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Washington Apple Pi

Volume 4 December 1982 Number 12

Highlights

GETTING STARTED WITH
FIG-FORTH
CONNECT THE DOTS
THE COST OF SCROLLING
THE MONITOR CTRL-Y INTERFACE

In This Issue

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APPLE ///	-Charles Dow	(301) 460-3911
ASMSIG	-Robert Palus	(301) 776-3075
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Pascal (PIG)	-Tom Woteki	(202) 547-0984
SIGGAMES	-Jim Eatherly	(202) 232-6046
SIG/DISABLED	-Curt Robbins	ABBS WAP428
(or write)	8805 Barnsley Court	
	Laurel, MD 20708	
(or phone)	-John Molineaux	(301) 341-7391
Telecomm. SIG	-George Kinal	(202) 863-6489

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EDITORIAL

This is the 46th issue of an unbroken series of issues of the Pi. It is a record of which we can all be proud. I firmly believe that a major contributing factor to the strength, health and growth of any computer users' group is the way in which its members communicate with each other - the newsletter. It constantly amazes me to witness the flow of new materials which arrives just in time for the next issue.

I should like to draw your attention to one of our most prolific contributors - David Morganstein. Here is a person who holds down a full-time job, runs the Washington Apple Pi, gives tutorials and writes articles - all this while helping out at home with two young children. You will notice at least four articles by him (or co-authored) in this issue, despite the fact that on top of everything I've mentioned, this month was moving time for him both at the office and at home. This is certainly not intended to denigrate the contributions made by our other regulars to these pages, of which there are many, but I personally feel that member accolades are in order for our President. How about you?

Please note that the article on FIG-Forth by Bill Wurzel is a welcome first of a series which will appear in the next several issues of the Pi.

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. Sales, library transactions, newsletter pickup, etc. are from 8:30 - 10:00 AM. From 9:00 to 10:00 AM there will be an informal "Help" session in the auditorium. The main meeting starts promptly at 10:00, at which time all sales and services close so that volunteers can attend the meeting.

Because of the Holidays, the December meeting will be on the THIRD Saturday.

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

December 18 (3rd. Sat.)	-	Swap Meet
January 22	-	Pascal - Dr. Wo
February 19 (3rd Sat.)	-	Hardware Interfacing Tom Riley

MINUTES

OCTOBER GENERAL MEETING

The monthly general meeting of WAP was held on October 30, 1982 at USUHS. The WAP hotline volunteers are available to answer questions for purchased software only. The Apple Tech Notes will be gradually published in the Pi but if anyone wants their own copy, $7.50 discount coupons are available. This month's demonstration was by the Montgomery County Teachers; next month's is on Graphics. Any suggestions or volunteers for demonstrations are welcome. The upcoming tutorial is on Pascal. In January Beginning Tutorials will be offered. Al Weiner is coordinating a computer fair and needs some volunteers. The December WAP meeting will be a swap fest. There will be no commercial sales. Volunteers are needed. The day will end with an auction to dispose of goods still remaining. Betsy Harriman needs contributors and help in collating a new member handbook. Volunteers were sought to handle the WAP booth at the Mid-Atlantic Computer Show. Appleseeds is looking for some adult volunteers to help them. The SIG/Disabled is examining Special Education as a new focus. For the club store, there will be a special line for buying diskettes, and picking up prepaid orders. Volunteers will be needed to help form these lines and write receipts. The Group Purchase Chairman will look into purchasing Source memberships at group rates. Volunteers were solicited to host informal gatherings by localities. A poll was taken as to who had heard of and were satisfied or not with Apple Orchard, the bimonthly publication of IAC. The June ACM conference here in Washington has put in a call for papers on applications, hardware, or software on microcomputers. A motion was made and passed that the Bylaws, published in the October issue of Pi be adopted and assets be transferred to the new corporation WAP, Ltd.

The presentation was on PILOT by Robert Platt.

SUMMARY - NOVEMBER BOARD MEETING

The Executive Board of WAP, Ltd. met on November 10, 1982 at the home of the Urbans, with 18 people present. Following a report on the office search, the President was authorized to execute a lease. A report on library acquistions included a call for pledges of office furniture/equipment. Bernie Urban was nominated as IAC Eastern Region Director. If an AJ8032 printer is available, the Board approved an exchange of an ad in the Pi for a short term loan of a printer with maintenance. A new member manual and disk is being prepared. Methods to handle the long lines at the club store were discussed. Our presence at the Mid-Atlantic Computer Show was reported on. Enough volunteers were received to plan Apple Teas for December and January. Out of a discussion on the needs of Appleseeds came a Bylaw amendment that no SIG shall collect dues or contributions without Board approval. Guidance was given to the scope of a vendor fair. Approval was given to have ALF make disk labels. A one page description of the call for papers by ACM will be included in the December newsletter. A report on the demonstration programs at the monthly meetings was given. An update of the membership directory was proposed. The ABBS Sysop was authorized to acquire Applesoft ROM chips. ¢

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 $18.00 per year, beginning in the month joined. If you would like to join, please call the club phone and leave your name and address, or write to the P.O. Box above. A membership application will be mailed to you.

Subscriptions to the Washington Apple Pi Newsletter are not available. The newsletter is distributed as a benefit of membership. ¢

GIFTS FOR GAMESTERS

by Jim Eatherly

With the holiday season approaching, I thought it would be a good idea to give some suggestions for gifts for the gamesters on your list. Within this limited space, I will only make a few suggestions, and I hope one of them is right for you.

The first gift that I would recommend for the serious gamester is a joystick. There are several types to choose from. You should try them out at your local computer store to see which is right for you.

The other suggestion that I have is a computer game, and there are several types to choose from. If the person you are giving the gift to enjoys arcade type games, then I would recommend THRESHOLD for the more experienced player and SNEAKERS as a game the whole family can play and enjoy. If the person enjoys adventure games, I recommend WIZARDRY, especially for those who are into Dungeons and Dragons; and ULTIMA for those who want something less complex. These suggestions are far from complete but should provide a place to start from. ¢

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.

General	Robert Fretwell	971-2621
	Dave Harvey	527-2704
	Robert Martin	498-6074
APPLE SSC	Bernie Benson	546-0076
Apple TechNotes	Ed Schenker	977-7349
Communications Packages		
Data Capture	Howard Simkowitz	882-4645
VISITERM	Steve Wildstrom	933-7728
Expediter Cmplr.	Peter Rosden	229-2288
Data Bases		
DB Master	Dave Einhorn	593-8420
	Leon Raesly	460-0754
Data Perfect	Leon Raesly	460-0754
Games	Jim Eatherly	232-6046
	Donn Hoffmann	966-2616
Graphics	Bill Schultheis	538-4575
Home Account	Leon Raesly	460-0754
Languages (A=Applesoft, I=Integer, P=Pascal, M=Machine)		
A	Peter Combes	871-1455
A,I	Jeff Dillon	422-6458
A	Mark Pankin	370-9219
A,I,P,M	Bill Schultheis	538-4575
A,I,M	Richard Untied	241-8678
P	Robert Fretwell	971-2621
Locksmith	Leon Raesly	460-0754
Modems-Telecom.	Ben Acton	428-3605
	Tom Nebiker (216)	867-7463
ASCII Express	Dave Harvey	527-2704
Hayes Smartmod.	Bernie Benson	546-0076
XTALK CP/M Com.	Bernie Benson	546-0076
Operating Systems		
APPLE DOS	Richard Untied	241-8678
CP/M	Robert Fretwell	971-2621
Paddles	Tom Riley (eve.)	340-9432
Pers. Fil. Sys.	Ben Ryan	469-6457
Printers		
General	Walt Francis	966-5742
Anderson Jac.	Bill Etue	620-2103
	Leon Raesly	460-0754
IDS 460	Jeff Stetekluh	521-4882
MX-80	Jeff Dillon	422-6458
Silentype	Bruce Field	340-7038
Time-Sharing	Chuck Reinbrecht	299-6810
	Dave Harvey	527-2704
VisiCalc	Walt Francis	966-5742
	Leon Raesly	460-0754
Word Processors	Walt Francis	966-5742
Apple Writer	Bruce Field	340-7038
Letter Perfect	Leon Raesly	460-0754
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Supertext II	Peter Rosden	229-2288
	Leon Raesly	460-0754
WordStar	David Inouye	422-8926

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PRISM 80 (Graphics, Sheet Feed, Sprint Mode)	$ 1,100
PRISM 80 (above plus Color)	$ 1,400
PRISM 132 (Graphics, Sheet Feed, Sprint, Color)	$ 1,550
Okidata Micro 82 A	$ 440
Okidata Micro 83 A	$ 680
NEC 7710 Spinwriter (RS 232)	$ 2,350
Grappler (Cable included – Specify Printer)	$ 140
Micro Buffer II (32 K) – Specify Printer)	$ 240
AMDEK RGB Color Monitor	$ 750
AMDEK DVMBOARD	$ 145
NEC Monitor 12" Green	$ 165
AMDEK 13 Color Monitor	$ 330
Axlon Ramdisk 320 K	$ 1,050
Microtek 16K Memory Board	$ 85
Softcard Premium System (Z 80, 16 K & Videx)	$ 525
Mu-Math	$ 200
D BASE-AP	$ 450
Wordstar-AP	$ 200
LJK Letter Perfect	$ 105
Visicalc 3.3	$ 185
Visiterm	$ 85
Visiplot	$ 150
Visidex	$ 185
Visitrend / Plot	$ 215
Visifile	$ 185
Desk top Plan II for Apple on Disk	$ 185
Visipak (Includes Visicalc, Visifile & Visitrend/Plot)	$ 490
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PRESIDENT'S CORNER

by David Morganstein

Apple Teas

At the October meeting we discussed starting a series of small meetings around the area. These meetings would provide a "quieter" opportunity for learning about the Apple, sharing knowledge and sharing some hands-on experience with others. About 20 members volunteered the use of their home for this purpose. Elsewhere in the magazine you will find a list of their names, locations and phone numbers as well as one or two dates for the first of these "Apple Teas". Please call these folks to RSVP your interest in visiting. From the long list you should be able to find someone near you who will be holding a session at a time convenient for you. They will limit attendance to the available space at their home. The club expresses its thanks for their willingness to help in this way. We will see how many people attend and the service these sessions provide. If they prove valuable, we will call for other volunteers and expand the list.

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Office

It's official!!! We have a one-year lease on about 750 sq. ft. in northern Bethesda (8227 Woodmont Ave. near Battery Lane). We will open after modifications are complete, perhaps in December. If so, we will hold an open house to bring in the Holiday spirit. (Apple cider will be served...)

If you have any office furniture to lend us, give me a call. We need two desks, many chairs, a filing cabinet and two tables (one for meeting around, another for magazine layout). We purchased several book cases during the Brentano's close-out sale so our Library will be able to shape up quickly. (See Library below.)

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Hot Line

A number of Hot Line volunteers have received requests for information about software from people who appear not to be purchasers of the programs in question. That is, the callers are not aware of the basic information provided in the owner's manual. The Hot Line should only be used by purchasers of the product to obtain program-specific information. Many of the Hot Line subjects are not connected to specific products; these topics can be used by all members. Please respect a Hot Line volunteer's request for registration numbers if they want to verify that the caller is indeed an owner of the product.

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Swap Fest

Make sure that you note the December meeting on your calendar (the THIRD Saturday). We will hold a swap fest in the cafeteria in lieu of having a speaker after the 10 AM meeting. Swapping should begin around 10:45. This is an opportunity to exchange unwanted items such as games you have not been able to solve and are too exhausted to continue trying...Please remember this is for personal property, no commercial sales.

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Library

We have obtained shelving for the Library and are ready for donations of magazines and books. You can make these permanent loans for now and can donate them if and when we obtain the IRS status which makes donations tax deductible. Contact Jess Wagstaff with offers to loan magazines and books to the WAP Library.

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Speakers & Demonstrations

Our first demonstration session, held in the Cafeteria at the October meeting, went well. Thanks to Chuck Philipp and the teachers who brought in and demonstrated their interesting science experiments. It is always amazing to see what can be done with the Apple!! If you have equipment or software you would like to demonstrate or see demonstrated, contact the coordinators, Harry Misuriello or Julie Oliver (their phone numbers are on the masthead).

Are you interested in being a speaker at our monthly meeting? If so, contact Ernie Forman, Tom Woteki or me to express your interest. We need topics and speakers for the March 83 and beyond meetings.

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USUHS

Due to a reassignment, Col. Dick Hodder is not regularly located at USUHS. We have another USUHS staff member who is acting as host and helping to coordinate our uses of the facilities. Chet Pletzke, Director of the Learning Resource Center, has taken on that burden. I would like to express the appreciation to Dick for the many hours he has spent on our behalf in arranging for our presence at an excellent facility. I look forward to working with Chet in the future.

If members have space or equipment needs or problems, however, they should work ONLY through Jim Carpenter, Arrangements Chairman. Jim is constantly in touch with Chet and the USUHS staff and knows how to resolve any needs you may have. Jim's phone number is found in the masthead list.

• • • • •

Tutorials

Our next tutorials will be on Pascal and be taught by Tom Woteki; the Nobember issue

contd.

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CPM Card	$250
V.C. Expand	$95
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contained a syllabus for the courses. There will be two courses. The first will be introductory and held in 1982. The second will be advanced and start in Jan. See the last page for a registration form. If you would like to teach a course, contact Steve Stern or Joe Silverman to volunteer. Courses can be as short as a single 2-3 hour session or as long as several such sessions at your option. If you would like to see a course on a certain subject, contact Steve or Joe.

As a note, the registration forms show two fees. A base fee and a discounted one. The discount is offered to those willing to cart an Apple to the tutorials. The only Apples available are those brought by attendees. Those unable to bring an Apple pay the regular fee and must rely on "over-the-shoulder" viewing with those who brought an Apple. There may be a possibility of using some USUHS computers for these courses and we will investigate this further.

• • • • •

Overheard in Cupertino...

"Franklin, my dear, I don't give a Basis". Is the WAP an "Apple only" organization? Or do we have room for the look alikes? It is said that imitation is the highest form of compliment...I expect that Mr. Jobs et al can do without the compliment. Of course, the competition sells by mail...A footnote: the WAP never received a reply to it's letter to Apple, Inc. about mail order sales. ¢

DEALERS' CORNER

APPLE WORKSHOPS!

A variety of low-cost, hands-on workshops on the Apple computer are being offered at Clinton Computer's new Learning Center. Many workshops are for beginners. Workshop offerings include Introduction to Microcomputers, How to Operate the Apple, VisiCalc, Wordstar, BASIC Programming, Intermediate VisiCalc, and many other workshops for home and business applications. Call Nancy Kelly, Director, Clinton Computer Learning Center, at (301) 868-0002 for details and registration. Class size is limited, so register early for upcoming November and December classes!

HOLIDAY SALE!

The Micro Connection Inc., the Personal Computer Store is having a Holiday Sale featuring red Christmas stockings stuffed with your favorite games, some containing a TG Joystick, all at 40% off retail price. Call for a complete listing of the game stockings, and a copy of our free Apple hardware and software catalog. The store telephone number is 281-1866. Our store address is 320-A Maple Ave., Vienna, VA. 22180.

COMPUTER COURSES!

Is your spouse a computer widow(er)? Give her (him) a gift certificate for a class in GETTING COMFORTABLE WITH COMPUTERS or BASIC PROGRAMMING with Electronic Learning Facilitators in Bethesda, MD. Gift certificates for parent/child workshops and classes for children in BASIC and LOGO are available also. Call 493-9696 for additional information and to receive the winter schedule. ¢

SIG/DISABLED - CALL FOR HELP

by Curt Robbins

Originally, the SIG/Disabled was established to make the WAP meetings accessible to all physically disabled members. By accessibility, we mean to make reasonable accomodations for those members who may or may not be able to independently conduct regular activities within the WAP functions, i.e. pre-meeting purchases of equipment and supplies, attending SIG meetings, and of course attending the regular WAP meetings. For example, a wheelchaired member may need a ride to the meeting place, a hearing-impaired member may need an interpreter, etc. Now, we are receiving requests for assistance over and beyond these intentions.

Consider this. We have been approached by a WAP member who was called upon to provide assistance to a lady using an APPLE for her husband who had a stroke. It left him with limited use of his arms and hands, and with limited speech. In another instance, we have received a call from a mother of a hearing-impaired son who feels an APPLE is a good way for him to develop his communication skills. And finally, we've expanded the SIG to include parents/members who have learning disabled or mentally retarded chilren and who want to find the best suited educational software for their children's needs. Needless to say, special education is beyond our scope of expertise, and we need help.

It would be greatly appreciated if any WAP members with special education expertise, or who know of anyone with such knowledge, would join us in solidifying the foundations of this SIG. Please call John Molineaux at 341-7391, or leave a message for me on the ABBS at WAP428. ¢

CLASSIFIEDS

FOR SALE: Heathkit Microprocessor Course WITH Trainer, Learn microprocessor basics. Half original price, mint condition, $150. Call Bob, 262-1355 daytime.

FOR SALE: Dynavit Computerized Fitness System, like new bicycle ergometer with chip memory of American Heart Association Cardiorespiratory table, solid state heart rate sensor. $1500 or best offer. Call Bob, 262-1355 daytime.

FOR SALE: Silentype printer, $250 or best offer. I needed to upgrade to 132 col. printer - never had a problem with it. Bob Schmidt, 736-4698.

FOR SALE OR SWAP: (All prices are negotiable.) Hayes Micromodem II (new), $Call; Dan Paymar UC/LC adapter (Rev.0-6), $10; The Dictionary (On-Line), $50; Speed-ASM, $20; Speedstar Applesoft compiler, $40; Superkram 3.3 DBMS, $60; REQUEST/CONQUEST DBMS (uses Superkram 3.3, above), $150. All programs on original disk(s) with original documentation. Contact Barry Gordon, (301) 235-3125 (evenings), (301) 955-6431 (daytime) for details.

FOR SALE: VisiCalc and Business Basic. Both brand new and unused. For Apple ///. $125 and $63 respectively. Save a bundle if you haven't yet bought your system or don't own these programs. Call Dave at (703) 385-9811. I have only one of each item.

FOR SALE: Epson printer inferface, $70. Call 972-5566 before 10:00 PM.

FOR SALE: Complete printer setup. Centronics 737-I dot matrix printer, Microdome External Textformatting Interface, Apple Centronics printer card, cable documentation. Near letter quality printing with powerful text formatting and dot matrix speed can be yours for $500. Call "Pete" Rusk, (work) 654-8234, (home) 933-7848.

FOR SALE: (1) Apple II+ with 16K RAM memory, Videx 80 column card, Microsoft Softcard, 2 Apple disk drives, Apple /// monitor, Apple stand for monitor, and game paddles - $2400. This system can be sold without Softcard as a Pascal system, $2200. (2) Apple super serial interface card and Transtar letter quality printer, which emulates Diablo 1610 and works with any Apple word processor and Wordstar. With a cable and some installation tips - $1500. Total system in (1) and (2) - $3800, negotiable. Various software packages, e.g. ScreenWriter, PFS, at a reasonable price to purchaser of above system. Call Naohito Okude, (703) 671-2248.

FOR SALE: Apple Pilot on original diskettes with full documentation, $70. Call Dave Einhorn, 593-8420.

FOR SALE: APPLE II+ 48K, Apple Disk Drive with controller card, Zenith 12" green CRT, DOS 3.3, Apple Writer. Purchased in 1981 for $2100, used only 10 hours. $1275. Call Bill or Hoff, (days) 202 872-0660.

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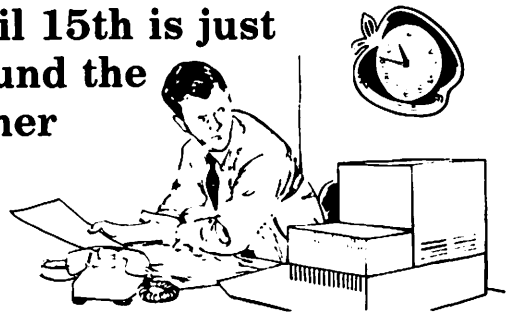

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SIGNEWS

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.

PIG, the Pascal Interest Group, meets on the third Thursday of each month at 7:30 PM at the Uniformed Services University of the Health Sciences, Bldg. A, Room 2054 (2nd floor), on the campus of the National Naval Medical Center at 4301 Jones Bridge Road, Bethesda, MD.

EDSIG - the education special interest group - will meet on Tuesday, December 14 at 7:30 PM in Lecture Room A, Building A, USUHS. For details of this and other meetings, see the EDSIG Page elsewhere in this issue.

LOGOSIG meets each month on the Saturday of the WAP meeting at 12:30 PM at the Bethesda Country Day School, 5616 Beech Avenue, Bethesda, MD.

ASMSIG meets immediately after the regular Washington Apple Pi meeting.

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

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

The Telecomm SIG meets after the regular WAP meeting. See the Telecomm SIGNEWS elsewhere in this issue.

*** LAWSIG ***

WAP member Charles Field and WAP General Counsel Jim Burger would like to see if there is any interest in forming a LAWSIG. Anyone interested please call Charles at work (755-8247) or Jim (822-1093). After the next meeting Charles and Jim will be meeting with a representative for West Law to explore the possibility of accessing West Law to the APPLE.

JOB MART

HELP WANTED

The Micro Connection Inc., the Personal Computer Store is seeking a part-time salesperson to work at the store each afternoon (3 pm to 6 pm) and all day Saturday. The salesperson should have knowledge of Apple equipment and software. Good opportunity in a pleasant store. Call Bob at 281-1866.

FACULTY TENURE TRACK POSITION IN MICRO-COMPUTER APPLICATIONS: In schools, home and business for instruction and learning, information management, and decision support.

Candidates from a wide variety of backgrounds will be considered. Ph.D. is required. Rank and salary commensurate with qualifications and experience. Appointment date: Fall 1983. Inquiries and applications should be sent to: Dr. James Liesener, Chair, Faculty Search Committee, College of Library and Information Services, University of Maryland, College Park, MD 20742.

The Univ. of MD is an affirmative action and equal opportunity employer.

CACI, INC. in Alexandria, VA has an immediate need for an Apple II+ configured for CP/M with keyboard enhancer to do Wordstar word processing. We would be willing to rent the machine and/or employ someone to do the work for a two-three month period. Contact Allen Oliver, 841-4444 (day), 593-5501 (evening).

EXPERIENCED APPLESOFT INSTRUCTOR WANTED: Electronic Learning Facilitators (ELF) is seeking experienced teachers for classes beginning in January in Applesoft BASIC, business and home applications software, and LOGO. All classes are held at our Bethesda location in the late afternoons, evenings, and on Saturday mornings. Call Dianne Lorenz at 530-7881 (evenings) or leave a message at 493-9696.

