

\$2

Washington Apple Pi



Volume 4

May 1982

Number 5

Highlights

LEARNING TECHNIQUES OTHER THAN ROTE MEMORIZATION

WRITE YOUR OWN BULLETIN BOARD SYSTEM

COPYRIGHT AND COMPUTER PROGRAMS

A PASCAL TEXT SCREEN UNIT

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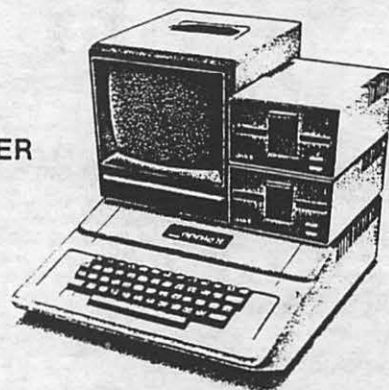
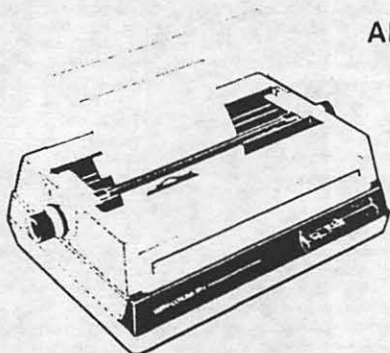
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Membership dues for Washington Apple Pi are \$18.00 per year, beginning in the month joined. If you would like to join, please call the club phone and leave your name and address, or write to the PO Box above. A membership application will be mailed to you.

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

Members who would like to sign onto the Washington Apple Pi ABBS system should call the club phone and leave your name (first and last), WAP number and phone number. You will be assigned a password and John Moon will take care of signing you on.

It was most gratifying to see the new system at work at our last meeting (now if we can only get a wall-stretcher...)

This issue, I believe, is one of our finest, thanks to all of the excellent contributions. I am tempted to describe it as a special issue on educational applications and information, but that would leave out the Copyright, the BBS, the Text Screen Dump, the reviews, the..... Anyways, enjoy!

EVENT QUEUE

Washington Apple Pi meets on the 4th Saturday 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 those volunteers can attend the meeting.

Due to a conflict in schedule with USUHS, the May meeting will not be on the 4th Saturday, but will be on the 5th Saturday. The speaker for this meeting will be:

May 29 - Data Bases - Martha Eggers

 # The meeting date for May has been #
 # changed to the 5th Saturday, May #
 # 29. Same time, same station. #
 # #####

PRESIDENT'S CORNER

by David Morganstein

MEETING FORMAT

It seemed as though things went more smoothly at our March meeting. The lines moved more quickly even though attendance was as large as the previous month. The HELP SIG lead by Bruce Field and Bill Wurzel during the 9:00 to 10:00 hour was lively right up to the start of the meeting. Most of the SIG's seem to want to continue their present meeting times. The NEWSIG led by Bernie Benson lasted well into the afternoon.

SPEAKERS AT MAIN MEETING

Because of the diverse nature of our group and the many SIG meetings held after the regular meeting, I am asking the speakers to follow these guidelines:

1. A short break between main meeting and presentation (if you need to leave the meeting room, please do so quickly and quietly so that the presentation can begin promptly).
2. Limit the formal presentation to a maximum of 45 minutes.
3. A short break after the formal presentation to allow members to leave the auditorium (again, please do so quickly and quietly).
4. A question and answer period following the break.

THANKS. It did my heart good to have volunteers step forward for every request mentioned. With the help of Jim Carpenter (arrangements), Steve Stern (tutorials), Bob Platt & Boris Levine (elections) and Ernie Forman (program), the club may be able to expand and improve its services to all members.

EQUIPMENT TO SPEED LIBRARY REPRODUCTION

The disk reproduction process is currently a long and arduous one. I have heard of equipment which will gang together several drives, permitting multiple simultaneous copies. I have asked Gordon Stubbs, Head Librarian, to check into the details and give us a report on cost and features. I'd go a long way to smooth the path for Gordon and his many unsung heroes...

SIG DISABLED

Curt Robbins has told me that he rarely is contacted by anyone interested in the SIG Disabled. He is wondering if members know about the SIG and asks that you contact him if you or someone you know could benefit from it. The group is concerned with improving the lot of the disabled through use of the APPLE. Many members who are

hearing impaired can make good use of an ABBS to communicate. Please contact Curt (WAP428). His home address is: 8805 Barnsley Court, Laurel, MD. 20811.

SUMMER CAMP

Jay Thal raised the question of our sponsoring a summer camp for younger APPLE owners. Sarah LaVilla volunteered to assist in the teaching. Our new tutorials chairman, Steve Stern, expressed interest in pursuing this. You may find an appeal for help in an article this month. If we are to do this, we will have to act quickly, and it will need a few volunteers.

VISICALC TUTORIAL

Having just come from assisting Ernie Forman (who needed no assistance...) at the VisiCalc tutorial, I wish to express my thanks and that of the 40 participants, to Ernie for a job well done. His careful explanations and patience served all tutees well. The idea of a more advanced tutorial was discussed and you may hear more about it.

Don't forget the Pascal tutorial scheduled for May. We have about 20 participants as of April 3. There may be space available, but act quickly. Dr. Wo wants to limit the number to about 30 to allow for interaction with the participants.

SYSOP NEEDED

Our SYSOP is looking for a trainee. If anyone is interested in learning about our ABBS and becoming the new SYSOP for it, please contact me. The job does not require a lot of time, but does require a special interest. An APPLE and phone line would be added to your home. (It's a great job for people who like to read other people's mail...)

TO GROW OR NOT TO GROW An Assessment of the Options

In the past year, we have more than doubled our size. Yet, we have tried to maintain and even expand our services. That we have been able to keep up with the growth (so far) is due entirely to the devotion and dedication of so many capable and willing volunteers. However, soon we will overburden these marvelous folks. It can be said that turnover of volunteers is an inevitable part of an evolving organization like ours. I am concerned about the

contd.

"half life" of these workers.

Let me mention a few tasks just to put things in perspective. Each month volunteers mail out over 1000 magazines. This involves printing 1500 labels, a problem which is about to outgrow a two drive system, and takes several hours on one machine. The labels are put on the magazines both at the meeting and after when they are bundled and taken to the post office. Each month we process 50 to 100 new members; this requires adding their names to the roster and assembling and mailing them newcomer packages. Each month we sell hundreds of library disks which must be painstakingly copied (for some at the rate of two minutes a piece) and checked. Even then, head alignment and speed differences result in many copies which do not read on other systems although they check out on the system which copied them. Most of the officers get numerous phone calls nightly from members with questions, problems and comments.

When you add this up it comes to a lot of work and hundreds of hours. If growth continues at its present rate, we will become overwhelmed trying to deal with it as we do now.

I see two major alternatives: limit growth or prepare for it. We can limit growth easily by shutting off new memberships. Our current size is (more or less) manageable. To prepare for growth means to improve our ability to provide our services to larger numbers. This can be accomplished in several ways:

- o Rent office space in which to focus much of our now dispersed equipment and activities
- o Hire a part time person to run the office and perform many of the tasks, including taking and receiving phone messages.
- o Purchase mass disk reproduction equipment which can be uniformly maintained and which can produce and verify multiple copies at high rates.
- o Purchase a hard disk to store membership information and to be used for rapid production of mailing labels.

No doubt other suggestions can be added to the list. One approach to such suggestions is to agree on them and then raise the funds necessary to proceed. The money could be obtained through higher membership dues (although that would not have an effect until next winter when most renewals would occur) or, possibly, through fund raising activities.

Another path, the one I prefer, is to conduct a test, a test of our viability. I suggest an application fee for new members, one which could generate the necessary capital if growth continued. If the fee acted as a disincentive to join, our size might not outstrip our ability to keep up with it. If growth continued at its current pace, we would have the needed capital within a short period.

PROPOSED AMENDMENTS TO CONSTITUTION AND BY-LAWS

TO BE VOTED ON AT THE APRIL MEETING:

1. Purpose: To increase the size of the Executive Board.

Article II, Section 1 of the Constitution shall be amended to read:

Section 1. The Officers of Washington Apple Pi shall be the President, Vice President, Secretary, and Treasurer. They shall be elected as specified in the Bylaws. The Executive Board of Washington Apple Pi shall consist of the Officers, and six (6) Members-at-Large, who shall be elected as specified in the Bylaws.

2. Purpose: To allow two months between nomination and taking office, permitting a mail ballot to all members.

Article III, Sections 1 and 2 of the Bylaws shall be deleted and replaced with the following:

Section 1. The offices of the Executive Board shall be filled by election prior to the regular June meeting. They shall take office on July 1.

