost complete collections of:

A+
Apple Orchard
Byte
Creative Computing
Dr. Dobbs
In Cider
InfoWorld
Interface Age
Kilobaud/Microcomputing
Nibble
Peelings II
Personal Computing
Personal Software
Popular Computing
Softalk

and full or partial holdings of many other commercial magazines.

In addition, we have a voluminous collection of club magazines and newsletters, including, of course, Washington Apple Pi and Call-A.P.P.L.E.

The accompanying table displays each book title by subject. The rating column shows the score given by Nicita's Reader's Guide to Microcomputer Books, as available. The Nicita Guide is an evaluative bibliography which provides brief and penetrating reviews.

If you have always wondered what Pascal was about, or how to wire your home for energy control, or just how much Apple software there is in the world, or whatever, we have a book or two and articles for you to browse through at the club office. You can also photocopy key pages for a nominal charge. Sorry, however, no lending yet.

Books are expensive (our collection would cost over $3,000 to duplicate) and we would love to have more donations. We don't limit our books to the Apple, or even to microcomputers, though we will keep that focus. Duplicates are welcome, as well, since that will help us to start lending. The only books we discourage are the ones with titles like "How to Understand Personal Computers including a 1980 Vendor List and 100 Pages of Drivel about BASIC."

The book listing is on a Multiplan spreadsheet file as a matter of simple convenience. If anyone has a good DBMS system to recommend (it should be one which uses standard DOS text files) for the time when we get professional about cataloging, please get in touch.

For now, donate or read, as you choose.

Washington Apple Pi Library Book Listing May 3, 1984

Subject	Title	Author	Year	Rating
Apple //	Apple // Reference Manual (//e)	Apple	1982	
Apple //	Apple //e Owner's Manual	Apple	1983	
Apple //	Apple II Reference Manual (II)	Apple	1979	
Apple //	Apple Interfacing	Titus	1981	70
Apple //	Apple Tech Notes	Apple	1982	
Apple //	Interface Projects for the Apple II	Hallgren	1982	
Apple //	The Apple Connection	Coffron	1982	85
Apple //	The Custom Apple & Other Mysteries	Hofacker	1982	
Apple III	The Osborne/McGraw-Hill Guide to Apple III	Miastk'ski	1983	
Applications	A Collection of Programming...Techniques	Maurer	1972	
Applications	Basic Computer Games: Microcomputer Edition	Ahl	1978	
Applications	Best of Creative Computing Vol. I	Ahl	1976	
Applications	Best of Creative Computing Vol. II	Ahl	1977	
Applications	Computers in Mathematics: A Sourcebook	Ahl	1979	
Applications	Computers in Science & Social Studies	Ahl	1983	
Applications	Create Word Puzzles with Your Microcomputer	Nau	1982	95
Applications	Executive Planning with BASIC	Bui	1982	90