VOLUNTEER NEEDED

Trinity College is seeking the help of a person with in-depth knowledge of the Apple computer to participate in a project to adapt an Apple for use by a handicapped student. For additional information, please call Dianne Lorenz at 269-2315 Monday - Thursday.

IAC CORNER

by Bernie Urban

IAC-Apple Computer relations continue to improve. Apple has prepared a colorful brochure on the IAC which is slated to be included with the literature and manuals accompanying each new Apple computer. Ken Silverman has arranged a companion purchase from their printer of a supply of the brochures to be used for promotional purposes.

IAC and Apple Computer have also agreed to an arrangement whereby IAC will support and seek "adoption" by the appropriate local IAC member club(s) of consortiums of not-for-profit community service agencies which have been awarded grants by Apple to network their activities. Recently initiated by Apple Computer, this new community affairs program awards up to five Apple computers together with related peripherals and software to community agencies wishing to share their information collected as a part of their community services. Under this plan, the IAC member clubs together with IAC's support would provide technical backup to the agencies once they received the requisite training to be provided by Apple Computer staff.

Some new business items soon to be considered by the IAC Board are:

- Redefinition of what constitutes a user group.
- Special memberships with the IAC with differing dues rates and services.
- Special subscriptions for members of member clubs.

All member clubs in the Easter region should have received by this time a certified letter from Santa Clara containing nomination forms and information pertaining to the nomination of candidates for Director, Eastern Region, IAC. (I personally stuffed and prepared each envelope.)

AMENDMENT TO THE BY-LAWS

The WAP Board has become concerned with the question of whether SIGs should collect dues. The WAP budget allocates funds to SIG activities, and the Board believes that most SIG activities can be funded through these allocations. Each SIG has an initial $100 budget, with the Board approving each specific expenditure. Additional funds may be budgeted as necessary. The Board has adopted the following Bylaw amendment to clarify that participation in SIGs is not conditioned upon payment of dues.

(New) Article X, Section 4. DUES. No special interest group shall collect dues or contributions without the permission of the Board of Directors.

IIF

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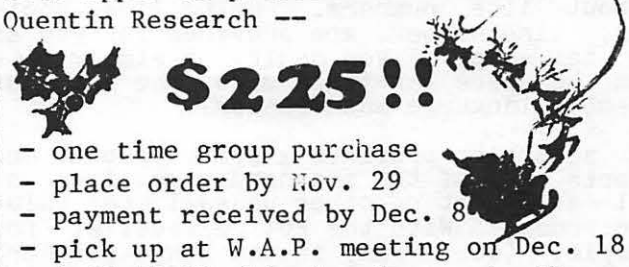

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SOFTVIEWS

by David Morganstein

BIG MAC (written by Glen E. Bredon, distributed by CALL A.P.P.L.E., 304 Main Ave. S., Suite 300, Renton, WA. 98055). Perhaps one of the best sources for low cost, high quality software is the CALL A.P.P.L.E group in Washington State. This macro assembler is yet another of their excellent products. Before a summary of its features, be aware that you must be a member to buy CA software. However, membership is well worth it!

This macro assembler costs less than many commercial assemblers without macro capability. The documentation is clear and the utility support programs are icing on an already wonderful cake. BIG MAC itself operates in one of several modes: the EXEC mode, the EDITOR mode or the ASSEMBLER mode.

The EXEC mode allows you to load and save source files, object files or text versions of source files. It allows you to CATALOG disks, APPEND source and change the default drive.

The EDITOR for creating assembly language source has all of the edit features of the PROGRAM GLOBAL LINE EDITOR, also distributed by CALL A.P.P.L.E. and also a bargain. It allows for the insertion and deletion of text, the modification of text either in one line or in many lines, the location of text throughout your source file and the displaying of lines with or without line numbers. During line addition, line numbers are provided for you as are tab stops if you desire by simply hitting the space bar (this makes the entry of assembly language much easier).

The assembler provides a symbol table and accepts all of the standard directives as well as a host of other unusual and valuable ones. With the PUT directive, for example, (found only in the Language Card version) you can insert a file during assembly to increase the effective size of your source. BIG MAC allows the programmer to define macro routines with variable parameters at the beginning of the source code. Thereafter, you can reference the macro name and include the parameter; the assembler will correctly assemble the corresponding object code. For example, you may define a routine for sending a message ending in 00 to the screen. Then you can give the name of the macro with different messages throughout your code. Yes, this can be done by defining a subroutine which you call whenever needed; the point is that it is easier and clearer to use a macro assembler to do this. Other useful macro routines might be to position the cursor at a given row, column or to read the keyboard. BIG MAC comes with a macro library of all of these as well as many other useful routines, along with example usages of macro capability.

The manual is 72 pages in length, easy to follow and includes a quick reference command summary card. It contains important programmer information and key locations including a memory map. All the utility programs included on the disk are explained. These include a dissassembler which creates source files for BIG MAC, the SUPPLEMENT which gives Apple II+ users the step and trace functions and a symbol cross reference lister (language card version only). The Language Card version of BIG MAC uses the extra 16K to allow you larger source/object files.

All in all, it is an unbeatable buy at only $22.50 ($28.50 for the Language Card Version) to CALL A.P.P.L.E. members.

Apple Flasher (written by Paul Mosher, distributed by Crow Ridge Associates, Inc.). If you think this is an R-rated game which comes in a plain brown rain-coat, you're wrong. Flasher is a graphics utility for assembling a slide show of Hi-res displays. The package (which comes on a protected disk) begins by asking you to insert the "PIX DISK". Referring to the seven page manual indicates that this means to insert your own disk with Hi-res pictures. The next screen displays the names of binary Hi-res screens and allows you several options: display one of the pictures, scan through them all, set up a "slide show" display where you can move forward or backward through the screens or automatically cycle through the pictures allowing varying amount of time for each display. By modifying a few normally unused bytes in the display file, you can program the display period. The best feature of the program is the high-speed BLOADs of Hi-res screens: about 2-3 seconds each!!! If you need a slide show routine, the Apple Flasher at $34.50 may be just the thing.

Bug Byter (written by Ted Cohn, distributed by Computer-Advanced Ideas, Inc., 1442A Walnut St., Suite 341, Berkeley, CA 94709). If you are trying to learn assembly language, or do a lot of machine language coding, you will find Bug Byter to be an extremely useful utility. Supplied in Dos 3.2 form (which can be MUFFIN'ed to 3.3), this $1A00 byte, relocatable program can be used to provide a visual display of machine code in action. The display has to be seen to be appreciated. It includes: the contents of the 6502 registers and program counter, the individual bits of the status byte, the stack around the current stack pointer, a disassembly of the current location, individual memory locations of your choice and user definable breakpoints. BB returns the step, trace and mini-assembler features lost to Apple II+ owners. You can watch the registers, stack pointer and status word change as you step through your program or trace its operation and at a

contd. on pg 21

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INSPECTING FILE CABINET TEXT FILES WITH A WORD PROCESSOR

by J. T. DeMay Jr

Some of the mysteries of FILE CABINET and its use of sequential text files can be explained using an editor program. The editor portion of the DOS TOOLKIT, SCREENWRITER][, or most any other word processor can be a valuable tool for discovering the secrets of the files used.

The first step is to copy the FILE CABINET files; BASENAMEFILE, XXXXXHEADERFILES, and XXXXXINDEXFILES onto a blank disk. If you are not sure how to do this, see Appendix J of the DOS REFERENCE MANUAL. It explains the use of FID, a handy text file utility which you received as part of the DOS package. With the original disk in a safe place, we can feel comfortable experimenting with data that we are familiar with, and not be concerned if it accidentally gets clobbered. I will be discussing the files we created in the FILEHANDLER article in the September issue of the WAP Newsletter. You can use any of the files created by FILE CABINET and and get similar results.

Start your EDITOR program using the normal procedures. If you are using the EDITOR from the DOS TOOLKIT, you will want to replace the tab character, a space, with some other character not used in your FILE CABINET files. A comma (,) is a good choice, since the comma is not usually accepted as input from the keyboard; rather, it is used as a separator by the Applesoft input routines. Now load the BASENAMEFILE copied earlier. You will see something similar to:

```
3
WAP NEWSLETTERS
SOFTALK
DOG RECORDS
```

The first line contains only a 3. This is the number of database files on this disk available to FILE CABINET. The remaining three lines are the actual names of the databases. In this case there is a file for WAP NEWSLETTERS, SOFTALK magazine articles, and one for my wife's DOG RECORDS. This is where FILE CABINET looks when first run. File Cabinet discovers there is no BASENAMEFILE on the disk, and an ONERR statement directs FILE CABINET to a subroutine which will prompt the user for the information it needs to construct a new database. If the BASENAMEFILE is there, it is used to present the "SELECT A DATABASE" section of the program. If we were to use FILE CABINET to create another database, say RECORD ALBUMS, it would write the new BASENAMEFILE as:

```
4
WAP NEWSLETTERS
SOFTSIDE
DOG RECORDS
RECORD ALBUMS
```

This can be verified using the EDITOR program.

Now that we know the format used for the BASENAMEFILE, let's read the WAP NEWSLETTERS HEADERFILE. Surprise, this file is in the same format as the BASENAMEFILE. See below:

```
5
TITLE
SUBJECT
DESCRIPTION
ISSUE
PAGE#
```

In this case, the 5 in the first line is the number of HEADERS or FIELDS in each record. The remaining lines are the HEADERS which describe the fields in each record. You might also expect the INDEXFILE to be of the same format. Well, there is a difference as we will see when we read the WAP NEWSLETTERS INDEXFILE. Reproduced below is a typical example:

```
69
APPLES GO TOPLESS
COOLING A HOT APPLE
REMOVE THE TOP TO COOL
SEPT 1982
37
BEGINNERS GUIDE
SYSTEM MASTER DISK
WHAT & HOW TO USE IT
OCT 1982
24
COMMUNICATION W/APPLE II
MODEMS & STUFF
HOW TO TRNSMIT & RCV DATA
JUNE 1982
16
.
.
MORE ENTRIES HERE
.
.
VISICOLUMN
VISICALC SPREADSHEET
WHAT IT'S ALL ABOUT
JULY 1982
12
```

It may be convenient to obtain a hard copy of this file for further study. Using the information in the HEADERFILE, we can determine just how many fields are in each record. In our case, there were 5. If we count the lines in the INDEXFILE, we should come up with a number minus one, which is a multiple of 5. The odd line is the first line in the file; it is the total number of records in this file (69). Lines 2 thru 6 are the data for record #1; lines 7 thru 11 are the data for record #2 etc..

FILE CABINET uses nested FOR...NEXT loops to read the data for each record from the INDEXFILES. For example:

contd. on pg 21

WINTER TUTORIALS

1. AN INTIMATE COURSE IN BASIC

This is a problem-solving course in Applesoft Basic. Six 1-1/2 hour teaching sessions with take-home assignments. The course is designed for a maximum of 10 individuals who have some familiarity with Applesoft and are ready for a second course toward gaining mastery. The class will meet in Germantown, Maryland on Tuesday evenings, 8-9:30, January 18 through February 22 and be taught by David Morganstein.

Fee - WAP member, $95.00 non-member, $110.00

2. PRACTICAL PROGRAMS UTILIZATION - What They Do, How to Use Them

For home and business users; a hands-on, get-acquainted course on CPM and non-CPM versions of word processors/text editors, data base management programs and electronic spreadsheet programs. The seminar will be held in Montgomery County on Saturday, January 8 and 15, 9-4:30 pm. and be taught by Jerry Trowbridge. Mr. Trowbridge, President of Advanced Data Communications, Inc., has been teaching computer and data communications courses for Fairfax County Adult Ed. Dept. for 5 years, and runs a computer communications engineering firm with a micro turnkey business systems division.

Fee - with computer, $100.00 without computer, $120.00

If you wish to attend one or both of these courses, please fill out the form below. Enclose check or money order made out to L. Morganstein Consultants. You will receive confirmation of registration within 2 weeks. Mail form to:

L. Morganstein Consultants
13329 Woodruff Court
Germantown, Maryland 20874
(301 972-4263)

_____ _____ _____ _____ _____

Name _____ Home phone # _____

Address _____ Work phone # _____

_____ WAP # _____
(if applicable)

I will/will not bring and be responsible for computer, monitor and disk drive for the Practical Programs Utilization course. I understand that if I do not choose to bring a machine, I will look on with someone who does.

Please check _____ Intimate Course in Basic
_____ Practical Programs Utilization

SPEAKING OF FORTH: GETTING STARTED WITH FIG-FORTH

by Bill Wurzel

Okay, you've just bought the WAP FIG-forth disk and booted it up. Now what? The documentation uses expressions like "inner interpreter" and "precedence bit" which probably make as little sense to you as they did to me the first time I encountered them. While this article won't go into Forth internals in detail, I would like to explain some elementary Forth and answer some WAP members' requests to "get me started in Forth!"

There are four main components of a disk-based Forth system: the data stack (sometimes called the user's stack), the return stack, the dictionary and the disk screen area.

THE DATA STACK

The data stack is a pushdown stack which holds signed 16-bit numbers. Certain stack operations treat a pair of these numbers as a single 32-bit number; they usually begin with the letter "D" and we'll ignore them here. You can think of a pushdown stack as a black box into which you can put numbers and out of which you can take them subject to the restriction that the order in which the numbers come out is the opposite of the order in which they went in: the last one in is the first one out. Numbers are pushed onto the data stack by simply typing them. (In all the examples that follow, it is assumed that each line ends with a carriage return.) For example,

```
1 2 3 4 5
```

will push the integers 1,2,3,4 and 5 onto the stack. Since the number 5 was the last one pushed, it is said to be "on the top of the stack." The number 4 similarly is the "next on the stack." These two expressions are frequently abbreviated TOS and NOS. The Forth word '.' (pronounced "dot") pops the TOS off the stack and prints it. So enter a period now (followed as always by a carriage return). The number 5 should appear on the screen. To print out the new TOS and NOS, enter two periods separated by a space. Notice that 5 is no longer on the stack - it was popped off before it was printed. Now the 3 and 4 have been popped off too, and the stack contains 1 and 2, with 2 as the TOS. Attempting to pop off more numbers than are on the stack gets you error message #1 - nothing left on the stack (technically called "stack underflow"). Similarly, attempting to push more numbers onto the stack than it can handle gets you error message #7 - stack overflow. (This implementation of Forth can stack a maximum of 63 16-digit numbers. The stack begins at $DE and grows down to $60.)

In the example, the two 'dots' had to be separated by a space. This is an example of a general rule in Forth that individual words must be followed either by one or more spaces or by a carriage return.

Many Forth words pop numbers off the stack and/or leave numbers on the stack. The word '+', for example, pops the first two numbers, adds them, and leaves the sum as the new TOS. To get the sum of 5 and 8, enter the following (remember the spaces between each Forth word!):

```
5 8 + .
```

THE RETURN STACK

Like the data stack, the return stack is a 16-bit first-in last-out data structure. The Forth inner interpreter (that part of Forth which executes previously defined words) uses this stack to store return addresses as it interprets words. Exactly how it does this is explained in more detailed references. The return stack is available to the Forth programmer through the words '>R' ("to R"), which pops the data stack and stores the number at the top of the return stack, 'R>' ("R from") which does the opposite, and 'R' which pushes the top of the return stack onto the data stack, but leaves the value on the return stack as well. These words are usually helpful when you want to set the TOS aside for a minute, do some computation on the rest of the stack and then get the number back. Obviously, if you put a number on the return stack and forget to take it off, the inner interpreter will eventually think it's a valid return address with spectacular though usually undesired effects. So each '>R' should be paired with a 'R>' in the same word definition.

THE DICTIONARY

A Forth program is just a sequence of previously-defined Forth words. When the program is run, the inner interpreter interprets each of these words by looking up it's definition in the dictionary and executing it. Each dictionary entry consists of four fields: the name field, the link field, the code field and the parameter field.

THE NAME FIELD - contains the name of the word, which may be comprised of 31 or fewer characters. Each name is unique in FIG-Forth. (This is significantly different from many other Forth's, where the name may be any length, but only the length and first few characters are stored in the dictionary. Thus, for example, the word 'GETDATE' might well be identical to 'GETNAME' and would then redefine it -- probably not what the programmer intended!) Preceding the name of the word in the Fig-Forth name field is a data byte indicating the length of the word, its precedence (immediate or non-immediate) and whether or not the word is smudged. (Smudging a word makes it invisible to the dictionary lookup routine. A word is usually only smudged

contd.

when it is being defined.)

THE LINK FIELD - contains the RAM-address of the next dictionary entry to be searched. The end of the dictionary is indicated by zero in the link field of the last word in the dictionary.

THE CODE FIELD - contains the RAM-address of the start of the executable code associated with the word.

THE PARAMETER FIELD - There are two types of words in Forth: primaries and secondaries. A primary word is one whose code field contains the address of the parameter field and whose parameter field contains the machine code which carries out the function of the word. The parameter field of a secondary word, on the other hand, usually contains data for the machine code addressed by the code field to operate with. When a Forth word is defined in terms of other Forth words, for example, its parameter field contains the code field addresses of these other Forth words and its own code field routine modifies the inner interpreter to execute this list of addresses. The exact makeup of the parameter field of a secondary word, of course, depends on what its code field code expects to be there. This treatment of the Forth dictionary is a little sketchy -- we'll discuss it more fully in a later column.

THE DISK SCREEN AREA

The disk I/O logic of standard FIG-Forth treats a disk as a collection of 100 screens. Each screen consists of 16 lines of 64 characters each. (Some quick arithmetic reveals that a Forth screen disk can hold a maximum of 102,400 bytes. Since a DOS 3.3 disk can hold about 139,000 bytes, an area approximately 36,600 bytes long is wasted on each disk. This was done intentionally to maintain compatibilty with the FIG-Forth "Standard.")

This implementation of Forth permits only one screen to reside in RAM at a time. Any time a new screen must be read into RAM, the current screen is automatically written back to disk if it has been modified in any way. Forth "programs" are usually written by using the EDITOR to create screens containing word definitions and then putting these word definitions into the dictionary by "compiling" the screens. An example of creating and compiling a screen is given later. Forth screens are numbered beginning at zero. The WAP implementation supports one or two disk drives. The controller card is assumed to be in whatever slot Forth was booted from. Screens 0-99 are defined to reside on drive one and screens 100-199 on drive two. Thus the fifth screen on a disk is #5 if the disk is in drive one and #105 if it's in drive two.

Certain housekeeping tasks have to be carried out to make the RAM screen buffer ready to receive Forth screens. These tasks are performed by the word 'EMPTY-BUFFERS'.

EVERY TIME FIG-FORTH IS BOOTED UP, 'EMPTY-BUFFERS' MUST BE EXECUTED BEFORE ANY DISK I/O IS ATTEMPTED. FAILURE TO DO THIS USUALLY CRASHES FORTH!

This warning is buried somewhere in the documentation and understandably is overlooked by many!

THE EDITOR

The line-oriented screen editor supplied with the WAP FIG-Forth disk is taken directly from the FIG-Forth model distributed by the Forth Interest Group. It has been placed in the public domain and a disk containing the source Forth will soon be available from WAP. Hardcopy of the line-oriented editor can be obtained for $15 (at this writing) from the Forth Interest Group, P.O. Box 1105, San Carlos, CA 94070. The editor will handle lines up to 64 characters long - but folks without 80-column cards will probably want to keep lines to a 40-character maximum. To invoke the editor, simply enter the word EDITOR. This makes the EDITOR vocabulary the context vocabulary - where Forth will look first when searching for dictionary words. We will use screen #15 - which means that we will be writing to a disk in drive #1. So before starting the example BE SURE TO REMOVE THE FORTH PROGRAM DISK FROM DRIVE #1! FIG-Forth's disk I/O is strictly screen-oriented. It does not know or care about DOS diskspace management and will happily write over WHATEVER happens to be in the designated screen area! Now place a newly initialized DOS 3.3 disk in drive #1 and you're ready to go.

After entering EDITOR, place the screen number you want to edit on the stack and then enter either CLEAR or LIST. CLEAR clears the stated screen to blanks; LIST merely lists it without clearing. Since we don't have any text on screen #15 yet and we don't know what garbage may be on it, we'll clear screen #15.

```
EDITOR 15 CLEAR
```

To list the blank screen we can enter either 15 LIST or simply L. The L command is an editor word which lists the screen being edited (previously specified with a CLEAR or LIST). To enter a line of text into the screen buffer, use the command P. P tells the editor to place all the text that follows it on the same line into the line number on top of the stack (TOS). So, if we enter

```
8 P THIS IS THE EIGHTH LINE.
L
```

and then enter L on a new line, we'll see "THIS IS THE EIGHTH LINE." on line 8. Notice that P puts everything up to the carriage return into the line, so we have to give the L command on a new line. Also notice the single spaces after 8 and P. Now enter

```
5 P THIS IS THE SEVENTH LINE.
```

Entering L again, we see the new text right where we put it. We can move this line to line seven like this:

```
5 D 7 I
```

contd.