Section 2. Nominations for the Executive Board shall be submitted during the month of April. The nominations will be received from the floor, or by mail.

3. Purpose: To meet IRS requirements for non-profit status.

Article IV Section 1(A) of the Bylaws shall be amended to read as follows:

In the event Washington Apple Pi disbands, any club property or funds remaining after satisfying the debts of the organization shall be donated to a charitable organization agreeable to two-thirds of the members attending a regularly scheduled meeting.

NEW AMENDMENT - TO BE PROPOSED AT THE APRIL MEETING AND VOTED ON AT THE MAY MEETING

1. Purpose: To provide for continuity of the Executive Board and add the Editor and Librarian to the Board.

Article II, Section 1 of the Constitution shall be amended to read:

Article II. Officers: Duties of Officers.

Section 1. The Officers of Washington Apple Pi shall be the President, Vice President, Secretary, and Treasurer. They shall be elected as specified in the Bylaws. The Executive Board of Washington Apple Pi shall consist of the Officers, the immediate Past President, six (6) Members-at-Large, who shall be elected as specified in the Bylaws, and the Editor and Librarian who shall be appointed by the President. &

MINUTES

EXECUTIVE BOARD MEETING

The Washington Apple Pi Executive Board met on March 10, 1982, at 7:30 PM at the Urbans. President Morganstein presided with 21 people present.

A motion was passed that SIGs be encouraged to meet at times other than after the club meetings. We now have an accountant who will audit our books and prepare our tax forms. The treasurer was authorized to invest funds in insured interest-bearing accounts. An election committee was formed. It is recommended to the club that the Bylaws be amended to increase the number of Members-at-Large to 6. Items discussed included continuation of cheaper group buys out of the local area, activities of the committee to document club disks, establishment of a hard copy library, and some of the problems associated with our rapid growth, together with possible solutions such as limiting membership or renting an office and hiring some part-time help.

GENERAL MONTHLY MEETING

Washington Apple Pi met on March 27, 1982, at 10:00AM at USUHS. President Morganstein presided with about 460 people present. Announcements made included special club meeting on April 17 to discuss future directions of WAP; nominations for Officers are now open and new members are encouraged to run; an accountant is needed to run for treasurer; there is need for people to chair or otherwise assist in arrangements, tutorials, elections, programs, and the club store. Displays may be set up in the cafeteria, but there can be no commercial sales. Amendments were proposed to increase the number of Members-at-Large to 6, have Officers take office in July, and that in the event the club disbands, our property will be given to a charity selected by a 2/3 vote of members.

The presentation by Bill Schultheis on assembly language was continued from last month.

SIG-NEWS

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. For other details of meetings, notes of interest and reviews, see "SIGAMES NEWS" elsewhere in this issue.

PIG, the Pascal Interest Group, meets on the third Thursday of each month at 7:30PM at the Uniformed Services University of the Health Sciences, Bldg. A, Room A2054 (2nd floor), on the campus of the National Naval Medical Center at 4301 Jones Bridge Road, Bethesda, MD.

EDSIG (the education SIG) will meet immediately after the regular meeting of Washington Apple Pi, in Lecture Room A in Building A. Details of this and other meetings are given in "EDSIG NEWS" elsewhere in this newsletter.

NEWSIG will meet just after the regular Washington Apple Pi meeting. The meeting seems to best help the new members by answering their questions, and telling them what to do to get their system up and running. We also tell them something about WAP, how to order the disks, what's on the disks, etc.

The following members have agreed to answer questions over the phone when someone gets stuck and needs help between meetings:

Bob Chesley	560-0121
Paul Hoffman	831-7433
Sara Lavilla	926-6355
Boris Levine	229-5730
John H. Smith	439-4388
Steve Sondag	281-5392

⌘

JOB MART

HELP WANTED

The George Washington University Medical Center, Department of Anesthesiology, sent the following letter to Washington APPLE Pi on March 22:

"We have an APPLE II computer and need advice from time to time. We are currently using the APPLE with a Fast Fourier transform in assembly language and a display program in Basic. The cycle time is about 20 seconds. We would like to take the signals from the two opposite sides of the head, do a FFT and display each one in about the same time within the capacity of the APPLE.

I am wondering if one of your members would like to get into this activity, and give us a hand. We would, of course, pay 'going rates'."

(signed) Michael Shaffer, D.Sc.
676-2798

POSITION WANTED

Recently RIFed Dept. of Justice employee seeks position. Have years of experience in Planning (Operational and Strategic), Analysis (PERT, WBS, PVBS, etc), Program Control, and Management. Will relocate, temporary and part-time acceptable. Earned J.D. degree (non-practicing attorney). Would like position with capacity to act independently or with team. Resume and details available. Contact R.S.B., P.O. Box 6213, Silver Spring, MD. 20906.

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EDSIG NEWS

by Peter Combes

EDSIG Calendar

Saturday, April 24th

Apple Pi Premiere of LOGO

Ever since Dr. Seymour Papert published his book "Mindstorms", there has been a great deal of interest in this very-high-level language which is claimed to help children learn how to think and solve problems. Nancy Strange, one of the original members of EDSIG, will present the various versions of LOGO which are now coming onto the market for the Apple.

Tuesday, May 11th at 7.30 P.M.

Videodiscs and Apples

Col. Hodder of USUHS will demonstrate how videodiscs can be coupled to the Apple to make a potent new tool for Computer Assisted Instruction and advanced simulations.

Tuesday, June 8th at 7.30 P.M.

An Apple in the Lion's Den

You look after your Apple, but can it survive in the classroom?

Jim Bruno of RAC has worked with several projects that involved placing Apples in high-risk situations. He will talk about "Battleproofing Apples".

All these meetings will be in Lecture Room A, in Building A, USUHS.

Meeting Report

Saturday March 18th - Exploiting the Power of the Apple.

Too much of what purports to be Computer Assisted Instruction uses the Apple only as an "electronic page turner", or, at best, takes the user along interminable Skinnerian paths of "multiple guess". Jay Thal demonstrated some programs that take a more interactive approach.

"Master Type" is an imaginative attempt to harness the power of the arcade game to teaching. The skill to be learned in this case is touch typing. This skill needs lots of practice, and it is very difficult to avoid hours of boredom. Microsoft's "Typing Tutor" was an attempt to use the Apple for this, presenting sets of letters to be typed, and timing the user. A little less boring, but not much. "Master Type" looks quite different, with "enemy" spacecraft converging on the center of the screen. The only way to destroy them is to

type, correctly and in time, the letters or words displayed in the corners. Lieut. Joan Dooling reported that she had used the program with 40 corpsmen who needed to reach 35 w.p.m. The program produced good results, and all sorts of competitions develop spontaneously between the corpsmen.

```
*****
*                               *
* Title:                        Master Type      *
* Subject Area:                 Touch Typing     *
* Objectives:                   Teach key        *
*                               location and      *
*                               typing of words.  *
* Age Group:                    8 yrs to adult   *
* Usefulness (1-10)             7                *
* Made by                       Lightning         *
* Bought from:                  Bethesda Computers *
* Price:                        $39.95 + tax      *
* Requirements:                 Applesoft        *
*                               DOS 3.2 or 3.3    *
*                               *                *
*****
```

How can you get a pre-schooler interested in the Apple keyboard? Jay presented one of his favorite programs - "Hodge Podge".

Press the key "K" and you get a picture of a koala bear and the tune, "Waltzing Matilda" - press letter "D" and you get a picture of a dog and a washtub. The dog disappears, and you get the tune "Where, oh where, has my little dog gone?" There is a picture for each letter, and often a tune. Three year-olds love it, and get to know the Apple keyboard.

Other parts of the program include developing a number line, the alphabet, and an interactive session on "greater than" and "less than".

```
*****
*                               *
* Title:                        Hodge Podge      *
* Subject Area:                 Letter Recognition *
* Objectives:                   Teach key location *
* Age Group:                    Pre school       *
* Usefulness (1-10)             10              *
* Made by                       Dynacorp         *
* Bought from:                  Huntingdon       *
*                               Computer         *
* Price:                        $18              *
* Requirements:                 DOS 3.2          *
*                               (Muffinable)     *
*                               *                *
*****
```

Jay also gave us a preliminary look at "Fig Newton" and "Isaac Newton". His first report is that the documentation is difficult (where have we heard that before?).

Have you tried to use Hi-Res graphics and then been daunted by the unending complexities of shape tables and the strange rules about which dots can be given which colors?

Mary Brown, assisted by Karen Berlin,
contd.

B.I.S.

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demonstrated some Hi-res packages that make things much easier.