Applications	Free Software for Your Apple	Heller	1984	
Applications	Home Energy Applications	Pitts	1983	
Applications	Inside Washington Apple Pi	WAP	1981	
Applications	Peeking at Call-A.P.P.L.E. Vol. 2	Call-APPLE	1979	
Applications	Science and Engineering Programs	Heilborn	1981	85
Applications	Some Common BASIC Programs Apple II Edition	Poole	1981	85
Applications	The Investor's Computer Handbook	Packer	1982	80
Assembly	370/360 Assembly Language Programming	Stern	1979	
Assembly	6502 Assembly Language Routines	Leventhal	1982	
Assembly	68000 Assembly Language Programming	Kane	1981	90
Assembly	8080A/8085 Assembly Language Programming	Leventhal	1978	
Assembly	Apple II Assembly Language	De Jong	1982	75
Assembly	Apple Machine Language	Inman	1981	90
Assembly	Assembly Lines: The Book	Wagner	1982	
Assembly	Beyond Games: System Software for...6502	Skier	1981	
Assembly	MOS 6500 Microcomputer...Programming	MOS	1976	
Assembly	Programming a Microcomputer: 6502	Foster	1978	65
Assembly	THE GUIDE to What's Where in the Apple	Lueblert	1981	
BASIC	A Guide to Programming in Applesoft	Presley	1982	90
BASIC	Advanced BASIC	Coan	1977	90
BASIC	Apple BASIC for Business	Parker	1981	
BASIC	Apple BASIC: Data File Programming	Finkel	1982	95
BASIC	Apple Backpack	Kamins	1982	95
BASIC	Apple II BASIC Programming Manual	Apple	1981	
BASIC	Apple II User's Guide	Poole	1982	95
BASIC	Applesoft II Reference Manual	Apple	1981	
BASIC	Applesoft Language	Blackwood	1981	60
BASIC	BASIC Programming Reference Manual	Apple	1978	
BASIC	BASIC and the Personal Computer	Dwyer	1978	95
BASIC	Basic Apple BASIC	Coan	1982	95
BASIC	Computers for Kids	Larsen	1981	90
BASIC	Golden Delicious Games for the Apple	Franklin	1982	50
BASIC	Introduction to BASIC	Morton	1977	
BASIC	Kids and the Apple	Trap	1982	
BASIC	Practical BASIC Programs Apple II Edition	Poole	1981	90
BASIC	Secrets of Better BASIC	Nau	1983	
BASIC	Software Design for Microcomputers	Ogdin	1978	
BASIC	The BASIC Handbook	Lien	1981	99
BASIC	The Little Book of BASIC Style	Nevison	1978	90
C	C Programming Guide	Purdum	1983	
COBOL	A Simplified Guide to Structured COBOL	McCracken	1976	
COBOL	Structured Programming for...COBOL...	Noll	1977	
CP/M	CP/M Revealed	Dennon	1982	80
CP/M	Mastering CP/M	Miller	1983	95
CP/M	The CP/M Handbook with MP/M	Zaks	1980	95
Chips	6502 Application Book	Zaks	1979	
Chips	68000 Microprocessor Handbook	Kane	1981	
Chips	Microcomputer Design	Ogdin	1978	
Chips	Microcomputers/Microprocessors	Hilburn	1976	
Chips	Microprocessor...Handbook	Ward	1975	
Chips	The 8080/8085 Microprocessor Book	Intel	1980	
Chips	Using the 6800 Microprocessor	Poe	1978	
Communication	The Complete Handbook of PC Communications	Glossbr'er	1983	90
DOS	Beneath Apple DOS	Worth	1981	90
DOS	The DOS Manual	Apple	1981	
DOS	The Do's and Don'ts of DOS (Vers. 3.2)	Apple	1979	
Data Base	Data Base Management Systems	Kruglinski	1983	85