The D tells the editor to delete line TOS (in this case 5) from the screen, hold it in a temporary line buffer (which the editor calls PAD) and then move all the following screen lines up one to cover up the blank line. The I command copies PAD into line TOS (in this case 7). If you want to move line 5 to line 7 without moving the following lines up, use the sequence:

```
5 H 5 E 7 I
```

The command H copies line TOS to PAD without erasing it. E erases line TOS without moving subsequent lines up. Now enter the following:

```
15 CLEAR
0 P THIS IS THE ZEROTH LINE.
1 P THIS IS THE FIRST LINE.
2 P THIS IS THE SECOND LINE.
3 P THIS IS THE FOURTH LINE.
4 P THIS IS THE FIFTH LINE.
L
```

Looks like we forgot "THIS IS THE THIRD LINE," in line 3. We can push down lines 3 and 4 and insert the new line like this:

```
3 S 3 P THIS IS THE THIRD LINE.
L
```

The command S spreads the screen at line TOS, moving subsequent lines down one line and making line TOS blank. There are a few more editor commands, but they are self-explanatory and are included in the summary later. The other feature of the editor is the character cursor. The cursor is used to find, delete and replace characters. The cursor is represented by an underscore character and the line it is currently within is printed at the bottom of any screen listed using the L command. Enter the following short Forth word which accepts a positive whole number and prints whether it is odd or even:

```
1 P : ODDOREVEN CR ." ENTER A POSITIVE
      WHOLE NUMBER " QUERY 0 WORD
2 P    HERE NUMBER DROP DUP ." THE
       NUMBER " . 1 AMD IF ." IS ODD."
3 P    ELSE " IS EVEN." THEN CR CR ;
L
```

Proofreading the screen, we see a typo in line 2 - AMD should be AND. Enter the following to correct the error without having to retype the line:

```
TOP
F AMD
3 DELETE C AND
L
```

The command TOP places the cursor before the first character of the first line. The command F places the cursor at the end of the first occurrence of whatever text follows the F. After entering F AMD and a carriage return, we see the cursor placed right after the "D" of "AMD" in line 2. DELETE deletes to the left of the cursor the number of characters on top of the stack (in this case 3 - we could have just deleted the "M", but deleting the whole word makes the example clearer). The command C inserts at the cursor whatever text follows the C. We can combine the F and DELETE functions by using X. X tells the editor to delete from the screen buffer the first occurrence of the text which follows the X. So, instead of the above, we could have simply entered:

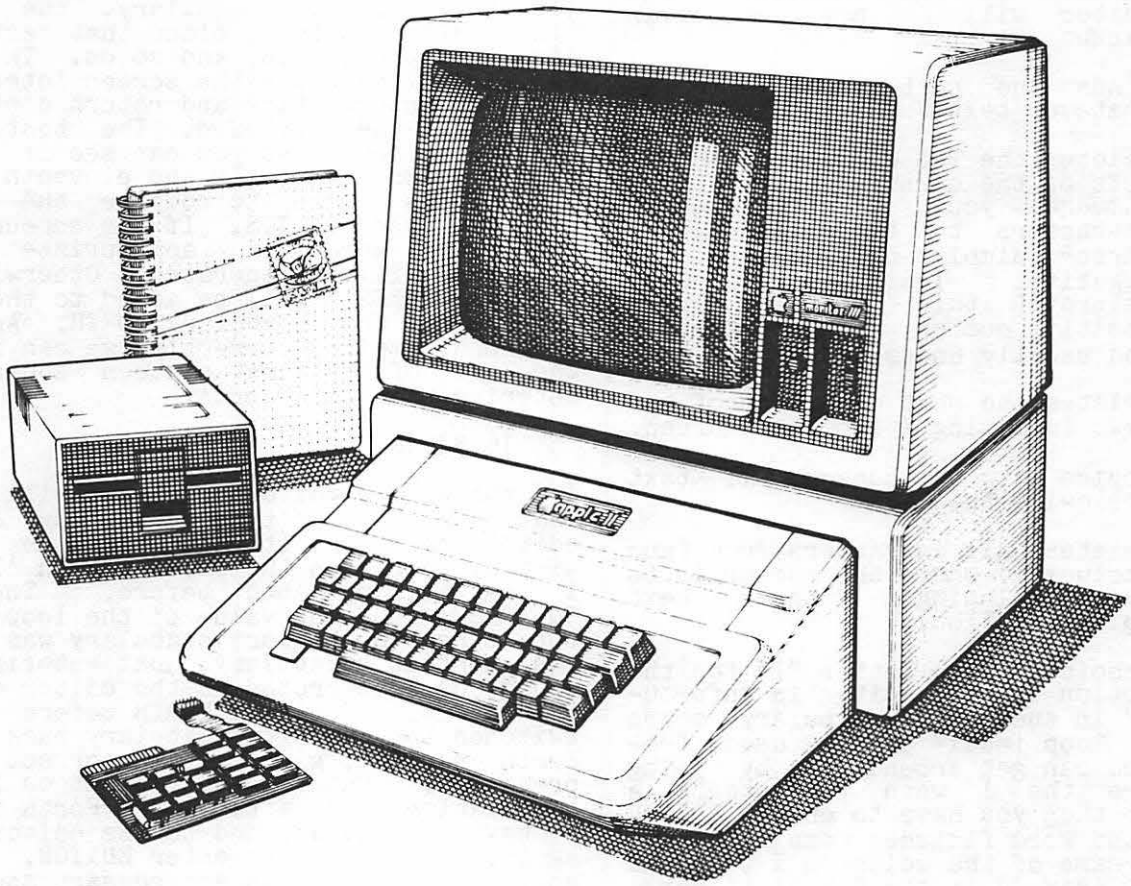
```
X AMD
C AND
L
```

The cursor can be moved with the command M. M moves the cursor TOS characters to the left if TOS is negative and to the right if TOS is positive.

SUMMARY OF THE LINE-ORIENTED EDITOR COMMANDS

EDITOR	- Selects the EDITOR vocabulary. This word should begin all screen editing sessions.
CLEAR	- Clears screen number TOS to blanks. (See LIST below.)
LIST	- Lists screen number TOS. Either CLEAR or LIST should be used to identify to the editor what number screen you want to edit. Using the L command (or any editor command, for that matter) without first entering CLEAR or LIST gives unpredictable results!
FLUSH	- Writes the current screen to disk.
P	- Enters the text following the P into line number TOS.
E	- Fills line number TOS with blanks.
D	- Copies line number TOS to PAD, deletes line number TOS and moves all subsequent lines up one line.
H	- Copies the line number TOS to PAD. Leaves line number TOS intact.
T	- Prints line number TOS on the CRT and copies the line to PAD.
R	- Replaces line number TOS with the line at PAD.
S	- Makes a blank line at line number TOS after first moving all subsequent lines down one line. "Opens up" a line at TOS. If line #15 is not blank, this command does nothing.
I	- Inserts the line at PAD at line number TOS after moving all subsequent lines down one line. (See note below.)
L	- Lists the current screen and the line containing the cursor.
TOP	- "Homes" the cursor. Places cursor before the first character of line #1.
M	- Moves the cursor TOS characters - to the left if TOS is negative

contd.



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and to the right if TOS is positive.

F - Places the cursor immediately to the right of the next occurrence of the text following F. F scans forward on the screen; the editor will not search backwards.

N - Finds the next occurrence of whatever text F was looking for.

DELETE - Deletes the TOS characters to the left of the cursor. Unlike the M command, you cannot delete characters to the right of the cursor simply by making TOS negative. The editor will interpret this as a very large positive number, with spectacular and usually undesirable results.

X - Deletes the next occurence of the text following X from the screen.

C - Copies at the cursor the text following the C.

TILL - Deletes all characters from (and including) where the cursor is to (and including) the text following TILL.

NOTE: The choice of the letter "I" for the INSERT function in this editor is unfortunate. "I" in the Forth vocabulary means "stack the loop index" and is used frequently. You can get around this by typing FORTH before the I when you create a screen, but then you have to enter EDITOR again when the word finishes compiling. To change the name of the editor's I to some other letter (say Z) in the RAM dictionary, enter the following:

```
EDITOR ' I NFA 1+ 218 C!
```

If you don't make this change, I can almost guarantee you that, sooner or later, you'll forget to precede "I" by "FORTH" in some program you're writing. This usually causes the program to hang - and you'll have one helluva time trying to figure out what went wrong!

The following example shows how to compile the word 'SQUARES' which will compute the squares of the integers from 1 to TOS and give their sum.

```
EMPTY-BUFFERS
EDITOR DECIMAL 15 CLEAR
0 P ( 'SQUARES' OF FIRST TOS INTEGERS )
1 P FORTH DEFINITIONS
2 P : SQUARES 1+ 0 1 ROT SWAP
3 P   DO FORTH I DUP DUP .   DUP . +
4 P   CR LOOP CR ." SUM = " . CR ;
5 P
6 P ;S
L
15 LOAD
```

The first line we've already talked about. In the second line, EDITOR makes the vocabulary of the line oriented editor available to the Forth outer interpreter. (We'll discuss vocabularies in a later column.) DECIMAL tells Forth to input and output numbers in base 10. 15 pushes a 15 onto the data stack. CLEAR instructs Forth to clear the screen whose number is on top of the stack (TOS) - in this case 15. In the third line, P instructs Forth to place all the text that follows (up to the carriage return) into the line whose number is TOS (in this case 0). Similary, the fourth line tells Forth to place that text into line 1 of the screen, and so on. The ;S in the ninth line tells the screen interpreter to stop interpreting and return control of Forth to the keyboard. The tenth line lists the screen so you can see if everything looks right. In the eleventh line, LOAD tells Forth to compile the screen whose number is TOS. If the screen contains any errors, appropriate error messages will be generated. Otherwise the word 'SQUARES' will be added to the dictionary in the vocabulary FORTH. Assuming the word compiled correctly, we can compute the sum of the first sixteen squares by entering the Forth words:

```
16 SQUARES
```

If the word compiled okay, you will notice that Forth doesn't recognize any of the editor commands (try to list the screen with L). This is the problem with 'I' that I was talking about before. The word SQUARES needs the value of the loop index, but since the editor vocabulary was still the context vocabulary, just entering 'I' would be interpreted as the editor command to Insert. Entering FORTH before the I switches the context vocabulary back to the Forth nucleus, giving I the correct interpretation. But from that point on in the compilation and afterwards, Forth is the context vocabulary and to use editor words again, we need to re-enter EDITOR. (This sort of confusion is unnecessary and could have been avoided by the choice of some other letter for the editor Insert!)

As you can see, line 0 of screen 15 contains a comment (enclosed, as all comments must be, in parentheses) giving the name of the major Forth word or words defined in the screen. This is the customary use for line 0 of any screen, since the word 'INDEX' will list line 0 of every screen from NOS to TOS, making it easy to see what screens are used for what purposes. Note also that there is a space after the left parenthesis. The left parenthesis is a Forth word indicating that all the text on that line up to and including a right parenthesis should be treated as a comment and ignored by the interpreter. Since '(' is a Forth word, it must be followed by a space.

The EDITOR works on whatever screen is in the screen buffer at the time. To bring another screen into the buffer, enter

```
nnn LIST
```

where nnn is the screen number you want. Before screen nnn is brought into memory, the old screen will be rewritten to disk automatically if it has been modified. If you just want to write the current screen to disk without bringing in a new one, simply enter the word 'FLUSH'.

contd.

ERROR CODES

The FIG-Forth error codes were inadvertently left out of the original disk-resident documentation. Forth outputs its error codes according to the base you're in - i.e. the code for CONDITIONALS NOT PAIRED would print as #19 if you're in decimal mode, #13 if you're in hex, #10011 if you're in binary etc. They are listed here in decimal:

0 - WORD NOT IN DICTIONARY or CAN'T CONVERT NUMBER

1 - EMPTY STACK - Some Forth word needed a number on the stack and the stack was empty.

2 - DICTIONARY FULL - No more room in the dictionary; cannot complete the word being compiled.

4 - NAME ISN'T UNIQUE (Note this is a warning message only - it appears during compilation to let you know that the name of the word being compiled is already in the dictionary - possibly in another vocabulary. The new word, however, will be compiled. Any subsequent words whose definitions include this new word will be compiled with the new definition, but words already compiled will retain the previous definition.

7 - FULL STACK - Some Forth word wanted to put a number on the stack but the stack was full. This FIG-Forth uses a stack which is decimal 127 bytes deep. The stack begins at location $DE and ends at $60.

17 - THIS WORD MAY ONLY BE USED WITHIN A COLON DEFINITION

18 - THIS WORD MAY ONLY BE USED IN EXECUTE MODE

19 - CONDITIONALS ARE NOT PROPERLY PAIRED

20 - DEFINITION IS NOT FINISHED

21 - WORD YOU WANT TO FORGET IS IN PROTECTED DICTIONARY

22 - THIS WORD MAY ONLY BE USED WHEN LOADING

I hope the above ramblings have been of some help in helping you get started in Forth. Some good references on Forth are:

1. BYTE, Vol. 5 No. 8 (August 1980)

2. Dr. Dobbs Journal, Vol. 6 Issue 9 (September 1981)

3. Brodie, Leo: Starting Forth, Prentice-Hall, Englewood Cliffs, NJ, 1981

4. Derrick and Baker: FORTH Encyclopedia, Mountain View Press, Mountain View, CA, 1982

5. Loeliger, R.G.: Threaded Interpretive Languages, Byte Publications Inc., 70 Main St., Peterborough, NH 03458

SOFTVIEWS contd. from pg 12

speed of your choice. You can switch the display to the Hi-res screen.

Since the code is relocatable, you can load it into a 16K memory card and execute it there to trace machine code which runs in the "lower 48". Had enough? There's more!!! You can issue DOS commands while BB is running, jump to the monitor and return to BB where you can change registers. The ASM command enters a mini-assembler like the one in the non-autostart ROM. You can convert hex to decimal and vice versa. There is a hex/ASCII memory dump feature which can be paged through memory. You can modify memory by supplying either the hex or ASCII data you want inserted. The ASCII can come with either the high bit on or off. Whew...the displays of registers can be either in hex or binary.

Folks like Chuck Mesztenyi will be interested to know that BB will display the number of cycles which have passed since its cycle counter was reset. This allows a programmer to optimize code. The 40 page manual is well written, easy to understand and begins by examining a simple example program contained on the unprotected disk. BB costs $47.50 and as far as I know has no competitors. It is a unique and valuable tool.

INSPECTING TEXT FILES contd. from pg 14

```
FOR X = 1 TO NR
FOR Y = 1 TO NH
INPUT R$(X,Y)
NEXT Y
NEXT X
```

where NR is the number of records, and NH is the number of headers. R$(X,Y) is the two dimension array variable for each field (Y), in each record (X). This is a very efficient programming technique and should be considered whenever there is a large amount of data to retrieve.

Armed with this information and an EDITOR program from a word processor, it may be possible to reconstruct a BASENAMEFILE, or a HEADERFILE, and save a database which was inadvertently clobbered.

These same techniques will work with any sequential text file written using normal DOS. Random access text files present a different problem. When reading a random access text file with a text editor, only the first record will be read in. I suspect that the EDITOR reads text files looking for two or more "empty" bytes as a signal that it has reached the end of the file. Some character must be used as a stop bit, a null perhaps, or else the EDITOR would read the entire disk. Programs that use random access files must keep track of the exact record length, as well as the number of records; but that's food for another article.

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APPLE TECH NOTES

by Ed Schenker

I am pleased to announce that Lance Bell has agreed to take calls from our friends in Virginia. Lance, who lives in Newington, has all the necessary information available to him. He can be reached during the evenings at 550-9064. Thank you, Lance.

Since the majority of calls have come from Apple /// owners, this month's column will be devoted to the Apple ///.

ITEM 1: There is a slight timing problem when the Apple][Parallel Printer Interface is used in an Apple ///. The Notes recommend that you use the Universal Parallel Interface, since it works in both Apple /// mode and Apple][emulation mode. The Apple][Parallel Printer Interface can be made to work with the addition of a 0.001 microfarad capacitor between pins 4 and 7 of chip B2, a 74LS74.

ITEM 2: The Super Serial Card can be used in the Apple /// with the appropriate driver. The Apple /// is an interrupt driven system, so switches S2-6 and S2-7 must be on to enable interrupts from the card. The Apple /// will hang when the driver is initiated and this is not done.

ITEM 3: There is no way to control the number of stop bits sent out by the RS-232 driver. It will send out one stop bit except at 110 baud, when it sends out two.

ITEM 4: The section on the Universal Parallel Interface deals mainly with the Epson MX-80 printer. In the UPIC manual, table 4-2 on page 19 can be used for table 2-2, which was inadvertently omitted on page 10.

ITEM 5: The Epson printer will not work properly with an Apple][Parallel Interface cable. On page 8 of the UPIC manual, there is a cable specified in table 2-1. This cable must be wired.

ITEM 6: The switch on the UPIC must be set to auto.

ITEM 7: Also, refer to table 4-2 on page 19 of the UPIC manual in order to set the values of the SOS driver configuration block for the Epson MX-80.

If you have any particular problem or question that might be answered from the Tech Notes, don't hesitate to call me at 977-7349. If you live in Virginia and wish to avoid a long distance charge please contact Lance Bell at 550-9064.

MAKING BETTER DISK COPIES

by David Morganstein

Have you ever made a back-up copy using the COPYA program on your Master Disk only to find that a later access of the disk yields the abhorrent "I/O ERROR" message? Even more mysteriously, has this happened even though you did a CATALOG of the back-up just after COPYA was finished? If so, the following advice is for you!

As many readers are aware, COPYA first reads eight tracks from the original and then initializes the back-up. The tracks read from the original are stored in memory and then written to the back-up. The process of reading and writing eight tracks is repeated four times (transferring 32 tracks) followed by a shorter read and write of the remaining 3 tracks. Usually this does it. Unfortunatly, if the back-up was not perfectly centered when the drive door was closed, the writes to the disk will be off center. After the copy process is complete, the disk can be CATALOG'ed so long as it remains in the drive. As the disk spins, off center, the head can track the data.

However, when the disk is removed and reinserted, the off-center pattern can not be re-established and the disk is unreadable. Therefore, to check that a copy is good, remove it from the drive and reinsert it before performing the CATALOG.

More importantly, to prevent the off-centering of the disk to begin with, try the following. When inserting the back-up disk, don't close the door. Run COPYA, after the original disk is read and as the back-up begins to spin, close the drive door gently. Waiting for the disk to begin spinning helps insure that it is centered and that the data will be written in repeatable circles.

BUGS AND OTHER PARASITES

Mark Crosby submits the following regarding Screen Writer II:

When using the Get Buffer with a virtual file (file bigger than memory - you can tell this by an inverse number in the lower right screen), an irretrievable I/O error will occur if you are using the same drive for your input and output file. To avoid this, use a different drive for your input and output. If you have only one drive, don't use the Get Buffer under these conditions until a corrected version of Screen Writer comes out (soon, we're told).

Q & A

by Bruce F. Field

The Q&A column in the September 1982 WAP newsletter contained a short program to allow a user to undelete a file from a diskette directory if it had accidentally been deleted. As a test I deliberately put a small error in the listing to see if anyone would catch it. (If you believe that, I have this bridge for sale...) Line 520 should be changed to:

```
520 IF S(J) >= 8 THEN S(J) = S(J)
    - 8:BYTE = BYTE -1
```

The original only tested for S(J) > 8. Thanks to Bob Schmidt for bringing it to my attention.

Q. I know you get this question frequently, but here we go again. What is a good reference or list of PEEK, POKE commands and their functions? I know from Inside Apple Pi that the first issue of Apple Orchard has such a list, but where can I get that issue? Failing that, is there a more recent and/or complete listing anywhere else?

A. Unless I'm blind (a distinct possibility when it comes to looking for articles in magazines) I couldn't find any PEEK/POKE list in Apple Orchard Vol. 1. I notice however that Beagle Bros. is offering a free PEEK/POKE chart with the purchase of any of their software. Actually the most complete list I know of is a book called "What's Where in the Apple" by William Luebbert. It's published by MICRO INK, Inc. (the same people that publish MICRO magazine) and is probably available in the local computer stores. This book lists the information two ways, first by numerical memory location, and second by names commonly used for Monitor, Applesoft, or DOS routines. Also another book "Apple II Monitor Peeled" contains information on how to use the Monitor routines, such as writing to the screen, reading the keyboard, using lo-res graphics, etc.

Q. If I accidentally type]NEW how can I recover my program?

A. This is easy to do, but hard to explain. Applesoft stores information in memory in the following format. Each character group represents one byte in memory.

```
A1L A1H L1L L1H T0 T1 T2 ...  0
A2L A2H L2L L2H T3 T4 ...  0
```

Each Applesoft line begins with two bytes (an address in low byte, high byte format) that point to where the next line begins in memory. Then two bytes for the line number, an arbitrary number of bytes for the tokens and variables names, and finally a zero. The zero indicates the end of the line. Two additional zeros are stored at the end of the program. Normally Applesoft starts storing the program beginning at memory address $801. When NEW is typed A1L and A1H are set to zero. To restore the program A1L, A1H have to be reset to the address of the byte containing A2L, that is the address of the byte immediately following the first zero. Then memory locations $69,6A, $6B,6C, $6D,6E, and $AF,B0 (low byte, high byte) have to be set to the last address of the program plus 2. The end of the program can be found by looking for zeros in three consecutive memory locations. Add two to the address of the last zero and put this address in the three pairs of addresses listed above.

A short machine language routine will do this for you. Type the following code in and save it to disk, then whenever you need to recover a program just BRUN the routine.

```
        find start of second line

0300-   A2 04       LDX   #$04
0302-   E8          INX
0303-   BD 00 08    LDA   $0800,X
0306-   D0 FA       BNE   $0302
0308-   E8          INX

        store in $801,$802

0309-   8E 01 08    STX   $0801
030C-   A9 08       LDA   #$08
030E-   8D 02 08    STA   $0802

        find end of program,
        setup monitor registers
        to step through memory

0311-   86 3C       STX   $3C
0313-   85 3D       STA   $3D
0315-   A5 73       LDA   $73
0317-   85 3E       STA   $3E
0319-   A5 74       LDA   $74
031B-   85 3F       STA   $3F
031D-   A0 FD       LDY   #$FD
031F-   20 BA FC    JSR   $FCBA
0322-   B0 20       BCS   $0344
0324-   B1 3C       LDA   ($3C),Y
0326-   D0 F5       BNE   $031D
0328-   C8          INY
0329-   30 F9       BMI   $0324
032B-   20 BA FC    JSR   $FCBA

        end of program found,
        store address in pointers
        $69,6A  $6B,6C  $$6D,6E
        and $AF,B0

032E-   A5 3C       LDA   $3C
0330-   85 69       STA   $69
0332-   85 6B       STA   $6B
0334-   85 6D       STA   $6D
0336-   85 AF       STA   $AF
0338-   E6 3D       INC   $3D
033A-   A5 3D       LDA   $3D
033C-   85 6A       STA   $6A
```

contd.

```
033E-   85 6C       STA   $6C
0340-   85 6E       STA   $6E
0342-   85 B0       STA   $B0
0344-   60          RTS
```

Q. I have a Videx Videoterm 80 column board with softswitch and would like to use it with my Apple Writer 1.0, but it doesn't work. How do I get it to work?

A. Unfortunately you don't. Apple Writer 1.0 (and 1.1) directly manipulate characters on the screen without going through any of the standard Apple I/O routines. There is virtually no way of using an 80 column board unless Apple Writer is completely re-written. The only solution is to purchase another word processor that is compatible with your Videx board.

The latest version of Apple Writer (version 2.0) is completely different from the original and will work with the Sup'R'Term card from M & R Enterprises.

Q. In the June issue of WAP you wrote that every 6 months you dismantle your disk drives and clean the heads. My questions are:

1) Would you give step-by-step instructions on how to do this?

2) Are there any other preventive maintenance routines you would recommend, for any part of an Apple II system? For example, as part of the recent controversy over whether to use both sides of a diskette, someone mentioned "dirt and debris" accumulating on the pressure pads in the drives. Should they be changed periodically?