They showed us how to paint areas in different colors - including some not offered by Apple - the brown was particularly good.

```
*****
*
* Title:           Micro Painter
* Subject Area:    Utility
* Objectives:      Coloring and
*                  "fixing" Hi-res
*                  pictures.
*
* Usefulness (1-10) 8
* Made by          Datasoft Inc.
*                  (Author - Bob
*                  Bishop)
* Bought from:     The Program Store
* Price:           $34.95 (July 1981)
* Requirements:    48K, Applesoft ROM
*                  DOS 3.3
*****
```

```
*****
*
* Title:           Paddle Graphics
* Subject Area:    Utility
* Objectives:      Upper/lower case
*                  text in any
*                  direction or color
*                  (without hardware)
*                  Color fill - any of
*                  21 hi-res colors
*                  Easy creation and
*                  saving of shape
*                  tables
*
* Usefulness (1-10) 3
* Made by          On-Line Systems
* Bought from:     The Program Store
* Price:           $39.95 (July 1981)
* Requirements:    48K, Applesoft ROM
*                  DOS 3.2 or 3.3
*****
```

```
*****
*
* Title:           Hi-Res Draw
* Subject Area:    Utility
* Objectives:      Helps drawing of
*                  hi-res pictures
*
* Usefulness (1-10) 5
* Made by:         Mary Brown & Karen
*                  Berlin
* Bought from:     Authors
* Price:           Free
* Requirements:    48K, Applesoft ROM
*                  DOS 3.3
*****
```

Finally, we looked at examples of the use of the character redefinition routines from the Apple Tool Kit to produce high speed animations.

Other News:

Nancy Strange is organizing a group purchase of LOGO - call her at 691-1619.

Our new Workshops and Courses chairman - Dianne Lorenz - presents the following list of upcoming events:

EDSIG, in an effort to make our discussions and findings available to the general membership, will be writing a monthly column

for Washington Apple Pi. This month we have gathered information on computer classes for adults and children, summer camps for kids, and workshops for teachers and other interested adults. If you have additions to the following, call Dianne Lorenz (530-7881) so they can appear in the next issue.

CLASSES FOR CHILDREN

1. AIMATH (Adventures in Mathematics and the Humanities) - Beginning and advanced computers for elementary (grades 4-6) and secondary (grades 7-12) students. Starts June 28th. Mathematics and art also available. National Cathedral School or Georgetown Day School. Call 533-2295 or 229-4817.
2. BETHESDA COMPUTERS - "A Gaming Approach to Programming". Saturday mornings beginning April 17. 8020 Norfolk Avenue. Call 657-1992 or 881-2543.
3. CAPITAL CHILDREN'S MUSEUM - 800 3rd Street, NE, Washington, D.C. Classes in Basic for ages 4 to adult, group tours, and public access to computers (Atari computers only). For a brochure call 543-8600.
4. ELF (Electronic Learning Facilitators) - Classes in Basic and Logo for children ages 6 to 14 beginning June 21st and continuing through July 30. To be taught at Bethesda Elementary School, Arlington Road and Old Georgetown Road. Workshops for parents and children every Saturday in June. Call 897-5434 or 530-3299.
5. HANDS-ON-SCIENCE - Beginning through Advanced Basic programming for children ages 9 to 17. Day and evening classes to be held at Sligo Jr. High School, Silver Spring, MD, from July 6 - July 30. Full range of science classes also available for children ages 7 to 14. Call 649-6921.
6. STONE RIDGE SCHOOL - Classes for children and teachers - no details due to Spring break. Call 657-4322 after April 19th.

CLASSES FOR ADULTS

1. CAPITAL CHILDREN'S MUSEUM AND STONE RIDGE SCHOOL - see above.
2. COMPUTER CRAFTERS - Beginning and Advanced Basic classes one evening per week for eight weeks beginning April 20th at 11246 Georgia Avenue, Silver Spring, Md. Call 933-5820.
3. POTOMAC COMPUTER CONSORTIUM - Classes for APPLE owners of all ability levels - personal and business applications including VisiCalc, beginning in May. Bring your own computer. To be held at Computer Workshop, Inc., 1776 Plaza, Rockville, MD. Call 340-2220.

SUMMER CAMPS FOR KIDS

1. Champlain College Computer Camp
163 South Willard
P.O. Box 670
Burlington, VT 05402; (802) 658-0800

contd.

2. APPLE II Computer Club Camp
1887 Summer Street
Stamford, CT. 06905; (203) 358-8240
 3. Computer Camp *
Zaca Lake, CA
 4. Computer Camps International
310 Hartford Turnpike
Vernon, CT 06066; (203) 871-9227
 5. National Computer Camp for Diabetic Children *
Simsbury, Connecticut
P.O. Box 624
Orange, CT 06477
 6. Beauvoir, Mount Saint Alban
3500 Woodley Road, NW
Washington, D.C. 20016
(202) 537-6599
Three different sessions in June and July.
 7. See May issue of "Creative Computing".
- * For more information see March issue of "Popular Computing".

WORKSHOPS

1. The Computer Learning Center
989 Avenue of the Americas
New York, NY 10018
Ongoing workshops in Logo - week long and weekend sessions. Beginning and advanced. Call (212) 564-6020.
2. TERC (Technical Education Research Centers, Inc.)
8 Eliot Street
Cambridge, MA 02138; (617) 547-3890
Classes in Pascal, Logo, Basic and Graphics I, Basics and Graphics II, Microcomputers and the education of special needs students, and more.
May 18 - 20 Cambridge, Mass.
June 7 - 9 Watertown, CT.

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Legend 64K add-on (see WAP articles, December 1981)		299
Disk Emulator for Legend 64K		45
VisiCalc memory expansion for Legend 64K		29
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(10) double density		27

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SIGAMES NEWS

by John Alden

Our beloved Al Gass has finally retired from the chairmanship of SIGAMES. We will sorely miss his contributions to both WAP and to SIGAMES. Al has promised to periodically visit the meetings and update our knowledge of games. For example, Al has solved the Cranston Manor mystery and will tell all (especially the whereabouts of the crystal skull)!

Elections were held for the chair of SIGAMES. Jim Eatherly was unanimously elected to the position. Jim has been with WAP and SIGAMES for 2 years and has made considerable contributions to the organization. Our hardest congratulations to Jim.

The April meeting will be conducted by Jim Eatherly. As his first official act, Jim will present the best of the arcades. Featured will be the various pinball games (By Budgeco, Broderbund, and Sublogic). This will be followed by the very popular question and answer session. The final segment will be a presentation of several new games.

The next meeting's tentative feature is a mini-version of the "great Trickshot Tournament" featuring 'Trickshot' by IDS1.

Do you have a game you would like demonstrated or explained? Let's hear from you. This is your meeting and we want to help people make educated decisions when purchasing software.

RECENTLY RELEASED SOFTWARE:

From AI: Graphic Adventure #1.
From Avalon Hill: Guns of Fort Defiance.
From Avant-Garde: Zero Gravity Pinball.
From Cavalier: Microwave.
From Continental: The Guardian and Cross Country Rally.
From Dakin 5: Worm Hole.
From Datamost: Swashbuckler and Casino.
From IDS1: Juggler.
From Piccadilly: Star Blaster and Ribbit.
From Sirius: Fly Wars, Jellyfish, Lemmings, and Bandit.
From Sublogic: Pinball (A2-PB1).
From Turnkey: Amoeba Man.

THE DEMONSTRATIONS:

For April:

Dung Beetles
Star Blazer
Microwave

THE CATEGORIES:

A highly recommended purchase. This software is outstanding. You play it many times and it still is interesting and fun.

A recommended purchase. An outstanding program but has a few flaws. A very fine line exists between this and "a highly recommended purchase."

A suggested purchase. Better than average. Worthwhile adding to your collection if you enjoy this style of game.

Average. Speaks for itself.

Poor. Avoid any programs which receive this category.

THE REVIEWS

'Microwave' is destined to become a best-seller. It is an unusual game. Rather than being an ordinary "shoot-em-up" (as many arcade games are becoming) you are playing the role of Teddy the Galactic Salvage Man (sic). Teddy's job is to patrol space-ships, pick up faulty equipment, and repair computers. But Teddy (not the candidate) has to avoid decadent, devious aliens who wish to destroy Teddy. (No, the alien is not a peanut farmer!). Not only do the aliens destroy Teddy by crashing into him, but they drop explosives in his path. He must avoid the explosives, the aliens, and collect all the tools before he can go to the next ship. His capabilities are constrained by the number of powerpacks he owns. Each powerpack will charge one microwave dish. It is with this dish that Teddy roasts the aliens. For this one, you need quick reflexes and a sharp eye. A recommended purchase from Cavalier Computer for \$34.95.

