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Washington Apple Pi



Volume 5

October 1983

Number 10

Highlights

SPEEDING UP YOUR APPLE
 BEATING "ROUND-OFF"
 THE NEW APPLE DOS HAS ARRIVED
 SOME APPLE //e COMPATIBLE WORD
 PROCESSORS

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Win an APPLE IIe SYSTEM,
a TEXAS INSTRUMENTS PROFESSIONAL,
or a KAYPRO PORTABLE COMPUTER!

at

COMM CENTER'S GRAND OPENING

of our

! NEW LOCATION !

The Comm Center is expanding it's operation by opening a new store in Severna Park, Maryland, and we're christening it with a festival of free classes, demonstrations, and drawings for prizes.

In appreciation of your past patronage and in celebration of our new location we're giving away a full Apple IIe system, a Kaypro Portable Computer, and a complete Texas Instruments Professional Computer. The opening is scheduled for this October, and you can call 301-544-5252 for details.

The Comm Center's new store is located in the Severna Plaza, on Route 2, directly accross from the Severna Park Mall.

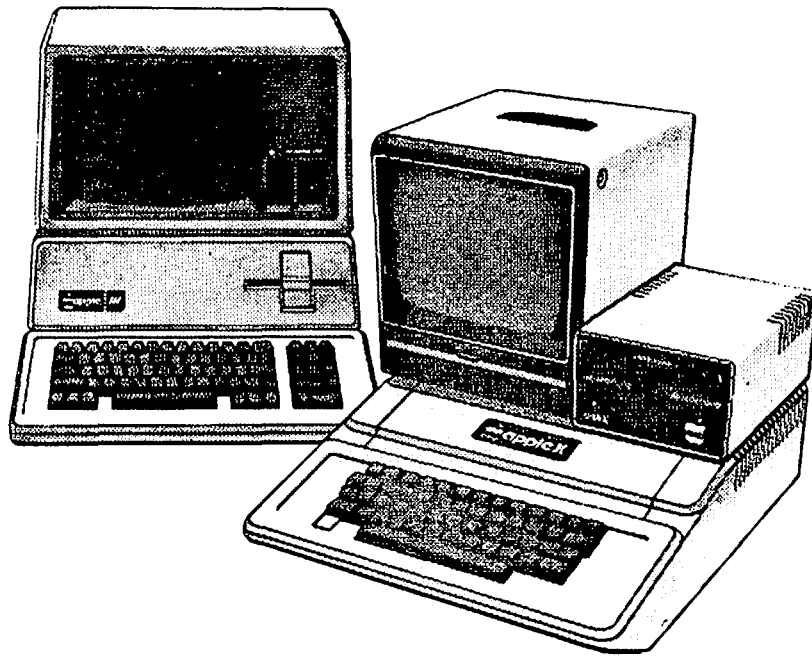


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COMPUTER-EASE

FROM OUR SCHEDULE

FOR BEGINNERS

Introduction to dBase II	Thursday	10/13 10/20	9:00am-11:30am	85.00	J.Mason
Introduction to dBase II	Tuesday	11/1 11/8	9:30am-11:30am	85.00	J.Mason
Bank Street Writer	Friday	9/30	10:00am-12:00pm	40.00	J.Cohen
Introduction to Screenwriter	Wednesday	10/5	9:30am-11:30am	45.00	B.Levine
WordStar, Beginning	Thursday	10/6	1:00am-3:30pm	55.00	J.Mason
WordStar, Beginning	Wednesday	10/19	1:00am-3:30pm	55.00	J.Mason
LOGO as a Programming Language	Wednesday	9/28	3:00pm-5:00pm	45.00	J.Cohen

FOR THE HEARING IMPAIRED

Introduction to Computers	Tuesday	11/8 11/15 11/22	5:30pm-7:30pm	75.00	Mason/Edwards
Anne Edwards will interpret in sign language					

FOR ADVANCED

Modula2	Thursday	11/17	7:00pm-9:15pm	45.00	Bob Platt
Problem solving on the Apple II in Nicholas Wirth's powerful new language					
Programming in dBaseII	Tuesday-Wednesday	9/27,9/28	9:00am-1:00pm	200.00	Whittaker
Programming in dBaseII	Thursday	10/27,11/3,11/10,11/17	9:00am-11:30am	200.00	Whittaker
Programming in dBaseII	Tuesday	11/29,12/6,12/13,12/20	9:00am-11:30am	200.00	Whittaker

FOR EVERYONE

How to Put Taxes on a Computer	Wednesday	11/16	5:30pm-7:30pm	50.00	Rosfeld
Given by Roy Rosfeld who designed the tax template on VisiCalc for Apple Pi					

CLASSES ARE "HANDS ON." COMPUTERS USED IN CLASSES INCLUDE APPLE II PLUS, APPLE IIe, IBM PC, EAGLE PC, OSBORNE AND MORROW

Classes limited to 10. Call 966-2336 to register.

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Associate Editors	- Betsy Harriman	(202) 363-5963
	- Genevieve Urban	(301) 229-3458
Journal Staff:		
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	- Bob Hicks, Ben Acton, Ed Lang,	
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ASMSIG	- Ray Hobbs	(301) 490-7484
Business	- John New	(301) 577-7959
CP/M	- Dave Neumann	(301) 776-6133
DISABLEDSIG	- Curt Robbins	ABBS WAP428 or
	write 8805 Barnsley Court, Laurel, MD 20708	
(or phone)	- John Molineaux	(301) 341-7391
EDSIG	- Peter Combes	(301) 871-1455
FORTH SIG	- Bill Wurzel	(301) 593-2258
Home Control SIG	- Russ Eberhart	(301) 596-4995
LAWSIG	- Charles Field	(202) 265-4040
LOGOSIG	- Nancy Strange	(703) 691-1619
NEWSIG	- Bernie Benson	(202) 546-0076
Pascal (PIG)	- Harry Bishop	(703) 931-4937
	- Jim Harvison	(703) 593-2993
SIGAMES	- Jim Eatherly	(202) 232-6046
STOCKSIG	- Robert Wood	(703) 893-9591
Telecomm. SIG	- George Kinal	(202) 863-6489

Washington Apple Pi, Ltd.
8227 Woodmont Avenue, Suite 201
Bethesda, MD 20814
Office (301) 654-8060

ABBS (301) 657-4507

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Washington Apple Pi

I was struck by a thought expressed by Jonathan Rotenberg in his column within the latest issue of Computer Update, a publication of the Boston Computer Society. In it he mentions Editorial Director Stuart Alsop's interest in expanding the size of the publication but at the same time, as Jonathan stated, "We're not interested in becoming another one of those magazines that gets delivered to you by forklift." I began once again to think about where the WAP Journal is heading. So far it has grown with no real direction and little pre-planning. We have regular (and some irregular) columns, a splendid potpourri of articles at all levels of expertise and much information about the activities of the WAP and our SIGs. I have received occasional laudatory comments from individuals about it, but what I believe is needed is more constructive commentary from many more of you. This is your publication. How can we make it even more useful to you? A phone call or a letter would be helpful. Perhaps a newsletter SIG?

Thanks again, Betsy, for filling in for us last month.

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:

October 22 - Data Bases

November 26 - Uses of Personal Computers by Disabled

December 17 - Garage Sale

The DISABLEDSIG is interested in trying something new at the November 26 meeting. They would like to videotape parts of the proceedings, edit, voiceover, etc. in order to produce a promotional tape for the Pi. Anyone with a portable VCR, camera, lighting, and the willingness to assist, please contact Jay Thal at (202) 244-3649.

GENERAL INFORMATION

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

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

Current Office hours are:

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

PRESIDENT'S CORNER

by David Morganstein

As the WAP crosses the 3,000 members mark it seems useful to spend a few minutes thinking about what we are and where we might be going. The members seem to want (and step forward to donate their time for) a service organization. The WAP provides many services to many people, not just our members.

Our task has become one of educating. People want to know what an Apple microcomputer is and how it can be used. There is a crying need for information about products, both hardware and software, how to choose them and how to use them. Which one of the many programs available should be selected for a particular problem? One person suggested that software reviews be printed in pairs; one review by a novice and another by a more experienced hand (oh, for the contributions!).

The WAP members have been willing to use our financial resources to purchase some of the more dulling activities which are required to continue our activity. We are adding hours to our paid office staff so that membership activities can be performed there on a timely basis. Maintaining the computer file of member information, mailing out new member materials, printing mailing labels and sending renewal notices requires dozens of hours of time each month.

There have been discussions about expanding our educational function. Some of the tutorials planned for this fall could be videotaped for later viewing by others. We have discussed ways in which we could help local school systems; two members have stepped forward offering to help as school coordinators (Conrad Fleck in P.G. County and Barbara Larson in Northern Va.)

One of our most effective programs is our Journal. We can all be thankful for the truly excellent contributions sent in by our members and assembled by our Editor. It helps all of us every month. Your contributions of questions or answers, of reviews and software development, of humor and anecdote bring information and cheer to over 3,000 others. Keep those cards and letters coming!

TUTORIALS. This month, we began a regular series of introductory tutorials. The first month's results were very rewarding as most of the evenings were filled with pre-registrants. We will repeat this series in October and again in November if the interest continues.

The tutorials are held every Tuesday night, from 7:30 to 9:00 at our office. An outline for the four evening series can be found in the September issue or can be seen at the office. You may attend any number of the four courses. While pre-registering is not a necessity, it will guarantee you a seat!

I wish to express the membership's appreciation to the instructors: Lee Raesly, Tom Warrick, Bob Platt and Bruce Field.

LIBRARY DOCUMENTATION. One of Bob Platt's objectives as librarian for new disks has been to improve their documentation. His first project, a joint one with Betsy Harriman, appears in the new member manual where most of our library disks are described. He has been aided in a disk-by-disk documentation effort by many volunteers. We can expect to see the fruits of their labors soon.

EXPANDED ABBS. One of the items receiving many votes of support from the membership was an expanded ABBS. Our able Sysop, Tom Warrick, has been at work on this project and will have recommended the specific hardware by this time. He has benefitted by a loan of equipment from Gordon Stubbs, member at large. The loan has allowed him to experiment before committing us to a particular configuration. Tom's plans should allow two incoming calls at once and greatly increased access time. We look forward to developments.

SUMMER EDITOR. Again this summer, Betsy Harriman filled in for Bernie & Gena Urban as Editor for the September issue. We thank Betsy for her excellent work.


GAMES COLUMN. I was delighted to hear of Jeff Bruner's intent to restart a Games column. It has been sorely missed. Another member, Andy Baum, has expressed interest in helping with such a column. Andy would like to be a clearinghouse for hints, tips and problems encountered. If you have any of these, send them to Andy via the office.

COMMERCIAL LIBRARY. Gordon Stubbs and Bob Hicks are busily at work developing our commercial software library as requested by the membership. They are seeking new products from distributors to add to our growing collection, which was begun with contributions from Computerland of Rockville and Columbia Computer Products. The software will be available for examination and use at the office. We plan to add a second computer which can be used for this purpose and for the tutorials, as well.

SIG ELECTIONS. Last month, we requested that SIGs which had not held elections in the past year discuss candidates for SIG chairman, librarian and columnist. Please hold nominations at this month's meeting and plan an election at the October meeting.

NEWSIG. I have discussed with Bernie & Paula Benson the idea of beginning a weekly NEWSIG meeting at the Office on Thursday evenings. This meeting would help meet the need of the many new Apple owners and new WAP members that we have. The meeting would be informal, held around a computer, and aimed at answering all those seemingly unending questions. To do this, we need four volunteers each to chair a session one Thursday of the month. If you are interested, call Bernie or Paula and indicate a Thursday of your choice. We plan to begin in October if we can get the volunteers.

QUESTIONS. Speaking of questions, for the past year, Bruce Field and Tom Warrick have positioned themselves in a hot-seat every meeting morning to try to handle your problems. I would like to express a deep thanks for their continued enthusiasm and patience, not to mention some awe at the wealth of knowledge they bring with them. Thanks to you both!

A WORD TO THE WOZ. I happened to spend 45 seconds on the phone with Steve Wozniak the other day. It was enough time to ask if he would stop by and visit with us as he did several years ago when we were meeting at G.W. He replied "How about in January?". Breathlessly, I answered, "Anytime!" He followed with, "Call me back in October to confirm a date." I shot back a clever "OK" and the line went dead...well, I'll call back in October and see if we've got a date... 

PROGRAM PREVIEWS

by Cara Ciria

September 17 - Voice Synthesizers

We are fortunate to have Dr. Randy Simon present our September program. He received his doctorate in physics from UCLA and is presently working on low temperature physics with the Naval Research Lab. Among his other projects, Dr. Simon has been involved in both programming software for Atari and the development of the voice synthesizer.

October 22 - Data Bases

You asked for it, you're going to get it! As indicated in the survey (taken at WAP board election time) data bases scored high in interest as a program. We will be following a panel discussion format. Each program representative will give a brief description of his/her data base. Following that will be a questionnaire of common interest for all data bases, and a Q&A session with the audience. Data bases and panelists are:

General Manager - Loftus Becker
DB Master - Dave Einhorn
Data Perfect - Leon Rasely
Personal Filing System - Jim Cumber
Data Factory - VOLUNTEER NEEDED
dBASE II - Paul Bublitz
List Handler - Jane Mason
InfoMaster - VOLUNTEER NEEDED
Directories (Used with Echo II Synthesizer)
Computer Aids Technology for Print Handicapped - Al Carter

Thank you, data base representatives, for your support. In order to have Data Factory and InfoMaster represented, we need two more volunteers. Anyone interested please call me (Cara Ciria) on 468-6118. Thank you to Lee Rasely and Tom Warrick for their data base questionnaire input.

November 26 - Use of Personal Computers for Disabled

Jay Thal, a member of our DISABLEDSIG, will be orchestrating a program devoted to the uses of personal computers by disabled individuals, featuring new educational techniques. Watch Jay's DISABLEDSIG NEWS for more details. If you have input, please call him on 244-3649.

December 17 - Garage Sale

Have any software you're bored with? Any hardware you've outgrown? Want to do a little trading or buying? We are running another garage sale, so gather your extras, tired-withs, and bring your coins to splurge during this pre-holiday sale. ☺

BACK TO SCHOOL SPECIALS

All inventory is 35% - 50% off retail price. Call to find out what we have in stock for you. For example:

TTX Daisy Wheel Printer 455.00
FingerPrint for MX-80, MX-100 . 40.00
C. Itoh ProWriter Printer ... 350.00
Kraft Joysticks 42.00
Ultima II 39.00
Quick-Vis 17.75
Verbatim diskettes (10 pack)
SS/DD 23.50
DS/DD 32.50

or buy 10 boxes at our everyday low price (SS-\$25, DD-\$35) and receive the 11th box free.

Verbatim head cleaning kits .. 3.00
Thunderbombs 15.00
Okidata Microline 92 485.00
NEC 8023A Printer 420.00
Grappler + (with purchase of printer) 122.50
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WAP HOTLINE

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

General	Dave Harvey (703) 527-2704 Robert Martin (301) 498-6074	Languages contd. A,I,P,M A,I,M P LOGO-Apple -General	Bill Schultheis (703) 538-4575 Richard Untied (703) 241-8678 Dottie Acton (301) 428-3605 Ron Murray (eve.) (202) 328-3553 Dagobert Soergel (703) 823-2840
APPLE SSC	Bernie Benson (202) 546-0076	Multiplan	Terry Prudden (301) 933-3065
Apple TechNotes	Ed Schenker (301) 977-7349 Lance Bell (703) 550-9064	Operating Systems APPLE DOS CP/M	Richard Untied (703) 241-8678 Robert Fretwell (703) 971-2621
Basis 108	Loftus Becker (202) 338-5217	Paddles	Tom Riley (eve.) (301) 340-9432
Communications Packages and Modems-Telecom.		Pers. Filing Sys.	Ben Ryan (301) 469-6457
Anchor Sig. & BIZCOMP Modem	Jeremy Parker (301) 229-2578	Printers General	Walt Francis (202) 966-5742 Bill Etue (703) 620-2103 Leon Raesly * (301) 460-0754
Apple CAT II	Ben Acton (301) 428-3605	Anderson Jacobson	Joan B. Dunham * (301) 585-0989 Jeff Stetekluh (703) 521-4882 Jeff Dillon (301) 422-6458 Scott Rullman (301) 779-5714 Bruce Field (301) 340-7038
ASCII Express	Dave Harvey (703) 527-2704	Apple Dot Matrix IDS 460	
CompuServe	Jerry Michalski (703) 442-8835	MX-80	
Data Capture General	Howard Simkowitz (202) 882-4645 Ben Acton (301) 428-3650 Tom Nebiker (216) 867-7463	Okidata	
Hayes Smartmodem	Bernie Benson (202) 546-0076	Silentype	
Omninet	Tom Vier (1-6 PM) (703) 860-0083	Statistical Packages	Jim Carpenter (301) 371-5263
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XTALK CP/M Comm.	Bernie Benson (202) 546-0076	Tax Preparer-H.Soft	Leon Raesly * (301) 460-0754
Corvus Hard Disk	Tom Vier (1-6 PM) (703) 860-0083	Time-Sharing	Dave Harvey (703) 527-2704
Expediter Compiler	Peter Rosden (301) 229-2288	VisiCalc	Walt Francis (202) 966-5742 Leon Raesly * (301) 460-0754
Data Bases dBase II	Loftus Becker (202) 338-5217 John Staples (703) 759-3461	Word Processors Apple Writer II	Walt Francis (202) 966-5742 Doug Daje (301) 868-5487 Dianne Lorenz (301) 530-7881 Leon Raesly * (301) 460-0754 Tom Warrick (301) 656-4389 Neil Muncy (301) 251-9330 Cara Cira (301) 468-6118 Leon Raesly (301) 460-0754 Peter Combes (301) 871-1455 Doug Daje (301) 868-5487 Peter Rosden (301) 229-2288 John Vaupel (301) 977-3054 David Inouye (301) 422-8926
DB Master	Doug Daje (301) 868-5487 Dave Einhorn (301) 593-8420 Leon Raesly * (301) 460-0754 Leon Raesly * (301) 460-0754	Gutenberg Letter Perfect	
Data Perfect	Bob Schmidt (301) 736-4698	ScreenWriter II	
Data Factory	Loftus Becker (202) 338-5217	Supertext II	
General Manager	Ben Acton (301) 428-3605	Word Handler	
InfoMaster	Doug Daje (301) 868-5487	WordStar	
List Handler	John Vaupel (301) 977-3054		
Games	Jim Eatherly (202) 232-6046		
Graphics	Bill Schultheis (703) 538-4575		
Home Accountant	Leon Raesly * (301) 460-0754		
Languages (A=Applesoft, I=Integer, P=Pascal, M=Machine A A,I A A	Peter Combes (301) 871-1455 Jeff Dillon (301) 422-6458 Mark Pankin (703) 370-9219 Leon Raesly * (301) 460-0754		

*Calls up until midnight are ok.

DEALER'S CORNER

Dear Editor,

I would like to bring to the attention of your readers the fact that Med-data, Inc. in Atlanta, Georgia, of which I am the president, has an excellent office management package for doctors which will perform all of the office functions including super bill and multiple insurance forms. The program originally was written for Apple II+ and Apple //e and will very shortly be available for the IBM/PC and IBM/XT and all of its clones.

Sincerely,

Robert I. Lowenberg, MD.
President, Med-data, INC.
180 Allen Road N.E., Suite 201N
Atlanta, GA 30328

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

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

SIGNEWS

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

ASMSIG meets immediately after the regular Washington Apple PI meeting.

Business SIG meets just after the regular Washington Apple PI meeting.

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

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

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

LOGOSIG meets at 12:30 after the regular WAP meeting.

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

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

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

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

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

Telecomm SIG usually meets after the regular WAP meeting.

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EDSIG NEWS

by Peter Combes

EDSIG Calendar

Tuesday, October 11th at 7.30 p.m.

PLEASE NOTE - THIS IS THE SECOND TUESDAY OF THE MONTH.

"Computer Camps - A Report" - chaired by Carolyn Adler.

Elections will be held at the meeting on November 1st, 1983.

EDSIG meetings are now mostly held in the Auditorium, Building B, of the Uniformed Services University of the Health Sciences, on the campus of the National Naval Medical Center, 4301 Jones Bridge Road, Bethesda, MD. Check with Security when you come in, in case the room has been changed.

Meeting Reports

Tuesday, September 6th at 7.30 p.m.

"Computers in the Classroom - The Ideal Versus the Reality" - a Round Table chaired by Mary Brown.

The September meeting took place in what to EDSIG are the unfamiliar surroundings of the USUHS auditorium. Some twenty four teachers, administrators, technologists and parents gathered to discuss the present and future of computers in the classroom. The focus of the discussion was very much on elementary schools.

June Wright is Project Coordinator of the Computer Discovery Center at the College of Education of the University of Maryland. She has considerable experience with LOGO and the Tasmanian Turtle. Two and a half years ago, she started as an experiment a computer discovery room. It had four large tables and three Astrovision computers with special control panels. The design of the joysticks, it was found, made a big difference. It was important that the movement of the point on the screen be in the same sense as the movement of the top of the joystick. Stability and sensitivity were also important factors.

For the first year, the computers worked mostly in the Graphics mode. They were very successful, particularly in giving the children the sense that they were in control. Computers were then less familiar items. Two and a half years ago, June remarked, a child would walk into the center, see one of the computers, and say "There's a TV" - now a child will say, "There's a game machine." Much of the work on changing the child's initially passive attitude (as if watching a TV set) to an active attitude was done with simple graphics programs, such as one to change the width, color and background of a bar on the screen. From then on "Guided Discovery" was used, and it was found that different children used the machines in different ways. Some created fantasy pictures. Others drew pictures of reality, others concentrated on letters and numbers. As the children became more familiar with programs, the computers were moved into the classroom for follow-on work.

June emphasized the benefits of having a programmer on hand. Indeed, June found that there was positive interaction between the programmers and the children and this led to improvements in the programs based on the children's suggestions.

Research showed that misconceptions are easily developed, and June quoted a finding in Delaware that some children thought that the "frogs" in a game program would jump out if someone took the top of the TV off.

65 children per day attend the Center for Young Children, 30 in the morning and 35 in the afternoon. They work on the computers first individually, and then in pairs. June quoted a familiar statistic - "We didn't have enough computers to give them more than 15 minutes a week each."

The university is a good source of graduate students to do observation work, and research had been carried out that coded the position of each child in the room every 10 seconds. After the novelty had worn off, they found that the presence of the computers in the room did not affect the children's choices of other things. The teachers' fear of "losing the children to the computers" just didn't materialize. There was a statistically significant difference between the sexes - the boys got more turns on the computer than the girls, who preferred to wait for a session with the teacher. However, the length of attention span was not a boy/girl issue. High school teachers in the audience reported that in high schools "boys have sustained interest, and girls do not".

This year the Astrovision machines have been joined by two Apples. The work on Graphics Arts has been complemented by work on Language Arts. The program "Keyboard Fun" had let children explore the keyboard, and again, different children started to explore different things. "Story Teller" was popular - the child uses shapes to make and color a picture and can then write up to 4 lines of text to match it.

Apple Writer was used with 5 year olds, who typed in the words they wanted. In "Star Gazer", children chose constellations, renamed them, and wrote stories about them on AppleWriter.

It was planned to use "Label Maker" from MECC to make banners. They were hoping to use "Electronic Mail" that would enable each child to write a message to another. LOGO was used extensively.

Ideally, they would like to have the computer in an alcove in the classroom as a standard piece of equipment, rather than as an add-on. However, there was a security problem and a space problem. It would also be nice to have a graphics board. Research was continuing, and they intended to find out how one could measure "real learning". Examining how children paired off was also planned.

Betty Hansen described her work at the University Park Elementary School with the Rainbow Room - started as a multi-purpose resource room, and now very much concentrating on mathematics manipulation and computers.

Every teacher sends half a class at a time to the Rainbow Room for a 45 minute period. They divide into two groups, half using hands-on manipulative material, the rest hands-on on the computers. Hence children would spend four weeks on computers, four weeks on the manipulative material, and so on. Betty is the only professional in the Rainbow Room, which is otherwise staffed by parents and other volunteers. One adult

contd.