A. Let me back off a little bit on cleaning disk drives. I disassemble and clean mine fairly often, but I am paranoid about "dirt and debris", and I use my computer about 20 hours a week. My opinion is that occasional cleaning is a good idea. I do not use both sides of a diskette. I have not noticed an appreciable accumulation of oxide on the pressure pads, and therefore have never replaced them. It is possible however to get replacement pads at some of the computer stores.

The procedure for disassembling a drive is straightforward.

1) Make sure the power is off to the Apple.

2) Disconnect the interface cable from the disk controller board.

3) Remove the four (4) screws from the bottom of the drive.

4) Slide the drive out of the case either from the front or the back. This is sometimes more difficult than it sounds because it is usually a tight fit. Also Apple has glued black paper on the inside of the case to close off the vent slots in the side and the edge of the drive may catch on the paper.

5) Locate the read/write head. The head is approximately 1/4" in diameter and is located 2" behind the drive spindle. Immediately above it is the pressure pad which is also approximately 1/4" in diameter and moves down to contact the head when the door on the drive is closed.

6) Clean the head. A light touch with a cotton swab dipped in isopropyl (rubbing) alcohol is all that is needed. You are trying to remove the brown oxide coating that accumulates on the head, and this usually comes off easily.

7) Reassemble the drive. Slide the cover back on using care not to catch the edge of the black paper on the case. Put the four screws back in, and attach the interface cable to the controller card. Be especially careful when attaching the cable to the card. If the connector is not attached so that every pin fits in the right hole in the cable socket I guarantee your disk drive will be damaged. It is best to take the controller card out of the Apple to attach the cable and inspect it to make sure it is connected correctly.

Since the Apple is mostly electronic there is very little other preventive maintenance that can be done. Problems with poor contact between the sockets on the boards and the chip leads occur, and also between the interface cards and the expansion sockets. If unexplained hardware problems occur occasionally, try pressing down on all the chips (with the power off) to reseat them and remove and replace all the interface cards.

Q. How can one do a dump of memory to the screen (or printer) and include the ASCII equivalent beside it?

A. See the listing below. To use this, type in the hex code and save it to disk. Then BRUN the program and it will "hook" into the Monitor via the Ctrl-Y command. For example, to display a range of memory addresses type 800.8FF<Ctrl-Y>. Lower case ASCII is converted to upper case before printing, and any non-printing control characters are replaced by periods.

```
        Setup ctrl-Y vector

0300-   A9 4C       LDA   #$4C
0302-   8D F8 03    STA   $03F8
0305-   A9 43       LDA   #$43
0307-   8D F9 03    STA   $03F9
030A-   A9 03       LDA   #$03
030C-   8D FA 03    STA   $03FA
030F-   60          RTS

0310-   A5 3C       LDA   $3C
0312-   29 07       AND   #$07
0314-   D0 30       BNE   $0346

        finished with hex digits
        now do ASCII
```

contd.

```
0316-   A8          TAY
0317-   38          SEC
0318-   A5 3C       LDA   $3C
031A-   E9 08       SBC   #$08
031C-   85 40       STA   $40
031E-   A5 3D       LDA   $3D
0320-   E9 00       SBC   #$00
0322-   85 41       STA   $41
0324-   A9 1F       LDA   #$1F
0326-   85 24       STA   $24
0328-   B1 40       LDA   ($40),Y
032A-   29 7F       AND   #$7F
032C-   C9 20       CMP   #$20
032E-   B0 02       BCS   $0332
0330-   C9 60       CMP   #$60
0334-   90 02       BCC   $0338
0336-   E9 20       SBC   #$20
0338-   09 80       ORA   #$80
033A-   20 ED FD    JSR   $FDED
033D-   C8          INY
033E-   98          TYA
033F-   29 07       AND   #$07
0341-   D0 E5       BNE   $0328

        Routine starts here
        first print address

0343-   20 92 FD    JSR   $FD92
0346-   A9 A0       LDA   #$A0
0348-   20 ED FD    JSR   $FDED

        then print hex digits

034B-   B1 3C       LDA   ($3C),Y
034D-   20 DA FD    JSR   $FDDA
0350-   20 BA FC    JSR   $FCBA
0353-   90 BB       BCC   $0310
0355-   60          RTS
```

Q. I want to use the screen dump program that appeared in NIBBLE EXPRESS Vol. 1. The program is written for the Apple parallel printer, but I am trying to use it with a Silentype printer. What changes do I have to make?

A. This program directly calls the printer driver software on the interface card. For the Apple parallel printer, the output routine starts at address $CX02, where X is the slot number. For the Silentype printer the output routine begins at address $CX07. The screen dump routine assumes that the printer is in slot 1 so you should change all references to address $C102 in the program to $C107.

A different screen dump program by Tom Warrick was published in the June 1982 issue of the WAP newsletter. This program eliminates the problem discussed above, and should work with most any printer.

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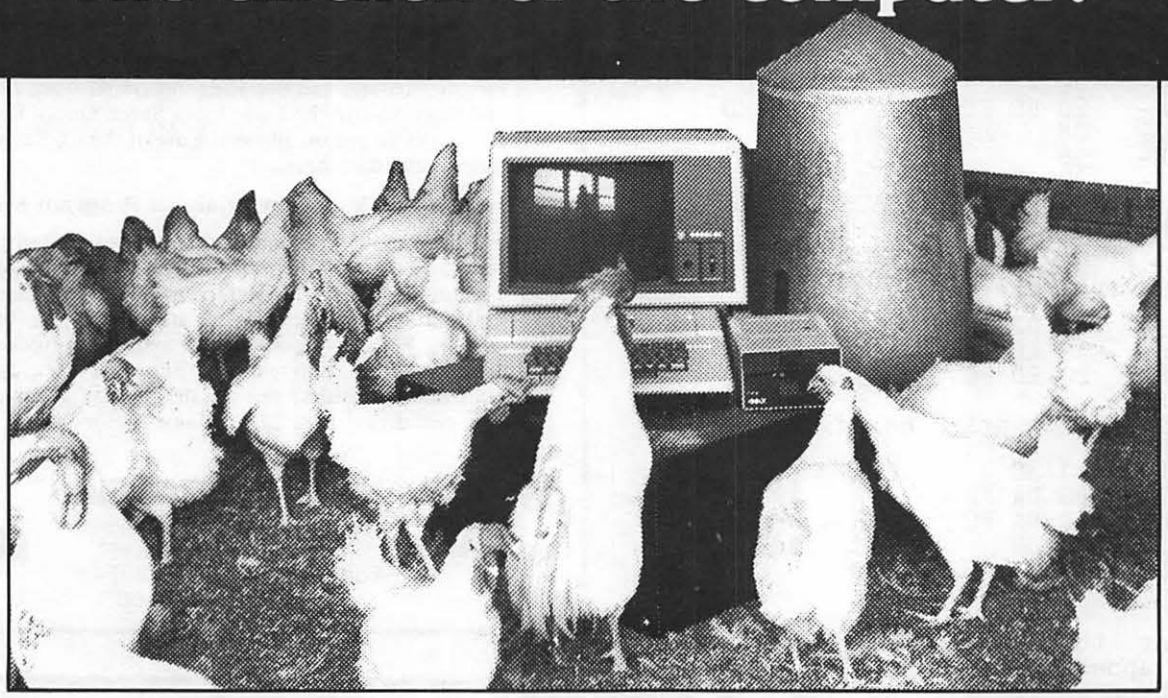
Which came first: The chicken or the computer?



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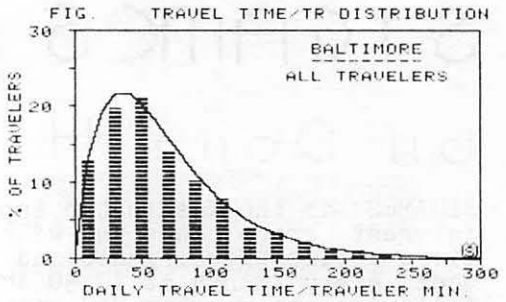

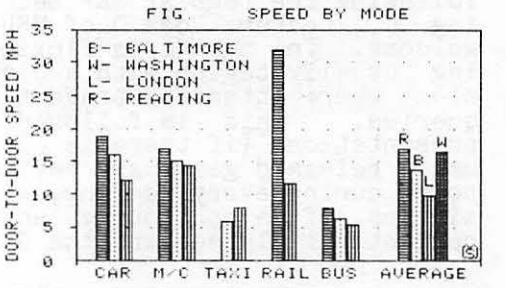

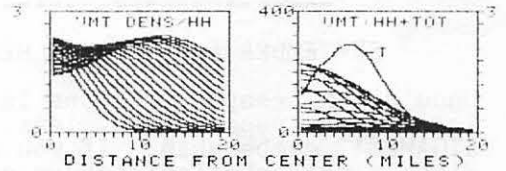

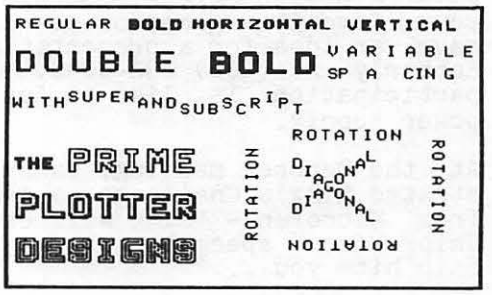

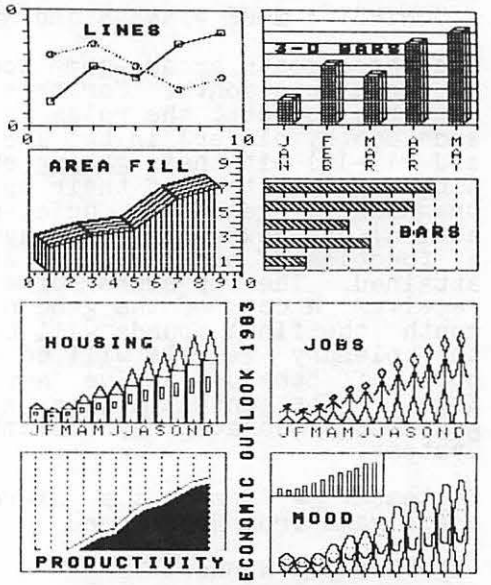

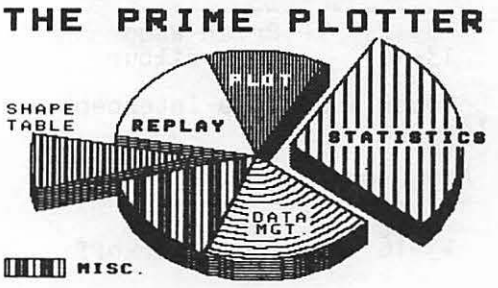

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SIGAMES NEWS

by Donn Hoffman

SIGAMES is the Washington Apple Pi special interest group concerned with two popular micro-applications: games and graphics. We meet every month at 10:30 AM, during and following the regular WAP meeting in Building C, Lecture Room D of USUHS. All are welcome. The agenda is flexible; the meeting usually begins with a discussion session where attendees trade tips and field queries. This is followed by the main presentation (if there is one) after which newly released games are reviewed. At some point during every meeting, we play several minutes of a continuing adventure game, currently : Ulysses and the Golden Fleece.

SEPTEMBER and OCTOBER MEETINGS

Once again, response to the last Appeal For Volunteers represented less than 1% of SIGAMES' membership. If you would like to give a presentation/lecture or demonstrate your favorite game, or even if you just have an idea for a presentation, call Jim Eatherly at (202) 232-6046. A SIG without participation is like an Apple without a power supply.

At the October meeting, Danny Roth demonstrated Ming's Challenge, a new arcade game from Microfun - "Ming will send his Death Ships from space to get you ! If a Death Ship hits you...."

CONTEST : SOME WINNERS and MORE TO COME

The three month arcade-game tourny draws to a close this month. For those unfamiliar with the contest, the rules are as follows: each month, players in two age groups (8-12 and 13-16) pit their gaming skill and cunning against that of their opponents in an unannounced game of quick-wits, speed, action, and dexterity. A player's score is a function of his raw-score and the level attained. The top scorer of each age group receives a copy of the game played. This month the final rounds will be played and the plenary laurels will be awarded - a copy of "the definitive adventure" Time Zone. The contest prizes have been most generously donated by Columbia Computer Systems.

September - Seafox : a Hi-res submarine chase game from Broderbund

Age Group	Winner
8-12	Brian Wood
13-16	Luke Wilbur

October - Shuttle Intercept : terrain shoot 'em up

Age Group	Winner
8-12	Danny Roth
13-16	David Kirkoff

Not much for paddle-play? Prefer to program? For the more intellectual among SIGAMES membership Jim and John have created the Programming Competition. You are challenged to create (with the assistance of an animation package - e.g. The Arcade Machine, Graphics Magician) an arcade game. Endeavor to imbue your entry with all those qualities that are the quintessential vid game : an original scenario, challenge (and the chance to win) at all levels, attractive graphics, etc. With just over one month to go, there are no submissions, so YOU could win by default. Submit unto SIGAMES!! The winner of the Programming Competition will receive an as-yet-unannounced graphics utility package.

*** T * I * P * S ***

As usual, if you have any Tips, Tricks, Cheats or Techniques call Jim Eatherly at (202) 232-6046 or leave a message on the WAP Bulletin Board to WP1261.

More Wizardy Character Enhancement Techniques

Doug Schafer, WAP member and SIGAMES enthusiast, reports a real weird one for Wizardry players: Create a wimpy bishop, take him to the E)dge Of Town and attempt to I(dentify item #9 (remember - eight items is the limit). Your weakling Bishop will be credited with oodles of experience points. On his next visit to the A(dventurer's Inn, Whelp the Bishop can collect on his two hundred some experience levels.

As promised, TIPS is back with info on how to shoplift from Boltac's Trading Post.

****
* READ CAREFULLY THE SEPTEMBER SIGAMES *
* REPORT BEFORE ATTEMPTING THESE METHODS *
****

Do not pass this point without reviewing September's TIPS !!

OK. You've read the September issue? Good. Now make sure that your character has nine letters in his/her name and eight items in his/her position and then boot up your sector editor. Locate the fifty-fourth (54th) byte after your character's name. You will notice a pattern : 01 00 XX (XX is a number between $00 and $64 which represents the item index). Every eight bytes following will contain three bytes in this format. This pattern occurs eight times : once for each of the character's eight items. To obtain any item, simply substitute it's number for one of the XX's. Below is a table of the item indices. REMEMBER - these cheats are for the original Wizardy scenario only, and will NOT work for Knight of Diamonds.

contd.

	00	10	20	30	40	50
0	broken itm	Latum. pot	staff +1	leather +2	evil shld +3	silver gloves
1	l. swrd	l. swrd +1	drag slayer	chain +2	amu. Makanito	evil swrd +3
2	s. swrd	s. swrd +1	helm +1	plate +2	diadem Malor	evil s. swrd +3
3	anoi mace	mace +1	leather -1	shld +2	scrl Badial	thief's daggar
4	anoi flail	stf Mogref	chain -1	evil helm +2	s. swrd -2	brst plt +3
5	staff	scrl Katino	brstplt -1	dial pot	dagger +2	lord's garb
6	dagger	leather +1	shld -1	ring Porfic	mace -2	Murasuma bld
7	small shld	ch mail +1	jeweled amu	wereslayer	staff -2	Shuriken
8	large shld	plate +1	scrl Badios	mage masher	dagger speed	ch pro fire
9	robes	shld +1	scrl Sopic	poison mace	cursed robes	evil plt +3
a	leather	brstplt +1	l. swrd +2	stf Montino	leather -2	shld +3
b	ch mail	scrl Badios	s. swrd +1	bld cusinart	chain -2	healing ring
c	brst plt	scrl Halito	mace +2	amu Manifo	brst plt -2	ring pro undead
d	plate	l. swrd -1	scrl Lomilw	rod of flame	shield -2	deadly ring
e	helm	s. swrd -1	scrl Dilto	evil ch +2	cursed helm	**Werdna's amu**
f	Dios pot	mace -1	copper glov	neut plt +2	brst plt +2	statu bear

$60 statuette of a frog $61 bronze key $62 silver key
$63 gold key $64 blue ribbon

imt = item pot = potion ch = chain brst = breast plt = plate stf = staff

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CONNECT THE DOTS

by David Morganstein and Charles K. Mesztenyi

(Note: This article was written by David Morganstein using notes and programs prepared by C.K. Mesztenyi...don't blame C.K. for misstatements!!!)

1. Introduction.

One of the things that makes the Apple exciting is its graphics. Most of us are intrigued by kaliedoscopes of color, fast moving images, 3-D perspective and the other effects we have seen demonstrated. In this article we explore the capabilities of Apple graphics, some myths and realities.

In the second section we summarize features found in Applesoft: shape tables and plotting commands. We do not elaborate on these as there are many articles and books that allow the Apple owner to develop these methods with a little self-study. In the third section we explore features of Apple graphics which are not well documented. The most important points being that the Apple does not really have a 192 by 280 pixel display as is commonly thought. We summarize how the Hi-res screen is mapped into the Apple memory. In the fourth section we discuss a BASIC routine written by Bob Bishop for demonstrating that the Apple can display 560 columns of pixels on a monochromatic monitor. In the fifth section, a machine language routine is given which can "connect the dots" on the Hi-res screen when supplied with two points.

2. Plotting In Applesoft.

There are two easy methods for drawing on the Hi-res screen. The first is plotting dots or connecting lines. This is accomplished with the HPLOT command. To plot a dot at the point X, Y (where X is between 0 and 279 and Y is between 0 and 191, written 0<X<279 and 0<Y<191) use the command:

```
HPLOT X,Y  (first turn on the Hi-res
            display by the command HGR)
```

The point 0,0 is in the upper left hand corner of the screen. X indicates the column with X=279 being the right-most column. Y represents the row with 191 being the bottom-most.

To draw a line from X1,Y1 to X2,Y2 use the command:

```
HPLOT X1,Y1 TO X2,Y2
```

The second well-documented method for drawing is with shapes. Having defined a "shape table" of one or more images, the individual images can be drawn with the command:

```
DRAW n AT X,Y where n is the selected
              shape number.
```

A useful variation for motion is the XDRAW command which compliments the color of the shape. Two successive XDRAWs will draw, then erase the shape. There are many low cost utility programs which assist in the design of shapes and in their storage as binary data files.

Hand in hand with either the HPLOT, DRAW or XDRAW command is the HCOLOR command which selects the color of the line or shape. HCOLOR may be set equal to a number between 0 and 7 to obtain either black, white, green, violet, blue or orange.

3. What's Really In There.

From most descriptions of the Apple Hi-res display, you would conclude that the Apple can make 280 by 192 pixels of one of six colors (a pixel is a dot). This however is not the case. To see this try the following simple program provided by Bob Bishop (2):

```
10 HGR:HCOLOR=1
20 HPLOT 0,0 TO 10,150
```

Instead of a straight line you get five separate line segments. Another example is to fill the screen with a solid color by the following:

```
10 HGR:INPUT"SELECT COLOR NO. ";CO
20 HCOLOR=CO
30 FOR Y=0 TO 191
50 HPLOT 0,Y TO 279,Y
60 NEXT Y
```

Repeat the above for each of the color numbers 0 to 7 and you will observe interesting differences.

Let us begin with some background. There are two Hi-res screens which are memory mapped into either the area $2000 (decimal 8192) to $3FFF or $4000 (16384 decimal) to $5FFF. By memory mapped we mean that by putting an eight bit byte into one of those areas, something will appear somewhere on the Hi-res display.

For example, try the following experiment suggested by Bob Bishop (2). First, turn on the Hi-res display by typing HGR. Now POKE 8192,1. This places a bit pattern of 00000001 into location $2000. If you are using a monochromatic display you will see a dot in the upper left hand corner. Now POKE 8192,2. This places a 00000010 in $2000. What happened on the screen? The dot moved. Try POKEing other powers of two such as 4 and 8. The dot keeps moving to the right. However, if you try POKEing a 129 which has the following pattern, 10000001, you will see the dot appear between the locations where you POKEed 1 and 2. In fact, using the following set of values moves the dot in the smallest possible steps:

contd.

Value to POKE	Equivalent Bit Pattern
1	00000001
129	10000001
2	00000010
130	10000010
4	00000100
132	10000100
8	00001000
136	10001000
:	:
:	:
192	11000000

From this you see that the location 8192, in the area of the upper left-hand corner can be used to position one of 14 dots by sequentially turning on each of the lower seven bits and having the high bit be off, then on.

If you repeat this for location $2001 (8193 decimal) through $2027 (8231 decimal) you will find that the sets of 14 points will move across the screen to the right hand edge. Thus, there are 14 times 40 or 560 possible dots which can be turned on.

Now if you had a color display on while you were doing the above, you would notice a repetitive pattern of colors: violet, blue, green, orange. That is, while you can have 560 black or white dots on a monochromatic display, you can have only one fourth as many colored dots on a color display! It is this effect that causes the two short BASIC programs to give the odd results.

If the above were not difficult enough to understand try repeating the experiment using location $2028 (8232 decimal). While you expect this to be the second row of dots on the screen, it isn't. The dot appears about a third of the way down the screen. To more easily understand this, examine page 21 of the Apple II Reference Manual. The diagram there explains why a BLOADed Hi-res screen fills simultaneously in three areas of the screen. The memory is filling continuously from $2000 to $3FFF; these locations do not map from top to bottom of the display screen.

To draw a line connecting two points, we must put the correct data byte in the correct memory location. The value of the byte determines which of fourteen possible positions will appear, while the location in which the byte is stored determines which of 192 rows and which of forty sets of fourteen points in the selected row will be used. A BASIC algorithm for doing this was given in a 1979 article by Loy Spurlock (5). A comparison of several methods for determining the location and data byte required for a given coordinate can be found in the article by C.K. Mesztenyi (3). Clearly, the BASIC HPLOT command is easy to use in comparison to having to compute memory locations and contents; it's restriction is the funny appearance of what appears to be straightforward plotting requests as shown by the two examples earlier.

It is worth mentioning that most other personal computers do not have the simple HPLOT alternative (nor the DRAW/XDRAW for shapes). In other machines, the programmer must resolve the same kinds of problems of what byte and what location. When programming in BASIC on these machines this is done with POKEs. Below we discuss two solutions to "connecting the dots" in 560 point resolution.