contd.

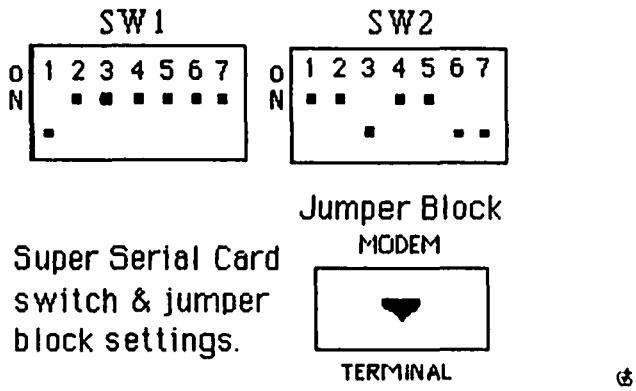
Data Base	Data Base Management for the Apple	Wadsworth	1983	
Data Base	Data Management Techniques			
Data Base	Everyman's Data Base Primer	Byers	1982	
Directory	Addison-Wesley Book of Apple Software 1983	Stanton	1983	90
Directory	Addison-Wesley Book of Apple Software 1984	Stanton	1984	90
Directory	Apple II Software Directory Vol. I Business	MIDL	1979	
Directory	Blue Book for the Apple Computer (1982)	MIDL	1981	80
Directory	Blue Book for the Apple Computer (1983-4)	MIDL	1983	80
Directory	CP/M Software Finder	Digital	1983	
Directory	Creative Computing Software Buyer's Guide	Cr. Comp.	1983	
Directory	InfoWorld's...Guide to Micro...Software	InfoWorld	1982	
Directory	LIST	Leonsis	1983	
Directory	PC Clearinghouse Software Directory (1983)	Wright	1983	
Directory	Skarbek Software Directory 3rd Edition	Skarbek	1982	
Directory	Swift's 1982-83 Educational Software Direct.	Swift	1982	80
Directory	Swift's 1983-84 Educational Software Direct.	Swift	1983	
Directory	The Index	Wallace	1981	
Directory	The Investor's Guide to Software	Longman	1983	
Directory	The Reader's Guide to Microcomputer Books	Nicita	1983	
Directory	VanLoves 1983 Apple II/III Software Direct.	Love	1982	
Education	Computers and Reading Instruction	Geoffrion	1983	
Education	Computers in Teaching Mathematics	Kelman	1983	
Education	Courseware in the Classroom	Lathrop	1983	
Education	Graded Problems in Computer Science	McGettrick	1983	
Education	Microcomputers and the 3 r's	Doerr	1979	85
Education	Mindstorms	Papert	1980	
Education	Practical Guide to Computers in Education	Coburn	1982	
Education	The Academic Apple	Howe	1983	
FORTH	Discover FORTH	Hogan	1982	35
General	1984 Programmer's Market	McGehee	1983	
General	Computer Dictionary	Sippl	1980	95
General	Computer Typesetting Experiments & Projects	Barnett	1965	
General	Computer Wimp	Bear	1983	
General	Crash Course in Microcomputers	Frenzel	1980	95
General	Don't (Or How to Care for Your Computer)	Zaks	1981	85
General	Nailing Jelly to a Tree	Willis	1981	95
General	Running Wild	Osborne	1979	80
General	The Cheap Video Cookbook	Lancaster	1978	
General	The Devil's DP Dictionary	Kelly-B'le	1981	90
General	The Personal Computer in Business Book	McWilliams	1983	
General	The Micro Millenium	Evans	1979	
General	Using Microcomputers in Business	Veit	1983	85
Graphics	Apple // Computer Graphics	Williams	1983	
Graphics	The Power of: VisiPlot	Hughes	1982	
LISP	LISP	Winston	1981	90
Logo	Apple Logo	Abelson	1982	60
Logo	Apple Logo Primer	Bitter	1983	
Logo	Discovering Apple Logo	Thornburg	1983	
Logo	Introducing Logo	Ross	1983	
Logo	Learning with Logo	Watt	1983	
Logo	Logo: An Introduction	Burnett	1982	
Macintosh	The Apple Macintosh Book	Lu	1984	
Macintosh	Presenting the Macintosh	Miller	1984	
Management	Microcomputers in Large Organizations	Madron	1983	
Management	The Mythical Man-Month	Brooks	1975	
Pascal	A BASIC Programmer's Guide to Pascal	Borgerson	1982	
Pascal	All About Pascal	Call-APPLE	1982	
Pascal	Apple Pascal Reference Manual	Apple	1979	
Pascal	Pascal Programming for the Apple	Lewis	1981	95
Pascal	Pascal Programs for Games & Graphics	Swan	1983	
Pascal	Pascal for BASIC Programmers	Seiter	1983	95
Pascal	Pascal: A Problem Solving Approach	Koffman	1982	90
Pascal	Problem-Solving Principles for Pascal	Lewis	1981	
Pascal	Software Tools in Pascal	Plauger	1981	
Spreadsheet	1-2-3 Go!	Bingham	1984	
Spreadsheet	Doing Business with SuperCalc	Trost	1983	
Spreadsheet	Doing Business with VisiCalc	Trost	1982	85
Spreadsheet	Executive VisiCalc for the Apple Computer	Clark	1983	70
Spreadsheet	The DIF File	Bell	1983	
Spreadsheet	The Power of: Multiplan	Williams	1982	
Spreadsheet	The TK!Solver Book	Konopasek	1984	
Spreadsheet	The VisiCalc Book Apple Edition	Bell	1982	75
Spreadsheet	VisiCalc Advanced Version	Van Wolv'n	1983	
Spreadsheet	VisiCalc Home and Office Companion	Castlewitz	1982	70
Spreadsheet	VisiCalc Models for Business	Cobb	1983	
Word Proc.	Apple II Word Processing	Poling	1982	95
Word Proc.	Introduction to Word Processing	Glatzer	1981	70
Word Proc.	Minute Manual for Apple Writer //e	Pirisino	1983	
Word Proc.	WordStar Made Easy	Ettlin	1982	60

BUGS AND OTHER PARASITES

There was an error in my article in the May issue of the WAP Journal on transferring files between the Apple][and Macintosh. The error was in the diagram of the switch settings of the the Super Serial Card (it showed SW1 set for 2400 baud). Although it will work OK as originally illustrated using ASCII-Pro configured to 1200 baud, it may not work with other terminal programs (or PR#<n> and IN#<n>, where <n> is the slot in which the serial card is located. The correct illustration is given below.