Operant Systems

*** HARDWARE ***

DISK DRIVES—	
MicroSci A2 drive (100% Apple-compatible Shugart 390) ..	239
Rana Systems Elite One drive (40 track, 163K) ..	265
Elite Two (40 track, double side, 326K) ..	425
Elite Three (80 track, double side, 652K) ..	549
TEAC Thinline drive (40 track, 100% Apple compatible) ..	259
Davong 5, 10, and 15-MEG Winchester drives ..	(call)
Corvus Winchester, Omninet, Mirror, Concept 68000 ..	(call)
CP/M SYSTEMS—	
Applicard (6 Mhz Z-80, 64K to 192K RAM, 70-col video) ..	260
(4 Mhz version of the above) ..	219
ALS CP/M Plus System (6 Mhz Z-80, 64K RAM, CP/M 3.0) ..	275
Microsoft Premium System (Z-80, Videx, 16K, CP/M 2.2) ..	445
Softcard JCe (Z-80, 80 col & 64K on one card) ..	335
MONITORS—	
Aadek 300G (12" green anti-glare screen, 18Mhz) ..	145
300A (12" amber anti-glare screen, 18Mhz) ..	155
Color I (40-column text/color graphics) ..	295
NEC JB-1201 (12" green anti-glare screen, 20Mhz) ..	159
JB-1260 (12" green, 15Mhz, best value for money) ..	110
JB-1212 (12" color, composite video) ..	279
USI PI-2 (12" green anti-glare screen, 20 Mhz) ..	145
PI-3 (12" amber anti-glare screen, 20 Mhz) ..	155
MODEMS—	
Hayes Micromodem II (with Hayes terminal program) ..	279
Smartmodem 300 (300 baud, RS-232, direct-connect) ..	205
Smartmodem 1200 (300/1200 baud, as above) ..	489
Novation Apple-Cat II (w/ Comware; 1200 baud capable) ..	265
Smart-Cat 300 (RS-232, direct-connect) ..	189
Smart-Cat 300/1200 (as above) ..	429
J-Cat 300 (miniature RS-232, direct-connect) ..	109
55M ModemCard (300 baud, audio monitor, emulates Hayes) ..	235
US Robotics Password (300/1200 baud, auto-dial/answer) ..	355
Anchor Automation (300 baud, RS-232, direct-connect) ..	85
PRINTERS—	
Epson FX-80 (160 cps, tractor/single sheet, graphics) ..	545
FX-100 (wide carriage version of the above) ..	739
MX-80F/T (100 cps tractor/single sheet, graphics) ..	459
MX-100 (wide carriage version of the above) ..	649
Okidata 92 (160 cps, graphics, BEST print for price) ..	445
93 (132 column version of above) ..	719
ID5 Microprisa (110 cps, prop spacing, excellent print) ..	479
Prisa-80 (200 cps, buffer, correspondence quality) ..	999
Prisa-132 (wide-carriage version of above) ..	1149
NEC 8023 (120 cps, tractor/sheet, same as Prowriter) ..	385
Gemini 10X (120 cps, tractor/single sheet, graphics) ..	315
15 (wide-carriage, same features as Epson MX) ..	465
Itoh F-10 Starwriter (40 cps daisywheel, Quae-compat) ..	1099
Transtar 140 (40 cps daisywheel, same as Itoh F-10) ..	1149
130 (18 cps daisywheel, BEST low-cost unit) ..	669
Silver-Reed 500 (14 cps daisywheel—goodbye typewriter) ..	439
NEC 7710 (55 cps daisywheel, built like a tank) ..	1999
Diablo 620 (25 cps daisywheel) ..	950
Quae Sprint 11/40 (40 cps daisywheel) ..	1349
INTERFACES & BUFFERS—	
Pkaso printer interface (parallel w/ superior graphics) ..	135
Pipeline buffer (8K to 128K w/merge-print & much more) ..	175
Grapplert printer interface (parallel w/ graphics) ..	129
Buffered Grapplert+ (64K buffer plus graphics) ..	179
CPS Multifunction (serial, parallel, and clock) ..	165
Wizard BPO (16K-32K buffered parallel w/ graphics) ..	135
IPI (graphics, text dup, page formatting) ..	69
CCS 7710A (RS-232 serial for printers & modems) ..	115
VIDEO & KEYBOARD—	
Videx Ultratera (160 column by 48 row display !!) ..	275
Videtera (80-column w/ softswitch & inverse) ..	229
Wespercorp Wizard-80 (softswitch & inverse built-in) ..	155
ALS Seartera II (80 columns at a bargain price) ..	129
Saturn 80-col card w/64K to 192K RAM for JCe ..	from 195
Keytronic KB-200 low-profile detached keyboard ..	235
MEMORY EXPANSION—	
Wespercorp Wizard 16K RAM card (2-yr warranty) ..	63
STB Systems 64K RAM card (w/ disk emulation software) ..	199

*** SOFTWARE ***

WORD PROCESSING—	
Wordstar 3.3 (including 6 Mhz Z-80 Applicard !!!) ..	329
Wordstar 3.3 (program alone) ..	299
ScreenWriter II (70 col display, spooling, more!) ..	85
Super-Text Professional ..	79
Bank Street Writer ..	49
Word Handler (70 col display, easy to use) ..	129
Letter Perfect ..	99
Incredible Jack (word processing, data base, calc) ..	135
Sensible Speller IV (checks ANY file type) ..	89
The Word Plus (super spelling checker for CP/M) ..	119
SPREADSHEETS & FORTUNE-TELLERS—	
Multiplan (state-of-the-art spreadsheet) ..	169
VisiCalc (IIE version available also) ..	165
The Financial Planner (from the dBASE folks) ..	449
SuperCalc 2 (powerful CP/M spreadsheet) ..	189
INFORMATION MANAGEMENT—	
dBASE II (w/ ZIP screen generator) ..	409
Quickcode (dBASE program generator) ..	199
dUTIL (time-savers for the dBASE programmer) ..	75
The General Manager 2.0 ..	149
DB Master ..	149
PFS: File, Report, or Graph ..	85
Infostar (including 6 Mhz Z-80 Applicard !!!) ..	329
Data Perfect ..	99
VisiFile ..	165
Condor III (powerful relational database system) ..	449
VersaForm (business forms processor/DBMS) ..	199
BUSINESS & ACCOUNTING—	
BPI Accounting (AR/AP/PAYROLL/INVENTORY) ea module ..	289
Peachtree Peachpak (GL/AR/AP) ..	all three: 239
Accounting Plus (GL/AR/AP/INVENTORY) ..	all four: 695
The Accountant (double-entry bookkeeping system) ..	99
Home Accountant ..	55
COMMUNICATIONS—	
Ascii Express Professional (for DOS 3.3) ..	99
Z-term Professional (for CP/M) ..	105
P-term Professional (for Pascal) ..	99
Data-Capture 4.0 ..	49
LANGUAGES—	
Softtech UCSD p-System ..	425
Digital Research Pascal/MT+ ..	249
Microsoft Fortran-80 ..	129
BDS C compiler ..	115
Microation FORTH-79 ..	79
Terrapin Logo ..	109
ODDS & ENDS—	
Kensington System Saver Fan (w/surge protector) ..	66
TG Joystick / Kraft Joystick ..	43/47
Trace SoundTrap (acoustic enclosure for printers) ..	99
Wildcard (hardware antidote for copy protection) ..	99
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Verbatim, Maxell, Dysan, Wabash disks ..	from 20
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was assigned to each four or five children on the materials, one to each two or three on computers.

They started with one computer, but this year will be starting with three. Two are II Pluses and one a //e. The PTA had donated the first machine, which had been used for after school work and for courses. The first computer had thus earned the second, and those two earned the third. Hopefully, the three would earn a fourth. The ideal was considered to permit two children per computer.

There was a little LOGO, a little BASIC, and programs on problem solving areas. LOGO had been found to be equally successful at any age and at any educational level - "it did everything that Papert promised."

Workshops were held to prepare parents for the first eight weeks, and classes for teachers were also planned.

Like June, Betty wished that the children could have more than 45 minutes per week on the computers. However, it would be difficult to extract more than 45 minutes from the children's crowded schedules. Ideally, they would like to have ten computers in a computer lab, and for each classroom to have up to six machines.

Currently, a popular program is "MopTown", which goes along with other logical thinking attribute work. Master Mind, Bagels, and Hot Stuff were also used. Bumble was particularly mentioned - "a nice step by step progression." Correct use of the keyboard was considered an important skill, and they had looked at Master Type. Other members of the audience had used Typing Tutor, Micro Type, and Word Attack. One participant mentioned using LOGO commands in Master Type.

Gloria Seelman of Montgomery County Public Schools, reported that Master Type was very good for those under 10, but it was sometimes frustrating for the younger child, and it would be useful if it could be slowed down. Those over 10 found it boring. One good point, though, was that the sound could be turned off. Typing Tutor II was liked better by older children. Betty also used Bank Street Writer, and would like to use it with younger children.

What did computers do best? Betty emphasized the "problem solving setting" that computers could provide, inducing a positive attitude to problem solving. As Jay Thal pointed out, "Computers are non-judgmental, and teachers are not."

Members of the audience also discussed the use of micros for accountability - analyzing and presenting information to parents on grades and evaluations on a weekly basis. Teachers pointed out that any software designed for administrative work by the teacher must be made extremely user-friendly: "Teachers have so much to do anyway that there is no spare time to learn the foibles of a particular program".

Mary summarized the issues that emerged from the discussion as: the use of special equipment, the question as to whether the computers should be in the classroom or in a lab, the presence of a programmer, the girl/boy differences, the issue of open ended exploration as against a more structured approach, and the issue of how to measure learning.

What is needed is:

More hardware
Better designed software
More people.

Correspondence

Dear Apple Users Group Editor,

The purpose of this letter is to request your assistance in locating members within your club who are involved in educational use of their microcomputers. It is my desire to establish contact with as many of them as is possible, across the country. We hope to facilitate an exchange of ideas/information and software with them.

User groups such as yours play an important part in helping people to become more knowledgeable about computing, and do it on a much more personal level, while covering so many special interests.

We are a network, helping people connect on to ideas, resources and information within the educational field. Our organization is administered by educators who are concerned about the schools of tomorrow, and the impact of technology upon education.

Would you kindly publish a notice in your next newsletter, indicating that EDUCATIONAL COMPUTING NETWORK wishes to share access to its software library with other educators. The software we have available is organized according to the different teaching disciplines such as English, Guidance, Library/media, etc. There is a small diskette charge, for disks requested from our "Microlog" (catalog/newsletter).

Your cooperation will be greatly appreciated in getting this information out to the members of your group. For anyone requesting more information, please send a self addressed stamped envelope to:

Educational Computing Network
P.O. Box 8236 - AC
Riverside, CA 92515

Sincerely Yours,

Keith L. Dreiberg
ECN Director

SPECIAL EVENTS

EDUCATIONAL COMPUTER FAIRE

The Prince Georges County Council of PTAs is sponsoring an Educational Computer Faire. It will be held on Saturday, October 15 from 10:30 AM until 4:30 PM, at Largo High School, Route 202, Largo, Maryland (the location is near Prince Georges Community College). There will be about ten distributors present, and there will be presentations on choosing and using a computer for your school.

IEEE COMPUTER WORKSHOP

IEEE is sponsoring a computer society workshop on using the personal computer to "Improve the Productivity of the Professional". It will be held on Friday, October 21, 1983, at the Johns Hopkins University, Applied Physics Laboratory, Laurel, Maryland. Sample topics to be covered include personal computers in the business environment, in industrial and R&D organizations, in government offices; micro to mainframe networking; data bases; and standards. Several exhibits will be demonstrated, e.g. VisiOn, VisiLink, 1-2-3, PFS, Data Ease, Multi Tool, T.K.Solver, etc.

Registration fee is \$30 for IEEE members and \$35 for non-members. For more information, call Carol Petris-ko, from Washington 953-7100 ext. 2364, from Baltimore 792-7800, ext. 2364.

DISABLEDSIG NEWS

by Jay M. Thal

DISABLEDSIG OCTOBER MEETING
THURSDAY, OCT. 13, 1983, 7:00 P.M.
Chevy Chase Community Center
Connecticut Ave. & McKinley St., NW, D.C.

The DISABLEDSIG is about to launch its most ambitious undertaking thus far. Those of you who looked at the event queue in the September issue must have noted that the subject of the November Apple Pi meeting will be on the uses of personal computers by the disabled.


We hope to have a variety of speakers and demonstrations which will show the flexibility of our machines in aiding the blind, deaf, physically, cognitively, and emotionally impaired.

Persons who are interested in assisting in the presentation, have inquiries regarding the subject matters, etc. should contact me at (202) 244-3649. To supplement the meeting itself we hope to include, in the December Newsletter, further articles about how computers can open up opportunities to the handicapped. The deadline for those newsletter articles is November 9.

The summer is a time which many of us use to revitalize ourselves. While things have been quiet on the homefront there have been several conferences on the uses of microcomputer technology for the handicapped. A major one is taking place as this issue of the Newsletter goes to press -- Microcomputers For The Disabled, in Minneapolis, Minnesota. We hope to bring you news of them soon.

We have recently heard about a new serial card that can output to voice or braille devices. It's called the Zero Card, by Cyberon Corporation. Cyberon's address is: 1175 Wendy Rd., Ann Arbor, MI 48103 (313) 944-0326. It has some drawbacks in that the prototypes are wirewrapped and it is not compatible with "on-board" speech synthesizers such as the ECHO II -- it works with the ECHO GP and Intex -- but most likely those problems will be overcome. The important thing is that it allows voice or braille output without needing commands -- a necessary factor with protected software.

Again, we remind you that the Council for Exceptional Children (CEC) is sponsoring a major software contest for programs designed for the handicapped. The deadline is November 15. Contact the CEC at 1920 Association Drive, Reston, VA 22091.

Also! Inform your hearing impaired friends that that the main meeting of the Pi has seats reserved and a signer. 



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COMMERCIAL SOFTWARE LIBRARY

by Bob Hicks

One of the more frustrating things about owning a personal computer is the problem of making correct decisions for the purchase of software. While this problem is apparent in all types of software, it is most important when choosing what is sometimes called "serious software". This can, perhaps, be defined as software which is supposed to do more than entertain, and almost always costs over (usualll WAY over) \$50. The normal way to make a decision about what to buy is to check the advertisements in (your favorite magazine, ask a friend what they have, or see your friendly dealer. None of these approaches work very well, primarily because they don't answer the question, "Is this package the right one for MY application?" The dealer should be able to answer this question, but often the salesman either lacks the knowledge or the time to help.

The WAP is planning to try to help solve this problem by establishing a commercial software "library". Members will be able to review documentation and actually run software long enough to reach a valid decision regarding its applicability. As always, there are some obstacles in implementing this program.

The most serious obstacle is that User Groups are commonly perceived as "pirate's dens" by software publishers (see David Morganstein's letter in the July 1983 WAP Journal). We intend to solve this problem by providing an environment which, while providing adequate review facilities, will remove all temptation to take a copy home for further review.

In order to establish such an environment, the following "rules" will apply:


1. All packages will be maintained in the club office.
2. Neither documentation nor diskettes will be kept on the regular library shelves; they will be controlled by the staff.
3. The computer system provided for use will be located within sight of the staff.
4. Members will not be permitted to bring diskettes into the test area. Data diskettes will be provided by the club; they must be returned with the package.
5. No photocopying will be permitted.

Another problem is the choice of hardware for the review system. We currently plan to install an Apple //e with extended memory 80-column card, two disk drives, a CP/M card (Microsoft version 2.2x), video monitors (monochrome and color), and a wide carriage dot matrix printer with suitable interface. Other hardware items can be added as need and budget indicate.

The most obvious problem is acquisition of review software. Some items have been donated by local dealers; these and any other donations may ultimately be sold at our "garage sales" to provide additional funds to the commercial library account. Publishers will be requested to provide review copies of software to the library for indeterminate periods of time. Members auditing these programs will be asked to make written comments for feedback to the publishers. Hopefully, we will be able to retain these packages as long as

demand exists. A final source is purchase; a limited fund will be maintained for this purpose. Purchase will only be considered for software with a broad appeal.

Listings of available software will be published in the Journal periodically. New additions will be announced as received. A current list will be maintained in the club office. While some donated software will be periodically sold, there is no intention to organize software sales. We will attempt to maintain a local source (or sources) for each item whenever publishers or dealers provide such information.

A final consideration is to provide information to as many members as possible. There are two avenues available to us; formal reviews can be published in the Journal and demonstrations can be provided at the monthly meetings. Either of these require (here it comes) qualified volunteers. If you are willing to provide this service for a listed program, please contact Gordon Stubbs for further information. 

LETTER TO THE EDITOR

September 2, 1983

Dear Editor,

A note on the progress of our book for club members (we've been gratified by several recent inquiries): The Computer Controller Cookbook has gone to press and should be out in early October. The publisher is Creative Computing Press, a Ziff-Davis subsidiary. No, we're not wild about the title, and in particular, we put up stiff resistance to the word "Cookbook", to no avail. We were lucky, though, to have a wonderful editor who fought for a workbook-like format with wide margins so that the schematics and instructions can be easily read. We will send the WAP office a copy just as soon as we receive our complimentary copies. We've discussed the possibility of a discount for computer clubs and other nonprofit groups, but don't yet know whether this will come to pass, or what the discount might be.

And now for something completely different: in the discussions on home control at the August meeting several people were interested in measuring temperature with their Apples. We have built a simple quad thermometer for doing just that and have written a good deal of support software for it. This unit will probably be featured in a magazine article this winter. The materials for a unit measuring four temperatures will cost about \$30, it won't be difficult to construct, and it will be ideal for evaluating home air conditioning, solar heating systems, and for science fair projects. If any club member is interested in building such a device, give us a call at (301) 340-9432. It is always a great help to have other people read our descriptions, build the device, and use the software before we publish an article.

Sincerely,

Tom Riley
Kelda Riley 

JOB MART

POSITION WANTED

WANTED - Full time position working with microcomputers on worthwhile creative applications. I have a Masters Degree in Computer Science and five years experience in programming and analysis on various size machines and projects. I am tired of large government agencies and beltway bandits. I believe the micro-computer can have a real, positive impact on society and I would like to contribute to such an effort. Interested persons, please contact Bernie Benson (202) 546-0076 (after 6:00 PM).

HELP WANTED

PASCAL INSTRUCTOR needed to tutor IBM 4341 version of Pascal to college student on hourly basis. Call Gery Sherman after 6:00 PM. (301) 942-1342.

FULL TIME POSITIONS: Instructor - Micro and teaching experience required. Administrative Assistant - Writing, Org., Pub. Rel. Skills. Send resume to CCLC, 6443 Old Alexandria Ferry Rd., Clinton, MD 20735.

SALES CONSULTANT: Potential \$50,000++. Responsible for marketing computer based solutions to professionals and small businesses. Background should ideally include experience in both small computer (or related) sales and "systems-approach" selling. Send resume to General Manager, Entre Computer Center, 6715-K Backlick Road, Springfield, VA 22150.

CUSTOMER SUPPORT - APPLICATIONS: Responsibilities include working with sales consultants to analyze client needs; conducting client seminars; and post-sale support. Strong background in applications software/programming (database, financial analysis, e.g.) is essential. Experience with small computer systems and working knowledge of data communications are real pluses. Send resume to General Manager, Entre Computer Center, 6715-K Backlick Road, Springfield, VA 22150.

CUSTOMER SUPPORT - HARDWARE & DATA COMMUNICATIONS: Responsible for post-sale customer support in the identification/repair of equipment related problems. Previous background should include microprocessor repair/assembly, digital electronics, and data communications. Good interpersonal skills a real asset in this key position. Send resume to General Manager, Entre Computer Center, 6715-K Backlick Road, Springfield, VA 22150.

ADMINISTRATOR/COMPUTER-ASSISTED INSTRUCTION - To oversee the operation of 3-4 person department involved in the programming of CAI material in the field of English as a Second Language. Will be responsible for supervision of programming staff, planning, developing, testing, evaluating and documentation of all software, and staff professional development. Qualifications include an in-depth knowledge of and experience with high level (Applesoft, MS-Basic and N-Basic, Pascal) programming languages, with Assembly language, and with 6502 machine language, and operating systems (DOS 3.3, MS-DOS, PC-DOS, CP/M) and in-depth knowledge of protection systems and advanced programming techniques, broad familiarity with best-selling brands of microcomputers and peripherals which are pertinent to the delivery of CAI, previous experience with CAI, preferably for language instruction, and with course design, previous teaching and supervisory experience. Salary commensurate with experience. Attractive benefits package. Send complete curriculum vitae, salary expectations and history, and availability by October 21, 1983 to Administrator

Search, Executive Offices, American Language Academy, Suite 200, 11426 Rockville Pike, Rockville, MD 20852.

PROGRAMMER - Computer-Assisted Instruction department of 3-4 people needs additional programmer of CAI material in the field of English as a Second Language. Will be responsible for planning, programming, testing, evaluating, revising, and documenting software. Qualifications include M.A. in linguistics or ESL or equivalent teaching experience, knowledge of and experience in use of CAI in the language-teaching classroom, preferably ESL, experience in developing lessons in CAI. Salary commensurate with experience. Benefits package. Send complete curriculum vitae and salary expectations and history by October 21, 1983 to Programmer Search, Executive Offices, American Language Academy, Suite 200, 11426 Rockville Pike, Rockville, MD 20852.

CLASSIFIEDS

DONATIONS SOUGHT: Anyone interested in donating Apple equipment, software or publications to Bethesda Chevy Chase High School and receiving an acknowledgement for income tax purposes, contact Dr. Betty Manchak at 654-5264 during business hours.

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Q & A

by Bruce F. Field

Q. I think I may have a problem with my power supply. When I first boot up the text on my monitor will often be "wavy" and flickering. As the day wears on the text "firms up" and the problem seems to disappear.

A. The problem may be with your power supply; however I am inclined to suspect other things. First, I would check the cable from the video output on the Apple to the monitor. The best way to check it is to replace it with another cable (at least temporarily). If the display is flickering this is usually the problem.

Sometimes other equipment placed close to the monitor, notably another monitor, will produce interference. Try turning off any nearby equipment.

There is an adjustment inside the Apple in the rear right-hand corner that controls the video signal level to the monitor (see the Apple Reference manual for the exact location). Changing this small potentiometer may help your problem. You can't damage anything with this adjustment so you might as well go ahead and play with it.

If the problem is repeatable I would try leaving the video monitor on overnight but leaving the Apple off. In the morning if the text is "firm" when you first start the problem may be in your monitor.

Make sure that both the monitor and the Apple are plugged into grounded (three wire) sockets that are common to one another. What I mean is don't have the Apple plugged into one socket on one side of the room and the monitor plugged into a socket on the other side, plug both into a single duplex outlet or a three wire extension cord.

If all of these tests fail I would take my Apple to a dealer and have him put the power supply output on an oscilloscope; this should indicate if there is any problem with the power supply.

Q. I have a program that I wish to be able to access 1 or 2 disk drives, depending upon the users' configuration. My problem is that I want to be able to access the second drive automatically, without having to ask the user. Is there a technique, or a location that can be looked at, that will enable me to tell from within a program whether the second drive is connected to the controller?

A. There is no way of telling if a disk drive is connected and contains a diskette without trying to read the diskette. One way to do this is to execute the DOS command VERIFY. If you try to verify a file that exists on the disk and if everything is okay DOS just returns to your program. If the file doesn't exist DOS returns with a FILE NOT FOUND error. If there is no disk drive or a diskette isn't in the drive, DOS returns with an I/O ERROR. You can use the ONERR command in Applesoft to sort out what is happening. The program segment below should get you started.

```
500 REM CHECK IF DRIVE 2 IS WORKING
510 ONERR GOTO 550
520 F=1 : REM INITIALIZE FLAG
```

```
530 PRINT CHR$(4)"VERIFY XXXX,D2"
540 GOTO 560 : REM SKIP ERROR CHECK
550 IF PEEK(222)=8 THEN F=0 : REM I/O ERROR
    SETS F=0
560 POKE 216,0 : REM TURN OFF ONERR
570 REM IF F=0 THEN NO DRIVE 2
580 REM IF F=1 THEN DRIVE 2 IS WORKING
```

This program will not be correct if by some chance a file named XXXX does exist on the disk and it somehow was recorded incorrectly, because if VERIFY finds a bad file it returns an I/O ERROR, thus fooling the program into thinking that the drive isn't working.

There is no way to just test if a disk drive is connected without having a disk in it.

Q. I understand it is not a good idea to turn your Apple on and off all the time, but how can you get out of programs that won't let you reset, forcing you to turn off?

A. The main concern in turning your Apple on and off is the weak power switch on the back of the Apple. If you use this switch a lot sooner or later (usually sooner) it will fail. Originally this meant that the entire power supply had to be replaced (\$\$\$) for a 50 cent switch. Now I believe the dealers can replace just the switch (\$\$). The best solution is to get a power strip type extension cord and use the switch on that to turn everything on and off. An additional advantage is that you won't accidentally forget and leave some peripheral on.

It is probably better for the electronics in your Apple if you leave it turned on rather than turning it on and off for short periods of time. The chips inside the Apple do not wear out from use but are somewhat sensitive to power surges that occur when the machine is turned on. Woz says he leaves his machine on all the time.

Q. After editing an Applesoft program using the normal edit features of the Autostart Rom, when I request a save or other DOS command the Apple often responds with a ?SYNTAX ERROR. How can I avoid this inaccurate trivia?

A. Are you questioning your computer? If it says SYNTAX ERROR, you have a syntax error. The problem is that when you are through editing you may still be in the ESC mode so that the next character you type is not recorded on the screen. Thus your command is short one character and incorrect. Or, you may have either copied over something without realizing it or you have typed a control character that does not appear on the screen. Then when you type a DOS command or any other Applesoft command the extra characters that are already in the keyboard buffer cause a syntax error. One way to get around this is to type Ctrl-X to erase anything in the keyboard buffer before typing the next command.

Q. Where can I get dust covers to fit various configurations of Apple hardware?

contd.

A. Cover Craft makes a number of flexible vinyl dust covers for the Apple and several monitors. Several of the local computer stores probably can get these for you but I have seen them in stock at The Micro Connection in Vienna, VA for around \$10. SACON, a systems integrator in Gaithersburg, MD (315 E. Diamond Avenue, next to the railroad station, tel. 258-9505) can order a wide variety of covers to fit many combinations of Apples, disk drives, and monitors. These go for \$12 to \$17.

Q. How can I restore the DOS 3.3 tracks on a disk after they have been blown without wiping out other programs on the disk?

A. BRUN the MASTER CREATE program on your system master diskette. This program is intended to convert a "slave" diskette to a "master" diskette able to boot on any memory size machine. It does this by writing a new copy of DOS to the first three tracks on the diskette. How to use this program is described on page 44 of the DOS Manual or on page 106 of the new DOS Programmer's Manual.

MASTER CREATE will only work if the initialization of the first three tracks is still intact. If MASTER CREATE is unable to rewrite DOS then the best solution is to use the FID program on your system master diskette to copy all the programs to a new diskette. FID is described starting on page 184 of the DOS Manual but seems to have been overlooked in the new DOS User's and Programmer's Manuals. Fortunately it is fairly obvious how to use it, just BRUN FID, choose the menu option to copy files, enter your source and destination disk drives, insert an initialized diskette in the destination drive, and enter = (an equal sign) when it asks you what file name to copy. Equal is a wild-card character and this will cause all the files on the source diskette to be copied to the destination diskette.

Q. Where can I find information on the one wire modification for upper case characters?

A. Richard Langston had an article in the July 1983 WAP Journal on how to do this. It is also explained in the Superscribe II manual.

Q. Can I sort names in VisiCalc?

A. Walt Francis discussed this in the last WAP Journal (September 1983). The answer is that you must do it manually line by line using the Move function. In other words, no. Multiplan does have a sorting option with the limitation that it will only handle 255 records in one file. Also sorting is done by row, each record must be limited to one row and the entire row is moved along with the name being sorted.

Q. Where can I purchase a communications card kit or plans? My goal is to interface a standard modem to the Apple without having to buy a communications card. Could I run it from the game I/O port?

A. I don't know of anyone that is specifically producing a comm. card kit, however you might check with John Bell Engineering (they advertise in BYTE magazine). They offer several cards in kit form.

Richard Campbell had an article in the April 1979 issue of BYTE (pp. 20-25) describing a simple communications card using the Intel 8251. Although the 6502 in the Apple violates the timing specifi-

cations of the 8251 it still seems to work. However you will have to write the software to make the Apple behave as a terminal.

It is nearly impossible to emulate a communications card using the game I/O port. The ACIA chip on the comm. card performs two functions simultaneously, sending data and receiving data. If you program the Apple to do this using the game I/O port it can either send data or receive data but not do both at the same time. Thus while you are typing or sending data you will lose any data being sent to you.

Q. I have seen advertisements for voltage surge protection, perhaps including near lightning strike protection. What about E.M.P./line voltage protection? Will the commercially available fan/combo surge protector protect against up to instantaneous surges of 100,000 volts? And against E.M.P. (electromagnetic pulse) from nuclear explosions?

A. Most surge suppressors on the market offer protection against one or both of the following problems, voltage surge, and/or electromagnetic interference. Voltage surges on the power line can be caused by lightning striking at or near a power line, motors turning on or off, or a sudden change in the load on the power line. At the heart of all these surge suppressors is a small device called a "varistor" that absorbs the extra energy if the line voltage gets too high. What you want to look for is the energy rating of the varistor, the higher the better. None of these devices are going to withstand a direct lightning strike on the power line; then it's baked Apple time. So it's not a bad idea to unplug your Apple during a thunderstorm.