4. Super Hi-res in Basic

One solution to obtaining Super Hi-res is to determine, in BASIC, which of the 560 possible X positions you are plotting and then to select the color which can appear in that column. Such a solution was given in Bob Bishop's article:

```
100 FOR Y = 0 TO 159
110 X% = 280 + Y / 8: Y% = Y
120 GOSUB 1000: NEXT Y
130 END
1000 XX% = X% / 4: M% = X% - 4 * XX%
1010 HCOLOR = 2*(M%=0) + 6*(M%=1) +
     1*(M%=2) + 5*(M%=3)
1020 HPLOT X%/2, Y%:RETURN
```

This program fragment determines which column is being plotted then, in SUB 1000, selects the proper color for display. Line 1010 will set HCOLOR equal to 2, 6, 1, or 5 depending on the value of M% (which must equal 0, 1, 2 or 3). A more elaborate version of this idea is given in the article by Dave Smith (4).

5. Super Hi-res in Super Speed

Since interpreted BASIC is notoriously slow when compared with machine language programs, it would seem desirable to perform the "connect the dots" in native 6502 code. This is no simple task for a newcomer to the Apple. Below, we present a subroutine which can be called from another machine language program or from BASIC to do a Super Hi-res line draw.

The routine below operates using a table look-up procedure to convert the X/Y point into the required data byte and memory location. This procedure operates through several tables which are entered with the row/column (X/Y) coordinate as an index to select the proper data byte and memory location (high and low bytes) for that coordinate. The table look-up method is much faster than recomputing the solution for each and every point to be plotted. An analysis of this and several other methods is provided in Mesztenyi (3). To use the method, the required tables must be precomputed and stored in memory while the subroutine is in use. A BASIC program for preparing these tables is shown in Listing 1 below. The program creates the required four tables: SCRNL, SCRNH (the Y address low and high bytes) and X7, X7R (the X-addr and bit position). In this example the tables are stored in the area of $6000 to $6400, just above the second Hi-res screen.

The assembly language source code is given in Listing 2. The routine begins at $6400 but could be reassembled to run almost anywhere. The object code and required tables were kept together so that they could be BLOADed in one file. One feature of the program which could be criticized is that it is self-modifying. That is, the code

contd.

actually changes data bytes within itself. While this is generally considered to be a difficult to interpret and debug characteristic, it has one virtue in this problem; it dramatically reduces the amount of code needed to solve the problem. However, it is not to be recommended for the beginning assembly language programmer.

With a few moments of reflection, some of the problems to be dealt with emerge. The X and Y coordinates must be examined to determine if the line is to be plotted by incrementing (or decrementing) in the X or in the Y direction. For example, consider connecting the point 0,0 with the point 3,50. By incrementing X from 0 to 3 we would have only 4 points to plot, one for each value of X. If we choose to increment in the Y direction we would have 51 points in four separate columns. Clearly the former procedure would be faster. (If the points had been supplied in the reverse order, 3,50 and 0,0, then we would be decrementing instead.) The conclusion is that the routine must compare the beginning and ending X and Y values and determine which drives the program and whether to increment or decrement. After determining this, the program could go to one of four sets of routines to perform the appropriate computations. The self-modifying code approach was chosen instead to redefine the program to perform the required operations. Lines 16, 24 and 26 are used to select the X direction and whether to increment or decrement. Lines 28, 36, and 38 do the same if Y is the choice. The selected values are placed in CHGLI and CHGOT, as instructions to be executed. Lines 44 and 52 select the direction used to terminate the loop and store a compare (CPX or CPY) instruction in COMP & COMP1. The actual plotting is done in lines 59 to 88, the area where code has been modified. The entire routine takes only $92 bytes in memory (although the tables consume almost 4 pages).

A simple BASIC program which uses the routine is shown in Listing 3. The program does not protect the tables and subroutine from being overwritten by BASIC variables; however, with such a small program and so few variables this is not likely to occur. The choice of Hi-res screen is POKEed into location $19 and the X1,Y1,X2, and Y2 point into locations $1C through $1F before calling the subroutine at $6400. The result... a super Hi-res line at super speeds.

References:

1. Apple II Reference Manual, Apple Computer Inc., 1979.

2. Bishop, Bob, "Apple-II Hi-res Graphics: Resolving the Resolution Myth", Apple Orchard, Fall 1980.

3. Mesztenyi, C.K. "Space/Time Analysis of Hires Alogrithms", Washington Apple Pi, July 1982.

4. Smith, David E., "560 by 191 Plot Program", The Apple Shoppe, May/June 1981.

5. Spurlock, Loy, "From the Forum", Applesauce, Oct. 1979.

LISTING 1

```
5   REM  LISTING 1
6   REM
10  REM  HIRES TABLE GENERATION PROGRAM
15  REM     BY C.K. MESZTENYI
20  REM  X/7 STORED AT $6000-$6117
30  REM  BIT(X/7) STORED AT $6200-6317
40  REM  SCRNL STORED AT $6118-$61D7
50  REM  SCRNH STORED AT $6318-$63D7
70  REM  TABLE BSAVED WITH A$6000,L$3D8
80  LOMEM = 25600: REM  $6400
90  DIM IB(6)
100 IB(0) = 1: FOR I = 1 TO 6:IB(I) = 2 *
    IB(I - 1): NEXT I
110 L1 = 24576:L2 = 25088: REM  $6000 &
    $6200
120 FOR I = 0 TO 255:J =  INT (I / 7):K =
    I - 7 * J: POKE L1,J: POKE L2,IB(K):L1
    = L1 + 1:L2 = L2 + 1: NEXT I
130 FOR I = 0 TO 23:J =  INT ((I + 256) /
    7):K = I + 256 - 7 * J: POKE L1,J:
    POKE L2,IB(K):L1 = L1 + 1:L2 = L2 + 1:
    NEXT I
140 L1 = 24856:L2 = 25368: REM  $6118 &
    $6318
150 FOR I = 0 TO 2: FOR J = 0 TO 7: FOR K =
    0 TO 7
160 N = 40 * I + 128 * J + 1024 * K:M =
    INT (N / 256):N = N - 256 * M: POKE
    L1,N: POKE L2,M:L1 = L1 + 1:L2 = L2 + 1
170 NEXT K: NEXT J: NEXT I
200 D$ =  CHR$ (4): PRINT D$"BSAVE
    TABLES,A$6000,L$3D8"
```

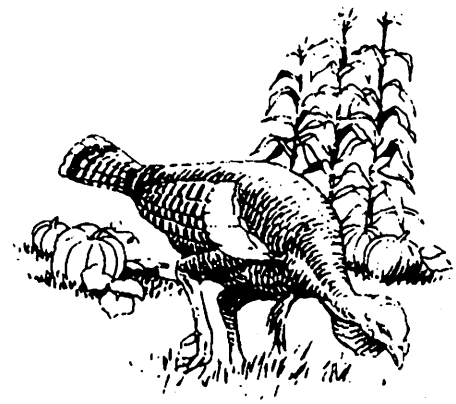
```
*****************************************
*  LISTING 2.                           *
*                                       *
*  FAST LINE DRAWING ROUTINE            *
*     BY. C. MESZTENYI 11/10/82         *
*                                       *
*  DRAWS FROM X1,Y1 TO X2,Y2            *
*     WHERE 0 < X1 & X2 < 256           *
*                                       *
*****************************************
*                                       *
*  INPUT ON PAGE ZERO:                  *
*     PAGE = #$20 HIRES PAGE 1          *
*          = #$40 HIRES PAGE 2          *
*     BASL,BASH = TEMP CONSECUTIVE      *
*                 LOCATIONS             *
*     DMIN = MIN(ABS(X1-X2),ABS(Y1-Y2)) *
*     DMAX = MAX(ABS(X1-X2),ABS(Y1-Y2)) *
*     SAVE = TEMP STORAGE FOR Y-REG     *
*  TABLES REQ'D:                        *
*     SCRNL = Y-ADDR LO BYTE            *
*     SCRNH = Y-ADDR HI BYTE            *
*     X7    = X-ADDR                    *
*     X7R   = X-BIT POSITION            *
*  REGISTERS DESTROYED BY ROUTINE       *
*****************************************
1          ORG $6400
* ZERO PAGE DATA
2     PAGE  EQU $19
3     BASL  EQU $1A
4     BASH  EQU $1B
5     X1    EQU $1C
6     Y1    EQU $1D
7     X2    EQU $1E
8     Y2    EQU $1F
9     DMIN  EQU $FD
10    DMAX  EQU $FE
11    SAVE  EQU $FF
* TABLE ADDRESSES:
12    SCRNL EQU $6118
13    SCRNH EQU $6318
14    X7    EQU $6000
15    X7R   EQU $6200
*ENTRY POINT
```

contd.

```
16    LINE  LDX #$EA   ;LOAD OP-CODE FOR NOP
17          LDA X1     ;FORM X1-X2
18          SEC ;
19          SBC X2 ;
20          BEQ SVX    ;OK IF ZERO
21          BCS PSX    ;BRANCH IF POS
22          EOR #$FF   ;NEG, FORM
23          ADC #01    ;ABSOLUTE VALUE &
24          LDX #$E8   ;GET OP-CODE: INX
25          BNE SVX
26    PSX   LDX #$CA   ;POS, OP-CODE IS DEX
27    SVX   STA SAVE   ;SAVE X-DIFF
28          LDY #$EA   ;LOAD OP-CODE: NOP
29          LDA Y1     ;FORM Y1-Y2
30          SEC
31          SBC Y2
32          BEQ SVY    ;OK IF ZERO
33          BCS PSY    ;BRANCH FOR POS
34          EOR #$FF   ;NEG, FORM ABSOLUTE
35          ADC #$01   ;VALUE AND GET
36          LDY #$C8   ;OP-CODE: INY
37          BNE SVY
38    PSY   LDY #$88   ;POS. OP-CODE DEY
39    SVY   CMP SAVE   ;COMPARE ABS DIFF
40          BCS LCY    ;FOR LOOP CONTROL
41          STX CHGLI  ;CONTROL ON X
42          STY CHGOT  ;   STORE OP CODES
43          STA DMIN   ;   DMIN
44          LDX #$E0   ;OP-CODE:CPX (IMM)
45          STX COMP
46          LDX X2
47          STX COMP1
48          LDA SAVE   ;DATA FOR DMAX
49          BCC STLP
50    LCY   STX CHGOT  ; CONTROL ON Y
51          STY CHGLI  ; STORE OP-CODES
52          LDY #$C0   ; OP-CODE: CPY (IMM)
53          STY COMP
54          LDY Y2
55          STY COMP1
56          LDY SAVE   ; DMIN
57          STY DMIN
58    STLP  STA DMAX   ; STORE DMAX AND
59          LDX X1     ; START LOOP WITH X1
60          LDY Y1 ;                Y1
61          LDA #00    ; DMIN-SUM=0
62    LOOP  PHA        ; SAVE DMIN-SUM
63          LDA SCRNL,Y ;SET SCREEN BASE
64          STA BASL   ; ADDR BY TABLE
65          LDA SCRNH,Y ; LOOP-UP WITH
66          ORA PAGE
67          STA BASH   ; Y-COORD
68          STY SAVE   ; SAVE Y-COORD
69          LDY X7,X   ; GET X-COORD, LOC.
70          LDA (BASL),Y ; BY TABLE LOOK-UP
71          ORA X7R,X  ; OR-IT WITH BIT LOC.
72          STA (BASL),Y ; TOPLOT POINT
73          LDY SAVE
74    COMP  NOP        ; LOOP INDEX COMPARISON
75    COMP1 NOP        ; FOR TERMINATION
76    *COMP CPX X2 (IMM)
77    *COMP CPY Y2 (IMM)
78          BEQ END    ; RETURN IF SATISFIED
79    CHGLI NOP        ; OTHERWISE MODIFY
*CHGLI INX OR DEX OR INY OR DEY
80          PLA        ; CHECK FOR THE OTHER
81          CLC        ; COORD CHANGE BY
82          ADC DMIN ; COMPARING INCREMENTED
83          BCS MODOT ; DMIN-SUM WITH DMAX
84          CMP DMAX
85          BCC LOOP
86    MODOT SBC DMAX   ; CHANGE NEEDED
87    CHGOT NOP        ; THUS INC OR DEC
*CHGOT INY OR DEY OR INX OR DEX
88          JMP LOOP   ; AND REPEAT LOOP
89    END   PLA        ; REMOVE DMIN-SUM FROM
                         STACK AND RETURN
90          RTS        ; DONE
```

LISTING 3

```
5   REM  LISTING 3.
6   REM
10  REM  EXAMPLE USAGE OF THE FAST
15  REM  LINE DRAW ROUTINES
80    D$  =     CHR$  (4):  PRINT  D$"BLOAD
FAST LINE DRAW.OBJ+TABLES"
90  HGR
110 PAGE = 25:HI = 32
120 POKE PAGE,HI
130 INPUT "ENTER STARTING X,Y ";X1,Y1
140 INPUT "ENTER ENDING X,Y ";X2,Y2
155 BA = 28
160 POKE BA,X1: POKE BA + 1,Y1
170 POKE BA + 2,X2: POKE BA + 3,Y2
180 SUB = 6 * 4096 + 4 * 256: CALL SUB
190 GOTO 130
```



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THE COST OF SCROLLING

by Charles K. Mesztenyi

The scrolling routine is part of the Apple's Monitor in the memory addresses $FC70-FCA7 and uses the vertical tabbing ($FC22-FC2B) and base calculation ($FBC1-FBD8) subroutines. The routine moves the text lines in the text window up by one line and blanks out the last line. It is called from the COUT1 routine of the Monitor when the current output cursor position is on the last row of the text window, and the character to be processed is a carriage return or line feed, or if the cursor is at the last character position of the last row. The cost of scrolling, i.e. the time needed to perform it, came up in the context of choosing a baud rate when the Apple is used as a terminal to a main frame computer. My objective was to selectively read a symbolic file stored on the main frame computer using only the TV screen of the Apple. Thus, after logging in with the Apple, operating as a dumb terminal and using the fastest baud rate possible, I wanted to output the file from the main frame to the Apple screen continuously until the part I wanted to read came up. At this point, a Ctrl-S (X-OFF) input from the keyboard could stop the output, giving me time to read the screen. A Ctrl-Q (X-ON) input from the keyboard could then allow me to continue with the output. This X-ON/ X-OFF protocol is available on many main frame computers. Using the Apple Super Serial card and direct wire connection to the main frame computer, I had available 300, 1200, 2400 and 4800 baud rates. Occasionally, I lost some characters at the 1200 baud rate, but operating at the 2400 baud rate, I started to lose more and more characters. The lost characters were always after the start of new lines on the Apple screen, which indicated that the necessary scrolling for the new line needed too much time and meanwhile the incoming characters were lost. This experience motivated me to count the number of cycles needed to execute the scrolling routine and I came up with the following formula:

$$T(V,H) = 16VH + 93.5V - 2H + 84$$

where T is the number of cycles, V is the number of rows and H is the number of characters/row of the text window. Since the Apple has approximately a 1-microsecond cycle time, T also gives the time in microseconds. Using the full screen (V=24, H=40), the time needed to perform scrolling is

$$T(24,40) = 17608 \text{ microseconds}$$

Note, that this is only the time for scrolling; one should also consider the rest of the time needed to handle an incoming character, and to place it on the screen if needed. This time may depend on the ROM terminal program, but in any case it should not be more than two hundred cycles of which 67 cycles is spent in the rest of the COUT1 routine to place a printable character on the screen. For later reference, I denote this time by "c".

The baud rate is measured as bits/sec. I have been using 10 bits/char (1 start bit, 7 bit ASCII, 1 parity bit, 1 stop bit). Thus, the available time to process one incoming character, before the next comes in, is

$$t(b) = 10/b \text{ sec.} = 10{,}000{,}000/b \text{ microseconds}$$

where b is the baud rate. Placing the actual baud rates into the formula, we get

$$t(300) = 33333 \text{ microsec.}$$
$$t(1200) = 8333 \text{ "}$$
$$t(2400) = 4166 \text{ "}$$

Assume now, that an incoming character A1 is picked up for processing as soon as it becomes available in the receive register of the ACIA, and it initiates the scrolling procedure. The processing of A1 takes T+c time. Meanwhile the next character A2 arrives after t(b) time passes, and it is ready in the receive register. The third character A3 arrives, and overwrites A2 in the receive register when another t(b) time passes by whether or not A2 has been picked up. Thus, T+c should be less then two times t(b), to prevent loss of the second character, and the characters arrive at full speed restricted only by the baud rate:

$$T(V,H) + c < 2t(b)$$

Looking at the actual numbers above assuming a full screen window, it is clear that there is no danger of losing characters at the 300 baud rate. At b=1200, the situation is already different:

$$T(24,40)+c = 17608+c$$
$$2t(1200) = 16666$$

indicating the loss of the character following the one causing a scroll. When I receive from the main frame computer a carriage return, line feed sequence, I lose the line feed character which should have been disregarded anyway since the carriage return automatically causes a scroll (line feed). On the other hand, the 41st character of a longer line input can be lost since the 40th character causes a new line (scrolling), and the 42nd character can overwrite the 41st in the receive register.

The above analysis assumes that the character causing the scroll is picked up as soon as it arrives. If such a character is followed by another character causing another scroll (e.g. a carriage return), then this second character can not be picked up in time. To handle such cases, one should have $T(V,H)+c<t(b)$.

contd. on pg 40

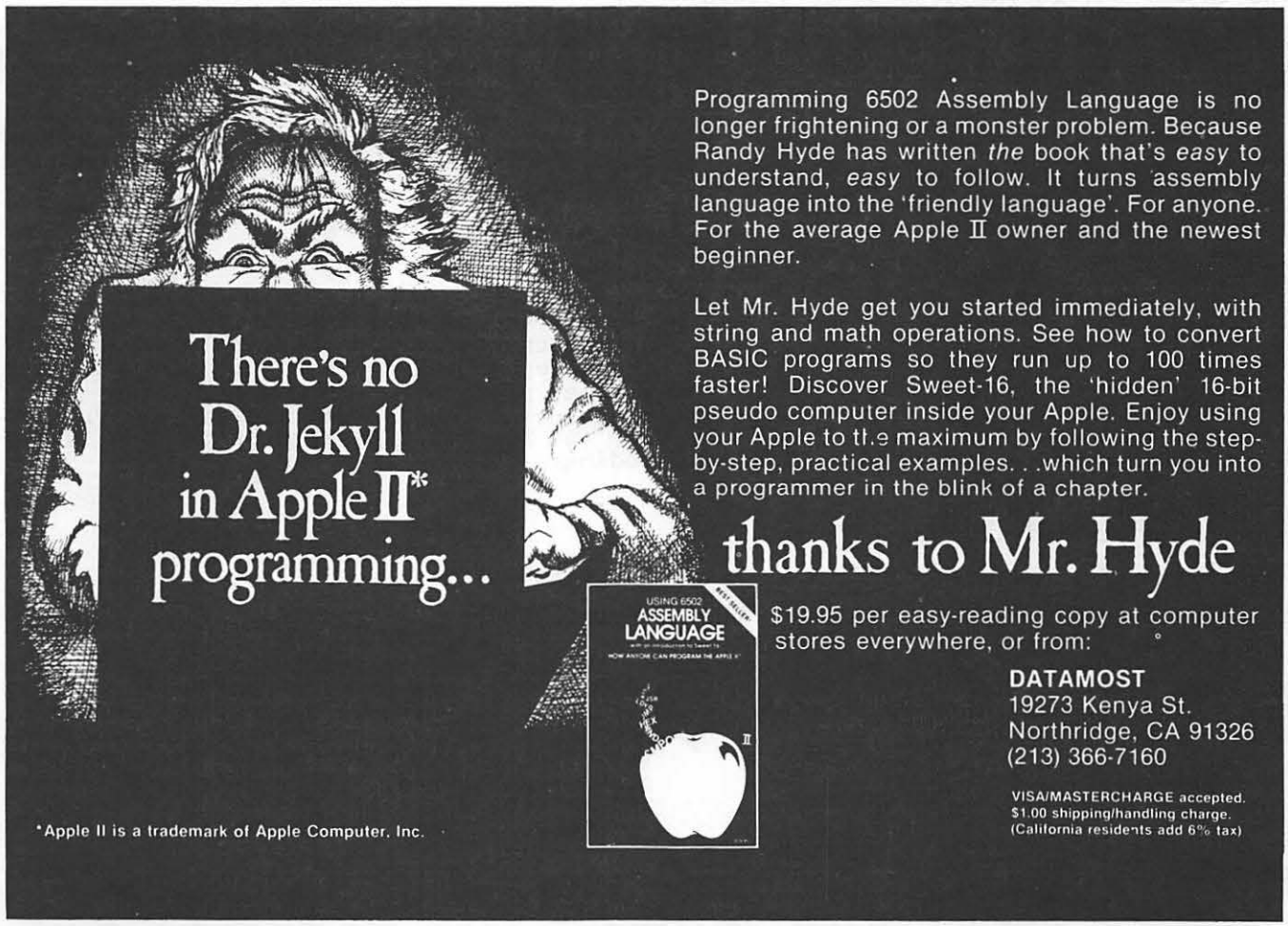
APPLE TEAS

Starting in December the WAP will be organizing small discussion groups around the D.C. area. Below you will find a list of volunteers who will be holding sessions in December and January. These will be informal and last about 2 hours. If you would like to attend, call the host and register with them. Each host will limit the size according to their wishes and will let you know if there is room left for the tea of interest. Hopefully, there will be ample numbers of sessions to meet the interest. If not, we will seek additional volunteers.

Session leaders may be needed if the host does not feel knowledgeable about the Apple. If you would like to help in organizing these sessions or would like to volunteer your home or help to be a session leader, contact David Morganstein.