'Minotaur' is wierd. It uses the graphics techniques of Hadron in a D&D setting. The object is for you in the role of Theseus to search the maze and destroy the Minotaur. As with Star Wars you are armed with a laser sword. There are four floors in each maze which are connected by numerous stairways. You begin on the top floor and strive to reach the minotaur, who is always on the bottom floor. If you find yourself blocked off from one part of a floor, you must go up or down a stairway and re-enter the original floor in a different area. If you have clubs, you may be able to bash through the wall or floor. After shooting the Minotaur, the game advances to a more difficult maze. A total of thirty-two levels of mazes exist. The mazes are random each time you boot the game. A recommended purchase. From Sirius software for \$34.95.

'Guardian' is simplistic version of 'Labyrinth'. You are in the middle of a room and outside the room Guardians move clock-

wise. To get to the next level, you must destroy some Guardians and get to the corner with the big 'X'. After several tries with this game, I found it to be very boring and unimaginative. Poor. From Continental Software for \$29.95.

'Labyrinth' is a fascinating version of Pac-man and several shoot-em-up arcade games. You have to rescue four people held in separate rooms in a maze. While this may sound easy, there is a secret: The walls of the maze are in constant motion. Entryways are exposed and exits are sealed. Both map and compass are useless. But among those held captive in the maze is one who holds the key to peace, prosperity, and good seats at the Superbowl. Find him, I'll offer a good price for the tickets. A highly recommended purchase. From Broderbund for \$29.95

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

Operating Systems

APPLE DOS	Richard Untied	241-8678
	(weekends only)	
CP/M	Robert Fretwell	971-2621

Languages (A=AppleSoft, I=Integer, P=Pascal, M=Machine)

A
A, I
A
A, I, P, M

A, I, M
P

DB Master

Printers
General
MX-80
Silentype
IDS 460

Word Processors

Apple Writer	Bruce Field	340-7038
Letter Perfect	Bill Schultheis	538-4575
Superscribe II	Peter Combes	871-1455
Supertext	Peter Rosden	229-2288
WordStar	David Inouye	422-8926

VisiCalc

Time-Sharing

Graphics

Games

Mem. Expansion

Other Disk Drives

Modems-Telecom.

Pers. Fil. Sys.

Paddles

Peter Combes	871-1455
Jeff Dillon	422-6458
Mark Pankin	370-9219
Bill Schultheis	538-4575
(except Tue., Thurs.)	
Richard Untied	241-8678
Robert Fretwell	971-2621

Dave Einhorn	593-8420
--------------	----------

Walt Francis	966-5742
Jeff Dillon	422-6458
Bruce Field	340-7038
Jeff Stetekluh	521-4882

Walt Francis	966-5742
Bruce Field	340-7038
Bill Schultheis	538-4575
Peter Combes	871-1455
Peter Rosden	229-2288
David Inouye	422-8926

Walt Francis	966-5742
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Chuck Reinbrecht	299-6810
Dave Harvey	527-2704

Bill Schultheis	538-4575
(except Tue., Thurs.)	

Jim Eatherly	232-6046
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Fred Schulz	223-1397
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Ben Acton	428-3605
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Ben Ryan	469-6457
----------	----------

Tom Riley	340-9432
(Evenings)	

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Q & A

by Bruce F. Field

At the request of our Editor (I suppose a threat of bodily injury can politely be called a request), anyway... At the request of our Editor who doesn't like to paste long titles at the top of articles, I've decided to rename this column "Q&A".

It would be helpful if questioners would include an evening/weekend telephone number with their questions so that I can get in touch with them for more information if necessary.

Q. How can I EXEC a date/time string into memory? I have a clock-BSR controller card (R10 by Intelligent Control Systems, Inc.) which calls up the date/time string <C\$> by the routine:

```
D$=CHR$(4)
PRINT D$;"IN#2"
PRINT D$;"PR#2"
INPUT C$
PRINT D$;"IN#0"
PRINT D$;"PR#0"
```

I have tried several routines,... (but) when I do an immediate PRINT C\$, I get nothing following the EXEC.

A. Your problem is a conflict in the use of the Monitor input buffer starting at memory location 512 (\$200). Your clock card when accessed by a IN#2 or PR#2 places the time/date string in this buffer area as if it were typed in from the keyboard. Under normal program execution, executing an INPUT C\$ command would take the string from the buffer and place it in C\$.

However, when executing an EXEC file, DOS directs all INPUT commands to the EXEC file. In addition DOS loads each line from the EXEC text file in turn into the input buffer and then calls the Applesoft command processor. Applesoft parses the line (converts all the keywords to tokens and removes spaces), executes the command, and returns the left bracket prompt which DOS uses as a signal to get the next line from the EXEC text file.

The solution is to explicitly CALL the machine language routine on the clock card rather than doing an IN#2 and moving the date/time string from the buffer area to a safe place before DOS overwrites it with the next command. The following program segment in your EXEC file should do this.

SLOT=2

C\$="":D\$=CHR\$(4)

```
X=X:X=X:X=X:X=X:X=X:CALL -16384+SLOT
*256:FOR I=512 TO 531:C$=C$+CHR$(
PEEK(I)):NEXT I:PRINT D$"IN#0"
```

PRINT D\$"PR#0"

The line with all the X's must be all one line. The X's are simply dummy statements to provide an area of 20 characters in the buffer (after parsing) where the date/time string will be placed. The CALL statement executes the machine language routine on the clock card to place the date/time in the first part of the buffer, and the FOR-NEXT loop copies the data out of the buffer into string C\$ before the next command is obtained from the EXEC file. The actual value used for the ending index of the FOR-NEXT loop is determined by the number of characters in your date/time string. The IN#0 and PR#0 commands reconnect DOS.

Q. As the number of disks stack up in the individual's library there is an on-going pressure buildup to index the various catalogs on the disks to make it easy to find particular programs. How can one go about "Saving" catalogs from the disk to a single library index without having to retype each title?

A. Have I got just the thing for you. WAP Library disk #100 has a program called MASTER CATALOG (48K-ENHANCED) that will do just what you want. It will read the file titles from the disk catalog (up to about 800 titles total), after which you may sort them (using the super-fast Ampersort routine), print them out three on a line (like our disk library listing) or save them to disk. The program doesn't have the ability to search for titles but since the program is written in Applesoft this feature could be added.

If searching for titles, title fragments, classes of programs, etc. is important to you, Sensible Software produces a program called MULTI-DISK CATALOG III. This program will read catalogs from DOS 3.2 or 3.3 and allows very sophisticated search capabilities via a search "mask" technique. It is written in machine language and is very fast. The disk is copy protected (UGH!) and "backups" are available at the regular retail price of \$25.

Q. I have what appears to be a fine report generation combination for my Apple II+. Unfortunately I can't seem to make it work. The programs are Appewriter, Graphtrix, and Appleplot. Appleplot makes a plot which I would like to include in a page of text. Per the instructions in the Graftrix manual, I file the graph by dropping out of Appleplot, and BSAVEing GRAPH, A\$4000, L\$2000. Then I have Graphtrix translate the Appewriter file into its own format, and print the whole affair. Everything works except that I get a splotchy black block where the graph should be.

A. As you probably know, the Apple has
contd.

two high-resolution graphics screens (usually called page 1 and page 2). The first starts at memory location 8192 (\$2000 in hexadecimal) and occupies 8192 bytes, thus ending at 16383. The second screen starts at 16384 (\$4000 hex) and also occupies 8192 bytes. Appleplot uses the first screen for its plotting. Thus to save the graph you should use:

BSAVE GRAPH,A\$2000,L\$2000

The splotchy black block is a graphics representation of Appleplot program variables stored in memory locations \$4000 to \$6000.

Q. Some HELLO programs return the catalog on initial booting. On some disks, the catalog is returned with a blinking cursor and on other disks the cursor is not returned until a (any) key is pressed. What is the difference in HELLO programs that causes this?

A. The vanishing cursor effect is not limited to HELLO programs, in fact you can include it in your Applesoft programs quite easily. Most keyboard input to the Apple is controlled by a machine language routine (RDKEY) in the Monitor ROM. This input routine is used for all input to the Applesoft interpreter (i.e. when a left bracket appears), and for the INPUT and GET commands. It is also used for Integer Basic and Monitor commands. It is this routine that produces the flashing cursor. To eliminate the cursor we simply need to read the keyboard directly, bypassing this routine. To do this the following program can be used:

```
100 KEY=PEEK(-16384):REM READ KEYBOARD
110 IF KEY<128 GOTO 100:REM SEE IF
    KEY HAS BEEN PRESSED
120 POKE -16368,0:REM RESET KEYBOARD
    STROBE
130 A$=CHR$(KEY)
```

This program segment performs the same function as the Applesoft GET A\$ command except no cursor appears. For more information on reading the keyboard directly see page 6 in the Apple Reference Manual.