When it comes to electromagnetic or radio frequency interference (RFI) protection is less important than surge protection. There are two things that can happen without this protection. One, RFI can come in the power line and upset the operation of the Apple. It would likely take a very large signal to upset the Apple and it shouldn't get through the power lines. Two, RFI FROM the Apple could be put on the power lines upsetting other equipment (i.e. TVs). It turns out that most of the RFI generated by the Apple travels through the air not the power lines. Adding this kind of filter won't do much, if anything, to help your TV reception.

Electromagnetic pulses from a nuclear explosion will be airborne. Putting something on the power line will not help with this problem.

Q. I have been having trouble finding a screen dump program for an Apple //e to an Epson MX100 printer. Where can I get one?

A. Since the MX100 is a popular printer there are several programs to choose from. Printographer by Southwestern Data Systems will dump the Hi-Res screen, or some portion of it to a printer. You may select a magnification from 1 to 9 and you can save the screen to disk in a compressed format.

Another highly recommended program is Zoom Graphix by Phoenix Software. This program can print the entire screen either vertically or horizontally, or print a portion of the screen in your choice of screen proportions. This is one of the most versatile programs available.

Graphtrix by Data Transforms, Inc. supports a wide variety of printers and interface cards. Portions of the screen may be printed in three different

contd. on pg 16

A PAGE FROM THE STACK

by Robert C. Platt

Before describing this month's disks, I am pleased to report great progress on our library projects. Brad Simpson, our Eamonologist, has completed his work on the Eamon disks which we have ordered from Call-A.P.P.L.E. These disks have been sent to ALF for duplication and should be available shortly. His review of the Call-A.P.P.L.E. Eamon disks will appear in next month's issue of the WAP Journal. Brad has also agreed to help us judge our Eamon-adventure-writing contest. (The contest closed at the end of August, and we hope to announce the winner shortly.)

The library documentation project is nearing completion, thanks to the efforts of Doug Waters, Tom Riley, Ron Bernstein, Bob Kosciesza, William Herrick, Ross Lenet, Vick Khera, John Poros, James Cumber, Jr., Richard Langston and Eric Rall. We have five disks still to assign, so please contact me if you can spare a couple of hours to try out the programs on a library disk and write them up. The results of this effort will be a series of articles reviewing our older library disks for the WAP Journal. The series begins in this issue.

Two disks premiered at the September meeting, PIG11: and Disk 42, One Key DOS. PIG11: is described in a companion column by our Pascal Librarian, Mike Hartman. A brief description of Disk 42 follows.

ONE KEY DOS

The Disk Operating System (DOS) is actually made up of three separate parts. The first part translates your commands into actions. ONE KEY DOS is designed to replace the normal translator in the DOS written by Apple Computer. The second part controls the sequence in which information is physically stored on the disk. By changing this sequence, one can control the number of times that a disk must revolve while reading in information. Disk 42 contains a version of DOS called "quick loader DOS" which can load programs faster than Apple DOS. However, the ONE KEY DOS can be also used with either Apple DOS or Diversi-DOS (see Disk 130). The final part of DOS performs the intricate task of actually reading or writing data on the disk. This foundation is common to most DOSes.

You can determine which flavor of DOS will be in use on your Apple by modifying the copy of the DOS stored on your disks. Whenever you boot your Apple by typing PR#6 (or by turning on the power) a copy of DOS is automatically loaded from the disk in Drive 1. Thus, if you boot from a disk with a copy of ONE KEY DOS, you will be allowed to use the disk with a series of menus rather than by typing standard DOS commands such as RUN, CATALOG or DELETE.

Disk 42 contains complete documentation on how to install ONE KEY DOS on your disks. In addition it has sample programs which rapidly load Hi-res designs from disk to allow you to compare its speed with Apple DOS.

ONE KEY DOS is not public domain software. However, its author is so confident that users who try his program will want to keep it that he is distributing ONE KEY DOS on an honor system. He asks that if you decide to use the program that you send the author a check for \$9. Details are included on Disk 42.

ERRATA

The program HUFFIN on Disk 101 has a mysterious extra line which should be deleted:

```
11 FP
```

The program will work when this line is removed.

Remember to keep those error reports and new program contributions coming!

Q & A contd. from pg 15

magnifications. Graphtrix can be used from a BASIC program and comes on an unprotected diskette.

Q. I am having trouble with my game I/O port: neither my joystick or paddle work. I have a paddle-adapple and a shift key mod. Neither control works from either the port or the paddle-adapple. Any ideas on what the problem is?

A. The game I/O port has three different functions, four digital outputs (not used with paddles or joysticks), three digital inputs (one for your shift key mod and two for the paddle buttons), and four analog inputs (two are used for the paddle knobs or joystick). We will assume that at least either your joystick or paddles work, although you might borrow a friend's just to make sure or try your paddles on another machine.

Before tearing apart the Apple or replacing chips I would write a simple program in Applesoft to convince myself that the paddles are really not working. For this test dump the paddle-adapple and plug directly into the game I/O port. Try the program below.

```
100 PRINT PDL(0):GOTO 100
```

Run this and turn both paddles, if the number changes with one paddle it's okay. Now change the zero in the PDL function to a one and try it again with the other paddle.

To test the buttons run this program.

```
100 PRINT PEEK(49249)>127:GOTO 100
```

Push the paddle buttons, the number should change from 0 to 1 when you push one of the buttons. To test the other button change the 49249 to 49250. If you've verified that it is really not working, read on.

If you have an Apple II or II+ the 558 chip at location H13 is the one that is used to read the analog inputs. If you turn the knob and nothing happens, this is the chip that probably isn't working. The chips on the circuit board in the Apple are laid out more or less in a grid pattern. The "rows" of chips are labelled along the left side of the board using the letters from A to K. The "columns" are labelled along the front side from 1 to 14. So, H13 is the chip in the seventh row from the front and the thirteenth column from the left.

If the paddle buttons don't work the problem is usually the 74LS251 at location H14.

SPEEDING UP YOUR APPLE: A COMPARATIVE ANALYSIS

by Ed Knepley

FASTER THAN A SPEEDING...

Do you ever wish that your Apple could move along a little quicker? One of the advantages of owning an Apple is that you don't have to stick with what the "Woz" gave you. There are many hardware and software alternatives and enhancements available out there. This article will attempt to shed a little light on a few of the things that you can do to speed things up (besides run out and buy a Sage IV).

There are two basic factors which affect the speed of your programs -

- Hardware (primarily the speed of the CPU and the speed of mass memory),
- Software (primarily the operating system and the choice of programming language for the particular application program).
- (Hardly much left after saying "hardware and software", is there? However, the impact of a poorly designed algorithm can easily outweigh the best hardware/software decisions - e.g. using a bubblesort algorithm to sort very large sets of data.)

In the world of hardware enhancements, there are coprocessors (a second CPU to run in your Apple), solid state disks (RAM which is made to emulate a floppy disk drive) and hard disk drives (approximately 10 times the data transfer rate of a floppy plus a whole lot more space). Each of these options buys you something depending on your application; in combination the improvement can be significant.

Many programming languages and several operating systems are available for the Apple. The obvious, but painful, solution for speed is to program in assembly (machine) language. Assuming that this solution is to be avoided whenever possible, we are left with a large number of so called high level languages such as BASIC, Pascal, Modula-2, FORTRAN, FORTH and the like. Compilers can be used to improve the speed of the high level languages; the numerous compilers available for Applesoft are prime examples. Operating system choices include Apple DOS, Apple Pascal (this is a complete operating system, the UCSD p-System, and not just a language) and CP/M.

At this juncture the question is, what are the relative merits of the mind boggling number of permutations and combinations that these options offer? Tables 1 - 3 provide timing benchmark results for a number of representative enhancement combinations and applications. These results provide a good indication of the relative performance improvements that are possible.

LANGUAGES

Articles (such as this one) describing differences in the performance of languages and computers abound. One article which is fairly well known appeared in BYTE (1/83) and used a prime number program called the Sieve of Eratosthenes as its "benchmark". Since this article has provided a "standard" that results can be compared against, this was the first benchmark program I ran for this article. Table 1 depicts the results I obtained in comparing four different languages on the

Apple II+ in conjunction with two different CPUs. One CPU is the 6502A (standard equipment) and the second is the 6502C (e.g. the Accelerator II) which runs 3.6 times faster than the 6502A.

As a first comparison, look at the top and bottom numbers of the left hand column (345 vs 30) or the right hand column. This improvement of more than 10:1 is due solely to the choice of languages. Compare any two rows and you see the improvement in using the faster CPU (approximately 3.5:1). Then, if you aren't convinced that there's improvement to be had, compare the upper left (345) with the lower right (7.5). That's a 46:1 difference; it's also one reason why I don't use BASIC.

(For those of you familiar with the sieve benchmark, please note that the times in Table 1 are for a single iteration of the algorithm in BYTE; multiply by 10 before comparing with the Gilbreaths' results.)

If your applications involve lots of processing (sorting files, for example), the path for you to take is clear. Shifting to Pascal is cheaper and faster than buying a coprocessor & compiler for use with BASIC. (Dana, is the membership roster really kept by an Applesoft program? Time to start Huffin', or is it Puffin', those files over to Pascal.) If you use commercial packages, the language choice is more or less out of your hands, but hardware enhancements such as the faster processor or disks are candidates.

HARDWARE

Now that the language choice is "perfectly clear", let's consider what improved hardware can do.

If you opt for the 6502C CPU and do nothing else, virtually all of your CPU bound operations will move along at a speed roughly 3.6 times faster than before, as shown in Table 1. Equally (or more) important, all of your software will continue to operate with no appreciable change on your part (except certain time sensitive applications like an autodial routine in a communications package - Ma Bell won't know what to make of those fast pulses). If you choose a coprocessor outside of the 6502 family, no general claims can be made regarding speed - particularly since none of your old programs will work. Presumably, a 6Mhz Z80 softcard for CP/M applications on your Apple is going to move out - but I wouldn't know just how fast.

If your applications involve lots of file transfers (data base systems, for example), then maybe a faster CPU isn't the best answer. Moving files (including loading/saving programs) is something that we all do quite often. How much can a faster disk system help? Lots!

Tables 2 and 3 demonstrate what hardware can do for us - particularly when a faster CPU is combined with a faster disk system. First the disk system alone - Table 2 show the differences in program compile times using the Apple floppy disk and the Syntix solid state disk. In this application both the application program (the compiler) and files (the source code and object code) are transferred back and forth between the disk system and the computer's RAM memory. There are certainly better benchmarks, but this one does illustrate that significant improvements are possible with faster disk systems. For a real eye opener,

contd.

glance at the "slide show" results in Table 3 which are almost solely due to disk speed differences.

To see the effect of combined CPU and disk changes, look at Table 3. In this case we compare Woz' hardware against latter day improvements (all software is written in Pascal).

The time to compile a program is reduced by more than 4 using the fast CPU and disk (and the fast system compiles in the neighborhood of 900 lines per minute, which is outstanding for any micro (and some larger machines as well)). This improvement tends to minimize any complaints about lengthy compiles.

The next program transfers slides (HIRES pictures) from the disk to the Hires screens. Both screens are used so that the next slide can be transferred while the previous one is being viewed. (Who said Pascal had only one screen?) A variable "viewing time" is selected which determines how long each slide is displayed - in this case it was set to zero in order to transfer the files as fast as possible. Apple Pascal Unltread and Unlwrite procedures were used in order to employ the most efficient file transfer mechanism available. The net result is a good picture (no pun) of the size of improvement potential available using solid state or hard disk systems. The fast system displayed 10 pictures in 2.4 seconds or, in other words, was transferring a picture from disk to RAM (and drawing it on the monitor screen) every quarter of a second.

The last two results are for text editing applications. The test was to search for a non-existent character string which caused the system to start at the front of the file and to look (unsuccessfully) through to the end of the file. In the first case, a 60K text file was used. The ASE editor (see Burt Chambers' "Flavors" in the 8/83 newsletter) handles files larger than the available internal memory of the system. The 60K file was a test of both the CPU speed (search through RAM) and the disk system (transfer successive segments of the file to RAM since it could not fit all at one time). This test wasn't practical to perform on the plain vanilla system; it took 4.5 seconds on the fast system - faster than some systems can get the job done when the entire text file is small enough to fit in RAM. Which brings us to the final case - a 14K text file which fits entirely in RAM using the standard Apple Pascal editor. The time to search the file with the fast system was instantaneous. As soon as the search key was entered, the system response that the key was not in the text was displayed. You will have to judge relative performance of the text editing speed for yourself - based on a comparison with your present system.

SUMMARY

A more detailed evaluation could have been done which considered more options and a broader set of applications and benchmark programs. Maybe this would be a good club project for the benefit of the membership. (You bet! - Ed.) My initial motivation was curiosity - triggered by the August issue of BYTE with all of those Unix and C comparisons of 10MHz 16 bit machines with hard and solid state disks - and not to write yet another benchmark article. (I found that the souped up Apple is respectable - particularly in terms of compile times - who wants to wait several minutes to compile a relatively small C program?) After I got started, one thing led to another and this is the result. Please exercise caution in interpreting these results to your situation - they are merely indicators, and not the complete answer for any specific case.

Language	CPU	
	6502A (1MHz)	6502C (3.6MHz)
Applesoft BASIC	345	101
Integer BASIC	211	62
Apple's Pascal	42.4	12.4
(Using Fillchar)	32	9.3
(Fillchar & no range chk)	--	8.2
Volition's Modula-2	38.3	11.2
(Using Fillchar)	30	8.4
(Fillchar & no range chk)	--	7.5

TABLE 1: Results for Eratosthenes sieve prime number algorithm using an Apple II+ computer (with and without 3.6MHz Accelerator II coprocessor) and the indicated four languages. Results are execution times, in seconds, for ONE iteration of the algorithm. The 1st times for Pascal & Modula-2 are for the algorithm as written in BYTE; the 2nd uses the Fillchar function to initialize the array; the 3rd uses Fillchar and also turns off range checking. Times are not dependent on the type of disk system.

Language & Function	Mass Memory	
	Floppy Disk	Solid State Disk
Pascal Compile	11.6	3.4
Modula - 2 Compile	23.6	10.8
Pascal Load	1.7	0.7
Modula-2 Load	7.7	1.8

TABLE 2: Sieve algorithm compile and load time (sec) comparisons for Pascal and Modula-2 using floppy and solid state disk systems together with the the 3.6 MHz coprocessor (1MHz CPU times would be slower).

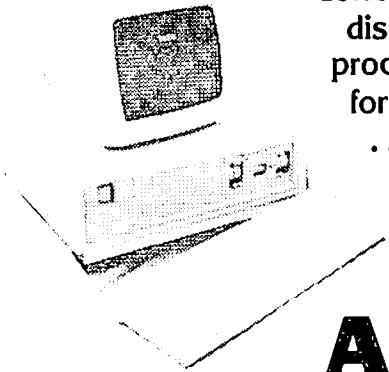
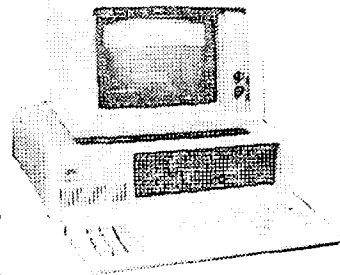
Application (in Pascal)	Memory/CPU	
	Floppy & 1MHz	Solid State Disk & 3.6MHz
Pascal Compile	37.7	8.4 (900+ lpm)
Slide show	26.7	2.4
Text Edit I	zzzzzz....	4.5
Text Edit II	(not attempted)	Instantaneous

TABLE 3: Illustrative times for functions which show the combined impact of the solid state disk coupled with the 3.6MHz coprocessor. 1st is compile time for a 131 line program (over 900 lines per minute with the fast system!!). 2nd emphasizes the ability to move data from mass storage; data is time (sec) required to transfer and display 10 HIRES pictures stored on disk. 3rd is the time to search for a non-existent string in a 60K byte text file using the ASE editor. 4th is similar to the 3rd except the file length is 14K and, thus, the search is done entirely in memory (standard Pascal editor).

We have them all.

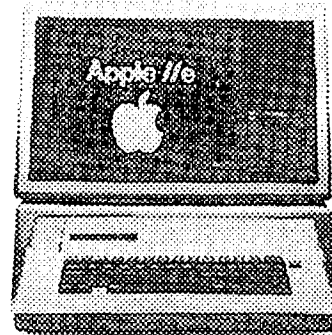


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COMPUTERS

FEEDING AT THE TROUGH: News From the PIG

by Michael Hartman

After watching the proliferation of columns from other, newer SIGs, I was struck by the need of the Pascal Interest Group (PIG) to uphold its honor. Thus, this column will relate news, tips, and rumors gathered from the PIG, the MUSUS bulletin board on CompuServe, and assorted other sources. The Trough will also feature announcements and descriptions of new PIG library disks. Contributions of news (in fact, of whole columns) are solicited, as the column will appear sporadically as material accumulates.

What's a PIG?

For those of you who are saying "Who?" in response to any or all of the above, the Pascal Interest Group is a special interest group (SIG) populated by users of Apple Pascal, a variant of UCSD Pascal. The PIG meets once a month to discuss topics such as Pascal programming techniques, structured language issues, new commercial Pascal software, and our own latest programming projects. We also frequently talk about new hardware and our experiences in interfacing it with the Pascal system. On occasion, when someone's arm is twisted far enough, we even have a formal presentation on one of these topics. There is also a question and answer session at every meeting, and new users of Apple Pascal (or those interested in learning about it) are welcome to come. The meetings are held on the third Thursday of every month at 7:30 PM in the WAP office.

The MUSUS Bulletin Board

The major organization for users of UCSD Pascal (from various vendors on a wide variety of machines) is the UCSD p-System User's Society (USUS). USUS was discussed in Tom Woteki's column in the January 1983 WAP Journal, so I won't repeat any of that here. But I would like to describe the MUSUS bulletin board which operates as a SIG on the CompuServe time-sharing service. There is a great deal of interesting material there on such things as operating system internals, software tool development, standard UNIT interfaces for creating machine-independent code, and experiences with p-System hardware and software. Several of the people involved in the development of the original UCSD Pascal system are active on the board, as are representatives of many major p-System hardware and software vendors. If you can't find help in answering a UCSD Pascal-related question there, you aren't likely to find it anywhere. Traffic on the board is heavy--an hour's worth of messages at 300 baud is posted each week! Right now the big topic on MUSUS is the Sage computer; many SIG members now own one and are busy exploring its terrific hardware and software capabilities. There is also a substantial amount of Apple-specific discussion on the board--it and the Sage appear to be about equal in popularity now. MUSUS also has an on-line public-domain software library; many well-written, useful programs can be downloaded from there. Membership in MUSUS is open to all USUS members with a CompuServe account. Several PIG members are now active on MUSUS (in fact, it's the main reason I subscribed to CompuServe).

USUS Meeting in Washington

The next semi-annual meeting of USUS will be held in

Washington, D.C. at the Crystal City Hyatt Regency on Friday, October 14 through Sunday, October 16. The meeting will feature several speakers, tutorials, a Q & A session, hardware and software demonstrations, and SIG meetings. The SIGs include Apple, Sage, Communications, Pascal standards, and Modula-2. Presentations and tutorials already scheduled are:

Technical Presentations-

- "Software Development Using the p-System"
by Dave Gelfand of Ferox Microsystems
- "Graphics Using the p-System"
by Alan Freiden of Information Systems, Inc.

Tutorials-

- "Introduction to the p-System"
- "Introduction to Pascal"
- "Introduction to Modula-2"
- "Advanced Topics in UCSD Pascal"

Everyone with an interest in UCSD Pascal is invited to attend; you do not have to be a USUS member. Registration for the three days is \$25 in advance or \$35 at the door. Advance registrations must be received by October 7 at this address:

USUS
Meeting Registration
P.O. Box 1148
La Jolla, CA 92038

According to all accounts I've heard, USUS meetings are both informative and a lot of fun. Attach faces to those names you've seen on the MUSUS bulletin board. Learn the secrets of the SYSCOM! See you there!

Apple Pascal 1.2

At the April meeting of USUS in San Diego, Apple Computer Inc. announced the release early next year of Apple Pascal 1.2 for the Apple // family. This release will fix a number of bugs in 1.1 and offer several new capabilities. The bugs are not nearly as serious as those which plagued version 1.0; in fact, many users won't have encountered any of them. The most severe relate to the Seek procedure for random file access (several problems), the assembler, and negative long integers (they don't work properly, especially in I/O). A complete bug list is available at PIG meetings. Perhaps the most exciting new feature of 1.2 is support for the auxiliary 64K on the Apple //e Extended 80-Column Text Card. This will be used for the code pool, much as it is under Softech's IV.x releases of the UCSD p-System. The stack, the heap, and user program data will reside in the main 64K. (I don't know which 64K bank the interpreter will reside in.) Thus much less segmenting of large programs will be necessary, and larger amounts of data can be handled in memory by a program. There will be a speed penalty due to the bank-switching involved; but according to some benchmarks I've seen, it's only about 10%! This use of the auxiliary 64K will, of course, be an option--presumably supported by special SYSTEM.APPLE and SYSTEM.PASCAL files. A version of 1.2 for use with Apple IIs and IIs+ and Apple //e's without the extra memory will also be included in the release.

contd.

New PIG11: Library Disk

As promised above, descriptions of new PIG library disks will appear in this column. Here is the first (for PIG11:), which should be available from WAP beginning this month.

BLAISE.3.2.TEXT
FILE.INFO.TEXT
TEST.FINFO.TEXT - Tom Woteki

These routines provide access to the File Information Block (FIB) maintained by the Apple Pascal system on each file declared in a program. They are comparable to the routines provided for UCSD IV.1 by several of its vendors. Such information as file pointer position and file buffer state is now available for your program's perusal. FILE.INFO.TEXT is the UNIT which contains the FIB access procedures. TEST.FINFO.TEXT is a sample program which utilizes the UNIT. BLAISE.3.2.TEXT is the documentation for both, which originally appeared as Tom's "Blaise Away!" column in the January 1983 WAP Journal.

RAMHOOK.TEXT
RAMDRIVER.TEXT - Steve Daly

These programs provide a device driver which turns the Extended 80-Column Text Card of your Apple //e into a super-fast 62K RAM disk. Steve has turned that paper-weight inside your new machine into something useful! And in a fit of cleverness, he has hidden the bulk of the driver in a fragmented portion of the auxiliary memory so that it doesn't fill valuable main RAM space. What do you use such a thing for? Put SYSTEM.COMPIILER out there and speed up your compiles by a factor of two. Run your segmented programs from the RAM disk and you'll never know they're overlaid! The file RAMHOOK.TEXT contains the documentation and the small hook of the driver which is provided to the ATTACH routines. RAMDRIVER.TEXT includes most of the device driver and the routine for copying it into the auxiliary memory. To install the driver, you will need Apple's ATTACH: disk, available from WAP as PIGO:. (Note that this RAM disk can coexist with double hi-res graphics provided you M(ake a file which reserves blocks 12-27.)

STARTUP.TEXT
STARTUP.EXEC - Michael Hartman

Here are two very small files for use with the RAM disk driver described above. STARTUP.TEXT calls the routine which copies the RAM driver into auxiliary memory and chains to the exec file STARTUP.EXEC. This Z(eros the RAM disk (on power-up only), makes it the prefix volume, and asks you the date. You can add your own startup procedures to both of these. You must compile STARTUP.TEXT, link it to the assembled RAMDRIVER.TEXT, name the result SYSTEM.STARTUP, and put it and STARTUP.EXEC on your boot disk. They will then be executed every time the system is booted or i(nited).

LOWER.CASE.INFO
PATCH.LC.TEXT
PATCH.ASM.TEXT
PATCH.SYS.TEXT
ALTCHARS.TEXT - Michael Hartman

When I got my new Apple //e home, it didn't do any more than my old II Plus did (I was waiting for the Extended 80-Column Text Card to become available). This was incredibly frustrating after spending all that money, so I broke out my BIOS disassembly and wrote these programs. They are a collection of routines for patching Apple Pascal 1.1 to utilize the lower-case typefont on the Apple //e. They should

also work without modification for a lower-case chip in an Apple II or II Plus. These programs are necessary only for the standard 40-column screen. Any 80-column card will accomplish lower-case display automatically.

INTERRUPT.TEXT - Arley Dealey

Ever tried to use interrupts with Apple Pascal 1.1? You probably had some trouble. This file from Arley Dealey explains the bug in the floppy disk driver and shows how to patch it.

ASE.HEADER.TEXT - Arley Dealey

The Advanced System Editor (ASE) from Volition Systems is a superset of the standard Apple Pascal editor. For those of you who have it, Arley and Volition have been kind enough to provide the text file header declarations for ASE releases 0.4 through 0.9. Both this and the file above were obtained (with permission) from MUSUS, the USUS SIG on CompuServe.

NEWROOTDOC.TEXT
NEWROOT.TEXT - John Stokes

Now that you have a RAM disk (see RAMHOOK/RAMDRIVER and SSD.DRIVER), wouldn't you like it to be your root disk? No more waiting while SYSTEM.PASCAL or UNITS from SYSTEM.LIBRARY are loaded! This program gives you that capability for Apple Pascal 1.1. Any device you choose--hard, floppy, or RAM disk--can become your root (not boot) volume. NEWROOTDOC.TEXT is the documentation and NEWROOT.TEXT is the program. Both were originally obtained from MUSUS, and also appeared in the August 1983 WAP Journal.

SSD.DRIVER.TEXT - Ed Knepley and David Neumann

For those lucky owners of the Syntex Solid-State Disk (SSD), Ed has written a device driver for you to use in place of Syntex's. The benefits are saving money, having the source code, and its working with Modula-2 from Volition Systems. For documentation, see Ed's article in the July 1983 issue of the WAP Journal. This includes the listings of a STARTUP routine (similar to the one described above) and of a program to make the SSD the root volume. (NEWROOT on this disk will also work with the SSD and is somewhat more powerful and flexible.) Dave Neumann has made some modifications to the version of the driver listed in the article, making it a tad larger, but it is now faster than even the one Syntex provides! Dave has also added some code to automatically Z(ero the SSD on power-up. If you keep this in, you must be careful about C(hanging the volume name of the SSD device. The driver is written for an SSD in slot 5, but this is easily changed at the top of the program. Again, as for any "foreign" device you want to attach cleanly to Apple Pascal, you will need Apple's ATTACH: disk to install the driver.