Apple Tea Schedule:

Host	Area	Phone	Date/Time	Date/Time	Leader Needed
Bob Hanson	Frederick	662-6697	Jan 13/7:30	Feb 10/7:30	Y
Walton Francis	Chevy Chase	245-0291	Dec 10/8-10	Jan 14/8-10	N
Sue Roth	McLean	356-9025	Jan 13/8-10	Feb 12/10-12	Y
Scott Rullmann	Bladensburg	779-5714	Dec 11/7:30	Jan 15/7:30	N
John Henry	Georgetown	625-7633	Dec 2/7:30	Jan 6/7:30	Y
Rollande Robert	Annandale	256-4121	Jan 21/9:30		Y
Dave Harvey	Arlington	527-2704	Dec 11/8-10	Jan 15/8-10	
Ginny Spevak	Chevy Chase	362-3887	Dec 8/8-10	Jan 19/8-10	Y
Robert Wood	McLean	893-9591	Dec 9/8-10	Jan 6/8-10	
Donna Campbell	Rockville	424-5069			
Joe Fuchs	Adelphi	434-6756	Dec 9/7:30	Jan 15/7:30	N
Don Drinkwater	Urbana	831-9234	Dec 9/6:30		N
H. Phelps	Greenbelt	345-0355	Dec 15/8-10	Jan 14/8-10	Y
Doug Richard	Fairfax	323-1027	Dec 2/8-10	Jan 6/8-10	Y
Robert Boyle	Carlisle Pa.	717-245-0030			
John Baker	Alexandria	354-9715	Dec 9/7-9		Y
Al Weiner	Wheaton	946-2585	Dec 14/8-10	Jan 11/8-10	N
Dick Sanderson	Rockville	983-9419	Dec 19/3-5	Jan 16/3-5	
B&D Acton	Gaithersburg	428-3605	Dec 12/1-3	Jan 23/1-3	N
Judy Fite	Fairfax	691-1082	Dec 4/3-5	Jan 29/3-5	Y
E&M Kelty	Bethesda	229-5639	Dec 12/7:30	Jan 9/7:30	Y
David Margulies	Bethesda	530-9190	Dec 15/8-10	Jan 26/8-10	Y



USING THE MONITOR CTRL-Y INTERFACE

by William Schultheis

The Apple II monitor provides a number of commands useful to the assembly language programmer. One of the most versatile is the CTRL-Y command. CTRL-Y is roughly equivalent to the "&" command in Applesoft in that it allows you to add your own command functions to the monitor. This month's column gives you some tips about how to take advantage of the CTRL-Y feature and describes some of the monitor routines used for monitor command processing.

The CTRL-Y command is described briefly on page 57 of the Apple II Reference Manual. This description is thoroughly confusing and gives no idea of how to pass data to your command. A slightly more detailed explanation occurs on page 86 of "Apple II Monitors Peeled", a publication of Apple which contains a lot of useful information about the monitor. But neither of these sources tells you enough to exploit the full parameter passing capability of the monitor.

How does the CTRL-Y command work? When the monitor scans a CTRL-Y, it does a JMP to location $03F8 which is the location of a jump instruction to your own command routine. When you load your CTRL-Y routine, you simply store the proper JMP instruction at $3F8 and you are ready to go. When your routine is called, it can access the values of parameters which precede the CTRL-Y on the command line. It is this ability to access parameters which gives the CTRL-Y its versatility.

Getting at Arguments

Your CTRL-Y routine will need some or all of the following symbolic definitions to interact with the monitor:

```
MODE   EQU $31     ;MODE FLAG
YSAVE  EQU $34     ;SCAN INDEX
A1L    EQU $3C     ;A1 LOW
A1H    EQU $3D     ;A1 HIGH
A2L    EQU $3E     ;A2 LOW
A2H    EQU $3F     ;A2 HIGH
A3L    EQU $40     ;A3 LOW
A3H    EQU $41     ;A3 HIGH
A4L    EQU $42     ;A4 LOW
A4H    EQU $43     ;A4 HIGH
A5L    EQU $44     ;A5 LOW
A5H    EQU $45     ;A5 HIGH
IN     EQU $200    ;INPUT BUFFER
GETNUM EQU $FFA7   ;READ HEX NUM
```

IN is the 256 byte buffer which holds the most recent line entered from the keyboard. The monitor uses GETNUM to retrieve hex numbers and command codes from the input buffer. GETNUM uses the y-reg to scan the input line, so the sequence:

```
        LDA IN,Y   ;GET CHAR
        INY        ;POINT TO NEXT
```

reads a character from the line and points to the next. The monitor uses the location YSAVE to save the scan index between calls to GETNUM. The sequence:

```
        LDY YSAVE  ;GET SCAN
        LDA IN-1,Y ;GET LAST CHAR
```

can be used to retrieve the most recently scanned character. You can check for the end of the input line by checking the next character for a CR:

```
        LDY YSAVE  ;GET SCAN
        LDA IN,Y   ;GET CHAR
        CMP #$8D   ;IS IT CR?
        BEQ LINEND
```

When commands have numeric parameters, these are stored in the two-byte locations A1 to A5. The location MODE is used to save certain parameter punctuation marks, and this controls how parameters are assigned to the parameter locations.

The method the monitor uses to pass command arguments is best shown by examples. In the examples which follow, the character "$\overline{y}$" will denote a CTRL-Y and "$\overline{cr}$" will denote a RETURN. All these examples work the same way whether the $\overline{y}$ is followed by $\overline{cr}$ or a blank and another command.

No parameters:

*$\overline{y}\overline{cr}$

A2 will contain zero with other parameter locations unchanged. On entry to your routine the x-reg contains 0 and the a-reg contains zero. The y-reg always contains zero, no matter how many parameters are involved.

One parameter:

*800$\overline{y}\overline{cr}$

A1, A2, and A3 all contain $800. A4 and A5 are unchanged. On entry to your routine the x-reg contains a 1, indicating that the $\overline{y}$ was preceded by a number. The a-reg contains 0. Note that you can always test for a numeric parameter before the $\overline{y}$ by coding:

```
        DEX
        BMI NONUM
```

Two parameters:

*800.900$\overline{y}\overline{cr}$

A1 and A3 contain $800 and A2 contains $900. On entry to your routine the x-reg contains 1. The a-reg now contains $AE, the negative ASCII code for the "." between the two numbers. You could also use three other characters, "+", "-", and ":" as separators:

contd.

```
*800+900ycr  ($AB in a-reg)
*800-900ycr  ($AD in a-reg)
*800:900ycr  ($BA in a-reg)
```

Omitting the first number:

```
*.900ycr
```

A2 contains $900. A1 and A3 are unchanged. The a-reg contains $AE and the x-reg contains 1.

Omitting the second number:

```
*800.ycr
```

This is not so useful. A1 and A3 contain $800 while A2 contains zero. The a-reg contains $AE and the x-reg contains 0.

Three parameters:

```
*B00<800.900ycr
```

A4 and A5 now contain $B00. Everything else is like the two parameter case with A1 and A3 containing $800 and A2 containing $900. The a-reg contains $AE and the x-reg contains 1.

The two and three parameter formats are ideal for commands which search, move, or compare memory. The $800 parameter in these examples would be the beginning of a range of memory to process, and $900 would be the end of the range. The $B00 would be a destination address. The monitor has two routines which make it easy to code such routines:

```
NXTA4  EQU $FCBA
NXTA1  EQU $FCB4
```

Each time you call NXTA1 it adds one to the contents of A1L,H and compares it to the number in A2L,H and returns. If A1 is less than or equal to A2, the carry flag is clear. If A1 is greater than A2, the carry flag is set. NXTA4 adds one to the number in A4L,H and then executes NXTA1. Using NXTA4 a memory move instruction can be coded in just five instructions:

```
CTLY   LDA (A1L),Y ;GET BYTE
       STA (A4L),Y ;STORE IT
       JSR NXTA4   ;STEP ONE
       BCC CTLY    ;A1 <= A2
       RTS
```

Notice that the three input parameters are still available. If the command had been "A00<800.900y", the second copy of $800 would be in A3 and the second copy of $A00 would be in A5. The original value of $900 would be in A2. You could copy A3 into A1 and A5 into A4 and loop through the same range of memory again.

More About GETNUM

If you want to know how all this works, you have to dig a little deeper into the inner workings of GETNUM and some other monitor routines. GETNUM does most of the work, reading hex numbers and command codes from the input buffer. Each time it is called, GETNUM tries to read a hex number stopping when it encounters the first non-hex character. It starts reading the buffer at IN,Y and updates the y-reg as it reads. It returns one or three copies of the number it finds there depending on the contents of MODE, and returns as a command code a scrambled version of the first non-hex character it finds. The routine calling GETNUM is responsible for setting up MODE and saving the y-reg between calls.

When GETNUM is called it (1) sets the x-reg to zero, (2) stores zero in A2L and A2H, and (3) reads the character at IN,Y. It then tries to convert the character into a value from 0 to 15. If it fails the scrambled character is left in the a-reg and GETNUM returns with the updated scan index in the y-reg and 0 in the x-reg. If the conversion succeeds, GETNUM performs a four bit double shift from the a-reg into A2L and A2L into A2H. The process of shifting always leaves a 1 in the x-reg. GETNUM then proceeds to read another input character. The process repeats until the conversion fails. GETNUM then looks at the contents of MODE. If MODE is zero, GETNUM copies the two-byte number in A2 into A1 and A3. When GETNUM returns, the scrambled command code is in the a-reg and the y-reg points to the next character in the input buffer. If there was no number before the command code, the x-reg contains 0 and A2 contains 0. On the other hand, if there was a hex number before the command code then the x-reg contains 1 and the number is in A2. If MODE is zero then the same number is in A1 and A3. I know that seems complicated, but it makes more sense when you see more of how the monitor works.

The monitor treats every non-hex character as a potential command. After each call to GETNUM the monitor saves the y-reg in YSAVE and looks up the scrambled command character in a table of legal scrambled commands. If it matches a table entry, the monitor gets the corresponding address and branches to the command routine. Just before it makes the call, the monitor executes the following instructions:

```
LDA MODE
LDY #0
STY MODE
```

This sets MODE to zero, sets the y-reg to zero, and passes the old value of MODE in the a-reg. Note that the x-reg still contains 1 or 0 depending on whether or not the command was preceded by a hex number.

The method behind this madness starts to appear when you look at the command table. It turns out that the characters ".", ":", "+", and "-" are commands, or more accurately they are alternate codes for a routine called SETMODE. SETMODE is a very simple routine; it retrieves the command code (unscrambled) from the command line, stores it into MODE, and returns. Now consider what happens when you enter the command:

```
*800.900ycr
```

The first call to GETNUM reads $800 into A2 and copies it into A1 and A3 (MODE is always set to 0 at the beginning of a new line). The scrambled "." is returned as a command code. The monitor looks it up in

contd.

the table and calls SETMODE. SETMODE gets the "." from the command line and puts it into MODE. The monitor calls GETNUM again and it reads $900 into A2. But now the "." is in MODE so A1 and A3 are left alone. The monitor looks up the scrambled Y and calls the routine USR. USR is a single instruction:

```
JMP $3F8
```

So if $3F8 contains a JMP to your routine, you are on your way with $800 in A2 and $900 in A1 and A3. If you care, the "." is in the a-reg.

The final piece of the picture is the "<" command. The "<" processing routine is called LT. LT copies the contents of A2 into A4 and A5 and returns. So consider the command:

*800<11.FYCR

This is what happens:

1. GETNUM reads $800 into A1, A2, A3
2. LT copies $800 into A4 and A5
3. GETNUM reads $11 into A1, A2, A3
4. SETMODE stores "." into MODE
5. GETNUM reads $F into A2
6. USR jumps to your routine

and you have the following inputs:

A1 - $11
A2 - $F
A3 - $11
A4 - $800
A5 - $800

This might be a command to call RWTS and read track $11 sector $F into a buffer at $800. After all, why spend $25 or more for a disk edit program if you can write your own? (Ed. Note: Are those hex dollars?)

You can pass still more parameters by having them follow the Y on the input line. You can retrieve the character after the Y by coding:

```
LDY YSAVE
LDA IN,Y
INY
STY YSAVE
```

By testing this one letter you can select one of a whole set of user functions. You can even call GETNUM to read numeric parameters. Just remember to leave YSAVE pointing to the character following your last parameter, and the monitor will never know the difference.

The possibilities for using the CTRL-Y interface are limited only by your imagination.

So... happy assembling!

Note: The topic for this column was suggested by David Morganstein. If you have a problem or application you would like me to write about, let me know at a meeting or call the hot line number.

COST OF SCROLLING contd. from pg 36

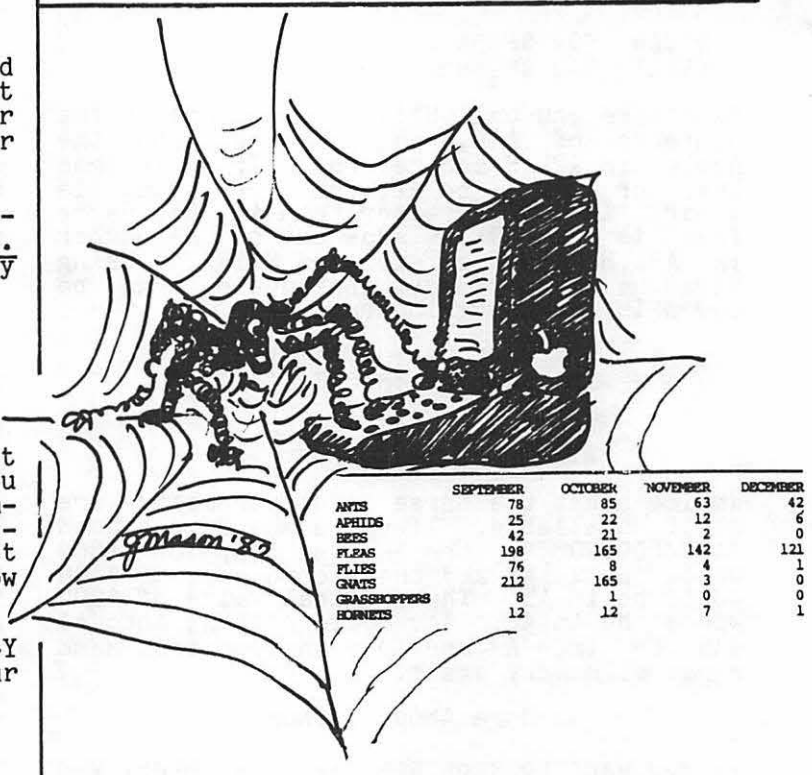
One could rewrite, and improve the scrolling subroutine of the Monitor by removing its general text window feature, assuming the full screen at all times. It would need approximately a 12% improvement to make the 1200 baud rate safe to use assuming a full screen. A better solution would be to buffer the input for each incoming line ending with the carriage return character. Force the sending main frame computer to wait after each line output. During this waiting time, the buffered line can be placed on the screen, necessary scrolling performed, etc.

A simpler solution is to use tabbing. Horizontal tabbing decreases H, the number of characters per line; vertical tabbing decreases V, the number of lines. Decreasing H by one would reduce T by 282 cycles, while decreasing V by one would reduce T by 733.5 cycles. Allowing enough time for c (processing the character), we should choose V = 20, which gives:

T(20,40) = 14674 microseconds

allowing almost 2000 cycles for c.

A good modem with 1200 baud rate costs around $1000. The increased transmission speed may be required, especially to perform file transfers; on the other hand, it may cause timing problems as indicated above.



Everyone's using computers nowadays.

APPLEPLOT/EPSON

by Bob Schmidt

For a couple of years now, I've been using the Appleplot program for business trend plots, and I found that I had luckily chosen the Grappler board for my Epson printer. With this combination, I could plot my charts to the screen (HIRES) and following a 'reset', could do a HGR dump to the printer. Neat, but I then had to rerun the program to do the setups for the next screen print-out. All that work with a resident program which already has a 'print' routine - but to only two printers (which seem to be in the minority). Oh, to use the routine with an Epson.

Due to the efforts of an Apple compatriot, an addition (List 1) was POKEd to the end of the program with suitable EOP pointer modifications to use the EPSON printer because regular programming changes did not work. For the same reasons, I made a change to line 354 to print to screen the file name just pulled from the disk memory when adding more data points. When doing plots of many fields, it is easy to forget which file one is working. I located the memory location of line 354 (by searching through a lot of machine language dump) and swapping machine bytes in the appropriate locations to add the "FI$" (file name) without changing the exact length of the line. Doing it this way, I didn't have to relocate lines, HIRES screen, or anything. Ugh, what a job - but to add insult-to-injury, the program 'burped' and cried "out-of-memory". With 131 sectors of APPLEPLOT as the basic program, there just wasn't enough room for even these few lines.

And so, I went to our prolific expounder of profound solutions to our many questions (Q & A) and asked how to delete those lines used for the other printer routines. With the usual insight we have come to love from our own "Q & A" column, came the July '82 issue, pgs. 10 and 11 (reproduced at the end of this article for your convenience), for the 'how-to' changes possible without the need to 'POKE' in the data. This is accomplished by resetting the 'start-of-program' pointer to ignore the first part of the program. This is done by setting locations $67 and $68 to the address of the first program line after the HIRES screen. That address is $4971. From the monitor, enter '67:71 49 <cr>' and do all the modifications (in APPLESOFT) as usual. When finished, reset $67 and $68 to $801, the normal start (in monitor => '67:01 08 <cr>'). Worked great and I was able to reduce the program length from 33000 to 31904 bytes by removing 31 lines (941 thru 948, 952 thru 957, and lines 1004 thru 1052) even with the Epson routine included. And finally, I slightly modified lines 940 and 950 to clean up the screen routine. To make all these changes:

1) follow the Q & A routine to change pointers;

2) delete lines noted above;

3) modify lines 334, 940, and 950 as listed in List 2;

4) add lines 1100 thru 1135 (List 1);

5) return pointers, and

6) save program.

This routine should work for any printer - just use your printer-unique commands in lines starting with 1100.

LIST 1

```
1100 GG$ = "EPSON" : GOSUB 958 : GOSUB
     1105 : RETURN

1105 HOME : INVERSE : PRINT "EPS ON MX-80":
     NORMAL : VTAB 5: PRINT "PARAMETERS:" :
     VTAB 10 : I$ = ""

1110 PRINT TAB(5) "DOUBLE-SIZED?";: GET X$:
     PRINT X$ : IF X$ = "Y" THEN I$ = I$ +
     "DR" : GOTO 1120

1115 PRINT TAB (5) "ROTATED?"; : GET X$ :
     PRINT X$ : IF X$ = "Y" THEN I$ = I$ +
     "R"

1120 PRINT TAB (5) "EMPHASIZED?";: GET X$ :
     PRINT X$ : IF X$ = "Y" THEN I$ = I$ +
     "E"

1125 PRINT TAB (5) "INVERSE?"; : GET X$ :
     PRINT X$ : IF X$ = "Y" THEN I$ = I$ +
     "I"

1130 PRINT CHR$ (4) "PR#1" : PRINT CHR$ (9)
     "G"I$ : PRINT CHR$ (10) CHR$ (10)

1135 PRINT CHR$ (4) "PR#0" : RETURN
```

LIST 2

```
 334 HOME : VTAB 2 : HTAB 8 : PRINT
     "DATA ENTRY" : VTAB 5 : PRINT
     "ENTERING DATA FOR:"; : PRINT FI$ :
     PRINT TAB(2);"PLOT 1 (";N1;" PTS)" :
     PRINT TAB(7);"OR" : PRINT TAB(2);"PLOT
     2 (";N2;" PTS)  SELECT (1 OR 2)? ";: :
     INPUT "";SE$ : IF SE$ = QZ$ THEN 276

940 HOME : PRINT TAB(2);"PRINT THE GRAPH
    ON THE EPSON PRINTER"

950 GET T$ : PRINT T$ : GOTO 1100
```

The following is reprinted from the July 1982 Q & A:

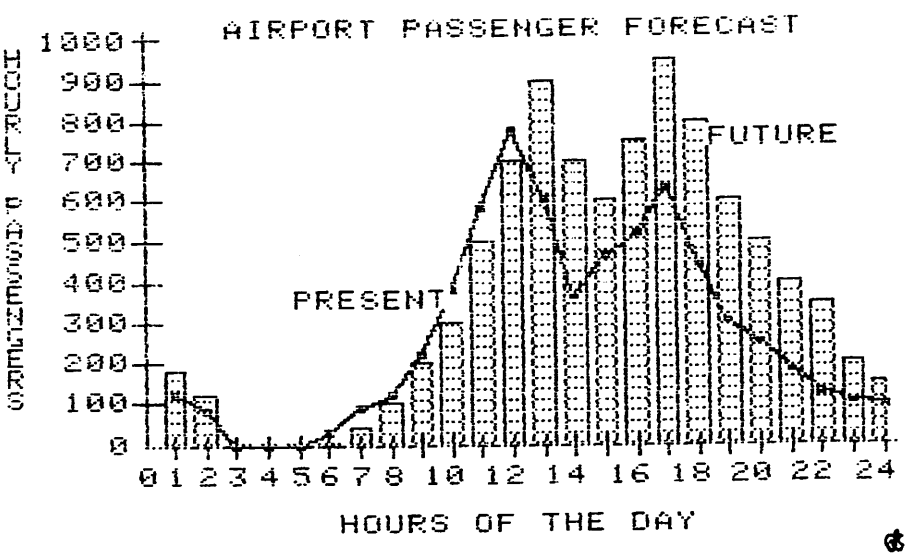
Q. How do I remove the program segments from Appleplot relating to the Silentype and Qume printers? I have a mod to Appleplot which adds the option of an EPSON printer (utilizing a Grappler board). Upon entering data into the program for printing, I have experienced (out of memory) #77 ERROR when I collect

contd.

over 2 sectors of data. It seems that the added program uses too much memory. Any suggestions?

A. From your enclosure documenting the changes you made, you indicate that you changed the program by using the Monitor to directly modify the program. This appears to be necessary because part of the program disappears if it is modified normally by typing in new lines. In fact part of the program can easily be modified. The problem is that the program is split to fit around hi-res page 1. For Appleplot the dividing line number is 232. Lines 232 and below cannot be modified without re-splitting the program. Anything above this line number can be modified by performing a simple trick. Applesoft does not like to modify programs that have been "split". The way around this is to reset the start of program pointer to ignore the first part of the program. This is done by finding the start of the first program line after the split which for Appleplot is $4971 and setting locations $67 and $68 to this address. For example from the Monitor do '67:71 49'. Now you can modify the last half of the program all you want and when finished reset $67 and $68 to $801 the normal start ('67:01 08'), save the program and you're all done. I made the modifications you included and found that only 506 free bytes of memory remain before entering any data. Space for the data values themselves has already been allocated via DIM statements but as you define the graph parameters other variables are assigned that apparently exceed the available storage. The solution is to remove the unneeded program lines dealing with the other printers and to rewrite your modification to conserve space by combining several statements on one line and using subroutines for common code.

Figure 1 - Result



TIDBITS FROM NEWSIG

by Bernie Benson

If the following paragraphs seem familiar, it is because they appeared in last February's Pi. The WAP has gained over a thousand members since then and I think this information can be helpful to them as well. This brings up a growing problem concerning new computer owners. The problem involves how to get the ever growing amount of published information about the APPLE into the hands of new owners.

Three quick reminders this month.

(1) Never plug or unplug anything into the peripheral boards, expansion slots, or the main circuit board of the APPLE while it is turned on; not even the game paddles, unless the device specifically says you can. Doing so can permanently damage chips on the cards and the main board as well as the power supply.

(2) The air is very dry this time of year in Washington and static electricity is common. This can be very harmful to your APPLE. To avoid any problems, simply ground yourself by touching the large case of the power supply before touching any other component in the computer. The power should be turned off but the power cord should NOT be unplugged. The computer is grounded through the power cord. Make sure the outlet that the cord is plugged into is properly grounded. Care must also be taken when carrying peripheral cards, disk, etc. across a carpeted floor.