Q. There appears to be a considerable number of memory cards becoming available, some with 16K and others with multiples of 16K. What are the specific hardware features to look for in trying to compare or evaluate these different cards? What software is required to effectively use the cards? Are there different software requirements for different memory cards or are there differences only when cards are multiples of 16K? Do I need any special software to expand the memory capability of my Visicalc software?

A. Whew, what a bunch of questions! The answers are - not many, it depends, no and maybe, and no.

Since you probably would like a little more detail here goes. As far as 16K

memory cards go they all function pretty much the same. They conform to Apple's soft-switch addresses for bank switching the memory, thus any software that will work with one will work with another. Most (but not all) of the cards require that one of the motherboard RAMs in your Apple be removed and put on the memory card, and a short jumper cable be plugged into the now vacant socket on the motherboard. This may be a disadvantage if you intend to insert or remove the card very often. There are also some differences in the power consumption of the cards which may concern you if you already have a lot of other boards in your Apple.

Writing your own software to use the card from Applesoft can be somewhat tricky. The additional 16K (or more) of memory cannot be considered as an extension of the 48K of memory on the motherboard. The memory card cannot be used directly from a program written in the motherboard ROM language (i.e. Applesoft in an Apple II+, or Integer Basic in an Apple II) because it must be switched off to use the Applesoft (Integer) ROMs. A short machine language program could be written to transfer data to and from Applesoft and the extra memory. The easiest way to use the memory card is to relocate DOS onto the card. This frees up about 10K of space in main memory that can be used directly by Applesoft. DOS may be relocated by BRUNning the RELOCATE DOS TO MEMORY CARD program on WAP Library Disk #101. Of course the memory card also allows you to easily run the other flavor of Basic.

For memory cards of more than 16K you should beware. There may be no clear consensus as to how the soft-switches work. Software may only be available from the card manufacturer. Unless you have a specific application that requires say 32K of extra memory and you are willing to write a program to use it, I personally don't see much use for more than 16K until you get enough to download an entire diskette into the card and then use the card as a fast pseudo disk.

Walt Francis tells me that Visicalc will automatically use any 16K memory card with no modification or extra programs required, however it will not take advantage of cards with more than 16K of memory.

And now a few questions that seem to be popular with callers to our Hotline volunteers.

Q. Some of my programs don't seem to run right after I renumber them using the RENUMBER program on the Apple System Master diskette. I've heard there was a bug in the program but what is it and how do I fix it?

A. This seems to be a perennial Spring favorite having been discussed in the April 1980 and March 1981 newsletters. The problem occurs when renumbering a

contd. on page 17

LEARNING TECHNIQUES OTHER THAN ROTE MEMORIZATION by Tom Riley

Since I am a very poor speller, Paul Ternlund's recent article, "A Spelling Exercise Program" (WAP Vol. 4, No. 3), struck an emotional cord and interested me greatly. From my point of view, however, this program has a serious drawback; the underlying learning technique is rote memorization. I will spare readers a dissertation on the long hours of my youth that were wasted trying to learn to spell with this technique. Suffice it to say that it did not work for me, nor does it work for many other people. There are, fortunately, promising alternatives to rote memorization that are not receiving the attention they deserve.

The accompanying program is an example of such an alternative. It aids the player in remembering numbers and is set up as a game. A spelling game similar to it would be slightly more advanced, so I decided to start with a numbers game. The program is based on "The Harry Lorayne Memory Isometrics Course". Harry Lorayne is a theatrical memory expert of some reputation. In his act, he memorizes the names, ages and social security numbers of 50 people in an audience, as fast as they can be spoken. Other organizations sell similar courses.

Memory aids historically have been used by showmen and hucksters, who often make extravagant claims for their techniques and package them in quasi-religious trappings. Many professional educators believe that such aids give an unfair advantage to the user and have bitterly contested their use in the classroom. In some school districts in Texas students using these memory techniques can actually be charged with cheating. But if you cut through the hokum you will find a core of powerful memory aids, more powerful than rote learning can ever be. And these aids beg for implementation and enlargement on home computers.

The basic idea in most of these alternatives is that the easiest way to transfer information from temporary memory to permanent memory is by the formation of a mental picture. The claim is that this transfer is an automatic process of the human brain and that this natural process does not have to be learned. If the mental picture is clearly formed, even for an instant, the brain will remember it indefinitely. Convincing results can be obtained with a modest amount of practice.

The problem, then, is how to convert material to be remembered into mental pictures, hold the pictures clearly in the mind for an instant, and move to the next item. In practice, the procedure used and the resulting mental pictures must not be boring, or the mind will very quickly lose interest.

To convert numbers to mental pictures using the Lorayne method, you assign a consonant sound to each digit (see game rules). You

then add vowels to make one or more words. These, and a few additional words, can be strung together to tie the number to its meaning (e.g., the telephone number of a friend). The game rules give an example of this process of forming mental images. To repeat, the image should be as ridiculous as possible to prevent boredom and to insure learning.

The program asks for a list of numbers to be remembered (addresses, birthdays, etc.); helps you convert them into words; then gives a quiz to see if you have successfully formed clear images. Remember, a hundred repetitions of a fuzzy image are useless, but an instant of a clear image is permanent.

This program is intended as an example of a memory aid other than rote and merely hints at the enormous power of combining these techniques with the home computer's ability to play games. The technique allows you to transfer information to permanent memory with ease; the computer makes the process fun, fast and painless.

]List

```

10 REM NUMBER REMEMBERING GAME
15 REM BASED ON 'THE HARRY LORAYNE
17 REM MEMORY ISOMETRICS COURSE'
18 REM MEMORY ISOMETRICS COURSE
19 REM PROGRAM BY T.RILEY 2/3/82
20 DIM W$(1,20),L$(3,9)
25 BEL$ = CHR$(7): REM CTRL-G
30 HOME
40 VTAB 8
45 GOSUB 1000
50 PRINT "    NUMBER REMEMBERING GAME "
60 PRINT : PRINT : PRINT
80 INPUT "DO YOU WISH TO SEE THE RULES ?
(Y OR N) ";YN$
90 IF YN$ = "Y" THEN GOSUB 2000
100 PRINT
105 HOME :N = 1
110 PRINT "ENTER A LIST OF NUMBERS TO
REMEMBER."
115 PRINT "    ( ENTER 0 TO END LIST )"
118 PRINT
120 PRINT "    ENTRY ";N;" IS -- ";
130 INPUT " ";W$(0,N)
140 IF VAL (W$(0,N)) < > 0 THEN N = N +
1: GOTO 120
145 N = N - 1
150 FOR K = 1 TO N
155 NM$ = W$(0,K)
160 CO = LEN (NM$)
165 HOME
167 PRINT "MAKE KEY WORDS FROM ONE GROUP
BELOW"
168 PRINT
170 PRINT NM$
180 PRINT
190 FOR W = 1 TO 9
200 FOR I = 1 TO CO
210 H = INT ( RND (5) * 3.99)
220 G = VAL ( MID$( NM$,I,1))
230 PRINT L$(H,G) + " ";
240 NEXT I
250 PRINT : PRINT

```

contd.

```

260 NEXT W
300 REM STORE WORDS
310 INPUT "WHAT KEY WORDS ? ";W$(1,K)
320 NEXT K
400 REM QUIZ
405 FOR I = 0 TO 1000: NEXT I
410 HOME
415 SC = 0
420 PRINT " I'LL GIVE YOU A NUMBER OR
THE WORDS"
430 PRINT "AND YOU GIVE ME THE OTHER ."
440 PRINT
450 FOR L = 1 TO 2 * N
460 A = INT ( RND (5) * 1.99)
470 B = INT ( RND (3) * N) + 1
480 PRINT W$(A,B);
490 INPUT " -- ";A$
500 A = A + 1: IF A = 2 THEN A = 0
510 IF A$ = W$(A,B) THEN SC = SC + 1:
PRINT " RIGHT"
515 IF A$ < > W$(A,B) THEN PRINT BEL$;"
      WRONG"
520 NEXT L
525 PRINT
530 PRINT "      YOUR SCORE IS ";SC;" OUT
OF ";L - 1
540 INPUT " WANT TO PLAY AGAIN ( Y OR N
) ?";YN$
545 PRINT
550 IF YN$ = "N" THEN END
560 PRINT
570 INPUT " NEW LIST ? (Y OR N) ";YN$
580 IF YN$ = "Y" GOTO 30
590 GOTO 400
999 END
1000 REM LOAD NUMBER/LETTERS
1005 DATA Z, S, S, S
1007 DATA T, D, TH, T
1009 DATA N, N, N, N
1011 DATA M, M, M, M
1013 DATA R, R, R, R
1015 DATA L, L, L, L
1017 DATA J, CH, SH, SH
1019 DATA K, C, K, K
1021 DATA F, V, PH, F
1023 DATA P, B, P, B
1030 FOR I = 0 TO 9
1040 FOR K = 0 TO 3
1050 READ L$(K,I)
1060 NEXT K
1070 NEXT I
1080 RETURN
2000 REM RULES
2010 HOME
2050 PRINT " EACH NUMERAL WILL BE
CHANGED INTO"
2060 PRINT "A CONSTANT SOUND FROM THE
CHART"
2070 PRINT "BELOW. YOU MUST MAKE WORDS
FROM THE"
2080 PRINT "CONSTANTS BY ADDING VOWELS.
2090 PRINT " THEN YOU MUST MAKE UP A
REDICULOUS"
2100 PRINT "SERIES OF MENTAL PICTURES FROM
THE
2110 PRINT "WORDS."
2120 PRINT
2130 PRINT " # CONSONANTS "
2140 PRINT
2150 PRINT " 0 Z, S
2160 PRINT " 1 T, D, TH
2170 PRINT " 2 N
2180 PRINT " 3 M
2190 PRINT " 4 R
2200 PRINT " 5 L
2210 PRINT " 6 J, CH, SH
2220 PRINT " 7 K, C
2230 PRINT " 8 F, V, PH
2240 PRINT " 9 P, B
2250 PRINT