Don Schmitt

Figure 2



SOFTWARE VERSION UPDATE

by J.T. (Tom) DeMay Jr.

In last month's President Corner there was a reference to a listing of the most recent version numbers of well known commercial products. Due to time and space limitations, the listing was not included in the May Journal. If you find that you have a more recent version than the number shown or have a recent version of those shown without version nos., please call or write us with the numbers. We will revise the list and republish it.

PROGRAM NAME	PUBLISHER	CAT	VERSION	DATE
BPI General Accounting	Apple	BUS		
BPI System	Apple	BUS		
dBase II	Ashton-Tate	BUS	2.4	
Incredible Jack	Business Solutions	BUS		
Multiplan	Microsoft	BUS		
PFS:File	Software Publishing	BUS		
PFS:Graph	Software Publishing	BUS		
PFS:Report	Software Publishing	BUS		
Quick File //e	Apple	BUS	1.0	
Risk Simulator	Acturarial Microcom Soft	BUS		
Spreadsheet, The	Call A.P.P.L.E.	BUS	2.0	
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Time is Money	Turning Point	BUS		
VisiCalc	VisiCorp	BUS	3.3	
VisiCalc Advanced //e	VisiCorp	BUS	193EOAP2	
The Accountant	Decision Support Soft	BUS	4.7	
ASCII Express, The Pro	United Software Ind	COM	4.2	
Comware II	Novation	COM	5.03	
Data Capture 4.0	Southeastern Software	COM		
P-Term: The Professional	United Software Ind	COM		
Z-Term: The Professional	United Software Ind	COM		
Alpha Plot	Beagle Bros	GRA		
Coloring Series 1	Koala Technologies	GRA		
Complete Graphics System	Penguin	GRA		
Doublestuff	Doublestuff Software	GRA		
Flow Charting	Patton & Patton	GRA		
Flying Colors	Computer Colorworks	GRA		
Fontrix	Data Transforms	GRA		
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Pixit	Baudville	GRA		
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Oddsmaker	CZ Software	HOM		
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WordWorx	Reston Publishing	HOM		
Algebra 1-4	Peachtree Software	EDU		
Alphabet Zoo	Spinnaker Software	EDU		
Apple Logo	Apple	EDU		
Apple II-6502 Ass Lang Tutor	Prentice-Hall	EDU		
Arcademic Skill Blds Lang Art	Developmental Learn Mat	EDU		
Arcademic Skill Blds in Math	Developmental Learn Mat	EDU		
Barron's SAT	Barron's	EDU		
Bumble Games	The Learning Co	EDU		
Bumble Plot	The Learning Co	EDU		
Cdex Training for Apple IIe	Cdex	EDU		
Computer SAT	Harcourt Brace Jovanovich	EDU		
Computer Training Tapes	Personal Tutor Associates	EDU		
Delta Drawing	Spinnaker	EDU		
Early Games for Yng Children	Counterpoint Software	EDU		
Early Games Fraction Factory	Counterpoint Software	EDU		
Early Games Matchmaker	Counterpoint Software	EDU		
Early Games Music	Counterpoint Software	EDU		
Early Games Piece of Cake	Counterpoint Software	EDU		
Ernie's Quiz	Apple	EDU		
Facemaker	Spinnaker	EDU		
Factor Blast	Hayden Software	EDU		
Fourth Leg of the Apple, The	Brinker Computing	EDU		
French Latin Spanish Hangman	George Earl	EDU		