(3) Looking for an inexpensive stand for your Epson MX-80 or similar size printer? Try a five dollar parsons table. The printer sits on it nicely and a box of 8.5 by 11 fanfold paper fits under it. If you want the printer on a larger desk top but have no way to feed paper to it, set it on just the top of the parsons table. Cut one side panel out of the top and about 2 inches of paper will feed nicely from under the raised printer.

Apple Wars

Can 'Mcintosh Patriotism' Help Yankee Pride?

THE BOTTOM LINE

by Leon H. Raesly

Well, this is my first attempt at writing to such a knowledgeable audience. If the Editor is willing, I hope to present a monthly column on the "Apple and Business". Within this very broad area, I would expect that the column would cover several aspects of the Apple's interface with business. These would include:

1. Systems (or structures) surrounding the Apple's use.
2. Training programs and their conceptualization.
3. Basic systems maintenance.
4. Sources for special forms, material, etc. (the type of "stuff" not available from Apple dealers).
5. Unique or special applications of various software.
6. Information from Business SIGs in our own and other other Apple groups.
7. Exchange of ideas from business users.
8. Anything else that you are willing to contribute to this column. I would hope that many of these columns would actually be written by you, the business reader.

I operate two Apple's currently, and am in the process of acquiring another for my place of business (a Community Mental Health Center) - I am continually surprised at the extensive need for microprocessors in all types of business. I believe that there are five basic types of programs that ALL businesses should have. These are:

1. A word processor program (we have four, but have finally settled on Letter Perfect, for its ease in interfacing with its companion Data Base Program, and any text file program).
2. A data base system (again, we have four, but have settled finally on Data Perfect, for the reason given above).
3. A checkbook program (many are available - we use "the Home Account").
4. An electronic spreadsheet (we use the ever popular VisiCalc).
5. And even more important than any of these, a nibble copy program for making backup copies. (We have three that we keep, Locksmith, Nibbles Away II, and Master Key +.)

Which leads me to the concept that I wish to cover for this article. The operating principle that we use is "BACK IT UP", and its two corollaries, "SAVE BEFORE...." (save before printing, save before turning the machine off, save before taking a break, SAVE BEFORE ..... ANYTHING), and "DON'T DELETE". Disks are cheap, labor isn't, and that temporary data you just deleted will undoubtedly be needed three days later!

Many businesses (and ours is one of them) use essentially inexperienced operators on the Apple. After all, if you had to hire programmers to run the programs, the advantages of an Apple would disappear. Not to mention what the cost would do to your profit (the BOTTOM LINE, of course!). So in line with our basic principal, we will not purchase a program that we cannot make a "USE COPY" for our people. So any program must be copyable by one of the Copy programs available (COPYA or a nibble copier). We then store the original in a special Master File, where it cannot be touched until needed again.

To make it more difficult for our inexperienced operators to goof, we also use a special color coding of disks. I would like to share it with you, as I have found that by doing this, our operators have a much easier time of it.

DISKETTE COLOR CODES

RED Program Diskettes
- 1st Line - Name of Program
- 2nd Line - PROGRAM DISKETTE
- 3rd Line - Leave Blank
- 4th & 5th Line - USE COPY (write VERY large)

BLUE Data Diskettes
- 1st Line - DATA DISK #n
- 2nd Line - Name of Program
- 3rd Line - Name of Special Use
- 4th Line - Date Diskette Put in Use
- 5th Line - ORIGINAL (Write in caps, and circle)

(Special Note, when diskette is full, write the word FULL on the BLUE label.)

WHITE with BLACK border — Duplicate Data Diskette (SAME AS ABOVE, 5TH LINE SAYS DUPLICATE!!)

GREEN System Master

(We have several different System Masters, each to be booted with special functions, such as V-C Expand, a Move DOS, the standard DOS, etc.

For the Color labels, we use the Avery 1" x 3" removable labels, in Day Glow colors. The Day Glow label is placed at the top, left side of the diskette, and the regular lined label (provided with the blank diskettes by the manufacturer) is placed on the top, right side of the diskette. The original label from the manufacturer is

contd.

removed prior to attaching our two labels. Since inaugurating this system, we have had no misloading of data disks for programs (and the consequent stopping of all work while they find me, because "...it doesn't work - what broke!", or trying to save data onto a full program disk, and the sometimes consequent aborting of the program, and losing all the data that they have just entered)!

Although a minor aspect of using an Apple in business, we have found that the color coding above has saved us a substantial amount of time and hassle.

WAP BUSINESS SIG REPORT

The meeting October 30th was attended by 18 people, and chaired by our Chairman, John New. 40% of those attending were interested in stock/bond applications/uses, and about 60% in a variety of general business uses. John presented an overview of Apple memory, and some understanding of how that would apply to programs or firmware we might purchase.

John also presented an interesting report on business applications which make use of microprocessors. The percentages reflect the percent of owners using them for each application. They were as follows: Inventory control - 43%; Invoice - 36%; Accounts Payable - 36%; Accounts Receivable - 36%; Sales Tool - 33%; Analysis - 33%; Recommend - 33% (I was not clear on what that meant); Projections - 27%; Customer Information - 20%. Also of interest to me was that in terms of the survey, 77% of the respondents HAD a micro, and 23% were considering purchasing one. This must have skewed the results, for it seems to me that those considering a micro would depend on advertising to give them potential uses, while those that owned one would base their responses on actual trials of what worked! Of further interest was that the TRS-80 reflected 57% of the respondents, and the Apple 35%. This would also have skewed the results, for the TRS-80 does not support independent programmers; thus those applications would be mostly based on Tandy's decision of what "ought" to be available, whereas the Apple people will try anything, and if it sells, it continues to be available!

The November program will include discussions by all attendees and general sharing of their experiences and applications. Ralph Hallen and I will lead the discussions. There will be a special workshop by John New and Dr. Ernest Forman at John's house within the next 6-8 weeks on use and applications of a program called "The Acountant".

There will be no December meeting (because of the SWAP scheduled at that time). The January meting will include both "experts" to talk about tax uses, and breaks, and an open question/sharing portion including the other members. It promises to be particularly interesting, and I am sure John New will have something "HOT" for us!

Well, that's it for this month. Please let me know your reaction to this type of column, and send in material to be included now, while you think of it. How about a list of the DOs and DON'Ts, ALWAYS, and NEVERs you use in your organization? Or maybe the things you've learned (usually the HARD way) about working with the Apple, or programs, or your staff? Whatever it is, if it relates to an Apple and your business, send it in. And while I am on the subject of your input, how about a joint effort? You provide a list, and a one or two line (at most) description of the various applications that you have for VisiCalc, and I will compile them, and list them in a future column. Such a list may trigger potential new uses for you! Thanks for "listening" today!

CONSUMER ADVOCATE by Mark D. Pankin

The response to the questionnaire in the October newsletter was underwhelming, a total of 7, but that is enough encouragement to get started. (Of course, responses are still welcome. See page 50 of the October WAP.)

There was near unanimous interest in having us publish a list of member complaints about hardware and software, a list of local dealers and what special considerations (if any) WAP members will receive, and a list of local hardware repair facilities and which peripherals they service. Less interest was expressed in having us mediate customer/dealer disputes and in providing guidance on formally filing complaints with government agencies or courts. We will follow these guidelines by focusing on compiling the dealer and repair facilities (both dealers and others) lists. Those having both complaints about and praise for hardware and software will have a greater effect if they write a short review or letter to the editor for publication. The consumer advocate is interested in hearing both complaints and praise, but is hesitant to publish "good buy" or "bad buy" lists based on a limited number of possibly very subjective reports.

Now an appeal for help. The sooner the data can be collected, the sooner the lists can be published. If you are willing to make phone calls or help in any other way (what do you think the consumer advocate should be doing?), please call me at home (703) 370-9219. You can call during the day if you don't mind talking to my answering machine. This effort requires more than one person to be successful, so I will share any credit for what gets done. To that end, I hereby convey my thanks to Conrad Fleck who did most of the work writing the questionnaire and to Fred Schulz who provided several valuable ideas and insights into hardware problems.

APPLE WORD PROCESSOR SURVEY by Jack Warner

At the October meeting, I circulated a survey form to collect information for a forthcoming primer article for the Apple Pi Beginners Guide. You may not be a beginner, but may need a word processor if you are working your way up in the world, preparing your homework, or just dashing off a note to tell Mom what just happened to Garfield, your cat.

Thanks goes out to 115 WAPers who participated in this survey. Some own more than one word processing package.

Here are the results to help you in making that crucial decision... to write or not to write, and with what! The decision is as complex as visiting a pen store and trying to decide with which of their 15,000 pens to write your first novel.

The survey form listed 41 word processing and related software e.g., spelling and merging programs, that Apple had listed in one of their ads. Interestingly, WAP respondents listed only 21 (some not on the Apple list). The survey results are tallied by the information given on the form. I chose the evaluation categories used in INFOWORLD evaluations.

Let the buyer beware! The August and September issues of PEELINGS and the August PERSONAL COMPUTING contain extensive word processing reviews. These are good, like the consumer magazines that rate by features and include chatty remarks by the reviewer. They give you an idea of all the bells and whistles available and which ones have what. However, like most articles they reflect limited opinions and are not always correct (what do you want from a person that reviews 50 or more WP programs!)

This survey reflects WAP users baring their happiness and woes! The comments are unexpurgated from the forms.

Survey Results

(30) APPLE WRITER II (INCL.5-1,1VER)

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE		3	15	12
DOCUMENTATION	1	6	15	8
EASE OF USE	1	2	12	14
ERROR HANDLING		8	12	6
SUPPORT	2	3	10	3

COMMENTS: Easy to learn. Not copy protected. WPL not well explained for beginning user, i.e. Help!. Lacks many features but several available packages (AW Extended, Graftrix) provide them. AWE provides screen formatting and printing. Best part is that is unprotected and we have modified it. Especially flexible & easy for novice to use quickly. I can't get it to scroll smoothly. Not well adapted to writing text of any length or complexity. After printing a file the program must be rebooted to edit correctly--a serious flaw (we have Videx enhancer + 80 col board.) O.K. Good first word processor. For newcomers; user must learn the arbitrary instructions which aren't user friendly due to limited capability of Apple keyboard. Not too good for extensive tabular work; very good otherwise. No tabbing. Weak on editing options for deletion (lines etc.); 80 column board makes this an excellent WP...A must! How about two windows into a delete buffer?

---

(1) LEXICOM-WP TO OTHER FORMATS

REPLY	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE				1
DOCUMENTATION	1			
EASE OF USE		1		
ERROR HANDLING			1	
SUPPORT		1		

COMMENTS: Flaw is that its data disks are DOS 3.2. copy protected software. I use it to convert AW files to other formats for other WP. With DOS 3.3 I have to Muffin and Niffum files...a pain! Documentation from Micro-sparc is typed sheets.

---

(3) EASY WRITER WORD PROCESSOR

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE		2		1
DOCUMENTATION		1	2	
EASE OF USE	1		1	1
ERROR HANDLING		1	1	1
SUPPORT		1	1	

COMMENTS: Expect new version mid-83 per mfg. telecon. Had trouble with the u/l case display...did not use enough to figure it out yet.

---

(1) FORMULEX BUS. FORM DESIGN

REPLY	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			1	
DOCUMENTATION		1		
EASE OF USE			1	
ERROR HANDLING			1	
SUPPORT		1		

COMMENTS: I only use this because its in Apple Pascal...it could rank amongst the best if Apple or someone would support.

---

(2) GOODSPELL

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE		1		1
DOCUMENTATION		2		
EASE OF USE			1	1
ERROR HANDLING		2		
SUPPORT			1	

COMMENTS: The only spelling checker I have on Apple DOS. Lacks convenience and power; doesn't compare to CP/M world. Wish it could be modified to work with text files.

---

contd.

(4) LETTER PERFECT

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			1	3
DOCUMENTATION			3	1
EASE OF USE				4
ERROR HANDLING			2	1
SUPPORT			1	2

COMMENTS: Easy to use, Doesn't try to do everything. Works well with Epson/Nec I, Ver. 5.01. Built-in ctrl codes for Diablo are wrong. Very versatile - 40 or 80 column; excellent data base merge with any Apple text file. Stores files either as text or binary - your choice. My spouse found this much easier to use than Superscribe II.

---

(1) MAGIC WAND WORD PROCESSOR

REPLY	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			1	
DOCUMENTATION			1	
EASE OF USE			1	
ERROR HANDLING		1		
SUPPORT		1		

COMMENTS: I am a new user and repeatedly received wrong info from the store. My rating reflects this.

---

(4) MAGIC WINDOW WORD PROCESSOR

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE		2		2
DOCUMENTATION	1		2	1
EASE OF USE		1	1	2
ERROR HANDLING		2	1	1
SUPPORT		1	1	

COMMENTS: Easy to use, extremely reliable (New Version) Will support 160 columns. Would like to see an 80 column version. Menu driven allows kids to do homework project easily. Didn't like it at all. Ctrl codes match functions generally.

---

(2) MAIL MERGE ENHANCEMENT WORDSTAR

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE				2
DOCUMENTATION			2	
EASE OF USE			1	1
ERROR HANDLING			2	
SUPPORT				2

COMMENTS: A must for form mailing. Very easy to personalize "boilerplate" text. Powerful...has many uses... wish it displayed file format (like Format I) and had logic capabilities (like Supertext's mailer).

---

(2) PASCAL EDITOR

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			1	1
DOCUMENTATION			1	1
EASE OF USE			1	1
ERROR HANDLING			1	1
SUPPORT				1

COMMENTS: Can see on screen what document contains. Easy to enter. Requires a text formatter for pagination, etc.

---

(2) PIE WRITER

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			1	1
DOCUMENTATION		1		1
EASE OF USE			1	1
ERROR HANDLING		1		1
SUPPORT		1		1

COMMENTS: I ordered Pie Writer & got Pie! Pie would not save a file after editing. Best one yet. Complicated to learn. Most flexible and versatile of all. For 80 col. Written by a programmer.

---

(1) SANDY WORD PROCESSOR

REPLY	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE				1
DOCUMENTATION				1
EASE OF USE				1
ERROR HANDLING			1	
SUPPORT			1	

COMMENTS: Uses standard text files. Has bug concerning underlining.

---

(20) SCREENWRITER

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			8	12
DOCUMENTATION		4	14	2
EASE OF USE		3	14	3
ERROR HANDLING		4	11	5
SUPPORT		2	5	8

COMMENTS: Original Superscribe written in Sanscrit: On-Line's 2 updates: 1st free, 2nd $10, made it workable, then super. I received Screenwritter II as a replacement for Superscribe II. I like using the program very much. Had many questions concerning interfacing with my NEC 8023 Printer. Apple Writer is easier to learn but SW has much greater capability. Unusable by a fast typist (>60wpm). Only difficulty is scrolling backwards in edit mode. To do a hardware mod is required. Needs 80 column interface. Documentation for Superscribe has, for some features, better explanation. Essential for anyone using footnotes. Cursor movement awkward as is shift/ctrl+key. On-Line's policy of trading up to new versions is great. A few annoying bugs, but limited to highly specific applications.e.g. spooling, Centronic driver. The 70 chrs display is unsatisfactory. Index could be better. This is one of the two or three best WPs available. For u/l case and 70 columns it's a best buy.

---

(2) SECRETARY, THE WORD PROCESSOR

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE		1	1	
DOCUMENTATION			1	1
EASE OF USE		1	1	
ERROR HANDLING			2	
SUPPORT				

COMMENTS: Good features but slow menus. 40 or 80 column. Has built in simple data base & electronic mail capability.

---

contd.

(3) SENSIBLE SPELLER

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			1	2
DOCUMENTATION			1	2
EASE OF USE			1	2
ERROR HANDLING		1	1	1
SUPPORT				2

COMMENTS: Most flexible Spelling program Has a 80,000 word dictionary. A must if you kan't spel.

---

(1) SPELLSTAR

REPLY	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE				1
DOCUMENTATION			1	
EASE OF USE				1
ERROR HANDLING			1	
SUPPORT			1	

COMMENTS: Easy to run and correct problems in text.

---

(13) SUPERSCRIBE

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE		1	4	8
DOCUMENTATION	2	3	6	2
EASE OF USE	2	6	3	2
ERROR HANDLING			5	2
SUPPORT		1	5	2

COMMENTS: Too many commands! Some problems with 80 col. board. Like the appearance of u/l chip better than graphic generated characters. Has index, superscript features. Page formmating has been a problem for me. Having to reboot editor after run-off & vice versa is irritating... otherwise very good. Super program. Best buy for the price. Sequences are rigid; not easy to change mind.

---

(2) SUPER-TEXT WORD PROCESSOR

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			1	1
DOCUMENTATION			1	1
EASE OF USE		1	1	
ERROR HANDLING			2	
SUPPORT			2	

COMMENTS: Control codes bear no relationship to the functions they perform.

---

(10) SUPERTEXT II

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE		1	4	5
DOCUMENTATION		2	7	1
EASE OF USE		2	5	3
ERROR HANDLING			9	1
SUPPORT	1		4	2

COMMENTS: Very good program for the price. No Index. Has math mode, split screen. Documentation has no index. Uses printer ctrl. Lines over 40 col. go to next line. Has 80 columns but margins are not displayed. New 40/80 version has good features, but hard to learn. Have been using two years for extensive writing.

---

(2) WORDHANDLER

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			1	1
DOCUMENTATION		1	1	
EASE OF USE				2
ERROR HANDLING			1	1
SUPPORT			2	

COMMENTS: Generates u/l case. Can print two page layups for booklets, picking & placing the matching pages properly.

---

(17) WORDSTAR

REPLIES	(P)OOR	(F)AIR	(G)OOD	(E)XCEL
PERFORMANCE			7	10
DOCUMENTATION		3	6	8
EASE OF USE			12	5
ERROR HANDLING			10	7
SUPPORT		2	7	2

COMMENTS: The best of six WP programs used. A very friendly program. Extremely easy to use--on screen menus--Mailmerge and Spellstar available. No occasion to seek help in application. Good as a first draft text editor, but editing a file is more troublesome due to 64K Apple memory. WS goes down when too many changes are made. One day of hard work=competence. Spellstar hard to figure out at first. Using 2 ctrl character commands and being able to print only after saved to disk is a pain. None of the others come even close. If WS doesn't have it you don't need it...except footnotes! Excellent, selectable levels of prompts. Easy to learn by a novice. Super program-tough to install, easy to use. Meets our needs, but poor font selection. No graphics.

ES-CAPE

Extended S-C
Applesoft Program Editor

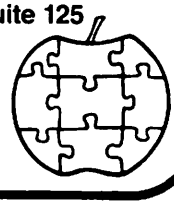
A programmer's tool to speed up and simplify the development of Applesoft BASIC programs. ES-CAPE provides a split-screen editing window: you can LIST a portion of your program in the upper window and independently edit other lines in the lower window. Editing functions include character insertion and deletion, line truncation, and simple entry of lower case and control characters.

Other major features: global search and replace, DOS command menu, automatic line numbering, list control, user-definable keyboard macros, variable display, and much more! ES-CAPE is user-friendly; most commands are a single keystroke. There is no need to memorize; three menus remind you of every command and macro.

The price of $60 includes both regular and RAM card versions of ES-CAPE on a copyable diskette, the 22 page comprehensive manual and a quick reference card. We accept Visa, MasterCard, and American Express.

S-C SOFTWARE CORPORATION
2331 Gus Thomasson, Suite 125
P.O. Box 280300
Dallas, TX 75228

(214) 324-2050



EDSIG NEWS by Peter Combes and Dianne Lorenz

EDSIG Calendar

Tuesday, December 14 at 7:30 p.m.

Language Arts for Elementary Schools.

Mary Brown and Karen Berlin, two EDSIG members, will present their new product, "Kidbits Word Fair", a language arts package for use in pre-school through fourth grade.

Tuesday, January 11 at 7:30 p.m.

Video tapes presentation made at the Horace Mann Learning Center. Topics include computer literacy, MECC, and Microsift.

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

Meeting Reports

Tuesday, November 9

Learning Disabilities and the Apple.

Special education has always been a particular concern of EDSIG, so we were very pleased when Carolyn Adler of Electronic Learning Facilitators (ELF) introduced Nancy and Yehoash Dworkin from the Center for Unique Learning. They work with children and teenagers who have learning problems, or, as they prefer to put it, "those people who are learning in a way that is unexpected".

For them, a computer offers a way to explore the logic of the learner.

Their work is almost exclusively focused on BASIC. This provoked a spirited exchange with the LOGO fans - "Computer efficiency is not the issue. You have a structured mind - if I want to communicate with you, I would use LOGO; my pupils do not have a structured mind - BASIC is better for them. As one of the pupils said, 'I like BASIC. It speaks English the way I do.' "

The center has ten computers ("If we had a hundred, it wouldn't be enough"), a mix of Apples, TRS-80s and Altairs. They do not see the computers as primarily teaching tools. "The computer is essentially a lousy teacher, but it is a magnificent student." The computer is part of a team - "a teacher and a number of students, one of whom is a computer". Some of their early successes were based on programs in which the student "teaches" the computer. ANIMAL was an early example of this, and led two students, who originally could not read or write, to go off the the library to do research projects on their own initiative.

Programs that simply used the computer as a "page turner" have not proved useful, but much use has been made of "Interactive Fiction" programs. Recently, "arcade" style programs have been used successfully.

The computer is not an instant panacea - "What makes us think that a child with any difficulty in reading a book will do any better reading a computer?", but, properly organized, the computer can be used to produce powerful learning situations.

The presentation concluded with a fascinating account of teams of learning disabled students working together to produce teaching programs, some of which will soon be on the market.

Forthcoming Events - Dianne Lorenz

WINTER COMPUTER CLASSES

ELF - Classes in "Getting Comfortable with Computers" and BASIC for adults...classes for parents and children together in BASIC and LOGO, and classes for children in beginning and advanced BASIC and LOGO. Call 493-9696.

Hands-On Science - Introduction to computers and computing for children 4 years old and up, beginning December 6 and continuing for 8 weeks. Several locations in the Silver Spring area. Call 649-6921.

Learning Works (657-4488) and Open University (966-9606) offer BASIC programming for adults and special classes in computer applications.

Adult education - Montgomery County - Beginning and Advanced levels of BASIC programming for adults. Evening classes at several area high schools. Call 942-8304.

The Computer Workshop - Two new classes for December: dBase II and Advanced BASIC for children. Special workshops: How to Start a Word Processing Business, How to Choose a Printer, and Apple Writer II. Call 468-0455.