```

```

2254 PRINT "      VOWELS A,E,I,O,U,Y "
2256 PRINT
2290 INPUT " (PRESS RETURN TO
CONTINUE)";YN$
2300 HOME
2310 PRINT
2320 PRINT "      AN EXAMPLE --"
2330 PRINT
2340 PRINT " THE WASHINGTON APPLE PI"
2350 PRINT "BOX NUMBER IS 34511."
2360 PRINT
2370 PRINT "THE CONSTANTS CAN BE -- M R L
T D."
2380 PRINT
2390 PRINT "SO THE KEY WORDS CAN BE -- MR
LTD."
2400 PRINT
2410 PRINT " PICTURE A HUGE CAR WITH A
BEAUTY"
2420 PRINT "PAGENT RIBBON HOLDING LONG
STEM APPLES"
2430 PRINT "AND CROWNED WITH A PI SYMBOL."
2435 PRINT
2440 PRINT " BETTER YET MAKE UP YOUR OWN
RIDICULOUS"
2450 PRINT "MENTAL PICTURE."
2470 VTAB 22
2480 INPUT " (PRESS RETURN TO
CONTINUE)";YN$
2490 RETURN

```

Q & A contd. from page 15

program where something is multiplied by a number that also happens to be a line number. For example, if

```

100 A=3
110 B=A*100

```

is renumbered starting at line 50 it will become:

```

50 A=3
60 B=A*50

```

For the DOS 3.3 version of RENUMBER with Applesoft in ROM (or on the Language card) the fix is:

```

LOAD RENUMBER
POKE 4789,172
POKE 4790,171
SAVE RENUMBER

```

The renumber program included in APA (Applesoft Programmer's Assistant) in the DOS Toolkit does not contain this bug.

Q. I have tried BRUNning the binary files on the Library disks and some work but others just cause the system to hang. How do I get these to work?

A. BRUNning unknown binary files is a very dangerous thing to do. Not all binary files are executable programs, they may be a graphics picture, program data, or a program that must be relocated into a different area of memory to run. The Apple doesn't know whether the file is a program or not, but when you say to BRUN it the Apple will try and interpret the data as instructions and may do strange things (like initializing your diskette). Most of the Library binary files are used from Basic programs that are also on the disk or have another file with documentation about the program.

TRIALS AND TRIBULATIONS OF THE FIRST TIME LIBRARY DISK COPIER by Dave Weikert

Being a relatively new member of the Washington Apple Pi (Aug 81) and not yet that conversant with my Apple II Plus, I didn't think that I could contribute too much to the club. However, during the meeting of THE GREAT SNOW this past January, a call went out for volunteer help in a number of different areas. These included the publication and distribution of the Washington Apple Pi newsletter, support to the SIGs and to the disk library. Each of the club members representing these activities described their requirements. Gordon Stubbs, the Head Librarian, described a job I believed that I could qualify for; all it took was some of my time and I could become a certified, bonafide Library Staff Coolie Copier - Level Zero.Zero.

I signed on the dotted line and eagerly awaited the call for duty. In about a week, I received a call from Gordon. There had been an excellent response and because of the number of volunteers, the new library staff names had been grouped and parceled out to some of the existing staff. Van Kozak was the staff member that would call me and coordinate my part in the copy process. By and by I got a call from Van. He confirmed that I had access to two disk drives. (I have only one but am able to borrow one from a neighbor.) Van indicated that it might be a few months or more until I would receive a call to make copies as the blank disks are often not available until the week prior to the meeting which doesn't allow time to distribute them to the copiers.

After two months, the awaited call came. The Washington Apple Pi officers had agreed to purchase a larger number of disks in advance and it was now possible to get the disks distributed and to coordinate the copying prior to the monthly meetings. This month, I would be responsible for copying seven different disks and there were a total of 97 copies to be made. Van then mentioned that these were DOS 3.2 (13 sector) format disks and said that the Library Staff used an integer fast copy program that would make copies in considerably less than a minute. Whoops!!! Bells and Alarms!!! I have an Apple II Plus!!! The only Integer Basic capability that I have is a DOS 3.3 machine language program. Quick consultation with Van - Do I have a memory or language card? No! A ROM card and Integer ROM chip? No! What now?? Ah ha - I think my neighbor has access to a language card. A quick call confirms that he can borrow one from work. I call Van back and make arrangements to pick up the blank disks and the Library masters from Van at his home in Annandale. I then call the neighbor and coordinate the disk drive and the language card for the same night that I will pick up the disks.

This is the big night. I have really scheduled this out. Get home from work at about 6:00 and eat. Go up to the neighbors about 6:30 and get the drive and the lan-

guage card. Install and test the card and the drive (this was the first time that I had used a language card so I first needed to read the directions and make sure that it would work) and then start the trip from Derwood MD to Annandale VA to Van's house to pick up the library masters and the box of 100 blank disks. Review the copy procedures and discuss with Van how to run a quick test to ensure that each disk has been properly copied. Since Van has only a single disk drive in place, we don't test the fast copy program on the disk that Van has given me to use. Back at home a little after 10:00 with my curious neighbor in tow, we load the copy utility and BEEP - BEEP "***** UNABLE TO WRITE *****". Pull the disk to remove the Write Protect tab - THERE ISN'T ANY. Run some other 3.2 programs to check out the hardware. No problems so it may be the fast copy program. Call Van and holler for help. Van reviews the procedures and confirms that there doesn't appear to be anything wrong except perhaps a bad copy program. Van asks if I have any other 3.2 copy programs - I don't since my machine was a 3.3 from the start and I didn't acquire any of the 3.2 utilities since somebody told me they don't all Muffin properly without making some changes. After hanging up, I have another idea - Locksmith! No good, it takes too long even with two disk drives. At this rate, we'll be a week and the copies still won't be tested. Van calls back and says that he just returned from Gordon's and the fast copy program is bad. I make arrangements to pick up another disk with the fast copy program from Van tomorrow at his work location in Crystal City. I remove the language card and restore the computer to its normal configuration so that my eleven year old son Mark will let me use the computer tomorrow. I then return the card to the neighbor since he must return it to work the next morning.

I stop by Crystal City on my way to a meeting and Van gives me the Washington Apple Pi Utilities III Volume 8 which contains the fast copy routine that the staff uses. I call the neighbor and ask if he can borrow the card again. He can and we arrange to start about 7:00. We install the card, load Basics, run the fast copy, insert the master and blank disks and BEEP - BEEP "***** UNABLE TO WRITE *****". ##&!""*o##. Oh, the perversity of inanimate objects!! What to do? I try a couple of other programs on the disk and they run fine. Software again? No, it couldn't be. I try a 3.2 copy program that I find on the Volume 8 disk; it works so it must be the fast copy program. I try the 3.2 copy again and it takes two minutes and 45 seconds to copy one disk. Too long! At this rate, I will need to borrow the disk drive and the language card for a week until the disks are all copied. Darn, Van said the fast copy program runs in less than a minute. Call Van - line busy. I call Gordon and explain the situation. He reviews the procedures and agrees that I

contd.

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must have another bad program. Since I remember that Van said something about running copies faster at Gordons when they used two drives each connected to a separate controller card, I asked Gordon if this would improve the speed of the 3.2 copy program. Gordon says that the speed should be quite a bit faster with the second controller and that I should try it. Back to the neighbor's house for his controller and back home to install it. Eureka!! It runs in only 45 seconds. Van calls and says that he and Gordon have checked the Volume 8 fast copy program and it does not work. Gordon has found a version that does and has also modified the catalog program that the staff uses to test that the copy is OK. Van will have a copy that I can pick up the next day. However, by 11:00 my neighbor and I have completed the copying of all of the disks and have tested and labeled them.