Game Show	Advanced Ideas	EDU		
Gertrude's Puzzles	The Learning Co	EDU		
Gertrude's Secrets	The Learning Co	EDU		
Grabit Factory, The	Eric Software	EDU		
Hey Diddle Diddle	Spinnaker	EDU		
In Search of Most Amaz Thing	Spinnaker	EDU		
Juggle's Rainbow	The Learning Co	EDU		
Kindercomp	Spinnaker	EDU		
Krell Logo	Krell	EDU		
Learning Line, The	Eric Software	EDU		
MasterType	Lightning	EDU		
Micro-LADS	Laureate Learning Sys	EDU		
New Step by Step, S by S Two	Program Design	EDU		
Report Card	Sensible Software	EDU		
Rhymes and Riddles	Spinnaker	EDU		
Rocky's Boots	The Learning Co	EDU		
Shifty Sam	Random House	EDU		
Snooper Troops	Spinnaker	EDU		
Spellakazam	DesignWare	EDU		
Stickybear	Weekly Reader Fam Soft	EDU		
Story Machine	Spinnaker	EDU		
Success with Math	CBS Software	EDU		
Sweet Shoppe	Eric Software	EDU		
Terrapin Logo	Terrapin	EDU		
Tic Tac Show	Advanced Ideas	EDU		
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Typing Tutor	Microsoft	EDU		
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Apple Mechanic Typefaces	Beagle Bros	UTL		
Beagle Basic	Beagle Bros	UTL		
Copy II Plus	Central Point Software	UTL	4.3	
Disk Quick	Beagle Bros	UTL		
Diversi-DOS	Diversified Software	UTL	4-D	
DOS Boss	Beagle Bros	UTL		
Double Take	Beagle Bros	UTL		
Einstein Compiler	Einstein	UTL		
Flex Type	Beagle Bros	UTL		
Frame Up	Beagle Bros	UTL		
Global Program Line Editor	Beagle Bros	UTL		
Locksmith	Omega Microware	UTL	5.0F	
Merlin	Roger Wagner Publishing	UTL		
Nibbles Away		UTL	C1	
Pronto DOS	Beagle Bros	UTL		
S-C Macro Assembler	S-C Software	UTL	V1.1	
ShortCuts	Penguin Software	UTL		
Silicon Salad	Beagle Bros	UTL		
Super Disk Copy III	Sensible Software	UTL	3.6	
Tip Disk #1	Beagle Bros	UTL		
Type Faces	Alpha	UTL		
Utility City	Beagle Bros	UTL		
XPS-Diagnostic	XPS	UTL		
Apple Writer II	Apple	WPR		
Apple Writer //e	Apple	WPR		
Bank Street Writer	Borderbund	WPR		
Cut and Paste	Electronic Arts	WPR		
Format II	Kensington Microware	WPR		
HomeWord	Sierra On-Line	WPR		
Lexicheck	Quark	WPR		
Magic Window II	Artsci	WPR		
MegaSpell	Megahaus	WPR		
MegaWriter	Megahaus	WPR		
PFS:Write	Software Publishing	WPR	2.3	
ScreenWriter II	Sierra On-Line	WPR		
Sensible Speller	Sensible	WPR	3.0g	
Word Handler II	Silicon Valley Systems	WPR		
Word Juggler IIe	Quark	WPR		
Word Processing	State of the Art	WPR		
WordStar	MicroPro	WPR	3.3	
Writer, The	Hayden Software	WPR		
Finder (MAC folder)	Apple	MAC		84/01/24
Imagewriter (MAC folder)	Apple	MAC		84/03/23
MacPaint	Apple	MAC		84/01/24
MacWrite	Apple	MAC		84/01/24
Microsoft BASIC	Microsoft	MAC		
Multiplan	Microsoft	MAC		
System (MAC folder)	Apple	MAC		84/01/24

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(remainder) - Members $ 5.00 ea.; Non-members $ 8.00 ea.

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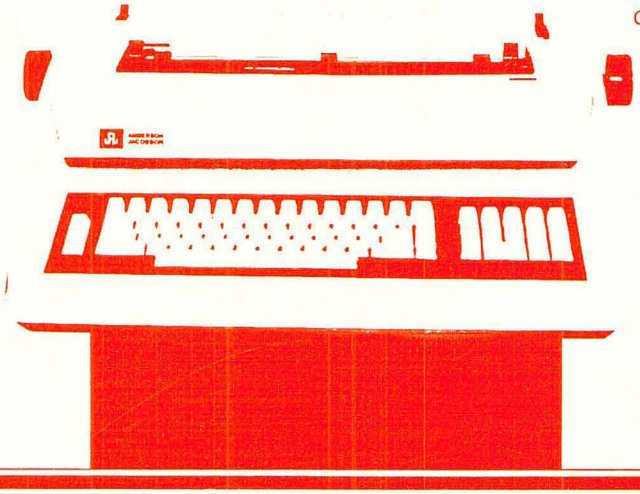

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