MMODEMPTCH.TEXT - Anonymous

This program patches the Apple Pascal 1.1 BIOS to utilize the D.C. Hayes Micromodem II (in slot 2) as REMIN:/REMOUT:. UnitRead, UnitWrite, and UnitClear (and I would expect Read, ReadLn, Write, and WriteLn) in your own or other's programs will now talk to the Micromodem. The program directly patches the interpreter/BIOS file SYSTEM.APPLE, which it expects to find on the root disk. This file was obtained from the Source Pascal Information Network (SPIN); its author was not identified. Are any of you ace programmers inspired to write a device driver for the Micromodem which can be ATTACHed in the standard way?

contd. on pg 25

GAMES PEOPLE PLAY: TWO REVIEWS

by Leslie Shriner

THE LAST GLADIATOR

Electric Arts has released yet another winner in "The Last Gladiator." The game is original and fun to play, especially if you are getting tired of shoot-em-ups and want a fast action game where strategy can be as important as speed. In this game you are one of the last gladiators in the era of classic Rome. Armed with a variety of weapons from a club to a boomerang, you must fight and kill many monsters and even do battle with the Emperor himself.

Minor deficiencies in sound and color are more than made up for by the originality and diversity of the game. One of the best things about this game is the number of options to choose from. You may begin on any one of the eight levels and be either male or female. Beginning levels are easier but they rapidly become more challenging. (Ever try to kill a bat with a club?) Monsters range in difficulty from Mordo the Spaz and the octopus, who are not too difficult, to robots who shoot death rays and vampires which have to be hit twice to be killed. The only option which seems to be missing is one for a multi-player game. Even so, playing individually for a high score can be almost as challenging.

The action in the game is fast-paced throughout and, unlike some games, Last Gladiator's action does not slow down noticeably when there are many figures on the screen. Because it reacts quickly to the joystick signals, it is less frustrating and more life-like. Also, another difference from some games is that it is easy to fire in all 8 directions, even diagonally. Believe me, when you are facing three or more monsters, you need all the maneuverability you can get!

A command card makes the game more playable. It explains the game and the control characters used to restart the game, choose new levels, pause and toggle sound. The command card is a handy size for quick review and it makes getting used to the game easier because there isn't a whole big manual to read.

The graphics are good even though they are mostly filled with white and a small splash of color. Each creature has its own shape and each is easily recognized. The graphics are somewhat jerky; however, it didn't really bother me because I got so wrapped up in the game I stopped noticing it.

The sound effects were the most disappointing part of the game for me because they are practically nonexistent. Of all the monsters, only the snake, robot and dragon have their own sound effects; and these are neither very complex nor exciting. In my opinion, the author could have done a lot more in this area.

The Last Gladiator works on either an Apple II or //e with 48K and one disk drive. It performs best with a self-centering joystick such as the TG or Keyboard Co. type but works almost as well with an Atari-type with a Wico adaptor. With a non-centering joystick on the other hand, it is almost impossible to aim your weapon unless you are a perfect shot. There is no keyboard control option because the number of keys required would be too great for most players.

Overall, the Last Gladiator is an addictive and fast paced game which is an ideal break from the usual "Space Invaders" types we see all too often. If you like variety and originality then The Last Gladiator may be a good investment for you.

SAMMY LIGHTFOOT

"Sammy Lightfoot", by Sierra On-Line is a creative, colorful game which is at first fun to play but is also, unfortunately, one which will not keep a player's interest for very long. The object of the game is to steer Sammy through a series of dare-devil acts to get a job in the circus. Sammy must jump on trampolines, swing from ropes, ride a flying carpet, and perform other feats while avoiding giant bouncing balls, a mean pumpkin and deadly flames to get the job.

The game might retain the player's interest longer if the action were faster. As it is, the game progresses slowly and there are portions which seem either much too simple or too difficult. For example, the second level is a real cinch compared to the first and third levels. One reason for the slow speed may be that there is so much going on at any one time. The game gets boring because each obstacle is so far apart and just walking to them takes a long time. The game is, however, very responsive to the joystick and keyboard controls.

The graphics in the game are very colorful, appealing, and in my opinion, the best part of the game. A lot of work obviously went into making the game nice to look at, making the game much more amusing to play. There is no flickering and very little jerkiness in the movements of characters and obstacles alike. The characters are cute and fun to watch.

Sound effects on the other hand are poor. Aside from a musical introduction to each level, there is almost no sound at all. In my opinion, the author would have done better leaving out the sound altogether, rather than leaving in the small amount now there.

Another feature in Sammy Lightfoot, now common in many new games is a high score record where the top ten scores are kept. This high score area can be cleared at any time so you don't have to keep looking at the disgusting scores your friends might have made.

The documentation is complete but simple. The instructions include how to move Sammy from place to place, and what the control characters are. As in all Sierra On-Line programs, the documentation is comprehensive and easy to understand; a combination sometimes hard to find in a fast-action game.

Sammy Lightfoot runs on an Apple II or //e with 48K and one disk drive. The program is controlled by joystick, paddle or keyboard. A self-centering joystick works best, though an Atari-type with a Wico adaptor also works well. A non-centering joystick also works pretty well. The paddles also work well but they are not quite as responsive as the joysticks. The keyboard mode is set up for either lefties or right handed players by using two different sets of three letters each on opposite sides of the keyboard. The keyboard mode is my favorite because it seems to be the most responsive.

This is an original game which is enjoyable for a while but which soon becomes tiring for an experienced player. The graphics are excellent, but the sound is unimpressive. While not a game for hardcore arcade gamers, if you are just a beginning player or have young children who get frustrated by the harder games, this might be the kind of program you are looking for.

BEATING "ROUND-OFF" WITH EXTENDED PRECISION

by Costa S. Vatikiotis, D.E.

Of the many types of error that influence numerical results from computers, the effect of "round-off" can be one of the most difficult to recognize. Round-off error occurs each time an arithmetic operation yields a result having a greater number of significant digits than the computer system is capable of representing. The effect of "round-off" usually goes undetected, but on occasion accumulates to an unacceptable level. This article will briefly describe the nature of round-off error and will introduce an Apple Pascal intrinsic unit for doing extended precision floating-point arithmetic with 16 significant digits.

Typically, number variables are defined in computer programs as "reals" or as "integers". For the most part, there are few surprises in working with integers. Using a 16 bit word (two bytes of memory), there are 65,536 true integers which can be represented by the Apple II, excluding Pascal "long" integers. Integer arithmetic is straight forward, and at times, the discreteness quality of integer arithmetic is advantageous (e.g., you may have used IF N DIV 3=0 THEN test for multiples of three). In contrast, a real number, as represented by a computer, is often not fully appreciated. The term "real" is a misnomer with regard to its usage with computers. The Real Number System is described by a continuous "number line"; that is, choosing two numbers regardless of how close, a third number can be selected that will fit between. A digital computer simulates the Real Number System by a subset called a floating-point number system. As in the case of integers, implementation of a floating-point number system on a computer is software dependent. This means that these number systems not only vary between computer systems, but also vary between computer languages. Additionally, multiple precision floating-point number systems are built into some computer languages (e.g., most implementations of FORTRAN provide for single and double precision; Apple FORTRAN does not).

Memory allocation for a single floating-point number is partitioned in two. Analogous to scientific notation, one part represents the mantissa and a second part represents the exponent. The maximum number of digits represented in the mantissa establishes the precision of the floating-point number system. In Apple Pascal, floating-point operations are made with 7 significant digit accuracy using numbers represented by 32 bits (four bytes of memory). In contrast, floating-point operations in Applesoft BASIC are made with 9 significant digit accuracy using numbers represented by 40 bits (five bytes of memory). The difference in the quantity of memory for representing the mantissa (24 bits in Apple Pascal and 33 bits in Applesoft BASIC) accounts for the additional accuracy of Applesoft BASIC. But, accuracy has a price. For a given amount of memory, a greater number of "reals" can be represented in Apple Pascal than in Applesoft BASIC. The maximum and minimum exponents that can be represented set the dynamic range of a floating-point number system. For both Applesoft BASIC and Apple Pascal, the effective dynamic range is exponent -38 to 38. To prevent a program from "crashing", the results of floating-point operations should be kept within the effective dynamic range. When a computer attempts to represent a real number outside the dynamic range, either an "underflow" or an "overflow" error message is given and program execution usually stops.

quality similar to that of integer systems. As in the case of the 65,526 integers, there is a finite number of "reals" that can be represented. Based on the effective dynamic range, this number is approximately 1.5E11 for Applesoft BASIC, and for Apple Pascal, approximately 1.5E9. Because of the larger mantissa, there are approximately 100 times more "reals" which can be represented in Applesoft BASIC than in Apple Pascal. As a consequence of these finite quantities, only a small percentage of "reals" resulting from floating-point operations are in the floating-point number system; that is, the result is a number which can be represented exactly by the computer. If all combinations of summing two Apple Pascal floating-point numbers were considered, less than 2 percent of the real number results would be represented exactly by the Apple Pascal system. For example, if 1.0E4 and 1.0E-4 were summed using one of the floating-point number systems discussed, the result would be exactly 1.0E4 in Apple Pascal, and the correct value, 10000.0001 in Applesoft BASIC. However, suppose that the two numbers were 1.0E4 and 1.0E-4; then, neither of the floating-point number systems could represent the correct sum. This loss of accuracy is called "round-off error". A problem arises when the error accumulates or is magnified by the algorithm to an unacceptable magnitude. Similar "rounding" occurs in multiplication.

In error analysis of numerical methods, the effects of round-off error are often explained using probability. For certain numerical problems, it has been determined that the chance of getting an unacceptable level of round-off error increases with the square root of the number of floating-point calculations. However, because round-off error in calculations can be negative or positive, there is a tendency for the average accumulated error to be small. Some algorithms, combined with the data, are sensitive to program structure with respect to round-off. For example, consider the following two equations which should give the same result,

$$A = (B / ((B-C) * (B+C)) - B) * D$$

and,

$$A = (B / ((B*B) - (C*C)) - B) * D$$

Letting B=1.0, C=0.001 and D=1000.0, the calculations in Apple Pascal yield 9.5367E-4 for the first case and 1.072883E-3 for the second. (If you are wondering which value is correct, neither is. The correct value for A is .001000001.... It appears that 7 significant digits is not sufficient for the above calculations.)

Depending on the computer application, active measures may or may not be employed for controlling round-off error. A major factor which prevents round-off error from being a constant problem in the engineering profession is the desired accuracy of the results. For typical engineering problems, input data and coefficients of equations usually have known accuracies of not more than 3 or 4 significant digits. It is not practical to use precision that gives results with computational accuracy greater than that of the input data. However, there are certain algorithms that are susceptible to "round-off" requiring greater precision. The accounting and banking professions have special techniques and software, including extended precision, for preventing computational inaccuracies and controlling round-off error.

Floating-point number systems have a discreteness

contd.

When round-off error is suspected of being the source of poor results, extended precision is often used to reduce the error. Converting to extended precision involves increasing the number of significant digits of floating-point variables and having the ability to perform arithmetic operations on these variables. Increasing the precision of floating-point operations may or may not be easily done depending on the computer system. As stated previously, some computer languages have the capability of increasing the precision of floating-point operations by simply declaring extended precision "real" variables. Neither Apple Pascal or Applesoft BASIC provides this capability. However, it is feasible that round-off error in a program written in Apple Pascal could be reduced by converting the program to Applesoft BASIC. This would increase the precision of floating-point operations by two significant digits. But, depending on the complexity of the Pascal program, this approach may not be practical, and in addition, two significant digits may not be enough.

Listing 1 is an Apple Pascal intrinsic unit for performing extended precision operations with 16 significant digits. EXTPREC is comprised of five calling procedures: one procedure for doing addition, subtraction, multiplication, and division; two procedures for converting numerical values between real type variables and pseudo extended precision variables; one procedure for printing the pseudo extended precision variable values; and one procedure for finding extended precision square roots. Listing 2 is a complete Apple Pascal program for solving a system of linear equations by Gaussian elimination. The purpose of the program is to demonstrate the use of the extended precision unit and to give an example of the effects of "round-off". Listing 2 also includes the program output for the solution of the sample problem.

The method for performing the extended precision arithmetic is based on the use of the "long" integer type. In using EXTPREC, real type variables are initially processed through the ST procedure. ST converts the real variable value to a 16 digit "long" integer value representing the mantissa and an integer value representing the exponent. After the real type data required for the calculations is converted, then the EP procedure is used to perform the arithmetic operations. EP uses 33 digit integers as buffers for performing the actual arithmetic operations, and maintains 16 significant digits in the resulting mantissas. Once the extended precision portion of the algorithm is completed, the long integer mantissa results and their associated integer exponent values are converted to real type variables by the SH procedure. The VU procedure can be used at any time to print the value of the pseudo extended precision variable (see the program output of Listing 2). Although use of EXTPREC requires reprogramming, the original algorithm and program structure are maintained making the reprogramming straightforward. It may be that only a small portion of the Pascal program requires extended precision, in which case, only that portion would need to be reprogrammed. In addition to providing the extended precision capability, EXTPREC extends the dynamic range from exponent -38 to 38 to exponent -32767 to 32767. (I have mixed feelings about this range extension. In one sense, a larger dynamic range may be useful. In another sense, program bugs have often been discovered through range check errors that may or may not occur with the range extension.)

The calling arguments of the procedures in EXTPREC are defined as follows:

```
ST ( X:REAL; VAR ID:BGN; VAR N:INTEGER; P:INTEGER )
```

Input
X : Real type variable with the value to be

converted to extended precision.

P : If P = 1, then X will be displayed on the screen along with the converted value of the extended precision variable.

Output

ID : Long integer of 16 digits representing the mantissa of X.
N : The integer value representing the exponent of X.

```
EP ( I1:BGN; N1:INTEGER; S1:CHAR; I2:BGN; N2:INTEGER; VAR I3:BGN; VAR N3:INTEGER; P:INTEGER )
```

Input

I1, I2 : Long integers of 16 digits representing the mantissas involved in the arithmetic operation.
N1, N2 : Respective integer exponents associated with I1 and I2.
S1 : Either "+", "-", "*", or "/"; represents the arithmetic operation to be performed.
P : If P = 1, then the arithmetic operation and result will be displayed on the screen. This feature can be used as a debugging aid.

Output

I3 : Long integer mantissa of result.
N3 : Integer exponent of result.
Note that the logic flow of EP is I1:N1 S1 I2:N2 := I3:N3.

```
SH ( VAR X:REAL; ID:BGN; N,P:INTEGER )
```

Input

ID : Long integer mantissa of the pseudo extended precision variable to be converted to a real type.
N : Respective integer exponent associated with ID.
P : If P = 1, then the extended precision value will be displayed along with the converted real value.

Output

X : The real type variable with a value converted from ID AND N.

```
VU ( ID:BGN; N:INTEGER )
```

Input

ID : Long integer mantissa of the extended precision variable to be displayed.
N : Associated integer exponent.
Note that VU is equivalent to the WRITE procedure.

```
ESQRT ( C:BGN; IC:INTEGER; VAR RT:BGN; VAR IRT:INTEGER; P:INTEGER )
```

Input

C : Long integer mantissa of the extended precision variable for which the square root is to be calculated.
IC : Respective integer exponent associated with C.
P : If P = 1, then the arithmetic operations within ESQRT will be displayed on the screen. This feature can be used as a debugging aid.

Output

RT : Long integer of 16 digits representing the mantissa of the extended precision square root.
IRT : Respective integer exponent associated with RT.

The EXTPREC unit has been used for numerical methods
contd.

programmed in Pascal which have produced poor results using the 7 significant digit precision (e.g., power method for determining matrix eigenvalues). Listing 2 is an example of a simultaneous solution of two linear equations by Gaussian elimination. The algorithm is programmed in both normal precision and extended precision using EXTPREC. The matrix representing the coefficients of the equations is of the type that generally gives poor results in normal or single precision. The equations are as follows,

$$0.00003 X[1] + 3.0 X[2] = 2.900001$$

$$1.0 X[1] + 1.0 X[2] = 1.0$$

The exact solution is $X[1] = 1/30$ and $X[2] = 29/30$. The results of the single precision and of the extended precision solutions are shown in Listing 2. Notice that there is approximately 5 per cent error in the single precision solution for $X[1]$. Listing 2 also shows a one to one comparison between the single precision and the extended precision implementation of the Gaussian elimination algorithm.

The ESQRT procedure included in EXTPREC provides an example of how extended precision transcendental procedures can be developed and added to the intrinsic unit. Listing 3 is a short program which demonstrates the ESQRT procedure.

There are a few additional comments concerning the use of EXTPREC. Comparing variables in conditional statements (e.g., greater than, less than) is done by considering the magnitudes of both the long integer mantissas and their associated integer exponents. Absolute values are obtained by multiplying the pseudo extended precision variable by itself using EP, and then taking the square root using ESQRT. Efficient use of memory with respect to programming and to the number of variables is emphasized because of the additional memory needed by EXTPREC. Extended precision operations using EXTPREC are slower than normal precision, but considering the alternative, speed should not be an issue.

As stated previously, extended precision is an effective means of reducing round-off error. The value of the EXTPREC unit is that it provides extended precision capability to Apple's implementation of UCSD Pascal that otherwise would not be available.

contd. on pg 26

Feeding at the Trough contd. from pg 21

DCCONTROL.TEXT
DCCTL.TEXT - Paul H. Kimpel

Here we have yet another assembly language program for talking to I/O devices. This is a terminal emulator program which controls communications between an external console and a modem, with optional echoing to a printer. The author has written the program for CCS 7710A Asynchronous Serial Interfaces in slot 3 (CONSOLE:) and slot 1 (PRINTER:) and an Apple Communications Card in slot 2 (REMIN:/REMOUT:), a combination unlikely to be duplicated (though it would be possible to adapt it to your own hardware). But the program is well worth looking at for the way in which Paul handles the polling of the devices and the queuing of I/O in both directions, nicely accomodating the widely different baud rates of the three devices. DCCONTROL.TEXT is the Pascal host which simply calls the assembly language in DCCTL.TEXT. This program originally came from the San Antonio Appleased User Group and reached PIG via an exchange with the Dallas Apple Corps/Fort Worth Apple User Group.

KINETC.STR.TEXT - Terry Pundlak

Finally, a beautiful graphics program (which also makes music) to round out the disk. Terry based the graphics on the "Kinetic String Art" algorithms in a "Byte" article by Louis Cesa and added the accompanying music himself. This program came from Apple Net (?), also via the DAC/FWAUG route. It's a good thing there weren't programs like this when I was in college. If we'd had this to watch when we were feeling lazy, we'd never have gotten any work done.

Thanks to all contributors, and keep those programs coming in! We are especially pleased to receive programs from WAP members (and others) outside the Washington area. If you have a contribution for the library or the column, please contact me at (301) 445-1583, on the WAP BBS (WAP284), or on CompuServe (73075,1171). Contributions may be mailed to me in care of the club office.

That cleans the Trough!



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Beating "Round-Off" contd from pg 25
Listing 1

The following program is an Apple Pascal intrinsic unit for performing extended precision operations with 16 significant digits. Refer to the Apple Pascal Language System documentation for attaching EXTPREC to a library.

(*SS*) {Compiler swapping option}

UNIT EXTPREC; INTRINSIC CODE 23 DATA 24;

INTERFACE

TYPE BGN = INTEGER[16];

VAR G : TEXT; {Used to def. output file in main program for VU}

PROCEDURE EP(I1:BGN;N1:INTEGER;S1:CHAR;I2:BGN;N2:INTEGER;
VAR I3:BGN;VAR N3:INTEGER;P:INTEGER);

PROCEDURE ST(X:REAL; VAR ID:BGN; VAR N:INTEGER;P:INTEGER);

PROCEDURE SH(VAR X:REAL;ID:BGN;N,P:INTEGER);

PROCEDURE ESCR(C:BGN;IC:INTEGER;VAR FT:BGN;VAR IRT:INTEGER;P:INTEGER);

PROCEDURE VU(ID:BGN;N:INTEGER);

IMPLEMENTATION

PROCEDURE EP; {Performs arithmetic operations}

CONST E16 = 1000000000000000;

VAR K1 : INTEGER[33];

K2 : INTEGER[17];

NM : INTEGER[18];

M,N : INTEGER;

S2 : CHAR;

PROCEDURE DI; {Division}

BEGIN

IF I2 = 0 {Dividing by zero?}

THEN BEGIN

WRITELN('...DIVIDE CHECK, EXITING PROGRAM...');

EXIT(PROGRAM)

END;

IF I1 = 0 {If dividend eq. zero, then quotient eq. zero}

THEN BEGIN

I3 := 0;

N3 := 0;

EXIT(DI);

END;

K2 := E16*10;

K1 := I1*E16*100; {Put dividend mantissa into 33 digit buffer}

N3 := N1-N2-1; {Calculate exponent of quotient}

NM := K1 DIV I2; {Calculate quotient mantissa}

NM := (NM+5) DIV 10; {Round-off mantissa}

IF NM DIV K2 = 0 {Check number of digits in mantissa}

THEN I3 := NM {If 16 digits, then okay}

ELSE BEGIN

NM := (NM+5) DIV 10; {If 17 digits, divide by 10}

N3 := N3+1; {and increment exponent by 1}

I3 := NM;

END

END;

PROCEDURE MU; {Multiplication}

BEGIN

IF (I1 = 0) OR (I2 = 0) {Multiplying by zero?}

THEN BEGIN

I3 := 0; {If so, product equals zero}

N3 := 0;

EXIT(MU); {Return to main}

END;

K2 := E16*10;

K1 := I1*I2; {Calc. product mantissa to 33 digits}

N3 := N1+N2; {Calc. exponent of product}

NM := K1 DIV E16*10; {Scale-down mantissa to 17 digits}

NM := (NM+5) DIV 10; {Round-off mantissa}

IF NM DIV K2 = 0

THEN I3 := NM {If 16 digits, then okay}

ELSE BEGIN

N3 := N3+1; {If 17 digits, then incr. exp. by 1}

NM := (NM+5) DIV 10; {and divide mantissa by 10}

I3 := NM;

END

END;

PROCEDURE AS; {Addition and Subtraction}

VAR J1,J2 : INTEGER[17];

BEGIN

IF (I1 = 0) OR (I2 = 0) {If either var. zero, take shortcut}

THEN BEGIN

IF S1 = '+'

THEN I3 := I1+I2 {One summand is zero}

ELSE I3 := I1-I2; {Either minuend or subtrahend is zero}

N3 := N1+N2; {One exponent is zero}

EXIT(AS) {Return to main}

END;

N3 := ABS(N1-N2); {Get abs. diff. of exponents}

J1 := I1; {Equate I1,I2 mantissa values to J1,J2}

J2 := I2;

IF N1 >= N2 {Test for larger exponent}

THEN BEGIN

FOR N := 1 TO N3 {Shift J2 to add to J1}

DO J2 := (J2+5) DIV 10;

N3 := N1; {Equate return exponent to N1}

END

ELSE BEGIN

FOR N := 1 TO N3 {Shift J1 to add to J2}

DO J1 := (J1+5) DIV 10;

N3 := N2 {Equate return exponent to N2}

END;

IF S1 = '+' {If addition, add mantissas}

THEN NM := J1+J2

ELSE NM := J1-J2; {else subtract J2 from J1 mantissas}

IF NM DIV (10*E16) = 0 {Check mantissa for less than

{16 digits}

THEN BEGIN

IF (NM DIV E16 = 0) AND (NM < 0)

contd.

```

    THEN REPEAT
      NM := NM*10; {Scale-up mantissa}
      N3 := N3-1; {and adjust exponent result}
    UNTIL NM DIV E16 > 0; {until 16 digits}
  END
ELSE BEGIN {Mantissa is 17 digits}
  N3 := N3+1; {Adjust exponent result}
  NM := NM DIV 10 {Scale-down by ten}
END;
I3 := NM
END;

PROCEDURE VU2(ID:BN;N:INTEGER); {Used by EP to write arithmetic}
VAR S3 : STRING[17]; {operations to screen}
BEGIN {Uses string to write extended precision number}
  IF ID < 0 {Set S2 to sign of mantissa}
    THEN S2 := '-' ELSE S2 := '';
  IF ID < 0
    THEN ID := -ID; {Make mantissa positive if negative}
  STR(ID,S3); {Convert mantissa to string}
  INSERT('.',S3,2); {Place decimal after 1st digit}
  WRITELN(S2,S3,'E',N); {Write ext. prec. value to screen}
  IF S2 = '-'
    THEN ID := -ID {Reset sign of mantissa}
END;

BEGIN
CASE S1 OF {Determine arithmetic operation}
  '+','-': AS;
  '*': MU;
  '/': DI;
END;
IF P = 1
  THEN BEGIN {Write arithmetic operation to screen}
    VU2(I1,N1);
    WRITELN('      (' ,S1,')');
    VU2(I2,N2);
    WRITELN('_____');
    VU2(I3,N3);
    WRITELN;
    WRITELN;
  END;
END;

PROCEDURE ST; {Stretch real to extended precision variable}
CONST E13 = 100000000000;
E10 = 1000000000;
VAR D : REAL;
NM : INTEGER;
S2 : CHAR;
S3 : STRING[17];
BEGIN
S2 := ''; {Initialize variables}
ID := 0;
N := 0;
IF X < 0 THEN BEGIN
  IF X < 0 THEN S2 := '-' ELSE S2 := ''; {Get sign of ID}
  D := ABS(X); {Get absolute value of mantissa}
  N := 3; {Set exponent to normalization value}

```

cont'd.

```

IF D < 1.OE3 {If abs. value less than 1000}
  THEN REPEAT
    D := D*100.0/10.0; {Scale-up value}
    N := N-1; {and adjust exponent}
  UNTIL D >= 1.OE3; {until value larger than 1000}
IF D >= 1.OE4 {If abs. value more than 10,000}
  THEN REPEAT
    D := D/10.0; {Scale-down value}
    N := N+1; {and adjust exponent}
  UNTIL D < 1.OE4; {until value less than 10,000}
NM := TRUNC(D); {Set NM to 1st 4 digits of D}
D := D-NM; {Set D to remainder}
ID := NM*E13; {Put NM in 1st 4 digits of ID}
ID := ID+ROUND(D*1.OE3)*E10; {Put next 3 digits in D}
END;
IF P = 1
  THEN BEGIN {Write converted value to screen}
    STR(ID,S3); {Convert mantissa to string}
    INSERT('.',S3,2); {Place decimal after 1st digit}
    WRITELN(X, ' -> ',S2,S3,'E',N); {Write to screen}
  END;
IF S2 = '-'
  THEN ID := -ID {Set sign of mantissa}
END;

PROCEDURE SH; {Shorten extended precision value to real}
CONST E13 = 100000000000;
E10 = 1000000000;
VAR J : INTEGER[16];
M1,M2,I : INTEGER;
S2 : CHAR;
S3 : STRING[17];
BEGIN
J := ID DIV E13; {Next two steps drops last twelve}
J := J*E13; {digits of mantissa}
J := ID-J; {J equals last twelve digits}
M1 := TRUNC(ID DIV E13); {M1 is 1st 4 digits of mantissa}
M2 := TRUNC(J DIV E10); {M2 is next 4 digits of mantissa}
X := M1/P*ROPIEN(3)+M2/P*ROPIEN(6); {Convert to real with}
IF N >= 0 {value between 1E3-1E4}
  THEN FOR I := 1 TO N {Scale X to correct value}
    DO X := X*10.0 {Scale-up if exponent larger than zero}
  ELSE FOR I := -1 DOWNTO N
    DO X := X/10.0; {Scale-down if exponent less than zero}
IF P = 1 THEN
  BEGIN {Write converted value to screen}
  IF ID < 0 {Get sign of mantissa}
    THEN S2 := '-' ELSE S2 := '';
  IF ID < 0 {Make mantissa positive if negative}
    THEN ID := -ID;
  STR(ID,S3); {Convert mantissa to string}
  INSERT('.',S3,2); {Place decimal after 1st digit}
  WRITELN(S2,S3,'E',N, ' -> ',X); {Write to screen}
  END;
END;

PROCEDURE ESQR; {Extended Precision Square Root}
VAR H1,H2,H3,HP :BN;
IH1,IH2,IH3,IHF : INTEGER;