WINTER WORKSHOPS and CONFERENCES

MECC '82 Educational Computing Conferences, Minneapolis, MN. Practical sessions directed at educators involved in promoting the use of computers in schools. Pre- and post-conference training sessions in developing courseware, programming micros, and in-service planning. Call (612) 376-1131. November 9 - December 3.

Microcomputers in Education Workshop - TERC workshop covering the use of micros in various educational applications, graphics, and programming languages. Call (617) 547-3890 for workshops in our area.

NCCE Conference - Oregon State University - A three day conference 'Linking Computers with Learning'. Call (503) 376-6111. February 17 - 19.

TELECOM SIGNEWS

by George Kinal

The Telecomm SIG meeting was held after the main meeting on October 30. Reports were made on members' evaluations of two low-cost modems (a brief comparison of the two is given below). At the main meeting of WAP, approximately 30 to 40 persons expressed interest in having the club store carry low-cost modems. Consequently, the SIG chairman will work with Rich Wasserstrom to make the necessary arrangements.

It was also reported that with appropriate software, most RS-232 modems can be operated via the game port, in lieu of a serial interface. BIZCOMP and MFJ sell such software for their own modems. The necessary connections are simple:

Game Port pins 3, 8, 15 to RS-232 (modem) pins 3, 7, 2, respectively.

This method has some limitations in software flexibility, but is an inexpensive means for Apple owners to communicate with bulletin boards, etc.

A report was also given on another low-cost means of interfacing: the QUEST serial board, $51.25 in kit form. This interface does work, but because it has no firmware is also limited in flexibility.

George Kinal has completed research on telephone line lightning protectors, and is ordering a number of them for interested members. (See article in November 1982 WAP; the protectors are easy to install and cost only about $7.)

Future SIG meeting topics that are planned include: communications software package evaluation and comparison; amateur radio and Baudot teletypwriter applications.

TWO INEXPENSIVE MODEMS - A COMPARISON

We have evaluated two low-cost 300 baud modems (each are about $75 to $100).

BIZCOMP:

This modem is ORIGINATE ONLY (cannot talk to another originate modem). It is powered from the phone line. It plugs into a modular telephone wall jack. It has a simple 5-pin connector on it. You can buy or make a cable to connect from this to either the Apple game port or to a serial interface (RS-232). BIZCOMP sells with the game port cable software to run via game port. This software is somewhat rudimentary, but is adequate for bulletin board access, etc. After you outgrow this software, you can add a serial i/f and more powerful software.

ANCHOR SIGNALMAN:

This modem is battery powered (9 volt). It can operate either originate or answer mode. It plugs between the phone set and its handset, so you must have a new phone with modular connectors on the handset cord. It has a standard DB-25 (RS-232) connector on it, so it should be used with a serial interface board. However, we have found that it can be run from the game port using the BIZCOMP or similar software (MFJ Enterprises sells "via gameport" software). An RS-232 to game port cable can be easily made using parts from Radio Shack. ¢

Now the focus is on *Apples*

MICROCOMPUTER SUPPLIES

MINI FLOPPIES

Single side/ single density	
SYNCOM "Ectype"	22.00
3M SCOTCH	25.99
single side/double density	
VERBATIM "DataLife"	28.50
KYBE "Accutrack"	28.50
3M SCOTCH	31.50
SYNCOM "Ectype"	28.50

CARTRIDGE RIBBONS

New film for Ricoh Printer	each	4.75
Recycled Ricoh film ribbons	each	2.95
DIABLO Hytype II black cloth	doz.	44.75
DIABLO High capacity film	doz.	46.50
EPSON MX 70/80	each	9.50
IDS "Paper Tiger"	each	10.75
NEC Spinwriter film or cloth	doz.	66.00
NEC compatible film ribbons	doz.	48.00
QUME Black film or cloth	doz.	33.95

CONTINUOUS FORM PAPER

size	stk no.	wt.	sheets	price
9 1/2 x 11	6910PP	15#	3500	27.25
9 1/2 x 11	6910PP(20)	20#	2700	25.95
9 1/2 x 11	6910HSPP	18#	3000	26.40
14 7/8 x 11	641	15#	3000	32.19
14 7/8 x 11	6410(20)	20#	2400	31.75

MODEM

Lexicon LX-11 300 baud	acoustic	145.00
Signalman 300 baud		99.00

ROBINS(Roberts Information Services, Inc.) (703) 560-5900 (800)336-0198
8306 Hilltop Road Fairfax, VA 22031
(across from the Post Office in Merrifield)
Monday-Friday 9 to 5 Saturday 10 to 2
We ship by Capital Messengers and UPS

PILOT OF THE CAI-WAYS

by Paula Benson

The following is a recap of the presentation at the October WAP meeting by Robert Platt. It is essentially a followup to the article he authored on PILOT in the May 1982 issue of the Pi.

Computer Assisted Instruction (CAI) is a very well known buzz word today in education, as computer technology continues to become more evident in the classroom. The computer is not meant to replace the teacher but to be a tool to allow the teacher to exercise greater creativity in aiding a student where individualized help is needed. CAI typically uses the computer to present information, to test the student and to provide additional information as needed or requested. CMI, or Computer Managed Instruction, uses the computer essentially as a sophisticated gradebook. This article will discuss CAI languages, focusing mainly on PILOT.

Three kinds of audiences might be interested in CAI. Institutions such as schools and corporations use computers in imparting knowledge and training. For home users, the computer can provide a fun way to spend time in drill and practice that is necessary in certain subjects such as vocabulary or multiplication tables. Self-improvement opportunities are possible by means of flash card drills and repetitive presentations. Whatever the audience, designing a lesson invokes the creativity of the programmer. To get into the shoes of the user and to develop a usable presentation through their eyes is a challenging task.

PILOT stands for Programmed Inquiry, Learning Or Teaching. It was developed on a main frame computer in 1968. Later versions were developed which ran on the Apple. The syntax is simple; each command consists of a one or two letter code, a colon, and the object of the command. A simple interpreter reads each line, determines what the command is, calls the appropriate routine, and performs the operational sequence. For example,

```
T: Hello   (Hello is printed)
```

There are other languages usable for CAI. A little comparison can be of use in evaluating PILOT. PLATO is the most sophisticated CAI language. It was also built for the large main frame computer as a time sharing instructional system. Surprisingly, a version was developed for the 6502 which maintains the same level of sophistication. The quick response possible on micros is useful for holding the student's attention. PASCAL is another language available for CAI. It is harder to learn, but perhaps better for developing teaching systems than PILOT. It has a faster execution time. BASIC is also usable for CAI. For a more interrelated network of lessons, it perhaps would give better results than PILOT. The pertinent questions you should ask yourself in choosing from among the three are "Which language do I know or am willing to learn, and which would achieve the set goals?" For most applications, PILOT does not produce that much better results than PASCAL or BASIC.

VERSIONS of PILOT

Apple Pilot is marketed by Apple Computer, Inc. It requires 48K of memory and 2 disk drives for lesson development. It lists for $150. SuperPilot is a newer version of Apple Pilot that lists for $200. (Ref. 1) It requires a 16K RAM card, displays color text on a colored background, has headline characters, and will control external devices such as a video disk. No upgrade offer is available to trade from an Apple Pilot kit to SuperPilot. (Ref. 2) Muse Software has their version of PILOT. WAP disk #110 contains an Applesoft version of a PILOT interpreter taken from the Feb '81 Creative Computing. PIG disk #3 contains a PILOT to PASCAL translator taken from the July '81 Byte. Nevada Pilot is also available, but requires a Z80 card with CP/M.

DEVELOPING A PILOT PROGRAM

In developing a Pilot program the format for the lesson should be well defined. New material can be interspersed with questions. The student then enters into a dialogue with the computer in an exchange of information and evaluation. The format can be that of problem solving drills, perhaps using a game concept. The format can also be that of role playing or simulation.

The lesson itself should be outlined for clarity and comprehensiveness. Information presentation should be well paced. The logical flow is important to maintain since PILOT allows for branching. To review material the student can go back to earlier segments. To acquire additional information the student can be directed to other segments. In order to maintain the attention of the student, the lesson must be made attractive. A PILOT lesson can attain entertainment value by the use of colors, sound, graphics and even the arrangement of the text. The consistent use of the same keys for controlling the various functions aids in the learning process.

In Apple Pilot there are two modes of operation: the author or the student. The author has four editors or utilities for developing the lesson. The lesson editor is a modified version of the Apple Pascal text editor. It is used as a text editor to enter lesson and interaction commands. There is a character set editor to insert special character sets such as headline types. The special effects editor allows entry of "musical" notes. For example a lesson can include a theme song, or

contd.

raspberries to respond to a wrong answer. (Ed. Note: Positive responses to a wrong answer and corrective guidance are considered to be better practice.) Each note's pitch is typed in using A thru G, and the timing of each note is set. The graphics editor is used to create pictures in Hi-res graphics. With 0,0 at the lower left corner of the screen, points are placed on a grid in X,Y fashion using cursor control keys.

PILOT COMMANDS

T - type command. The type command is similar to PRINT in BASIC. This command also gives control over tab, clearing screen and inverse. The T command checks for spaces between words, breaking up a line between words, if necessary, rather than within a word.

A - accept answer. The response can be stored in a variable. A:N stores the response in string variable N. This is similar to INPUT in BASIC.

M - match command. The match command is the means by which the program tests whether a correct answer was given. The response must be spelled correctly. More sophisticated options in SuperPilot give more leeway in spelling. For instance, it will look for fragments of words while permitting a variety of endings (s, ing).

J - jump command. At this point if the correct answer is given, there is a presentation of new material. If the student doesn't know, the correct answer is provided and the material is reviewed. This jumping to another section of the lesson is part of the branching logic of PILOT. It is not very sophisticated, however. There can be a number of jumps all going to the same routine. This permits some rudimentary tailoring of the lesson to the individual.

G - graphics command. This command makes use of the Hi-res screen and plots points or lines. This command is similar to the BASIC commands HGR and HPLOT.

A few other commands are available to generate remark statements, link to other programs, etc.

In summary, the basic idea is to present text with the T command, get the answers back using the A command, check for correctness of the response with the M command, and jump to an appropriate lesson segment with the J command.

NEGATIVE ASPECTS

The Apple Pilot package is overpriced. There are similar capabilities on the WAP $5 library disks. Most PILOT programs are nonstandard and non transferable. One can't intermix Apple Pilot, the Pascal editor and the library disk interpreter versions of PILOT. It is hard to envision the graphics display as it is being entered. It has to be plotted and then viewed. The same graphics editor can not be used to place text on the screen under the graphics display. Rather, graphics must be developed in one stage of lesson development and text in another. Graphics is rather slow but SuperPilot's graphics is reported to be faster. Lesson execution is sluggish too because Apple Pilot uses only 48k. It must read in separate routines from the disk for each command. To list the lesson, the standard Apple printer controller card must be used in slot #1.

There are viable alternatives to Apple Pilot, e.g. Pascal, that give more flexibility and multiple disk files.

POSITIVE ASPECTS

Apple Pilot is a user friendly package. Only one drive is needed once development is complete. It requires only 48k. The lesson disks are turnkey operations. Help sequences can be programmed where the computer either gives the correct answer or jumps to "help" pages with a review of the instruction material. It is easy to use the music and graphics editors. The graphics routines use the Hi-res Turtlegraphics of the Apple Pascal system. The text editor has upper and lowercase capability. Apple Pilot performs as advertised though SuperPilot does even better. Class statistics can be kept using SuperPilot. Using PILOT on the computer in a teaching environment is a viable alternative to standard methods.

REFERENCES

(1) Creative Computing, January 1982.
(2) Infoworld, Vol. 4, No. 45, pg. 45, November 15, 1982)

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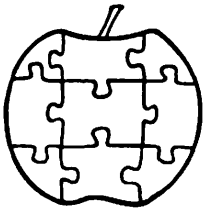

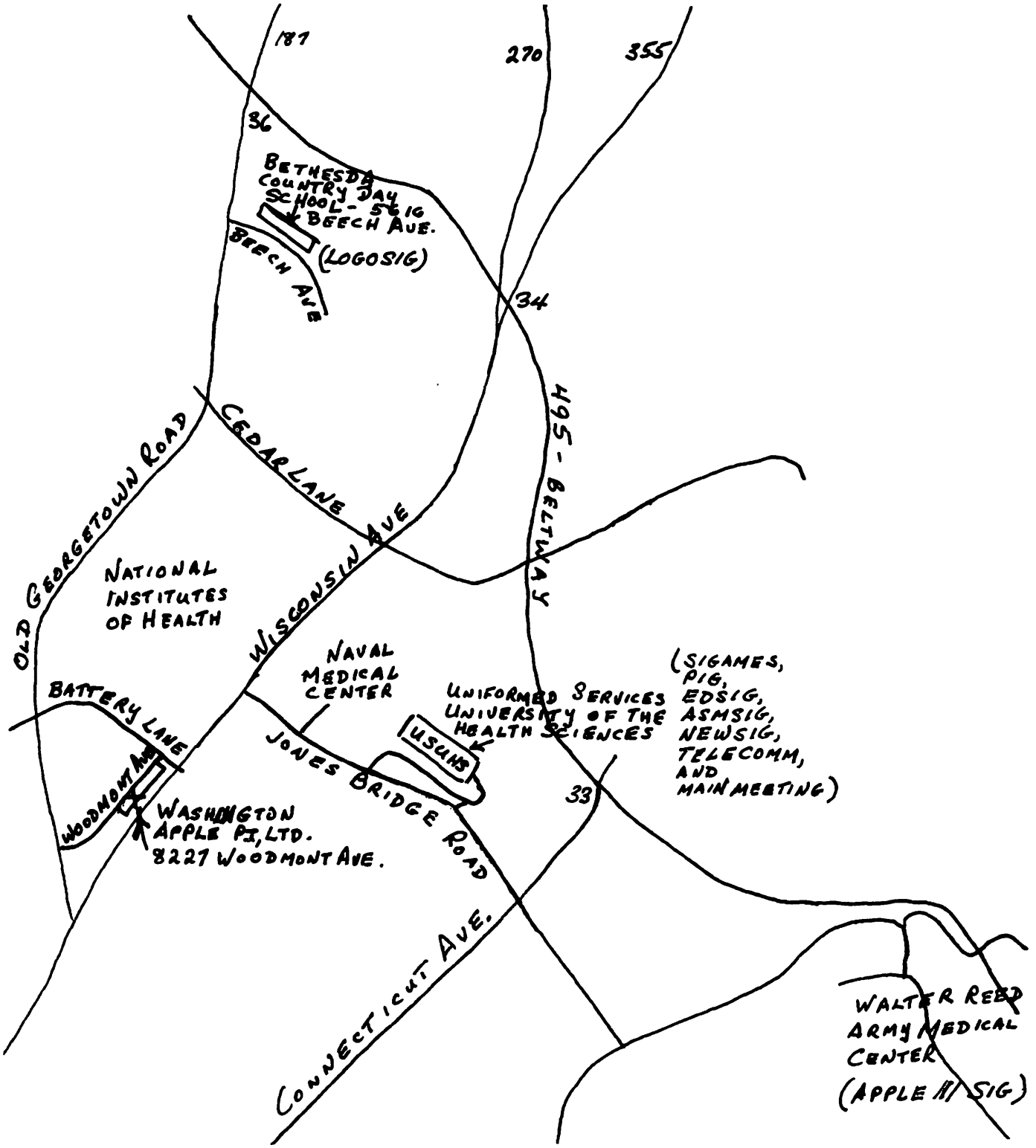

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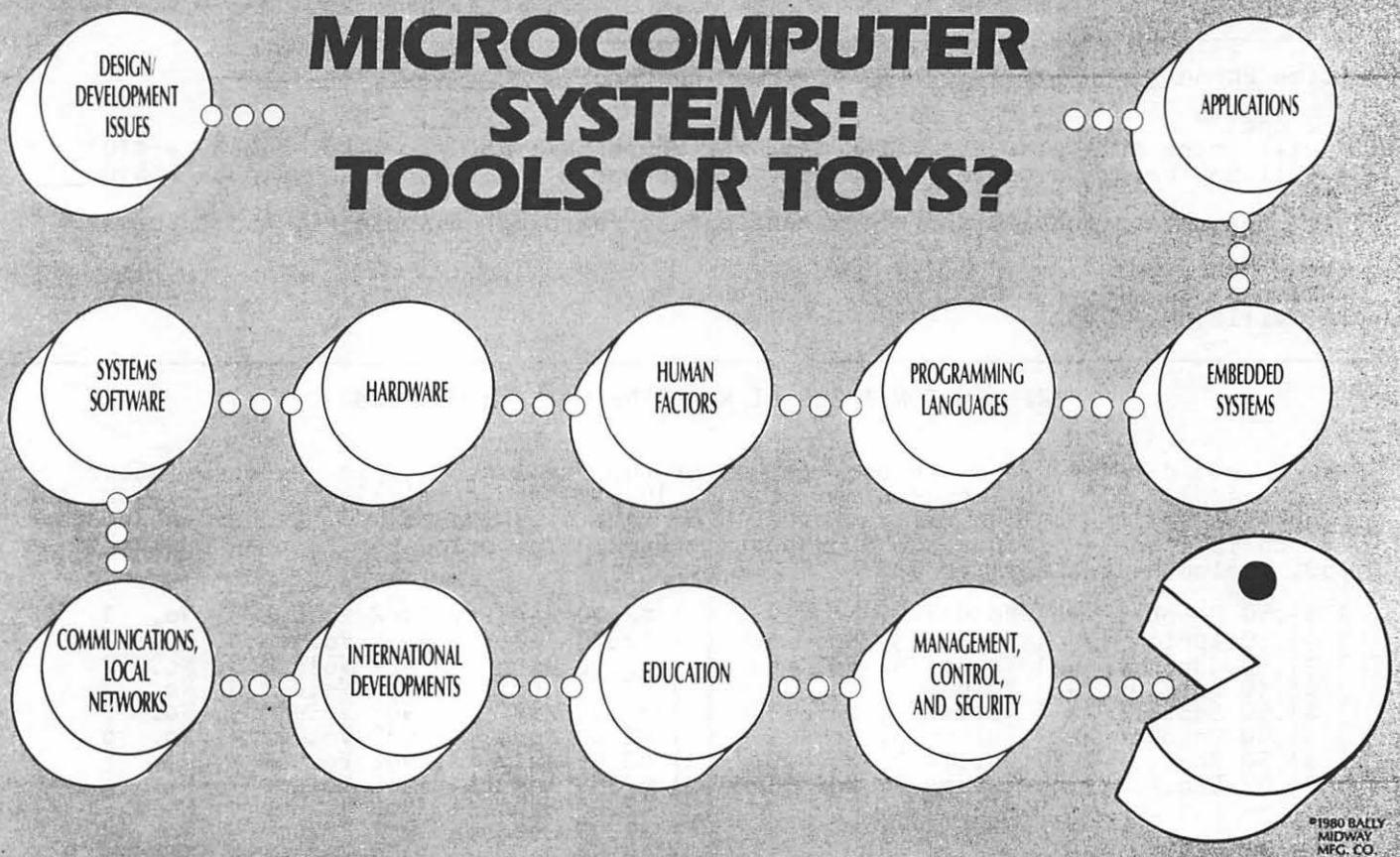

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This tutorial is designed for individuals who have a good working knowledge of Pascal programming and who want to learn some advanced techniques such as using library units in program development, and writing device drivers. Some suggested topics were given in the November WAP Newsletter.

The fee is $45 if you bring a 64K APPLE, disk drive and monitor; $60 if you do not. Please note that if you do not bring an APPLE, there will NOT be one available for you - you will have to "look over someone's shoulder". (See the remarks on this subject under Tutorials in the President's Corner elsewhere in this issue.)

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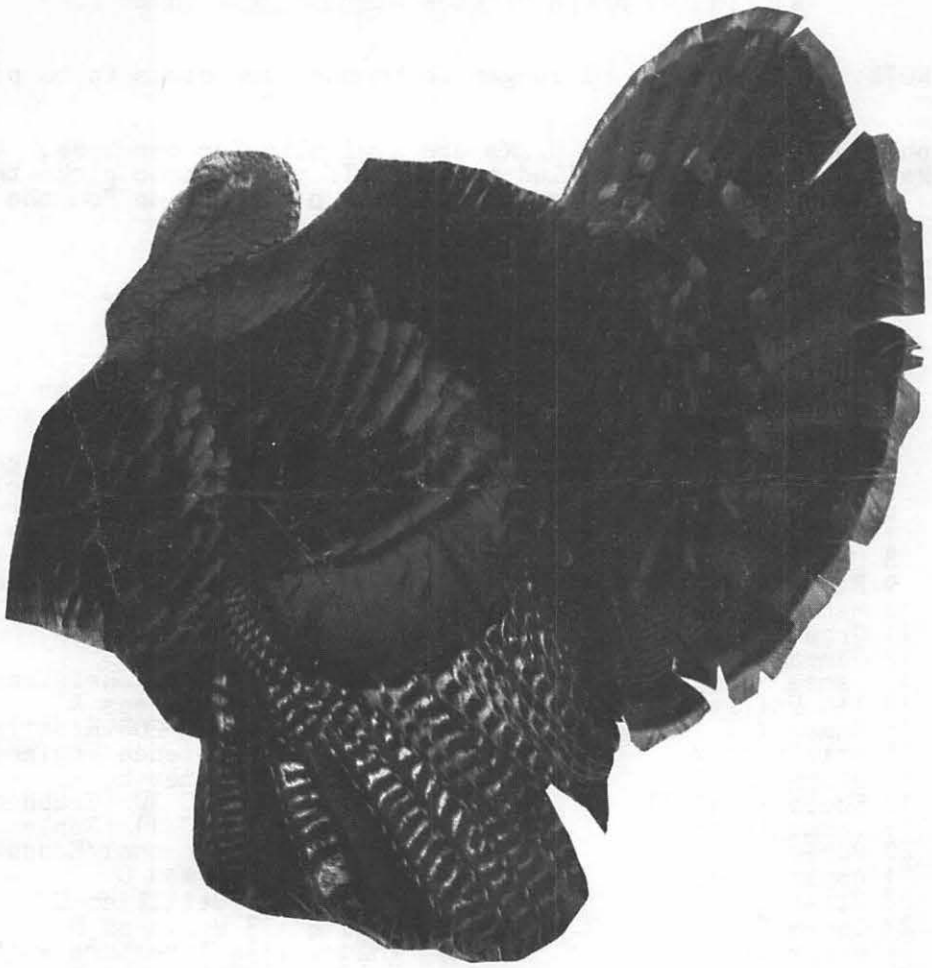

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