I drop off the completed disks at Van's office and pick up the new fast copy program and the improved catalog that makes testing easier. Although I won't need the fast copy program anymore this month, it has the promise of copying the disks in less than 30 seconds if two controllers are used.

I will keep the same disk masters and copy programs for the first few months and pick up the blank disks from Gordon or Van at the Washington Apple Pi meeting. After a few months, I will return the masters that I have been copying and will get some different disks to copy. Keeping the same master disks for a while will simplify the logistics of the copy process while still providing some variety and the ability to see other disks in the library. Picking up the blank disks at the Washington Apple Pi meetings is now possible since the club is now maintaining a larger inventory of blank disks and recorded disks in the library. Gordon says that they are now selling over 700 library disks a month and this is an excellent money-maker for the club especially considering the cost of the labor. Some of the library staff also assists by distributing disks at the monthly meetings and I will try to help in this capacity also.

Postscript

The latest program that I received from Van has been tested and it works. I have already purchased another disk drive (the Washington Apple Pi Group Purchase of the Micro-SCI). I can now make copies in 28 (count them) seconds with the two drives and two controllers. I have performed some additional testing and found that I still get "UNABLE TO READ" and "UNABLE TO WRITE" errors depending upon the specific configuration of the drives that are specified as the master and the slave. About half the tested configurations didn't work without an error. This includes my original APPLE, my neighbor's APPLE and my new Micro-SCI (three drives and two controllers). If you try the fast copy program on Volume 8 and encounter errors, try reversing the order of drives when you respond to the prompt for master and slave. Further conversations with Van and Gordon have disclosed that I didn't need the memory card since I had the Washington Apple Pi Volume 14 disk

which has a machine language Integer program (INTEGER BASIC-DISK). However, I am going to order my own memory card since I need it for my Visicalc work anyway. The next time, I don't expect to have any problems since nothing can go wrong ... go wrong ... go wrong ... go wrong ... go wrong ...

(Ed. Note: Gordon Stubbs and Van Kozak found the preceding article an extremely amusing account of an extremely trying experience. The transition from 1 to 3 experienced library copiers to 12 newcomers (while attempting to copy more than 1500 disks) evidently brings out the "best" of Murphy's Law.)

GROUP PURCHASE POWER by Rich Wasserstrom

Group Purchase Phone: (703) 448-0984

After one month of radio silence, you may again call about group purchase items. Four volunteers (John Shilling, Jean Strong, Steve Gianos, Conrad Fleck, and Bob Palus) and I will tend the phone from 7:00pm to 9:30pm Monday through Friday. We are closed on weekends. Please observe these phone hours and preserve peace in our families.

New Items

The club store now offers Legend Industries memory cards, the Nibbles Away II utility, and Happ Electronics game port extenders.

Legend Industries offers 64K and 128K memory boards. With the appropriate software (available either as a package with the boards or separately) these boards will emulate disk drives, provide additional VisiCalc memory, or free-up motherboard RAM by accepting a relocated DOS and non-native language. Memory Master, the software which performs the latter trick, will also support your Firmware card in any available slot and works with most 16K cards.

The Nibbles Away II Disk Backup System allows back-up of your valuable software, and includes a powerful track/sector editor, a disk drive speed test, a diskette certification routine and a media degauser.

At long last, I've found a reasonably priced, high quality game port extension device. Happ Electronics produces a hand soldered, 100% tested, zero-insertion force socket extender at a price below the competition.

See me at the meeting, or call for pricing.

Oldies, But Goodies

We will continue group purchases on NEC and Epson printers, Pkaso "smart" printer interfaces, Zenith green screen monitors (our supplier has replenished his stock), Micro-Sci disk drives, and the Accountant and DBcalc software packages.

CLASSIFIEDS

FOR SALE: Speedstar, Applesoft compiler from Southwestern Data Systems. Bought on impulse; I never use it. List price \$134.95; will sell for \$55.00. Stephen Bach, Rt. 2 Box 89, Scottsville, VA 24590, (804) 286-3466.

FOR SALE: IDS-560G 150 cps matrix printer, 2k buffer/graphics, serial/parallel, 5 months old - \$890. DSS:F super modeling language for APPLE II (10/81 edition) - \$950. Call Les Cohen, (703) 451-9546.

FOR SALE: APPLE Silentype printer, \$280. Purchased new in Nov. 81, but no longer needed. SMARType software (descenders, alternate character sets) \$20. R.L. Henne, 5870 Wood Flower, Burke, VA 22015, (703) 250-5323.

FOR SALE: APPLE Silentype printer, just like brand new, excellent buy at \$300. Call Joe at 490-0038.

WANTED: Typewriter keyboard actuator (Rochester Data Dynatyper or Kogyosha KGS-80). Call Jack Stader, (301) 963-0906.

WANTED TO RENT: APPLE II 48K with disk drive. Call Dan, 525-4898 (evenings).

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APPLE PILOT - A PROMISING START TO APPLE-BASED INSTRUCTION by Robert C. Platt

My principal reason for buying an APPLE was to convert instructional programs from a time-sharing network. Although I was prepared to sacrifice some performance for the price advantage of a stand-alone micro-computer, I've been impressed with the APPLE's ability to present instructional materials at the same level of sophistication as is available on instructional networks.

Even though the student experiences the same level of lesson quality, the APPLE unfortunately lacks the level of programming support available to courseware authors who use time-sharing instructional systems such as PLATO, a nationwide CDC Cyber-based educational network developed at the University of Illinois. Upon learning that one of PLATO's developers worked on Apple PILOT, and after reviewing its promising specifications, I ordered this software package. Apple's suggested list price is \$150, and I found the package to not justify its price.

THE APPLE PILOT SYSTEM

Apple PILOT comes with two copies of a copy-protected "author disk", and a sample "lesson disk". A 253-page Language Reference Manual describes the Apple PILOT language and includes many useful examples. A 134-page Editor's Manual describes the four editor programs used to enter PILOT lessons. Apple PILOT uses UCSD Pascal disk format, and the "lesson editor" is a slightly modified version of the Apple Pascal text editor. A "character set editor" is similar to a shape table editor for creating new character fonts. A "sound effects editor" allows an author to enter music one note at a time, and the "graphics editor" creates Hi-res displays using cursor controls.

The PILOT language has a simple syntax. Each command begins on a new line with a one or two letter code, followed by conditions which are evaluated in order to determine whether the command will be executed or skipped over. The object of each command follows after a colon. For example, a command to display "a message" on the monitor if the variable A equals 1 would read:

```
T (A = 1): a message.
```

DRAWBACKS OF APPLE PILOT

PILOT (Programmed Inquiry, Learning or Teaching) was designed for easy implementation using simple interpreter programs. The Apple version of PILOT implements the basic PILOT commands (flaws and all), and attempts to compensate for a number of PILOT's shortcomings by new extensions to the language. However, because PILOT has never been standardized to the extent of most other programming languages, PILOT

lessons written in Apple PILOT may not be readily adapted to other PILOT implementations, including other PILOT interpreters running on the APPLE.

A principal disadvantage of Apple PILOT is its slow speed when executing lessons. The interpreter is coded in Apple Pascal, with the interpreter for each command overlaid into a small area of memory.

Each occurrence of most commands causes a routine to be read from the disk (even if a command immediately follows a second command of the same type). Apple PILOT will continue to perform these disk swaps even when a 16K memory card is present.

Although text is plotted on the Hi-res screen at an acceptable rate, solid colored graphic displays can be painfully slow. To speed up graphics, a special "quickdraw" feature is included which permits an 8K bit map of the Hi-res screen to be saved and quickly reloaded, at the expense of precious disk space.

The execution speed of arithmetic commands is unacceptably slow. For example, one of my lessons takes the interpreter 7 seconds to set a nine element array to zero. Further delays occur when a program branches to a statement label. If the label has not been previously encountered in the execution of the lesson, the interpreter conducts a character-by-character search through the source code for the label.

Because PILOT runs on the Apple Pascal system, input/output poses certain problems. Only 120 blocks (240 sectors) are available on each lesson diskette for program and data storage. (The Pascal and PILOT interpreters occupy the remaining 160 blocks.) Only printers compatible with a standard Apple printer control card in slot No. 1 can be used to list lessons. Thus, non-standard cards, such as the Mountain CPS Card, cannot be used. Because the "author disk" is full, the Pascal printer driver cannot be modified to overcome this problem. I've resorted to using the WAP Huffin program (1), to convert lesson files for listing under DOS. Similarly, the data files generated by lessons (to record lesson usage, etc.) must be processed in Pascal.