```

```

BEGIN
  IF C < 0 THEN BEGIN {Exit if less than zero}
    WRITE('...ESQRT ARGUMENT LESS THAN 0, EXIT PROGRAM...');
    EXIT(PROGRAM);
  END;
  IF C = 0 THEN BEGIN {Take shortcut if C equals zero}
    RT := 0;
    IRT := 0;
    END
  ELSE BEGIN
    H2 := 10000000000000000;
    IH2 := 0;
    HF := 5000000000000000;
    IHF := -1;
    REPEAT {Iterative equation is X2=.5(X1+C/X1) where}
      H1 := H2; {X is square root, and C is input argument}
      IH1 := IH2;
      EP(C,IC,'/',H1,IH1,H3,IH3,P);
      EP(H3,IH3,'+',H1,IH1,H3,IH3,P);
      EP(H3,IH3,'*',HF,IHF,H2,IH2,P);
    UNTIL (H2+H1) DIV 2 = H2;
    RT := H2; {Return mantissa value of square root}
    IRT := IH2; {Return exponent value of square root}
  END;
END;

PROCEDURE VU; {WRITE for extended precision variable}
  VAR S2 : CHAR;
      S3 : STRING[17];
  BEGIN {VU is equivalent to WRITE procedure}
    IF ID < 0 {Get sign of mantissa}
      THEN S2 := '-' ELSE S2 := ' ';
    IF ID < 0 {Make mantissa positive, if negative}
      THEN ID := -ID;
    STR(ID,S3); {Convert mantissa to string}
    INSERT('.',S3,2); {Place decimal after 1st digit}
    WRITE(G,S2,S3,'E',N); {Write value to file G}
  END;

BEGIN (* MAIN *)
END. (* MAIN *)

```

Listing 2

The following program example demonstrates how the EXTPREC unit is used to convert an Apple Pascal program from normal precision to extended precision. The solution to the problem is shown at the end of the program listing.

```

PROGRAM EXAMPLE1; {for demonstrating use of EXTPREC unit}

USES EXTPREC;

CONST
  M = 2; {Set system size, i.e., M x M}
TYPE
  RANGE = 0..M;
  EXP = INTEGER;

```

```

MAT = ARRAY[RANGE,RANGE] OF REAL;
EPMAT = ARRAY[RANGE,RANGE] OF BGN;
XMAT = ARRAY[RANGE,RANGE] OF EXP;
VEC = ARRAY[RANGE] OF REAL;
EPVEC = ARRAY[RANGE] OF BGN;
XVEC = ARRAY[RANGE] OF EXP;
INDEX = -M..M;

VAR
  N : RANGE; {Number of rows and columns}
  A : MAT; {Normal precision coefficient matrix}
  AEP : EPMAT; {Ext. prec. mantissas of coefficient matrix}
  AX : XMAT; {Ext. prec. exponents of coefficient matrix}
  B : VEC; {Normal precision force vector}
  BEP : EPVEC; {Ext. prec. mantissas of force vector}
  BX : XVEC; {Ext. prec. exponents of force vector}
  X : VEC; {Normal precision solution}
  I,J,K : INDEX;

```

----- GAUSSIAN ELIMINATION -----

```

PROCEDURE GAUSSELIM;
VAR I,J,K : INDEX;
  C : REAL; {Normal precision intermediate value}
  CEP : BGN; {Extended precision intermediate mantissa value}
  CX : EXP; {Extended precision intermediate exponent value}
  DUMEP : BGN; {Extended precision scratch mantissa}
  DUMX : EXP; {Extended precision scratch exponent}

```

PROCEDURE REDUCE; {Obtains upper triangular matrix from A}

```

BEGIN
  FOR K:= 1 TO N-1 DO BEGIN
    FOR I:= K+1 TO N DO BEGIN

```

```

{Normal precision reduction}
NP  C:= A[I,K];
NP  IF C = 0.0
NP  THEN (* DO NOTHING *)
NP  ELSE BEGIN
NP    C:= C/A[K,K];
NP    FOR J:= K+1 TO N DO
NP      A[I,J]:= A[I,J]-A[K,J]*C;
NP      H[I]:= H[I]-H[K]*C;
NP    END;

```

```

{Extended precision reduction}
EP  CEP:= AEP[I,K]; CX:= AX[I,K];
EP  IF CEP = 0
EP  THEN (* DO NOTHING *)
EP  ELSE BEGIN
EP    EP(CEP,CX,'/',AEP[K,K],AX[K,K],CEP,CX,0);
EP    FOR J:= K+1 TO N DO BEGIN
EP      EP(AEP[K,J],AX[K,J], '*', CEP,CX,DUMEP,DUMX,0);
EP      EP(AEP[I,J],AX[I,J], '-', DUMEP,DUMX,AEP[I,J],AX[I,J],0);
EP    END;
EP    EP(BEP[K],BX[K], '*', CEP,CX,DUMEP,DUMX,0);
EP    EP(BEP[I],BX[I], '-', DUMEP,DUMX,BEP[I],BX[I],0);
EP  END;

```

```

END;
END;

```

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END;

PROCEDURE BACKSUB; {Returns solution in force vector}

BEGIN

FOR I:= -N TO -1 DO BEGIN

{Normal precision back-substitution}

NP C:= B[-I];

NP IF I = -N

NP THEN (*DO NOTHING*)

NP ELSE FOR J:= -I+1 TO N DO

NP C:= C-A[-I,J]*H[J];

NP H[-I]:= C/A[-I,-I];

{Extended precision back-substitution}

EP CEP:= BEP[-I]; CX:= EX[-I];

EP IF I = -N

EP THEN (*DO NOTHING *)

EP ELSE FOR J:= -I+1 TO N DO BEGIN

EP EP(AEP[-I,J],AX[-I,J], '*', BEP[J], EX[J], DUMEP, DUMX, 0);

EP EP(CEP, CX, '-', DUMEP, DUMX, CEP, CX, 0);

EP END;

EP EP(CEP, CX, '/', AEP[-I,-I], AX[-I,-I], BEP[-I], EX[-I], 0);

END;

END;

BEGIN

REDUCE;

BACKSUB;

END;

~~GAUSSIAN ELIMINATION~~

BEGIN {Main program}

REWRITE(G, 'CONSOLE:'); {G defined as "text" in EXIPREC unit}

N:= N; {Sets size of matrices}

{Input linear system}

A[1,1]:= 0.00003; A[1,2]:= 3.00000; H[1]:= 2.900001;

A[2,1]:= 1.00000; A[2,2]:= 1.00000; H[2]:= 1.000000;

{Stretch input to extended precision}

FOR I:= 1 TO N DO BEGIN

FOR J:= 1 TO N DO ST(A[I,J], AEP[I,J], AX[I,J], 0);

ST(H[I], BEP[I], EX[I], 0);

END;

GAUSSELIM; {Solve linear system}

{Print the solution}

WRITELN(G, 'SOLUTION FOLLOWS...');

FOR K:= 1 TO N DO BEGIN

SH(X[K], BEP[K], EX[K], 0); {Shorten extended to normal precision}

WRITE(G, 'X', K, ':=' NP: ', H[K]:10);

WRITE(G, ' EP: ', X[K]:10, ' (');

VU(BEP[K], EX[K]); WRITELN(G, ')'); {Write ext. prec. with VU}

END;

END. {Main program}

SOLUTION FOLLOWS...

X[1]:= NP: 3.17891E-2 EP: 3.33333E-2 (3.333333333333333E-2)

X[2]:= NP: 9.66667E-1 EP: 9.66667E-1 (9.666666666666667E-1)

Listing 3

The following program demonstrates the use of the ESQRT procedure. The extended precision square roots of the whole numbers between 0 and 10 are included at the end of the program listing.

PROGRAM EXAMPLE2; {for demonstrating the ESQRT procedure}

USES EXIPREC;

VAR X : REAL;

Y : BGN; {Extended precision mantissa of X}

IY : INTEGER; {Extended precision exponent of X}

YRT : BGN; {Extended precision mantissa of square root}

IYRT : INTEGER; {Extended precision exponent of square root}

N : INTEGER; {Indexing variable}

BEGIN {Find square roots of whole numbers from 0 to 10}

REWRITE(G, 'CONSOLE:'); {G defined as "text" in EXIPREC unit}

WRITELN(G, 'WHOLE NUMBERS AND SQUARE ROOTS FOLLOW...');

FOR N:= 0 TO 10 DO BEGIN

X := N; {Set X to real value}

ST(X, Y, IY, 0); {Stretch real value to extended precision}

ESQRT(Y, IY, YRT, IYRT, 0); {Find square root}

WRITE(G, X, ' ('); VU(Y, IY);

WRITE(G, ') ==> '); VU(YRT, IYRT);

WRITELN(G);

END;

CLOSE(G, LOCK);

END.

WHOLE NUMBERS AND SQUARE ROOTS FOLLOW...

0.00000 (0.ED) ==> 0.ED

1.00000 (1.000000000000000ED) ==> 1.000000000000000ED

2.00000 (2.000000000000000ED) ==> 1.414213562373095ED

3.00000 (3.000000000000000ED) ==> 1.732050807568878ED

4.00000 (4.000000000000000ED) ==> 2.000000000000000ED

5.00000 (5.000000000000000ED) ==> 2.236067977499790ED

6.00000 (6.000000000000000ED) ==> 2.449489742783178ED

7.00000 (7.000000000000000ED) ==> 2.645751311064591ED

8.00000 (8.000000000000000ED) ==> 2.828427124746190ED

9.00000 (9.000000000000000ED) ==> 3.000000000000000ED

1.00000E1 (1.000000000000000E1) ==> 3.162277660168380ED

6

TWO PASCAL BOOK REVIEWS

by Robert C. Platt

APPLE PASCAL: A HANDS-ON APPROACH
by Arthur Luehrmann and Herbert Peckham
(1981 McGraw Hill, pp. 430 \$16.95)

This book is intended for the first-time programmer. Although it does not require prior knowledge of any programming language, it goes out of its way to dispell any misimpressions which might have been created by the prior study of Basic. The authors tackle a difficult assignment with great skill. Not only does the text provide a gradual introduction to all important features of the Pascal language, it also integrates an introduction to the UCSD p-system.

The book consists of fourteen sessions. Each session consists of step-by-step instructions on using the features of Apple Pascal. The sessions consist of a good mix of activities and explanatory text. Although it is possible to use this book for successful self-study, I have also used it as a text for live instruction. Each session ends with a summary of all new material, cumulative tables showing language and system features introduced, and illustrative problems. These problems include programming assignments. The answers to the odd number problems are included in an appendix.

A common trap in books on programming is too heavy use of number oriented examples. Instead, the authors selected sample problems which use the apple game paddles for input, and use Hi-res graphics and musical notes as output. Arithmetic operations and numerical data types are not introduced until session 10. However, the book does give appropriately broad coverage to the features of Pascal, including recursive procedures, records and files, and scalar data types.

DRAWBACKS

The book assumes that the user has only one disk drive; in practice two disk drives are needed for the smooth operation of the p-system, and I recommend that both drives be used when working through the activities in the book. This requires using disks APPLE1: and APPLE2: instead of APPLE0:. I also would cover GOTOXY, PAGE, and IORESULT in any introduction to Pascal, although these built-in features are not covered.

The one concept which gives students who work through this book the most trouble is the difference between functions, variables and procedures. Perhaps the authors should have included more explanatory material and introduced the difference between passing procedure parameters by name and by value at the point where they introduce the function/procedure distinction.

One annoying technique upon which the authors frequently rely is to lead the user through deliberate mistakes and then explain the error messages. This can be a useful device in a tutorial, but the students which I observed began to skip executing the negative examples after a while.

INTRODUCTION TO THE UCSD P-SYSTEM
by Charles Grant and Jon Butah
(1982 Sybex, pp. 300 \$18.00)

Needless to say, Apple Computer's manuals are not designed for use by a novice. Grant and Butah have filled the breach by offering a step-by-step tutorial

introduction to the p-system. (The Pascal language is used only in examples.) The book assumes no prior knowledge of the Apple or operating systems. Chapter 1 introduces the basics, including what a floppy disk looks like. Chapter 2 includes a tutorial which edits, compiles and runs a very short Pascal program. (This material is covered in greater depth by Luehrmann and Peckham.) Chapters 3 and 4 gives in-depth coverage of each feature of the p-system filer and editor, including tutorial examples and a well-organized reference guide to each subcommand. The final chapters are devoted to the creation of short and long Pascal programs including the use of units, the linker and include files.

The principle drawback to this book is that it is geared toward the p-system in general rather than the Apple implementation. As a result, readers must make a certain number of mental conversions. For example, the authors refer to the ETX key rather than CTRL-C. Also Appendix B on system configuration will not be of much use to the novice Apple user as the system comes more or less pre-configured. The book fails to cover the shift-key modification and the use of CTRL-E, CTRL-W and CTRL-T for capitalization of upper and lower case text. Nor is the use of CTRL-A and CTRL-Z to horizontally scroll on a 40 column screen covered.

On the whole, I recommend this book as a useful introduction and reference for the neophyte p-system user. It will serve as a useful quick reference to the editor and filer, which is a weak point in the Luehrmann and Peckham book.

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THE FRIDAY REPORT

by Leon H. Raesly



Is your business growing? Or declining? Or static? How do you know? These are very important management questions, and all too often in a small business, no one knows. Oh, you have a "seat of the pants" feeling about which direction your business is going, but you don't know. However, the Friday Report could tell you. And using the Friday Report in your business could open up for you the myriad of possibilities that VisiCalc or any spreadsheet can offer.

My primary business (where I earn the money to play with this Apple!) is a Community Mental Health Center. I will use it as an example for this article. You will have to apply the concepts to your business. And even though this is an article on VisiCalc, there will be no template listing at the end of the article. I will discuss the concepts, and you will need to make your own template. Each business is so unique that it is not possible to make even a modestly universal template.

I use an Apple II+ (but the upstart //e will do!) with a Videx 80 column board, and a 16K Board - a necessity for this template because of minimum size. I also use The Spreadsheet 2.0, but any spreadsheet will do fine. Further, I have a Saturn 128K board in place, giving me 157K of user memory, but you won't need that. At least at first! Later, if your Friday Report expands as mine did, you probably will!

So on with the article. Our Friday Report is divided into three areas. These are the weekly (Friday, of course!) data input area, the weekly formula area, and the summary area. I have arranged the first two areas in a matrix, with the names of the columns across the top, and the date of the report going down the second column. For convenience in reading, I have also added a number column as the first and last column. This not only aids reading by my partner and me, but also tells me how many weeks comprise the data base. Currently, I have 40 weeks of data. The general layout looks like this:

	A	B	C	.....	AH	AI	AJ
1	#COL	DATECOL	COL#3	.....	COL#34	COL#35	#COL
2	1	1,07	..		..	..	1
3	2	1,14	..		..	..	2
:	:	:	:		:	:	:
:	:	Weekly Data Area			Weekly Formula Area		:
:	:	:	:		:	:	:
40	39	9,02	..		..	..	39
41	40	9,09	..	.....	..	..	40
42	Last Entry		-----Last Entry				
43	#COL	DATECOL	COL#3	.....	COL#34	COL#35	#COL:
45			@SUM		@SUM	@SUM	
:							
46	Weekly Summary Formula Area						
:							
50	Monthly Summary Formula Area						
:							
60	Other Summary Formula Area						

In the simulated layout above, the following abbreviations are used: # means number; COL is COLUMN. In the DATE COLUMN, the integer value is the month, and the decimal is the two digit date of the day (Friday of each week). The layout of the template was developed over time, to make it simple for my staff to enter data, and to use the ORDER of calculation within VisiCalc to my advantage. I sure am glad that

VisiCalc has a M)ove command!

So let's talk further about the general layout. The Weekly Data Area is on the left, and first. Thus, all data is entered in a contiguous row. The Weekly Formula Area is on the right side of the week's row. This makes each week's entry easier. The template is only set-up for the current number of weeks. Thus, when first developed, it had only one row for the week, the next row was the "Last Entry" row. This is an important part of the design, and when used as shown below, lets an Insertion by Row automatically change the formulas. All @SUM's include the title row, and the Last Entry row. In the layout above, @SUMming column 3 would use the following formula: @SUM(C1...C42), thus encompassing all the data. When a row is inserted in VisiCalc with the CURSOR at the Last Entry row (row 42), VisiCalc inserts a Row ABOVE the cursor, thus INSIDE the summation command. When a row (or column) is inserted inside a @SUMmation row (or column), VisiCalc automatically extends the summation formula to include that row.

Hence, if the CURSOR was placed over the word Last, in row 42, and the Insert a Row command used, VisiCalc would insert a new Row at 42, make the Last Entry row now 43, and change the summation formula to read @SUM(C1...C43). How's that for Neat! So the Last Entry line is an important part of the design, for without it, you would have to manually change all the formulas each time you inserted a line.

You will note in the design above, that I have repeated the titles in the row right below the Last Entry row. Although in the VisiCalc model I use the Titles command to show both the titles at the top of the screen, and the date at the left side of the screen (for operator convenience), the titles below the Last Entry row are for the convenience of the people reading the report. When you get quite a number of weeks entered (and long before the year is up!), it gets hard to go from the top of the print-out and down a column to the current week. The extra set of titles makes it much easier to read!

I also use variable column width with Spreadsheet 2.0. This saves much space on printing, enabling me to get all of my model on a single sheet of paper (14 5/8 inches wide). With compressed type on the Epson MX80 printer, I am able to print 254 characters per line. In addition, since I use the variable width column, I can get more columns displayed on the screen, thus facilitating data entry.

So now let's talk about the data and formulas used. There are several types of data needed, and although the types will be the same for all organizations, the specific nature will vary from one organization to another. The types generally useful are: 1. Cash accounts 2. Cash flow amounts 3. Cash flow sources 4. Customer information 5. Billing information 6. Expense information (both those paid, and Accounts Payable) 7. Salary information 8. Tax information. Each of these will have both a raw data component, and a computed formula component.

1. Cash accounts. This portion is rather straight forward. Most businesses have at least four accounts, and many six cash accounts that they work with. Let's look at the ones I use, and see how they fit in the model.

contd.

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We have two checking accounts, a general checking, from which we pay all of our payments (except salary). The second one is, of course, a salary account. Thus, when we pay a salary check, we can be pretty sure that there can be no bank (or internal to our organization) foul-up which could cause an employee's paycheck to accidentally bounce. This can be very unsettling to morale!

The other accounts we have are the regular statement savings account (which earns .0525 interest), where all income is deposited, and three others. These are all in a Savings & Loan, and gives us several advantages. First, all deposits are immediately usable, no hold is put on our deposits. Second, we are able to wire transfer funds to any regular account by simply picking up the telephone. Since funds are never actually handled after they are deposited, we have greater employee safety, since transfers can only go to specified accounts.

The other accounts are: Back-up Fund, Trust Fund, and Salary Savings. These are all Money Market Funds, at the same Savings & Loan, and we earn .095 interest compounded daily on these accounts currently. They are used in the following manner.

The Trust Fund holds the taxes, FICA, SUTA and other amounts that have been allocated for future payment. Thus, when a salary is paid, immediately the appropriate amount for taxes is also withdrawn and placed in the Trust Fund. Therefore, when taxes are due, we have them already (and have been earning interest). We also know what percentage of our average income we need for salaries (in our case it is 50%), and we transfer 50% of all deposits into the Salary Savings at the time we make a deposit. Again, when salaries are due, we already have the money, and have been earning interest.

The final account is the Back-up Fund. We know from history (from the Friday Report, of course!) that there are certain cyclical times when income goes down, yet expenses do not. The major one is the summer, when income is off (down) by 30% a month. Thus, we need to have approximately 10% of our yearly gross income in reserve for this time. The answer is simple, of course. We transfer 10% of each deposit throughout the year into the Back-up Fund, and it is ready for us by summer, when we need it. And, of course, we are earning interest on it while it is waiting there. Each year we earn a goodly sum from these techniques.

So with such a sophisticated financial system, it becomes clear what some of the needs, and advantages, of the Apple are for us (or anyone else using a related system).

In terms of the Friday Report, we need several bits (not bytes!) of information. We need to know the actual amount of cash in each of these accounts, and also the total amount of cash on hand, and the amount of "discretionary" cash (total cash on hand, minus the Trust Fund). So the first four columns in the Raw Data area of the Friday Report are these bank and savings account balances, and the first two columns of the formula area are the summation of the cash accounts, and the summation of the cash accounts minus the Trust Fund. These are both @SUM functions in VisiCalc. You may also have additional cash information you need for your company. Perhaps you might also include a column for Petty Cash.

2. Cash flow amounts. This information is actually all formulas, and consists of several parts: total weekly income, total expenses + % for salary + % for taxes + % for reserves, and also total weekly income minus the formula above (which gives you the weekly increase or

decrease in available cash). Also useful is a column subtracting this weeks total cash from last week's total cash, giving you the net increase (or decrease) in cash-on-hand. This should equal the expense + salary paid + taxes paid, and becomes a check on the accounts, so that you can easily see if funds are missing, or not recorded in your cash account records. A way of checking up on the honesty (or accuracy) of your staff without making it obvious.

3. Cash Income sources. Here you breakdown your cash income into as many sources as are appropriate for your business. In our case we use columns for Client cash (weekly cash payments), Insurance payments, List Rental (we have a list of 29,000 mental health professionals in the Middle Atlantic states which we rent to anyone interested in using all or part), Interest income, and Miscellaneous income. Use whatever is appropriate for your business.

4. Customer information. We use a count of clients, a count of new clients, how many terminated, how many do not have insurance. Also, in the formula area of the weekly columns, we now can add other data, such as % of total clients without insurance, % with insurance, this weeks average client payment (which is, of course, Client cash income divided by # of clients), average insurance payment per client (overall) and average insurance payment per client with insurance, % of total clients terminated, as well as other related data.

5. Billing information. Again, we simply make a count, and enter the data. Outstanding bills not yet printed or mailed, number of bills waiting receipt of insurance payments, and number of new clients for whom no bill has ever been sent. We use colored tags on folders to indicate this information, and these are added, or removed, whenever work is done on the account. Thus, weekly, we only have to count the tags by their colors. In the formula section we can now get additional information. Since we now can get the average insurance payments per client from the section before, we can also get a fairly accurate picture of our accounts receivable, which we cannot get in the more traditional way of simply totalling outstanding accounts.

6. Expense information. Here simply enter the total of those expenses paid (except salaries). Also enter a column for Outstanding Accounts Payable (we use the VisiCalc Accounts payable program in last months issue of the PI to maintain this information, and just enter the correct total for this week.)

7. Salary information. The total amount of salary paid is entered in this column.

8. Taxes paid. Simple enough, just enter the amount of taxes actually paid this week.

Next in the model are the summations of each column. Certain columns are not important to sum, other are. For instance, it is important to know the total number of terminated clients year to date, or the year to date total of insurance payments, so those columns are summed. But it does not provide any useful information to sum the amount of cash on hand each Friday for any bank or savings account.

Now on to the Weekly and Monthly Summary areas. Here, I use both the VisiCalc function @SUM as well as @AVERAGE. The monthly @AVERAGE is just the weekly amount times 4.3.

The Other Summary Formula Area is just that. Summary data about any other information that is useful. Some of the ones I use are average client cash payment, average insurance payment all clients, and the average

contd.

Insurance payment per insurance client (remember the column where we counted the non-insurance clients?).

Also very useful to me is the projected yearly rate of business. The easiest way is simply the total of all income to date, divided by the number of weeks to date, and multiply by 52. So, while I also have this column within each weeks row, here the longer time period averages out the weekly changes, and gives a more stable picture. I am sure that you could see many other statistical details for your business that would be important aids in understanding your business' health (or unhealth!).

So there you have it, the Friday Report. It takes one person on my staff about 30 minutes a week to prepare this report, then P)rint it. The steps are simple. First, she loads the last weeks template into VisiCalc. Second, she I)nserts a row at the Last Entry row. Then she R)eplicates the formulas from the last half of the row above (in the Formula Area) into the new row. Third, enter the new data in the Raw Data Area, and have VisiCalc recalculate with the ! command (we have the G)lobal R)ecalculate command set to M)anual, so that the operator does not have to wait for VisiCalc to recalculate after each entry). The last two steps are to first S)ave the new copy onto disk (SAVE before anything - and everything - you know!), then P)rint the Friday Report.

Well, if you develop a Friday report for your own use, please let me know how it goes, as I would be interested. Thanks for listening.

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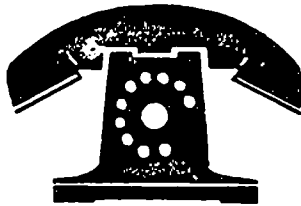
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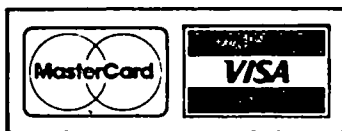
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ESCAping WITH GPLE

by J.T. (Tom) DeMay Jr.

The July 1982 WAP Journal contained an article which I wrote describing easier ways to edit APPLESOFT BASIC programs. PLE was my first choice then, and probably would still be except that the original program was improved to add global capabilities. The new version is called GPLE "Global Program Line Editor". I have been using GPLE since its release by Call-A.P.P.L.E. almost a year ago.

One of my favorite features is the ability of any key to perform the same function as a combination of several keys. These may be accessed by first pressing the ESC key and then the desired key. Several useful features are included on the GPLE master disk. For example, pressing the ESC key then the "W" key will print the address and length of the last BLOADED file. Pressing the ESC then "I" will CATALOG the disk in drive one. Similarly, the ESC key then the "2" will CATALOG the disk in drive two. ESC then "S" will print the amount of free sectors of the disk last CATALOGed. Several of the provided ESCape functions are not documented in the users guide. There is however, a program on the master disk called "ESCAPE PRINTER" which will print a complete list of the current ESCape functions.

GPLE will work with INTEGER or APPLESOFT BASIC, and some of the provided functions will only work with INTEGER BASIC. Since I seldom program in INTEGER BASIC, they are of little use to me. However, it is possible to re-define these ESCape functions at any time, and save them on a disk. The only criticism I have is that there is a limited amount of memory dedicated to these ESCape functions, and no easy way of knowing when the ESCape table is almost full.

The first thing I did was to make a backup copy of the master disk. There is no copy protection so it is a simple matter. I suggest using COPYA, or LHS COPY; either will do nicely. With the master disk locked safely in the vault, I feel confident exploring the wonders of the working copy. Next boot the copy, turn on your printer, type "PR#1", and then BRUN ESCAPE PRINTER. Use the resulting printout to determine what the undocumented ESCape functions do. Try them if you are not certain (even if you think you are). Make notes on the printout describing them. Later you can print a "users guide" to your personal ESCape table. Decide which functions you can do without, which ones you would like to modify, and then think of the new features you want to add. Keep in mind that several of these features depend on others, so if you delete a provided feature, be sure that it is not called by some other ESCape function.

By using the ESC key then the "!" key it is possible to print the left square bracket. Since this is difficult to remember, I defined the ESC "<" to be the "[" and the ESC ">" to be the "]". Simple and logical! Here are several other ESCape functions I have added:

- Print Top of memory (HIMEM)
T - 'A=115m?'*M="@fm
- Print Length of program
L - '?"PL="PEEK(175)+PEEK(176)*256-
(PEEK(103)PEEK(104)*256)m
- Print free memory (without doing garbage collection)

F - '?"FR="PEEK(111)+PEEK(112)*256-(PEEK(109)+PEEK(110)*256)m

- Print last line # executed
(useful while debugging)
Z - '?"SA "PEEK(119)+PEEK(120)*256m
- List the program using the right arrow key
u - LIST
- Print ERROR # and LINE # which caused program execution to stop. (useful if ONERR is active)
X - '?"ER "PEEK(222)" LN "PEEK(218)+PEEK(219)*256m
- List the program to the printer in slot#1
P - PR#1m?"i80N"LISTmPR#0m&m
- Read the THUNDERCLOCK in slot #3, then print the time in AM/PM format
- - @:2D0:A9 A5 20 0B C* 20 08 C* A0 01 B9 00
02 C0 15 F0 07 20 ED FD C8 4C DA 02
4C D0 03m2D00m

In the previous examples the following symbols are used:

- * - Replace this with the slot# of your THUNDERCLOCK
- @ - The ESC key. Entered by pressing the CTRL, the SHIFT, and the M keys simultaneously. (actually GPLE uses the inverse right square bracket, but that is hard to print)
- f - CTRL-F
- i - CTRL-I
- m - CTRL-M (RETURN). Entered by first pressing CTRL-O, then RETURN or CTRL-M
- u - CTRL-U

The last example requires a little explanation. By simply pressing the ESC key and then the "-" key, a short machine language program is entered and executed. I first attempted to do this using a small BASIC program but there were complications. It is possible to include all the instructions necessary to read the THUNDERCLOCK and print the time in one BASIC line, but which line # should I use? Whichever one I chose, I ran the risk of DELETing an existing program line. There was also the need to DELETE the clock program line when I was finished with it. If I forgot, it would end up as part of the program I was working on. Assembly language seemed to be the better solution. Here's how it works:

The apostrophe is used to inhibit the printing of the following functions. Next, the ESC code combined with the colon is used to enter the Monitor. Then the "2D0:" is used to tell the Monitor where to insert the machine language code. Since this is the upper part of the keyboard buffer it is a good place to insert a small machine language program. Then twenty-seven bytes are entered, separated by spaces as is always required by the Monitor. The lowercase "m" represents the RETURN key which ends the entry of data. All that is required now is to tell the Monitor where to start

contd. on pg 48

PRINTER GOSUB ROUTINES

by C. Swift, Prop.

There are times when it is convenient to prepare a master copy for duplication, and at the same time not have access to a super word processor. (From the many reviews I have read, it seems the "super" word processor has yet to reach the market.) At such times I have found much success in simply writing a program directly to my C.1toh Prowriter.

The biggest hassle, of course, is keeping track of the many commands which are needed to change to or from character size (pica, elite, etc.), underlining, activating boldface, and so on. It finally dawned on me that it would be a simple solution to put the information needed directly into the program itself in the form of GOSUBs.

Listed below is a program which does just that, AND keeps the information right on the screen in front of me where I can call on it without confusion. The slight loss of screen space is a small price to pay for the convenience provided.

Although I have not had access to printers other than the Prowriter, I see no reason why it would not work on any of its "look-alikes", and possibly on others also. At any rate, it works fine for me, and perhaps it will be of some use to you.

```
1 REM GOSUB ROUTINES
2 REM BY C. SWIFT, PROP.
3 POKE 34,0
4 GOTO 100
5 REM
6 REM *** SUBROUTINES ***
7 REM
11 PRINT CHR$( 27) CHR$( 33);: RETURN
12 PRINT CHR$( 27) CHR$( 34);: RETURN
13 PRINT CHR$( 27) CHR$( 81);: RETURN
14 PRINT CHR$( 27) CHR$( 69);: RETURN
15 PRINT CHR$( 27) "L010";: RETURN
16 PRINT CHR$( 9) "070N";: RETURN
17 PRINT CHR$( 27) CHR$( 78);: RETURN
18 PRINT CHR$( 12);: RETURN
19 PRINT CHR$( 27) CHR$( 88);: RETURN
20 PRINT CHR$( 27) CHR$( 89);: RETURN
21 PRINT CHR$( 142);: RETURN
22 PRINT CHR$( 143);: RETURN
30 REM
100 REM *** SCREEN DISPLAY ***
110 REM
120 PR#0: HOME
130 PRINT SPC(13);: INVERSE
140 PRINT " GOSUB ROUTINES "
150 NORMAL: PRINT
160 PRINT "11 ACT. BLDFAE      17 PICA (10CPI)"
170 PRINT "12 DEACT. BLDFAE   18 TOF"
180 PRINT "13 CMP.PTCH(17CPI) 19 ACT. UNDERLINE"
190 PRINT "14 ELT.PTCH(12CPI) 20 DEACT. UNDERLN."
200 PRINT "15 LEFT MARGIN(10) 21 ACT. WIDETYPE"
210 PRINT "16 LINE LENGTH(70) 22 DEACT. WIDETYPE"
220 PRINT SPC( 3);: FLASH : PRINT "****";: NORMAL
230 PRINT " ";: INVERSE
240 PRINT "START PROGRAM AT LINE 500";: NORMAL
250 PRINT " ";: FLASH : PRINT "****";: NORMAL
260 L$ = "-": FOR I = 1 TO 38: L$ = L$ # "-": NEXT
270 PRINT L$
280 POKE 34,10
```

(NOTES: The values in Lines 15 and 16 can easily be changed to fit your own needs. If you do this, be

sure to make the appropriate changes in Lines 200 and 210. Line 240 suggests starting your program at Line 500. This is arbitrary and may be changed, PROVIDED you start at a line number higher than Line 280. And one last thought: don't forget to slip a "PR#1" into your program!)

DOUBLE-TAKE MYSTERIES SOLVED by Bob Anderson

In the September issue of WAP I did a review of the Double-Take Utility disk published by the Beagle Brothers. I had tried to use the Ampersand version of the list utility in a text capture program and got strange results. In addition, there was a problem in trying to use the utilities with Diversi-DOS. The answer to my query returned the other day. The utilities were written to work in the immediate mode only. There are zero page conflicts with DOS 3.3 otherwise (the utility and DOS attempt to use the same memory locations in the zero page for temporary storage). Beagle Brothers is aware of the problem with Diversi-DOS and has an update available. Just return your purchased disk to them for a free update.

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SCREENWRITER HOTLINE

by Peter Combes

Many of us have used ScreenWriter with letter quality printers to produce material almost of publication standard. The next step in the search for quality is obviously to have the material typeset. Since typesetters use computerized equipment, can we get the typesetter's computer to read a ScreenWriter file? Guest columnist Patricia N. Holland reports on two local typesetting firms that are offering this service:

ScreenWriter (and any other word processing program that creates text files on an Apple) does a beautiful job "driving" a typesetter. It seems almost magic to type material into your Apple in the morning---and have the same copy neatly typeset---and delivered to your desk by afternoon.

Large and small publishing companies have created a demand for ways to interface, or link, word processing small computers with their sophisticated typesetting equipment. With our Apples, we can tap the same benefits sought by the publishing companies. The benefits include savings of money and time.

Think about what happens when someone types up a rough draft, then a neatly typed final copy of a manuscript. When it reaches the printing or publishing company, every keystroke must be typed again. The interface between a small computer and the typesetting equipment eliminates the need to retype the information.

A growing number of the commercial printing companies in the Washington area can handle material generated on personal computers. The printing companies try to make this service attractive and easy for their customers to use. I've used two such companies and can recommend both. They are: Naecker Brothers Lithographers in Silver Spring, Maryland and Composition Systems Inc. in Falls Church, Virginia. Both companies offer reduced typesetting prices and a quicker turn around time to customers who use computers.

For example, Naecker Brothers offers a sliding price scale based on the amount of coding the customer does before delivering the information. If you just type away using ScreenWriter then send that text file to Naecker Brothers using a modem, you'll save about 10% of the composition costs. If you label the parts of the files that should be done in different type styles, or sizes, or column widths; then you'll save about 30%. If you take advantage of ScreenWriter's ability to create "macros," lengthy sequences of keystrokes with single keystrokes; then you can insert the longer sequence of numbers the typesetting machine recognizes as the proper numbers to identify the type style, size, and column width and you may save as much as 40% of the cost.

The short code might look like this ;T1. The long code, like this [965,10,11,14]. Every time the typesetting machine reads that code it will put your file into the typestyle, size and width that you want to use for most of your text. Want to use a different typestyle for the headlines, or titles? The code for a headline might look like this .H1.

While there are great advantages to this method of do-it-yourself typesetting, there are some disadvantages. The burden of accuracy shifts to the original typist. After you receive the typeset material, if you spot typos or misspellings that you generated when

you typed in the material you will be charged a small AA, or author's alteration, fee to correct your bloopers.

Typing with care becomes important. You must insert the codes in some consistent, standardized fashion in order for the data to run through the typesetter. You will probably not find it easy to typeset difficult tabular matter. Charts and graphs can stump beginners. If you follow the advice in the ScreenWriter manual and the advice of your printer, you can learn the proper codes and apply them correctly to complex material.

Two important codes automatically appear in the text you keyboard. One is the paragraph indent and the other is the carriage return. Newspapers and most paperback books have a one em indent (the indent matches the width of one capital M.) Most typewritten business letters have a five-letter indent. If you use ScreenWriter's first tab stop as a paragraph indent, you'll put in five-letter spaces. Make sure you tell the folks at the printer's what sort of indent you want on your material when it appears in print.

The other important built-in code is the carriage return. ScreenWriter has delightful features called fill and break. The embedded commands cause the computer to fill the text and ignore all of the carriage returns until it "sees" the symbol for a paragraph indent or it sees the break command. The two commands make it easier for the typesetter to receive the material and justify and hyphenate everything as it runs through the typesetter. Don't try to set up the justification on the Apple. The typesetter will just chuck out all of the line breaks from the Apple and do its own thing.

There are two ways to transfer your copy to the typesetter. If the printing company has a media reader that can handle the floppy disk from an Apple, then you can deliver the disk and sit back and wait. You don't save much time with this method.

Sending the copy via a modem is much quicker. Whenever data is sent over a Bell network telephone line, it must be sent in ASCII. Again, we can thank ScreenWriter for formatting everything in the standard code set for tele-communicating.

Interested in trying some typesetting? Here's more information on the two companies:

Composition Systems Inc.
6320 Castle Place
Falls Church, VA 22044
(703) 237-1700

Naecker Bros. Lithographers Inc.
9170 Brookville Road
Silver Spring, MD 20910
(301) 588-2010

(Ed. Note: There are other companies in the Metropolitan area.)

THE NEW APPLE DOS HAS ARRIVED -

Well, Almost

by William C. Jacobson

When the //e was announced, I was disappointed that a new operating system was not introduced at the same time. After all, the venerable Apple DOS has been around for a long time, and it lacks many of the refinements and capabilities of newer operating systems.

A few months ago, I heard that Apple was in the process of rectifying this oversight and a new, Unix-type operating system was about to be released. A conversation with the marketing staff of Quark, Incorporated -- a software development firm that produces many fine programs for the Apple /// -- confirmed these rumors. Quark planned to use the new operating system for an Apple //e version of their Word Juggler word processing package. They were simply waiting for a formal announcement from Apple to ship this software to dealers.

Thus I was not surprised that the copy of Word Juggler I received from Quark uses a system called "ProDOS Version 1.0." Nor was I shocked to discover that ProDOS is, as Quark describes it, a "whittled down version of the SOS (sophisticated operating system) used on the Apple ///."

Apple reportedly will not distribute ProDOS system disks and manuals until early next year, so a full analysis of the capabilities and deficiencies of this operating system lies awaiting. In the absence of more complete documentation on the system, I will regale you with what little I can derive from the Word Juggler manual, use of the program, and insights gained through considerable experience with SOS for the Apple /// (I am an ex-owner of that much maligned system). Although the ProDOS specifications provided by Quark are far from comprehensive, they at least provide some inkling of how the system operates.

THE KNOWNS

It is readily apparent that ProDOS preserves many of the conventions of SOS. It permits elaborate sub-directories of master and data files, and the naming of disk volumes. You may format and name a volume, and within that volume have multiple levels of directory information. For example, the volume for a school system budget office may be named "Budget1984", with a master directory name of "SecondarySchls" (note: only 15-characters are permitted per directory level). Subdirectories may then be created for each school and document, for instance "USGrant" and "Prelim,Review". This would then be listed as: "/Budget1984/SecondarySchls/USGrant/Prelim,Review." The drive default could be set at "/Budget1984/SecondarySchls" so that any documents created would automatically be assigned to these directory levels, and catalog displays would list only the documents so assigned.

ProDOS also permits drives to be addressed by number, as with Apple DOS. However, the convention in this case is ".Dn" -- e.g., ".D1" for drive one, with a file call being ".Di/File.name." A dot may be used to separate words in a file name, as spaces are not allowed in ProDOS or SOS. Spaces are permitted in Apple DOS, and this has led to problems associated with "stray" spaces. I much prefer the "." method.

Like SOS, ProDOS is written in Pascal. The version of Pascal that is used presumably simplifies addressing

the additional 64K of RAM (random access memory) on the Extended 80-Column Card produced by Apple. This feature also raises the issue of whether there is a memory capability larger than 128K in the future of the //e (Super //e?), with RAM being addressed in banks of 64K or more, depending on the capacity of the chips being used.

The use of Pascal also increases the size of disk volumes that are possible, as 8-megabytes is the limit for Pascal and 143K for Apple DOS. This increase is particularly advantageous for hard disk drive users, where the very restrictive Apple DOS volume limits are a real "pain."

The improved capabilities of ProDOS also raise the possibility of Apple releasing //e versions of their new UniFile and DuoFile floppy disk drives. These drives are identical to the 870K drives used on the Lisa computer, and soon to be offered for the Apple ///. They reportedly provide much faster data access as well as vastly superior disk storage.

Some of the problems of SOS have apparently been dealt with in ProDOS. In SOS, for example, you must boot a separate utility disk for formatting new disks and other utilities. This means that you must keep a supply of formatted disks on hand, or suffer the inconvenience and potential other problem of having to exit a program, boot the utility disk, exit that and reboot the program disk. On the Word Juggler disk, built-in utilities are provided for disk formatting and other purposes.

On the Quark implementation of ProDOS, date and time stamping of file directories is not possible, unless a Thunderclock is present. Manual entry of date/time information is an excellent feature on SOS, and it would be unfortunate if this were not available for ProDOS.

In order to make hard copy printouts of SOS file directories, you also must boot a separate utility disk. With ProDOS this is not necessary. While in the catalog mode, you simply precede the drive number designation (e.g., ".d1") with an exclamation point, and the directory is printed out.

THE UNKNOWNNS

There are a number of significant questions that cannot be answered without access to the ProDOS system utilities and manual, including the following:

The availability of compilers/interpreters for BASIC, PASCAL and other languages in the ProDOS format. I must assume that new versions of these languages will be marketed and that they will be variations of those currently available for SOS.

The capacity to easily modify printer, console and other drivers, using various system utilities. SOS has superb utilities for making extensive changes to standard drivers. However, the Apple /// is not as Read Only Memory (ROM) dependent as the Apple //e and thus is much easier to customize from an I/O standpoint. Apple may be able to emulate some of these capabilities on the //e through a hardware device.

The extent to which ProDOS can be used on Apple //+ or earlier computers. Word Juggler is designed for the

contd.

keyboard of the //e, but that may be a programming decision rather than technical limitation. ProDOS presumably can operate with 64K or 128K of RAM, although Quark recommends 128K for Word Juggler. Anything less than 128K severely restricts the size of the file that can be entered into memory during the document creation, editing and printing processes.

The capabilities of ProDOS-based //e's to interact with the Lisa system. If ProDOS is a Unix compatible system, then some networking should be possible. Guesses on the extent and limitations of such a setup would be pure conjecture.

It is unfortunate that ProDOS adds yet another disk format procedure -- the others being DOS, Pascal and CP/M -- to further confuse floppy disk users. But such is the price of "progress", I guess.

WORD JUGGLER

This program was originally released in 1981 as one of only two word processing packages written in SOS for the Apple ///. The other was Apple Writer ///. A complimentary program is Lexicheck, a spelling checker that contains a 50,000 word dictionary. The Apple //e versions of both Word Juggler and Lexicheck, according to Quark, retain all of the features of the original Apple /// versions.

The list prices of Word Juggler and Lexicheck are, respectively, \$239 and \$129. Substantial discounts probably will be offered by dealers and mail order firms.

In order to accommodate some of the function key sequences described below, Quark provides a "keyboard enhancer circuit card" into which the standard Apple keyboard connector is plugged.

DOCUMENT SIZE. There is a limit of 785 "lines" of information. It is not clear how a line is defined, but presumably it represents a screen line of any length. For example, pressing the return key while at the beginning of a line (i.e., with no other data on that line) counts as a line of text. Assuming a standard 54 lines of text per page of output, about 15 pages of data could be stored in memory. Provision is made for "inserting" other documents into the text at print time, so that much longer documents may be strung together and printed consecutively.

TEXT FILE TRANSFERS. Utilities are provided for reading Apple DOS and Pascal text files into Word Juggler, but no provision is made to reverse this process. Hopefully, such utilities are provided with the ProDOS system disks released by Apple. In addition, any SOS (Apple ///) text files can be read simply by preceding the file name with an asterisk. I transferred text files of each type, and encountered no problems.

SCREEN FEATURES. In the document create mode, the screen is blank except for information at the bottom of the screen on cursor location (line and column) and remaining memory. You are initially in the insert mode (i.e., text is entered without overstriking any characters that already may exist in memory). Character entry is extremely crisp and fast typists should encounter no problems. Usable screen display area is 80 characters wide and 22 lines in height. The text display is not adjustable, therefore it does not have "what you see is what you get" capabilities. You can preview a printed document by pressing Control-O, and text in memory will be formatted and displayed on the screen.

CURSOR MOVEMENT. The arrow keys of the //e or the Control-S,E,D and X sequence may be used for standard line and character-by-character movement of the cur-

sor. Combinations of the Shift, Control and arrow keys may be used for other cursor "jumping" operations.

FUNCTION KEYS. While menu screens are used for some functions, Word Juggler relies mostly on a "function key" arrangement for special command execution. Because the //e does not have separate function keys, this means that combinations of keys must be used as substitutes. The Escape, Control, Open Apple and Closed Apple keys are used for different types of commands. For example, Escape in combination with the number and special character keys at the top of the keyboard is used for imbedding document formatting commands (margins, justification, etc.) in the text. The Control key is used in combination with others for various editing functions, such as character, paragraph, line and character delete; block copy, move and delete, etc.

Quark has attempted to compensate for this proliferation of special commands by supplying replacement key caps with commands printed on them for the "Control" related commands, and a template that is placed above the keyboard for the "Escape" related commands. There are many other commands that are not listed on the special key caps or the template. I found this arrangement to be somewhat complicated at first, but my problems disappeared as soon as I became familiar with each procedure.

FORM LETTERS. The built-in form letter function is excellent. Variables can be assigned very easily, and conditional "IF/THEN/ELSE" statements can be nested 127 levels deep. Because of the text file transfer utilities mentioned above, almost any DBMS can be used to create a compatible address file.

In addition, other utilities are provided to access existing Quick File and PFS data bases. You create or load a form letter into memory, and while in the document mode press the "Open Apple-1" keys. You are then asked the source of the data file. If you select Quick File, insert the appropriate data disk in drive ".D1" and press Return. The list of files on the Quick File disk is displayed. After you have selected the correct file, form letter printing begins. The data records you wish printed may be defined in "IF/THEN/ELSE" conditions listed in the text of the form letter. This is one of the most versatile and easy to use form letter functions that I have encountered.

ERROR HANDLING. Try as I might, I could not get the program to "bomb" or hang. Error protection appears to be excellent.

PRINTING. Several output default settings are available. In addition, "dot-type" commands and control characters may be imbedded in the text. For instance, the left margin setting may be changed by pressing "Escape-(", as indicated on the template provided, and then entering the new setting (e.g., 10 for ten columns from the far left margin). The term "Left Margin-10" will be displayed on the screen in inverse video. This is a very easy "dot" command feature to use, and the listing of the function in inverse makes it simple to spot active commands and make modifications. The entire document or selected pages may be printed.

Custom drivers are provided only for the most popular printers; however, instructions are included on how to create or modify printer "filters", as defined by Quark, using assembly language programming. Assembly code listings are provided for the Epson and Apple matrix dot printers, to facilitate changes to those drivers and serve as a tutorial for similar modifications for other printers.

contd.

SPELLING CHECKER. The Lexicheck program will operate only in conjunction with Word Juggler. While the latter will function with only 64K of RAM -- albeit with extremely limited edit work space, Lexicheck requires a full 128K. Simply place the Lexicheck disk in the first drive of a two drive system and enter Open Apple-7. A screen of options will then be displayed. These options permit one to change some defaults and to add a supplemental user prepared dictionary to the spelling check operation. Press the Return key, and the document in memory will be checked. All words are checked alphabetically. The operation is quick and appears to be quite thorough.

Once all words have been verified, a numeric summary of words checked, unique words and unrecognized words will be displayed. To correct any misspelled words, press the Space key. The text screen containing the word will then be shown, with the word in question displayed in inverse video. To ignore a word, press the Space key once again and the next word will be displayed.

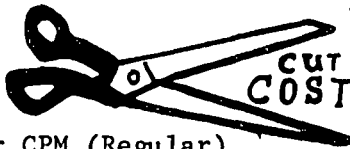
To correct a word, press the Return key and you will be invited to type in the correct spelling of the word. Once this has been done, simply press the Return key again, and the correction will be entered and the next misspelled word, if any, will be shown. If you want to add a given word to a supplemental dictionary, press the Control and Space keys at the same time.

Lexicheck is an excellent program, and it interacts superbly with Word Juggler.

SUMMARY

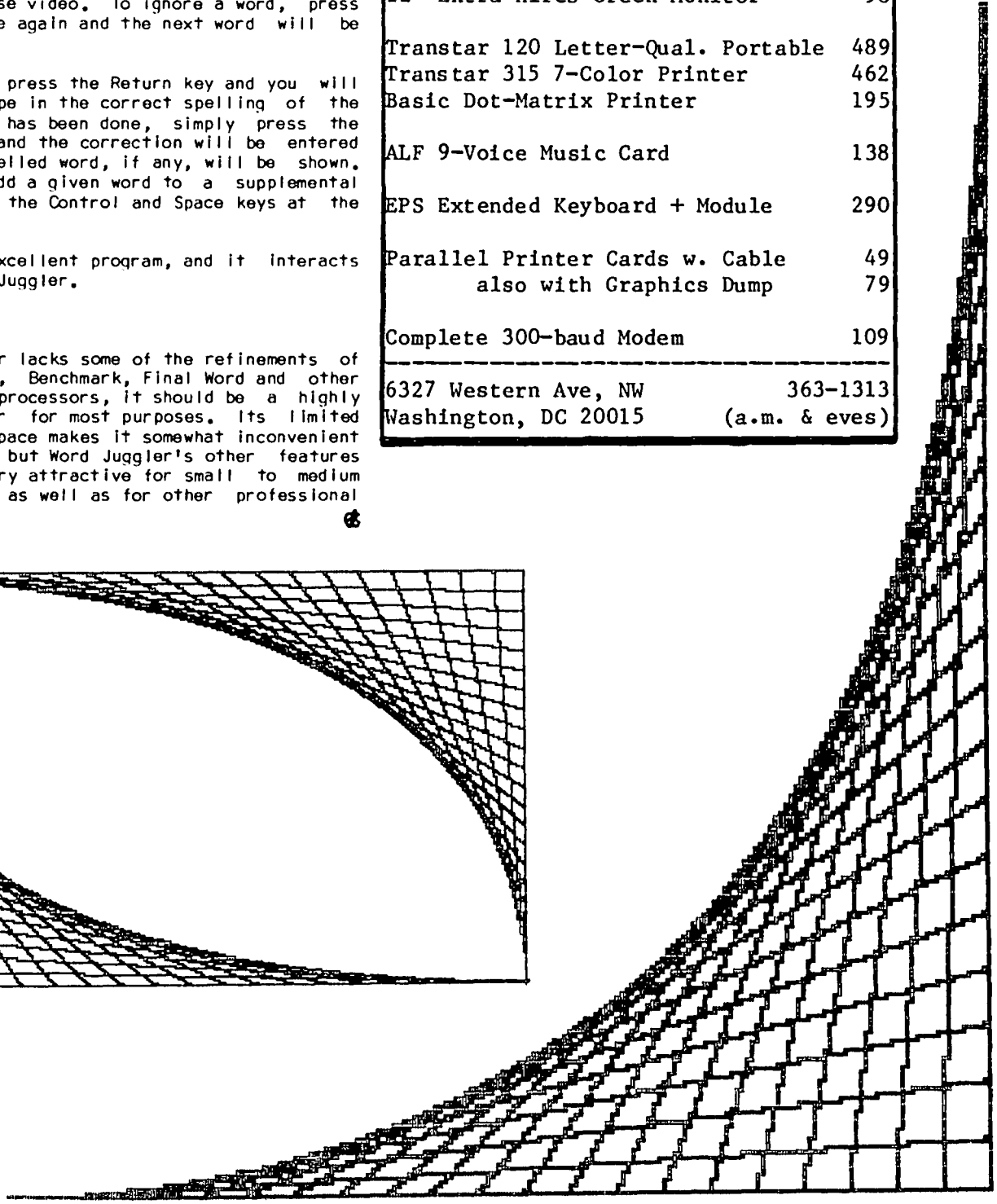
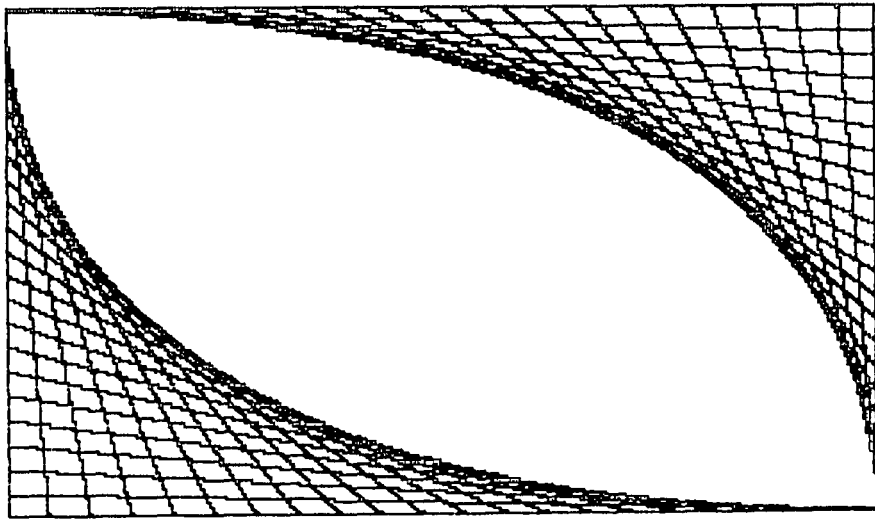
While Word Juggler lacks some of the refinements of WordStar, Palantir, Benchmark, Final Word and other CP/M based word processors, it should be a highly competent performer for most purposes. Its limited edit screen work space makes it somewhat inconvenient for long reports, but Word Juggler's other features should make it very attractive for small to medium sized businesses, as well as for other professional and home uses.

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GUTENBERG WORD AND PRINTER PROCESSOR: A Review

by C. K. Mesztenyi

Despite its power and versatility, Gutenberg has received little publicity in comparison to other word processors for the Apple II or III. Gutenberg is unique by its aim: to provide a powerful and versatile tool for formatted page printing of text, special symbols and pictures. The tool is a formal computer language with syntactic and semantic rules for Format statements which the user can write into a separate file and refer to them by their names in the text files to be printed. The Print program of Gutenberg receives an input file composed of such Format statements together with the text files to be printed. A Format statement is "executed" by the Print program when its name is encountered in the text stream. Execution of a Format statement can cause some direct action, e.g. loading an alternate character set, and/or changes in values of system variables. System variables are general indicators for the Print program, such as length of a text line, use of mono or proportional spacing, etc. Three specially named Format statements, AR, AP and AB, are always executed by the Print program at the end of a composed text line, at the beginning of a paragraph and at the bottom of a text block, respectively. The program assumes default statements for these three Format statements, but they can be changed by the user. This arrangement allows the user to build up a Format Library consisting of statements for heading, footnoting, etc. Format statements can also be imbedded directly in the text. In certain cases, such as underlining, it is preferred.

Besides the Print program, Gutenberg comes with many other programs and data files. The full power of the whole package can be seen best in the following files which a user can create and specify the programs to create/edit/use them:

1. The INPUT file contains the main text stream to be printed. It is created/edited by the Text Editor and used by the Print program. The Text Editor is relatively easy to use and powerful, e.g. one can move blocks of text from one file to another in split-screen editing.
2. The J-INPUT file contains information which is to be imbedded in the main text stream at specified places during the print process. It is created/edited by the Text Editor and used by the Print program. Such a file may be used for preparing mailing lists and form letters, table generation, etc.
3. The FORMAT file contains the AR, AP and AB format statements. It is created/edited by the Text Editor and used by the Print program.
4. The PICTURE file contains high resolution pictures. It is created/edited by the Paint program and used by the Print program through a Format statement referring to the name of the file. The Paint program is an interactive graphics program using a scrollable screen with dot-resolutions of 558 by 190 or 278 by 382. It can be used to compose a picture from picture segments which were previously created picture files and/or DOS binary files containing high-resolution screen dumps. One can write horizontal labels easily using the normal or alternate character set. Picture segments can be moved on the screen by inserting or removing rectangular white areas. Drawing is accomplished

by cursor movements horizontally, vertically or diagonally.

5. The FONT file contains alternate character sets. It is created/edited by the Graphics program and used by the Text Editor, Paint and Print programs. The Graphics program provides a 7 by 12 matrix of cells in which the user can place the dots used for a character, then specify the code (key) to be used for inputting it. Separate print programs are provided to print an alternate character set in a list or keyboard layout format. FONT files for Greek, Cyrillic alphabets are provided in the package.
6. The CHG file contains designated function key information. It is created/edited by the Text Editor in command (edit) mode and used in insert mode. The main use of this file is to allow the user to input frequently used long characters strings with a single key.
7. The MACRO Edit file contains a list of editor commands. It is created/used by the Text Editor.

The package also includes other utility programs not mentioned above, such as a diskette initialization program, translator of DOS/Wordstar text files to Gutenberg files, a communication program for use with the CAT Novation modem, various copy programs, programs for locking, unlocking, deleting, renaming files, etc. Generally, it is a very powerful package of programs. Learning to use one program is not difficult, but it takes time to be familiar with all of them. The only significant shortcoming I have found is that the rectangular size of a picture is not available to a format statement prior to printing it. This necessitates the writing of a separate format statement for each different picture size.

The manual is printed in a loose-leaf binder. Besides a subject index, it has a Glossary specifying various terms used in the manual. I found the instructions on the use of individual programs generally good and clear. I had some trouble comprehending the full system as it is described in the first "System Overview" chapter. For example, there is no explanation given for the "READY" state (waiting for an operating system command?), and its difference from the command (edit) mode of the Text Editor. Also, some pictorial representation of the relations between various files, programs and keyboard would have been very helpful. My main problem was understanding the language of formatting and how it is processed by the Print program. As a programmer, I am accustomed to and like the conventional form of language descriptions starting with constants and variables used in the language and not jumping into command descriptions. This approach would have allowed a section on "system" variables whose values are checked by the Print program and modified by the "execution" of the Format-statements.

Both the manual and the data diskette contain a large number of examples, many of these directly usable. Word processing with Cyrillic or Greek alphabets or special accent marks can use the supplied alternate fonts. Form letters with mailing lists and table generation are given as examples for the J-file use. A large number of examples are given for formatting. Special use, such as printing mathematical formulas may require extensive preparations involving the

contd.

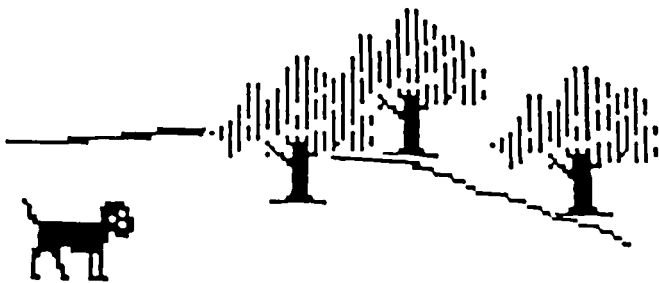
creation of alternate character sets, picture files for oversized symbols and appropriate Format statements. All of these need special attention with respect to key assignment for symbols and naming picture files and format statements so that they would be "natural" to a user. Special interest groups in Apple User's clubs may provide such library files in the future for such special use.

Gutenberg comes with a two-sided master diskette, a back-up diskette, a data diskette containing tutorials, a manual, a shift key which plugs into the gameport and a plastic ruler to measure distances on printed paper. For booting up Gutenberg one must use the original master diskette. Once this is done, the user may use a "copied" master on which all programs are available. Instructions for making such a "copied" master are in the manual. The package is available for Apple II, II+, IIe and III in Apple II emulation mode. Hardware requirements for II and II+ are the shift-key modification, preferably a language card to have full 64K memory available and one or two disk drives. To use the full power of Gutenberg, the printer is the most important hardware. Supported dot matrix printers are Apple, NEC, Itoh, Centronix, Epson with Grafrax-plus, and a full assortment of interface cards. Although some of the daisywheel printers are also supported, their use would downgrade the power of Gutenberg. The best printer is the Apple DMP since the package supports its downloaded font option. Gutenberg is marketed by Micromation Limited, 1 Yorkdale Road, Suite 406, Toronto, Ontario, Canada M6A 3A1, Tel (416) 781-6675, for \$325.00 (U.S.)

(If ordered by mail, one may receive a \$23 bill from the US Custom Office.)

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MORE ON WORDSTAR/EPSON

by Ted Rockwell

Several questions have come up on last month's article on this subject, so I thought I'd share the answers in this brief note.

1. Some of the commands include a \hat{Q} . This is a NUL (00 in hex) and is not the same as the O character on the keyboard. It is transmitted by hitting Control P, followed by Q. That was not clear in my article. For example, to turn on Graftrax superscript, hit Control P, then E (capital or lower case, it doesn't matter). That's ESCAPE. Then capital S (not lower case), then Control P followed by Q. My shorthand for this was: ES \hat{Q} .

2. The purpose of the article was to show how to create more characters than first appear possible. To that end, look at page B-6 at the back of your Wordstar Manual. It shows that when you strike the ESCAPE key, you do more than lock in capital letters. Certain keys have additional characters on them, which show up when you hit the shift key, with ESCAPE previously pressed. These additional characters are listed below. You turn them off by hitting ESC again.

KEY	SHIFT ONLY	SHIFT LOCK MODE	
"1"	!	(|)	Vertical line
"7"	'	(')	Opening single quote
"8"	(	(|)	Left brace
"9"	)	(|)	Right brace
"_"	=	(=)	Underline
"p"	P	(@)	"At symbol"
"n"	N	(^)	Carrot
"m"	M	(~)	Tilde
"["	<	([)	Left square bracket
"]"	>	(])	Right square bracket
"/"	?	(\)	Backslash

3. If you have quotations or other material you wish to appear in condensed type, slightly indented, I suggest you set the left margin (OL) at 10 and the right margin (OR) at 100. Don't worry when the text starts to go off the right side of the screen--the text will scroll left and the cursor will keep up with you. For expanded type, remember that you have only 66 characters per line, and if you exceed that, it will go on to the next line, despite what the screen shows.

4. The article noted that expanded and compressed modes alter the spaces as well as the letters. Let me show how this can be a problem.

\hat{W} Suppose you type a paragraph in condensed type that looks like this on screen. R

But when you go to print it, you get a surprise; the first line is indented far more than you wanted, and it overhangs the right margin. Why doesn't it look like it did on the screen? How do you fix it? The problem is that the spaces before the first word are not compressed (you didn't order them compressed), and the spaces before each of the following lines are compressed. So you type your command \hat{W} in Column 1, right against the left margin, so there are no uncompressed spaces. That will fix it.


5. Wordstar is designed to compensate for commands which take up screen space but don't print. For example, if you are typing "justified mode" (smooth right margin, like this article), a line of text which has a command (such as "underscore S") will appear on the screen as running over the right margin, but it will print flush. However, Wordstar won't do this for the multi-character commands we have introduced. If this creates a problem for you, you will have to correct it.

6. Wordstar tells you to turn off compressed mode with a command on the line following the last line of compressed text, rather than immediately after the last word. I have not had any problems as a result of typing the \hat{R} immediately after the last word. If you do, try putting the R on the next line.

ESCaping with GPLE contd. from pg 40


executing the program; "2D0Gm" is used in this case. Again, the lowercase "m" represents the RETURN key. When the program has successfully completed, we are returned to APPLESOFT where we can continue as if there were no interruptions.

After you are finished entering and testing the new functions, don't forget to run "ESCAPE SAVE" to save them. If you have any good ideas for new ESCape functions, please share them with all of us. If you have any questions, I will attempt to answer them for you.



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SOME APPLE //e COMPATIBLE WORD PROCESSORS: Pie Writer, EXECUTIVE SECRETARY, & APPLE WRITER

by William C. Jacobson

Since the introduction of the enhanced version of the venerable Apple II (otherwise known as the Apple //e), software producers have been scrambling to release new programs, or adapt existing ones to take advantage of its revised keyboard, expanded memory and other features.

In this article I will summarize the capabilities of three processors, versions of which were available long before the incarnation of the //e:

- o Pie Writer by Hayden Software (Version 2.2; \$150)
- o The Executive Secretary by Sof/Sys (Version 4.1; \$250)
- o Apple Writer by Apple Computer (//e version; \$150)

These programs are powerful, but in quite different ways. Pie Writer can do many things well, but its versatility makes it a somewhat complicated package to use. It has a feature unusual for Apple DOS based software: it is neither write nor copy protected. Therefore, it can be copied using the COPY utility, and programmers can add their own routines or modify those that exist. It is also designed for writing and editing Pascal and machine language programs.

Executive Secretary and Apple Writer also are versatile packages, but along more traditional lines. Executive Secretary includes a mail list card file, the capacity to access other programs from its menu, and an "electronic mail" utility.

Apple Writer //e does not have all of the bells and whistles of the other two programs, but as we shall see, has a few strong points of its own, including outstanding search and glossary functions.

In keeping with the Apple DOS "tradition," standard versions of Executive Secretary and Apple Writer are both copy and write protected. A hard disk version of Executive Secretary (for the Corvus drive, only) is available for an additional \$100; the hard disk package includes a special peripheral card (yes, it must take up one of your valuable card slots) as part of an unusual copy protection scheme. Apple Writer is sold only in a floppy disk version.

Needless to say, all of these programs are available at discount prices, but few if any computer stores carry all three processors. Thus it may not be possible to try each of them at one sitting.

The major features of each program are summarized in Figure A. I have included the WordStar program of MicroPro as a fourth comparison point. This excellent word processor is considered by many to be the current industry standard.

PIE WRITER

This popular program can be configured to operate on any Apple computer, from the original Integer version to the new enhanced model. Both 40-column and 80-column editing is possible, and only one disk drive is needed. To take advantage of its latest features, however, you must have 64K of memory.

For those unfamiliar with Pie Writer, it consists of three modules:

Figure A. COMPARISON OF FEATURES

	Pie Writer	Exec. Sect.	Apple Writer	WordStar
Text edit memory	19,000	16,000	47,000	N/A
Help screens	One	None	Many	Many
Form letter func.	Yes	Yes	Yes	M'Merge
Mail list program	No	Yes	No	No
Menu-dependent	No	Yes	No	Yes
Footnoting	No	No	Yes	No
Time delays (in seconds):				
Initial boot	6	6	20	8
To edit screen	30	10	8	8
Begin printing	10	19	2	10
Print spooling	No	No	No	Yes
Imbed CTRL chars	Yes	Yes	Yes	Yes
Imbed format com	Yes	Yes	Yes	Yes
Page break line on edit screen	No	No	No	Yes
Cursor location Indicators:				
Line	Yes	Yes	No	Yes
Column	Yes	No	Yes	Yes
Page	No	No	No	Yes
Horizontal scrolling	Yes	No	No	Yes
Run other prog. from menu	No	Yes	No	Yes
Draft print capability	No	Yes	No	Yes
Hard disk drive compatible	Yes	Limited	No	Yes
Copiable	Yes	No	No	Yes
Prog. files can be modified	Yes	No	No	Yes
What you see is what you get				
screen format	No	No	No	Yes
Uses 128K, if available	No	No	Yes	N/A
Ratings (scale of A-F):				
Learning ease	B-	B-	A	B-
Text editing	B-	B	C-	A
Form letters	C-	A-	C-	B+
Overall power	B+	B	C	A

- CONFIGURE which is used to adapt the program to various hardware combinations and to set system defaults.
- PIE for text entry and edit commands.
- FORMAT which contains all text formatting and printer output functions for data created/modified in the Pie module.

Because program disks are copiable, the first chore is to make working copies of the appropriate disks and store the originals in a safe place. You then must run the configuration program. This takes about 25 minutes, because many files on the program disk are re-written as part of the installation routine. When the newly configured program disk is booted, the following menu is displayed:

Figure B. PIE WRITER MAIN MENU

- 1 - PIE TEXT EDITOR
- 2 - FORMAT TEXT PROCESSOR
- 3 - PIE CONFIGURE
- 4 - FORMAT CONFIGURE
- 5 - EXIT

If you wish to create or modify a document, the PIE option is selected. For printing of an existing file, the FORMAT module may be invoked.

The menu for PIE is shown in Figure C. Documents are loaded, saved, renamed, and FORMAT is entered from this menu. Only 19K of memory work space is available for document editing, even with 64K of random access memory (RAM). This is due to a "new" feature which loads both the PIE and FORMAT modules at the time of program booting, thereby eliminating any appreciable delays in switching between these modules. This is important because documents must be previewed (printed to screen) frequently to ensure that they are properly formatted. The preview feature is contained in the FORMAT module.

Figure C. PIE MODULE MENU

```
FILENAME:      ?
LENGTH:       0
MEMORY LEFT:  19,000
COMMAND?:
```

To begin editing, you simply enter E and press return. The edit screen is displayed after a delay of a few seconds. The data entry portion of the screen measures 78-columns by 21-lines, and is outlined by combinations of dashes and exclamation points.

There are three text entry modes: manual, word wrap, and indent. The manual mode operates like a typewriter, with carriage returns required at the end of lines, and "bells" to remind you when the end of a line is approaching. The bell tone may be set to any column you desire.

Word wrap is the standard setting for most word processors. Any word that exceeds the prescribed length of a line is "wrapped" around to the next line.

The indent mode is intended for the entry of outlines, lists and program statements, including Pascal and Assembly code.

These text entry types may be used interchangeably during the creation of a document. While the user manual describes the manual setting as the default for the processor, I configured the program for word wrap. This is most appropriate if Pie Writer is to be used primarily for correspondence, reports and similar purposes.

Pie Writer has commands, commands and then some more commands. For example, documents normally are saved as binary files, but DOS text files may also be loaded and edited. There are some seventeen (17) commands that deal specifically with these text file procedures, including one which will convert binary files to text files.

Additional examples include fourteen (14) line and window scrolling commands, thirteen (13) insert and delete commands and thirty-five (35) "dot" commands for print formatting. There are many more where these came from!

Cursor movement is simple and effective. The arrow keys of the //e may be used for normal line-to-line and character-to-character movements. A variety of other commands are available for more dramatic jumps,

as attested by statistics in the previous paragraph.

There are many types of delete commands, some of which are awkward to use. The line delete command, for example, requires the sequence Esc-CTRL-^.

The most difficult facet of Pie Writer to learn is text editing. While initial text entry is the same as most processors, there are major differences in methods used for correcting and modifying existing text. Insertion of text into a line may cause the text supplanting by this action to move off the screen. If the insertion exceeds the right extremity of Pie Writer (it has a line length limit of 127 characters), a bell will ring, and additional text cannot be entered until the line is reformatted. To reformat a line, you must position the cursor at the desired end of line column, and invoke a command that will cause the over-long line to be "cut." Gaps or irregular lines may remain on the screen display (a more than likely event). These may be corrected by using a "join lines" command.

If text is added to the middle of a long paragraph, several cut/join command sequences may be needed, as one line's "cut" will be another line's "add, potentially creating a series of over-long sentences.

None of these efforts are necessary for the correct printing of data in memory. The FORMAT module will reformat long or short lines to conform to the default margin settings for printer or screen output. That is, a series of 100-character and 30-character lines will print out as 65 column lines, if that is the current setting for the right margin. Thus you must (a) get accustomed to viewing a "screwed up" screen -- while continually seeking the comfort of print-to-screen previews to make sure every thing is okay, or (b) become proficient with cut/join commands.

Unfortunately Pie Writer does not have the single stroke screen reformat commands of WordStar (CTRL-B) or Palantir (CTRL-F), nor the auto reformatting of Benchmark. Another reasonable substitute for this type of processor is that of the ZARDAX word processor from Computer Solutions of Mt. Gravatt, Australia: press escape at anytime in the print preview function (called "Videoprint"), and you will be returned to edit mode and the precise screen that you were previewing. This makes the detection and editing of format errors a fast, two-step action. Also, the ZARDAX preview function is an edit mode command; you do not have to enter a separate module to use it.

Document printing routines are typical. They are easy to invoke, and individual pages may be selected for output.

The Mail Merge function of Pie Writer performs standard form letter operations (i.e., insertion of address and other variables into forms as they are being printed), but it lacks the versatility and capabilities of others, including Executive Secretary. Data files apparently cannot be read from text files created by a data base management system without considerable modification, or the creation of your own programs to accomplish this action. In addition, there is no provision for conditional IF/THEN/ELSE statements to select user defined subsets of records for printing.

Mail list variables cannot be assigned specific names so that they can be referenced and inserted anywhere in the text. Data fields are read and used sequentially. Therefore, if one wishes to re-use a given variable, it must be repeated in the data file. For example, if you wish to use "first name" in both the address and salutation sections of a letter, separate data fields must be created for each section.

contd.

The Pie Writer manual is nicely mounted in a loose leaf binder and stored in a cardboard box, ala the IBM standard. It is tabbed and indexed, with a plastic sleeve in the back for two floppy disks.

Despite a Herculean effort by Hayden Software to simplify the learning of Pie Writer, the manual is not quite up to the task. There are many references to "later chapters" and injunctions to "not worry about learning that command at this time," but this technique does not work. I have far more than average experience in using word processors, including the most sophisticated of them (WordStar, Palantir, Final Word, Benchmark, PowerText, Select, etc.), yet I found Pie Writer less than easy to master. More detailed, explicit information on the peculiarities of document editing, formatting and handling would be desirable.

In addition, many program commands are not explained fully. For instance, I wanted to insert a text file in the middle of an existing document. A common use of that function would be to place a table produced from Visicalc into the middle of a report. A command like the "Read" function of WordStar will insert a document into memory at the cursor position. Pie Writer does not have such a command. There is a text file command that will append data in memory, but it adds such data at the end of the file -- not at the cursor position.

I then looked for a "dot" command which would allow me to reference the file in text and have it inserted at print time. No such command seemed to exist. I double checked the Mail Merge commands, and it appeared that one could use a combination of Open File (.op) and Read Block (.rb) commands to do this. Sure enough, it worked perfectly. Such a feature is essential for many sophisticated word processing chores, yet its use for that purpose was not explained in the manual.

Another apparently useful function -- Shell File Structures -- is given very little attention in the manual. It is supposed to simplify the entry of frequently used commands. The explanation provided is extremely difficult to understand, and additional information is certainly in order.

A skilled programmer I know has used Pie Writer for many years. He believes that Pie Writer is one of the best available programs, because it has excellent potential and can be infinitely modified through user prepared machine language routines. The latest version of Pie Writer retains this capability. The manual provides memory address tables and rudimentary advice on how to prepare and use such routines.

It is very easy to contact Hayden Software for help. They have a toll free number and their offices are in Massachusetts, so that you can call during normal daylight hours. Their technical support staff is responsive and eager to help.

All in all, Pie Writer is an extremely versatile program that is a "tinkerer's delight." Its main drawbacks are:

- No screen reformat command,
- Too little memory (19,000) for text editing and printing purposes,
- A form letter function that is "under powered," and
- As is typical of much computer documentation today, user manual tutorials that do not emphasize the most troublesome features of the program, e.g., the on-screen editing and document handling quirks of Pie Writer. In addition, much more complete

explanations of Pie Writer's powerful array of commands are necessary, so that users may take advantage of these excellent features.

Should Hayden Software correct the above problems, I would place Pie Writer among the best available Apple DOS-based word processors. At a list price of \$150, it is a bargain by any standard.

EXECUTIVE SECRETARY

This processor can truly be classified as "menu-dependent." Almost all functions must be selected/executed from one of the many menu screens. This makes it exceedingly easy for first time users to learn the system, and for occasional users to regain their proficiency. This does not mean that Executive Secretary is without its complications. There are a number of functions that require time and effort to master. Some of these will be discussed later in this section.

The Main Menu contains the following options:

1. Create/Edit Documents
2. Print Documents
3. Create/Edit a Card File
4. Delete/Transfer/Restore

- X. List Other Choices
- D. Dash Off a Quick Note

The "Other Options" in choice X include:

5. Set Up a Document Disk
6. Change System Features
7. Send Document By Phone
8. Alphabetical Indexer

If you select item "1" you will be spirited to the following menu:

THE DOCUMENT EDITOR

- A. Select a document
- B. Start a new document
- P. Go to the printer
- M. Go to other menus

Should you elect to start a new document, all files on the current data disk would be displayed. An example of such a screen is shown below:

DATA-1
Room on Disk for 23,300 more words

- 1 Test
- 2 Test2
- 3 ES Article
- 4 Letter to Jim

Name of file to create:

The data disk volume name is shown at the top. A volume is named at the time of disk initialization.

Remaining disk and memory capacity are computed in words. Presumably there are about six characters per "word;" this translates into approximately 16,000 bytes of memory for document creation and editing. An Exec file function is available for consecutive printing of a series of interrelated files.

Once you enter the name of the document to be created, the edit screen will be displayed. At the top of this screen will be the following information:

contd.

 A)dd D)el G)o M)rk P)rint S)earch (Esc)

There are two edit modes: cursor movement/delete and add text. The screen is initially in the movement/delete mode, at which time you may scroll through a document you have loaded into memory or delete characters of text. The arrow, return, comma and period keys are used for movement within the current screen. For other screens the "Go" command is used: press G, enter the number of the line to which you wish to scroll, and press return.

The line number convention has special significance in Executive Secretary. If you want to print a draft copy of the document in memory, simply press "P" while in the movement/delete mode. You will then be asked whether the draft copy is to be double spaced and/or line numbers should be printed at the left hand margin. Assuming you answer yes to the latter question, each line in the draft will be consecutively numbered. Once corrections have been marked on the draft copy, you may then use the "Go" command to jump directly to each line that requires correction. This is an incredibly useful and convenient feature.

The Add Text mode is entered by pressing the "A" key. If you wish to insert text in the middle of existing paragraphs, the text below the cursor line will be scrolled forward, with the balance of the line being edited displayed at the bottom of the screen. This is a fairly common technique and has its advocates and opponents. It does highlight very clearly the text being added, but limits your ability to review subsequent text while you are composing. For users of Pascal-based text editors, this is this is standard operating procedure. I think it is a minor distraction, as I am used to processors that permit text insertion without splitting existing text.

The "Mark" function is used to outline segments of text for deletion, movement or saving to disk. This command is also used to create subfiles that can be inserted anywhere in the text. Because Executive Secretary does not have a glossary function, subfiles must be used to insert special strings of control characters, headers and any other data that you may want to recall at a later time. To prepare a subfile, simply type the information on the edit screen, press Escape to re-enter the movement/delete mode, mark the beginning and end of the information you typed, and answer "F" to the request at the top of the screen -- "D)delete M)ove or F)ile." The subfile you create will be listed as a file on your data disk, and can be edited like any other data file.

Typing is extremely crisp, with characters echoed on the screen as soon as the keys are touched. Like Pie Writer, fast typists should have no problem maintaining their optimum speed.

To leave the edit mode, simply press Escape and the following menu will be displayed:

1. Replace "filename"
2. Save under a different name
3. Don't save at all

If you select item one, you will be asked if you want to:

- E. Edit "filename"
- A. Select a document to edit
- B. Start a new document
- P. Print "filename"
- M. Go to other menus

Should you press P, there will be a short delay, after

which you will be asked whether the document is to be printed to screen or paper, and the number of copies. Once those questions have been answered, the printing format screen will appear, and you will be able to temporarily modify any of a multitude of default settings. After you have satisfied your format-related whims, the document will be printed. Then another menu will ask what you want to do next, including an option to reprint "filename" once again.

There are lots of other menus, but I will not bore you with them. I found the menu-dependent structure of Executive Secretary to be excellently designed and not intrusive.

Of the many other features of Executive Secretary, I will briefly discuss only the Card File and Form Letter functions. Like Pie Writer and Apple Writer, "dot" commands and control characters may be imbedded into the text of a document, and there are a wide variety of special formatting and document manipulation functions. Also, Executive Secretary has electronic mail and DIF file transfer functions, among others. Readers should experiment with these features at their favorite software retailer.

The Card File program will store a limited amount of address or other information. A maximum of 13 fields can be defined, and the actual number of fields permitted is dictated by the overall length of the record. Files are easy to set up. Special index files can be developed to produce sorted reports, form letters or mailing labels of user defined subsets of records. This function is intended for those whose filing needs are simple, and do not involve large amounts of data or numbers of entries.

For those who require the use of a sophisticated data base management system (DBMS), Executive Secretary permits sequential data files created by such DBMS to be read directly. To test this function, I used the excellent General Manager program marketed by Sierra On-Line to create a sequential text file from an existing data base.

I copied data directly from the General Manager disk, adding at the beginning of the file the names of each field in data base sequence. Eight fields were listed, including last name, first name, company, address, city, state, zip and "blank." The last field is necessary to account for a record separator automatically inserted by General Manager. The file was then ready to be read by Executive Secretary's form letter function.

Unlike Pie Writer, variables for a given record may be inserted into an Executive Secretary form letter in any order. Thus, if numbers are used as variable titles, last name and first name would be assigned the designations of &1 and &2, respectively. If these numbers were entered in the letter as "&2 &1", "Smith" and "John" would be output as "John Smith," and the salutation "Dear &2:" would be output as "Dear William:" at the appropriate spots in the letter.

The form letter function also allows multiple "IF/THEN/ELSE" statements to be used, so that user selected conditions can be used to print certain addresses, or to insert one or more of a select group of paragraphs into the letter.

This is an excellent feature. It is similar to the form letter functions of the new Word Juggler //e processor from Quark Engineering, and the Write Away processor of Midwest Software Associates. The latter program has one distinct advantage over its competition: variable names do not have to be specified at the beginning of the sequential data file. Thus data can be read directly from a DBMS generated text file,

contd.

without modification.

Executive Secretary contains hardware configuration programs for most models of the Apple II, including the //e. This permits one to use the arrow keys and other keyboard oriented improvements of the //e. Unfortunately the program can use only 48K of random access memory (RAM). Perhaps 64K and 128K versions are in the wings. This would allow a much needed improvement in the size of documents that can be manipulated by the system editor. With these improvements, Executive Secretary would be one of the most versatile and powerful word processors on the market today.

I had hoped to review the hard disk version of Executive Secretary. The copy that I received, however, was configured specifically for Corvus drives and I could not modify it for my Davong drive. I believe that its performance on hard disk could be truly outstanding.

The Executive Secretary manual is poorly organized and not up-to-date. Rather than supply supplemental or replacement pages for this loose leaf volume, Sof/Sys elected to include crudely produced, letter-sized pages of additional information. At times the data on these sheets seemed to be internally inconsistent. The lack of a good manual complicates the learning of this otherwise well constructed and conceived program. It should not be as hard as Sof/Sys has made it to learn the special commands and other features of Executive Secretary.

Sof/Sys appears to respond quickly to calls for "help." An SOS letter to them was answered within a few days, and someone is always available for telephone calls. There is no toll free number, so any calls are at the expense of the caller.

APPLE WRITER //e

This program is marketed by Apple Computer and written by Paul Lutus. Apple Writer, affectionately known as "AW," has had several manifestations. The current version, that for the //e, is certainly a far cry from the original. The general logic of the program remains the same, but the new AW is a slick but flawed word processor of considerable power. Over the years, I have used all versions of the program, including those for the Apple II+, /// and //e.

The version reviewed here will operate only on the //e, and takes partial advantage of the additional 64K of RAM offered by Apple. Curiously, only 17K of additional edit screen memory -- from 30k to 47K -- is achieved with this purchase. There is no explanation for the "missing" RAM. Other software that uses the full complement of 128K does not exact such a penalty. For example, VisiCalc for the //e affords a work space of 95K, more than twice that of AW.

AW has to be one of the easiest programs for a neophyte to learn. That plus its use of WPL, a built-in language for command and form letter purposes, make it a versatile and quite competent program. Its primary virtues are:

- The best find (search) function in the business.
- An excellent glossary feature for lightning fast execution of command sequences and the insertion of special words and phrases.
- A customized menu that can be displayed at boot.
- Relatively large memory (47K) when used with the 128KB version of the //e.

- A full complement of "dot" commands for imbedding printer configuration commands into the text of a document.

The weaknesses of AW are equally significant:

Keystrokes are not immediately echoed to the screen. There is an annoying, short delay from entry to display on the screen. This delay becomes even more evident when the size of the file in memory increases, or one attempts to insert data in the middle of existing text. This type of problem also exists in the cursor movement mode, which has an incredibly annoying, jerky motion.

The delete function has been improved somewhat with the advent of the DELETE key on the //e. This function is still very awkward to use, because of the AW convention that text can be deleted only from right to left. This makes editing a real pain, particularly if there is considerable editing to do. The jerky motion of the cursor makes accurate deletion, using the left cursor key, nearly impossible.

An advantage to the AW delete convention is the automatic saving of any deletions in a special memory buffer. Thus, if you inadvertently remove text, it can be restored simply by reversing the direction of the cursor while holding down the "Open-Apple" key.

The edit screen displays only 12-lines during initial data entry. The assumed reason for this is the need to create space for the "window" or split screen feature of AW. However, other programs have split screen capabilities, yet allow a full complement of lines on their screens for normal text editing.

The settings shown on the Print/Program Menu (the default and special printer commands) do not "go with the file." That is, if default print format settings have been changed, you must reset these prior to beginning a new document or they will remain in effect. Many processors save special settings with the document, or clear out such settings at the end of print actions, so "special adjustments" are not needed.

I have had similar problems with "hanging" dot and other text imbedded commands. Those invoked for one file may still be in effect when another file is loaded. The AW devil strikes again!

Needless to say, I am not the World's foremost proponent of AW. I have always found it a difficult program to completely control even with its surface simplicity. AW is always pulling new tricks for which remedies must be concocted.

Even with AW's problems, there are those who would use no other program. They find it easy to use and are willing to live with its idiosyncracies. My teenage son is among them, and he has the choice of many processors.

FIND AND GLOSSARY

AW has some of the best implementations of certain features that I have encountered. First on my list is the find or search function. Like nearly every other word processor, the find function allows search only, conditional replace, and automatic replace. What distinguishes it from the "pack" is the wide variety of search parameters that can be set. Anything in the text including carriage returns, can be included in the search. This makes it possible to use AW for complex editing of text files, so they can be read by data base management systems or other word processors.

For example, my son had created a listing of his comic

contd.

book collection in an Apple Writer /// text file. He was about to exceed the memory limits of that processor, and wanted to transfer these data to a file created on dBASE II, the popular CP/M based DBMS. In order to do this, I had to structure the data into a format that could be recognized by dBASE.

This re-structuring was accomplished very easily with the AW find function, which is identical to that for the //e version. I used a single command to add all of the commas needed by dBASE II as field delimiters. With a few additional commands, I was able to remove all extraneous characters and carriage returns that would be rejected or misinterpreted by dBASE, and to add quotation marks to those fields with imbedded commas (i.e., to prevent a field with an imbedded comma from being interpreted as two fields).

My son has a collection of over 1500 comic book titles, and this feature saved many hours of tedious effort. The modified data file was read perfectly by dBASE the first time I attempted this transfer/append operation.

Glossary is, if possible, an even more remarkable feature. I have used it, for example, to create help menus and function key arrangements on the Apple //e. The file containing glossary commands is maintained on the master AW disk. You may create and call up to 62 routines, each designated by a letter of the alphabet or number (A-Z, a-z and 0-9). These routines may contain control characters or text, and may be loaded automatically at the time AW is booted.

A glossary may contain text that is used frequently or special command sequences, including imbedded control characters. This information may be entered anywhere in a document, and their primary virtues are speed of entry and accuracy. Long words or complex phrases may be inserted with a single keystroke.

I used the glossary feature extensively to simplify the execution of various sets of complex commands. Once these commands are entered into the glossary file and loaded into memory, they may be executed by pressing the //e's "Open Apple" key and the designated character at the same time. Some examples of the commands I "automated" are listed below:

```
0 Printer setting of 6 characters per inch
1 " " 8 " " "
2 " " 10 " " "
3 " " 12 " " "
4 " " 16 " " "
5 Proportional spacing on
6 " " off
7 Clear memory and load business form letter
8 Clear memory and load personal form letter
/ Help screen menu
= Save file in memory
p Print file in memory
P Display the print format options menu prior to
printing
s Print file in memory to CRT screen
g Save and re-load changes to glossary file (a
multi-step procedure)
e Clear file in memory
c Display the catalog on the default drive
q Quit AW
```

The 10, 12 and 16 CPI settings also make the appropriate changes to the left and right margins. Enormously complex strings of commands may be entered and used with a single keystroke.

FORM LETTERS

As indicated previously, WPL is the special "language" that can be used to create various types of command

files. AW uses these files to run form letters, and to create Exec files, special routines for renumbering files, and anything else that the human brain may concoct. A WPL file may be loaded at boot time, or by executing the command "DO filename" whenever you wish.

Form letter file examples are located on the master program disk. This relieves users of the necessity of constructing their own. It also means that one may modify existing files, once some level of proficiency has been achieved with WPL.

In neither case, however, can you develop programs which have all the bells and whistles of the form letter functions of Executive Secretary or others. In fact, the features and problems of the AW version almost exactly duplicate those of Pie Writer, the limitations of which were explained previously. AW also has some quirks of its own. For example, data records must be numbered sequentially. This adds yet another complication, as care must be taken to avoid duplicate numbers and to make certain that new entries are numbered properly.

For an occasional user of form letter features, these problems will have little meaning. For those who make frequent use of such features, serious consideration should be given Executive Secretary, Zardax, Write Away, Word Juggler and other processors which offer far superior form letter/mail list functions.

Two manuals come with the AW package: one for general program operations, the other for WPL. Both are superbly designed and written, with many illustrations and well conceived tutorials. These and the other excellent manuals for the //e represent software documentation at its best.

It is nearly impossible to get a response from Apple about the software that they market directly, and most retailers are not expert enough with a given package to provide any technical assistance. Of four letters I sent to Apple in the past year, I received a response to only one of them, and that was six-months in arriving. You can try Apple's Charlotte regional technical assistance group, but they are very overloaded and continually refer you to a dealer for help. If you have questions or problems involving AW, your best source of information is a fellow user.

SUMMARY

As can be seen from the summary table at the beginning of this article, none of the three processors I reviewed can duplicate the varied and sophisticated features of WordStar. But WordStar is very expensive and one must be a prodigious writer to justify its cost. I have seen discount prices of \$395 for a package that contains WordStar, Mailmerge, SpellStar, and StarIndex, the latter being a program for generating tables of contents and indexes. If you do not already have a CP/M card for your Apple, you must add \$200 to \$275 for that peripheral. You would end up with one heck of a system, but with your pocketbook considerably lighter.

A combination of Executive Secretary and Sensible Speller would cost about \$250 (discounted). Even if you added the General Manager DBMS, the entire cost would be about the same as the WordStar package, excluding the cost of a CP/M card. This system would be somewhat less effective than WordStar for word processing, but a lot more powerful overall, as the WordStar group listed above does not include a DBMS.

Of the three processors, Executive Secretary clearly has more built in features than Pie Writer or Apple Writer. It is far from being a flawless program, how-

contd. on pg 57

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

by John Love



As the old saying goes, "One step at a time!" And so, this is my first step in writing to such a learned audience as well as my first step in writing about a subject pertaining to the Apple microcomputer. Finally, by way of introduction, I must thank both Peter Combes and Lee Raesly for the kernel of an idea behind the solution to the problem I am about to describe.

This problem exists in Applesoft; namely, when a number which has either been entered as input or generated becomes equal to or larger than 1,000,000,000 then this number is automatically printed out in exponential notation. This is okay so long as the reading audience is familiar with exponential notation. However, if not, then the reader might become confused. FORTRAN avoids this problem by having an "F" format option in its "PRINT" instruction; CBASIC under CP/M can use "PRINT USING". Applesoft replies, "I am what I am . . . and what I am, I am."

The following short Applesoft subroutine solves the above problem by concentrating on converting this large number to a string variable. WARNING . . . every significant digit beyond the ninth is depicted as "0", For example, if

Number = 1234567891234

then,

N\$ = "1234567890000"

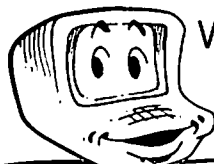
```

10 REM ELIMINATING THE EXPONENTIAL FORMAT FOR
    VERY LARGE #'S
20 REM
30 N$ = STR$ (NUMBER)
40 IF ABS (NUMBER) < 1.0E + 09 THEN RETURN
50 CVT = ABS (NUMBER) / 1.0E + 09; CVT = INT (CVT)
60 LNG = LEN (STR$ (CVT)); REM # OF DIGITS LEFT OF
    DECIMAL POINT
70 CVT = NUMBER / (1.0E + 09 * 10 ^ LNG) : REM
    DECIMAL POINT NOW AT FAR LEFT. # IS NOW
    TRUNCATED TO 9 SIGNIFICANT DIGITS.
80 CVT = CVT * 1.0E + 09 : N$ = STR$ (CVT) :
    REM # = "XXXXXXXXXX".
90 FOR ZERO = 1 TO LNG
100 N$ = N$ + "0"
110 NEXT ZERO
120 RETURN
    
```

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APPLE WRITER //e - OKIDATA 92 EMBEDDED PRINT COMMANDS

by Lewis Aronow

I recently purchased an Apple //e, mostly for word processing work. The program I selected was Apple Writer II (for //e), the printer an Okidata Microline 92, and the interface card the PKASO OK12. The system is quite satisfactory, and I find that the Apple Writer program is easy to learn and has all the sophisticated features I need, including glossaries, find and replace, and mail merges. And with the glossary of special print commands described below, I can call up a great variety of type sizes and quality, line compression, underlining, super and subscripts, and other features with single keystrokes without leaving the word processing program.

It did take me a fairly significant amount of time to master the technique of embedding print commands into text, and perhaps I can save someone else the trouble of duplicating the process. The goal is to create a glossary of print commands. Then to call up a special feature one merely presses "open apple" and the underline key () simultaneously to get underlining, open apple and the hyphen (-) to turn it off, open apple and the up arrow to get superscripts (or turn off subscript), open apple and the down arrow to get subscripts (or to turn off superscript), and so forth.

To create this glossary file, first boot Apple Writer II. The SPECIAL file was [L]oaded from the Apple Writer master disk, as a document (square brackets indicates the control key is held down). The last six commands in SPECIAL (catalog, save glossary file, new - erases memory, print, restore program defaults, and quit) were retained, the remainder deleted. New glossary items were created with the following sequence:

- [V]
Designator - up arrow for superscript, E for emphasized print, I for correspondence quality print, and so forth. A complete list of the designators I used is given in the table below.
- EscX - X is the Okidata code for the function desired. EscC is underline, EscD is underline off, EscJ is superscript, EscL is subscript, EscI is correspondence quality type face, EscO is data quality, etc. Codes are shown in table below.
- CR (carriage return)
- [V]
Back up three spaces, using left arrow key.
[L]oad CONTROLV from Applewriter master disc, CR.
Forward one space with right arrow key.
[L]oad CONTROLV from Applewriter master, CR.
Forward one space with right arrow key.
CR.

This sequence inserts Control V's before and after the codes. The printer functions available using the Okidata Esc sequence are underlining on and off, superscripts and subscripts, correspondence quality print, data quality print, and emphasized print on and off. To get control of printer functions not available with the Esc sequence, a [I] lead-in is used to turn on the PKASO card. Type size and line compression is obtained in this way. The sequence to use is a little more complicated:

- [V]
Designator (i.e., t for tiny print)
- [I]
Instruction (i.e., 254F for 17 characters per inch)
- CR
- [V]
Back arrow appropriate spaces - 6 in instance above.
[L]oad CONTROLV from Applewriter master, CR.
Forward arrow appropriate spaces - 5 in example above.
[L]oad CONTROLV from Applewriter master, CR.
Forward arrow one space.
CR.

The newly created glossary file is [S]aved to disk as a document which I called SPECIALX. The file uses less than 200 characters, so there is plenty of room in the glossary buffer memory (2048 characters capacity) for you to add additional glossary items to SPECIALX. Of course you cannot use any of the designators already employed for printer commands. Remember, in order to use this file, it must be put into memory as a glossary file, using [Q]E. When loaded as a glossary file, pressing [G], the designator, and a carriage return inserts the command into text. Even easier, press "open apple" and the designator simultaneously to get the desired function. The table below lists the functions available and the various designators I used. The entry codes are shown, then the keystroke used with [G] or "open apple".

DESIGNATOR, CODE	FUNCTION	KEYSTROKE
Already available on SPECIAL:		
c A]	Catalog	[G]c
d f	Save glossary file	[G]d
n y	New - erases memory	[G]n
p NP]	Print	[G]p
r CSYS,d]]	Restores Apple Writer defaults	[G]r
q Ky	Quit Apple Writer	[G]q
Available with Okidata Escape sequence:		
- C	Underline on	[G]_
- D	Underline off	[G]-
↑ J	Superscript (also sub off)	[G]up arrow
↓ L	Subscript (also super off)	[G]down arrow
I I	Correspondence quality print	[G]I (#1)
O O	Data quality print	[G]O
E T	Emphasized print (bold-face)	[G]E
e I	Emphasized off	[G]e
Available with PKASO [I] lead-in:		
t 254F	Tiny print - 17 CPI	[G]t
s 90F	Small print (Elite - 12CPI)	[G]s
9 70F	Default print (Pica - 10CPI)	[G]9
8 50F	Big print - 8.5 CPI	[G]8
6 45F	Bigger print - 6 CPI	[G]6
5 20F	Biggest print - 5 CPI	[G]5
L 8M	Line compression - 8 lines/inch	[G]L
I 6M	6 Lines/inch (default)	[G]I (Letter I)

contd.

Now for the problems this glossary file creates. First, remember that in order to use these commands, the file SPECIALX must be loaded as a glossary file, using [Q] option E. Problems with underline are that it won't wrap around as ordinary text does. You therefore have to turn it off at the correct place, insert a carriage return, and turn it back on if you are doing continuous underlining that extends past one line. If you are just underlining a single word or a header phrase, this problem doesn't arise. If you are doing discontinuous underlining, you are inserting and removing the underline function before and after each word. This leads to special problems, as does frequent use of the subscript/superscript command. The problem is that your right margins get misaligned because Apple Writer counts the non-printed commands as characters for line spacing or margin justification purposes. The corrective step is to insert a "dot" command before that particular line of text adding additional spaces to the right margin (up from default of .RM79). Don't forget to go back to .RM79 when finished. The dot commands must be on lines by themselves, of course.

You must also make changes in the margin settings when using non-default print sizes. For example, if you use 5 CPI, maximum margin settings (for 8 inches of typing) are LMO, RM40. For the tiny print size, maximum typing is 8"x17 = 136, or LMO, RM136. Elite type, 12CPI, requires LM10, RM94 for ordinary work. This print size, in correspondence mode, produces an exceptionally good appearance and should be acceptable for almost any purpose, including direct photo reproduction.

The emphasized print (boldface) works with all print sizes, but correspondence quality will not work with 17 CPI or 8.5 CPI. If you are changing both size and style, enter the size first, then the type quality. If you switch between the two smaller type sizes, or the two larger type sizes, the command takes effect at the next line, not where it is in text. One final caution - if you use the compressed line feature (8 lines per inch), you might have to readjust the default value of the number of lines per page.

Apple //e Word Proc. contd. from pg 54

ever, and needs improvements in memory work space and a number of its functions. Sof/Sys also needs to hire Apple's writers (no pun intended); their manual needs a lot of work.

Apple Writer is an extremely versatile program. Prospective buyers should spend considerable time testing this program to see if they can live with its idiosyncracies and limitations.

Apple Writer is the easiest program to learn, and it executes very quickly, particularly if you take advantage of its splendid glossary function. It has a number of annoying quirks and deficiencies, however, and may not satisfy the longer term needs of serious users.

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SUPERSCRIPTS, SCREENWRITER II, AND THE EPSON PRINTER

by David C. Eldridge

This article is concerned with embedding printer code, particularly for superscripting and subscripting, while using ScreenWriter II with an Epson printer. One technique, using replace characters, was described by Donald Hall in the June issue of WAP. Another technique, using a custom printer driver, was provided by Becker in the July issue of WAP. In describing his driver, Becker mentioned his driver was an efficient alternative to entering a long string of code that might otherwise be required to control a printer. He also mentioned that the MACRO facility was a way of handling this. This is the approach I had taken. I used macros and avoided character replacement where possible (allowing one to make better use of editor listings and avoid having to insert the extra embedded commands in each file).

With one exception, I found that it is possible to control the printer using <CTRL X> to embed the various control keys listed in Appendix C and control codes listed in Appendix B of the IMX Printer Manual with GRAFTRAX PLUS. That exception was <CTRL O> (for compressed printing). It seems to cause a system hangup when using RUNOFF.

Superscripts and subscripts present a particular problem and require a very long string of control characters to get the output desired. To avoid a stretched out appearance (in superscripts or subscripts), I found it desirable to put the printer into condensed mode first. The escape code must be entered with the S followed by the null code for superscripting. Then a backspace must be inserted to avoid a blank space. The ESC required in the control codes (ASC = 27) can be easily entered by using the <CTRL X> ESC sequence. A bell symbol shows up for ESC on a CRT. The ESC prints out on a printer as a |, when doing an editor listing with control character flag set to 1. Then a backspace must be entered to avoid a blank space. The character to be superscripted must be entered. Then one must turn off the compressed mode and also return to normal characters with or without double strike. All along one must make sure the enhanced mode has not been turned on.

The control key for compressed mode is <CTRL O> (ASC code = 15) which works fine in the editor listing but gives trouble in RUNOFF. I had to use a (.RP <CTRL X><CTRL W>, 15) earlier in the program to give a Replace Character. To provide a superscript and a subscript for a particular symbol requires instructions to return to normal after one character and do an extra backspace before continuing. <CTRL H> provides a backspace. <ESC CTRL P> provides a null character (preceded by the usual <CTRL X>). I should note here that my keyboard does not have a shift key modification and this could make a difference.

A string to give a compressed superscript would be provided by: <CTRL X> <CTRL W> <CTRL X> ESC S <CTRL X> <CTRL SHIFT P> <CTRL X> <CTRL H>. A return to normal (without turning off double strike) would be provided by <CTRL X> ESC T <CTRL X> <CTRL R>.

These strings are very long and hard to remember. The MACRO facility should be just the thing here. It can work, but it I found it very strange. Only once did I manage to properly save a macro table. It handled subscripting with a <CTRL S>, superscripting with <ESC CTRL S>, and a return to normal with a \$. If a \$ is needed, then it can be obtained by preceding it on the

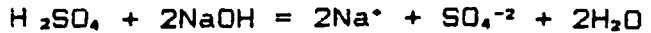
keyboard with a <CTRL X>.

I said I once managed to get what I needed in a macro table. However, I can not tell how I did it, as I can't repeat the feat. The problem is that new macros seem to affect old macros that were in the table already. Apparently there is a bug in the MACRO facility. One fact I quickly discovered is that, with the exception of the ESC control, every <CTRL X> must be triplicated when defining the macro.

There are other peculiarities with the ScreenWriter/Epson combination. In particular, the underlining acts strangely with double strike. The underlined portion goes downhill if the regular ScreenWriter II underlining is used. To turn on underlining, use the sequence <CTRL X> ESC - 1 and use <CTRL X> ESC - <CTRL X> <SHIFT CTRL P> to turn the underlining off.

Below is a sample. Note the extra space before a subscripted 2 in one case but not in another. Coding was identical.

with compressed mode:



without compressed mode:



2H^W^[S1^H2^R^[T0 (as it would appear on an listing) produced 2H_2O.



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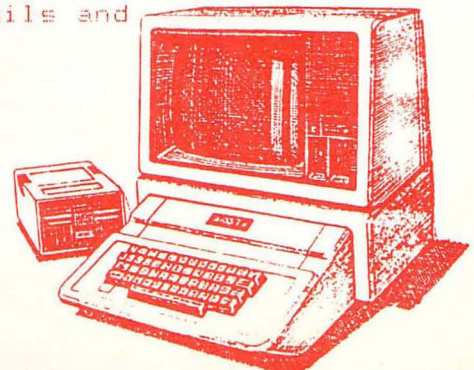
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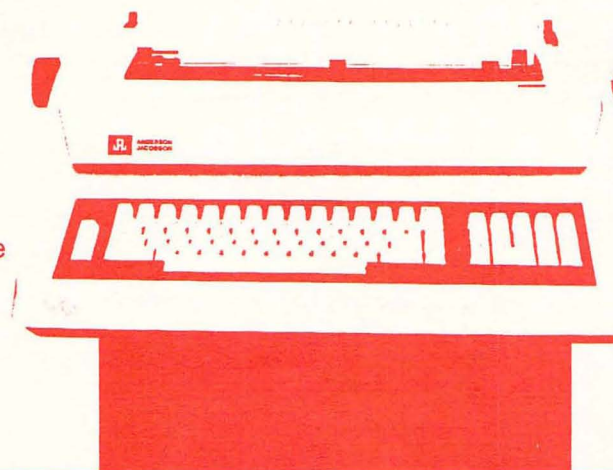
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