The limited amount of available space on each disk poses a serious obstacle to constructing a unified series of lessons. I had originally hoped to overcome this limitation by displaying an "insert disk No. 2" message and then branching to a continuation lesson after a pause for changing disks. However, because Pascal keeps its disk directories in core, the PILOT system must be re-booted whenever a student switches lesson disks. Thus, switching between disks under program control is impossible on a one-disk APPLE.

contd.

ADVANTAGE OF APPLE PILOT

The main advantage of Apple PILOT is that it permits the rapid development of "quick and dirty" Apple based lessons. The system permits easy debugging by allowing the author to switch quickly between editing lessons and running the lesson as a student.

Apple PILOT also provides professional touches commonly requiring hardware modifications. Text is displayed in upper and lower case, and a Pascal quality editor and Turtlegraphics usually associated with 64k systems are made available on a 48K system. Apple PILOT's sound editor is also better documented and easier to use than the corresponding Pascal sound procedure. Although the quality of music produced does not approach a separate synthesizer board, the sound editor is comparable to most Apple based music editors.

THE ALTERNATIVES

Several other vendors offer PILOT interpreters for the APPLE. An Applesoft version is available on WAP disk No. 110. This version was discussed in the February 1981 Creative Computing at page 172. Muse Software offers its version of PILOT, although it hasn't been listed in their latest ads. Finally, Creative Computing has reported that Apple Computer has been developing an improved package called "Super PILOT". (2)

A second alternative is to use Apple PILOT to develop lessons, and then to translate the lessons into Pascal for faster execution. At least one lesson author has implemented a form of PILOT in this fashion. (3) Given that the Apple PILOT sound and graphic features are already available through Apple Pascal's "APPLE-STUFF" and "TURTLEGRAPHICS" routines, a simple Pascal translator program could read an Apple PILOT lesson file and convert it line by line into Pascal source code. Once this Pascal source is compiled, it would probably execute more rapidly than the original PILOT file.

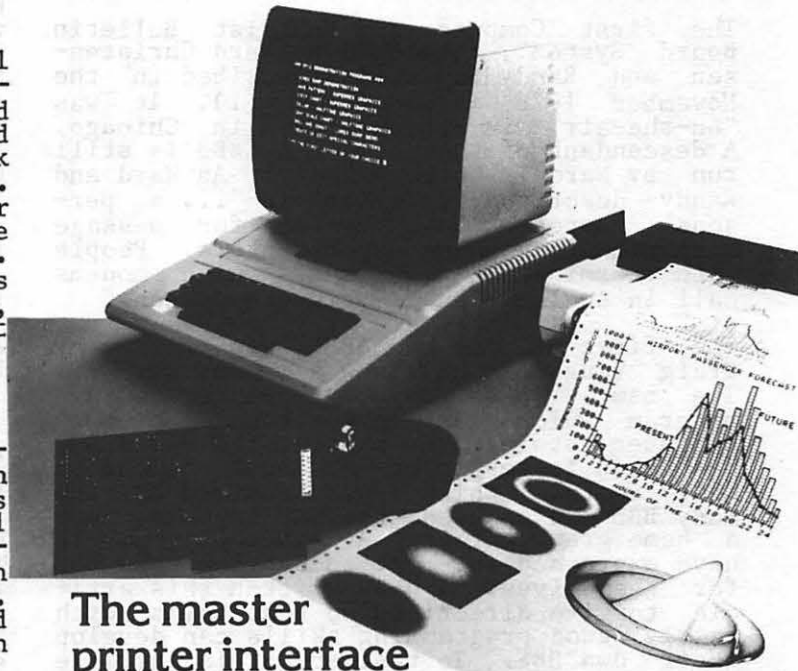
CONCLUSION

Apple PILOT is a useful tool for authors who need to prepare short lessons without mastering computer programming. Apple PILOT is not well suited for creating a sophisticated series of interrelated lessons. For more advanced applications, Pascal or Basic may produce better results.

References:

- (1) Washington Apple Pi, Vol. 3 No. 7 (July 1981) and WAP Disk No. 101.
- (2) January 1982 Creative Computing, p 104.
- (3) July 1980 Byte, p 154.

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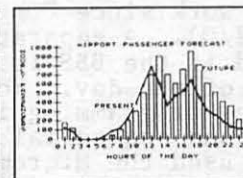
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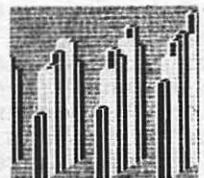
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```
#####
#
# The meeting date for May has been
# changed to the 5th Saturday, May 29.
# Same time, same station.
#
#####
```

WRITE YOUR OWN BULLETIN BOARD SYSTEM

by John Moon

INTRODUCTION

The first "Computerized Hobbyist Bulletin Board System", developed by Ward Christensen and Randy Suess, is described in the November 1978 issue of Byte (1). It was "on-the-air" in February 1978 in Chicago. A descendant of that original CBBS is still run by Ward in Chicago today! As Ward and Randy described it, a CBBS is "... a personal computer based system for message communication among experimenters. People with terminals or computers with modems call in to leave and retrieve messages."

The first BBS for the APPLE was written by Craig Vaughan - he's now a member of WAP. The name "ABBS" properly applies to his program which can be purchased at many computer stores. My system, the WAP ABBS, has been in gestation for about one and a half years. While I was inspired by the many BBS's I've used, the WAP ABBS has been a home grown affair. A number of members have expressed interest in setting up a BBS for themselves. I have written this article to give directions so that folks with fairly good programming skills can develop their own BBS. To that end, this article attempts to provide you the benefit of my experience in programming a CBBS. I include subroutines for input, output, disk I/O, as well as hints, techniques and suggested data structures. I try to provide at least the beginning of the program structure that you need.

An APPLE II+ or equivalent (Applesoft ROM or Language System RAM) is required along with a disk and a D.C. Hayes Micromodem. A printer can be used to log all information that appears on the screen if used with an APPLE parallel card (typical compatible cards may not work since POKES are used to perform the I/O). A separate phone line will be needed if the BBS is run any significant time of the day. You should have some experience programming in Applesoft, using random and sequential files in DOS 3.3, and have used the Micromodem at least as a terminal as described in the user's guide (2).

INITIALIZATIONS

The first statement of your program should be:

```
10 GOTO 10000
```

to branch around all the subroutines to the initialization code. At 10000 should be:

```
10000 MN=100
10010 DIM M$(MN),MB$(20)
10020 D$=CHR$(4)
10030 C$=CHR$(13)
10040 LF$=CHR$(10)
10050 SN=2 : REM MODEM SLOT
10060 I$="" : A$="" : O$=""
10070 PRINT D$;"NOMON I,C,O"
```

Why these variables? MN defines the maximum number of messages the BBS can have, while M\$ is used to keep the message headers in memory to speed up searches. MB\$ is a message buffer for input from either the disk or the modem. I\$ is always the input line; O\$ is always the output line; and A\$ is used as the subject of the GET instruction to collect characters one by one. D\$, C\$, and LF\$ are constants for needed control characters (trust me a little, I'll use them later...).

DATA STRUCTURES

A discussion of data structure is necessary before we get too much further into detail. In a BBS, the primary piece of data is the list of messages. Each message has two parts: the header and the message text. The header contains information such as From, To, Date, Subject, Msg Number, and Key. The message text is, of course, lines of text. I use an extra carriage return on the end to denote the end of the message. Because of the slowness of disk I/O, it pays to keep the message headers in memory. M\$ contains a copy of the message headers, during startup, it is initialized and during all adds, deletes, and other operations, the disk version of the header and the version in M\$ must be kept the same. I also assume (for the sake of this article) that no message is longer than a fixed amount of space so no provisions are made for variable allocations of disk text space.

You have to decide the format of your header. It is convenient to separate the fields with a carriage return. For example, the WAP ABBS uses a header of:

```
FROM---/TO----/DATE/SUBJECT-- --/
```

(The slashes represent carriage returns.) This is a total of 40 characters. When printed to the screen, it is formatted with labels so it comes out as;

```
FROM:WAPXXX TO:WAPXXX DATE:MMDD
SUB:-----
```

If I did it over, I would make the date of the form YYMMDD which is much easier to manipulate, especially for searches and end of year calculations. Also, I'd include a message number in the header that would monotonically increase. A key field would be of use to sort messages by category, for example, For Sale, Games, News, Meetings, or whatever, For the purpose of illustration, I assume a header identical to WAP ABBS.

You also decide what an empty message looks like so you can do a search for an empty message block when you get ready to add a message into the system. Again, WAP ABBS uses:

```
EMPTY /WAP000/MMDD/01234567890123456789/
```

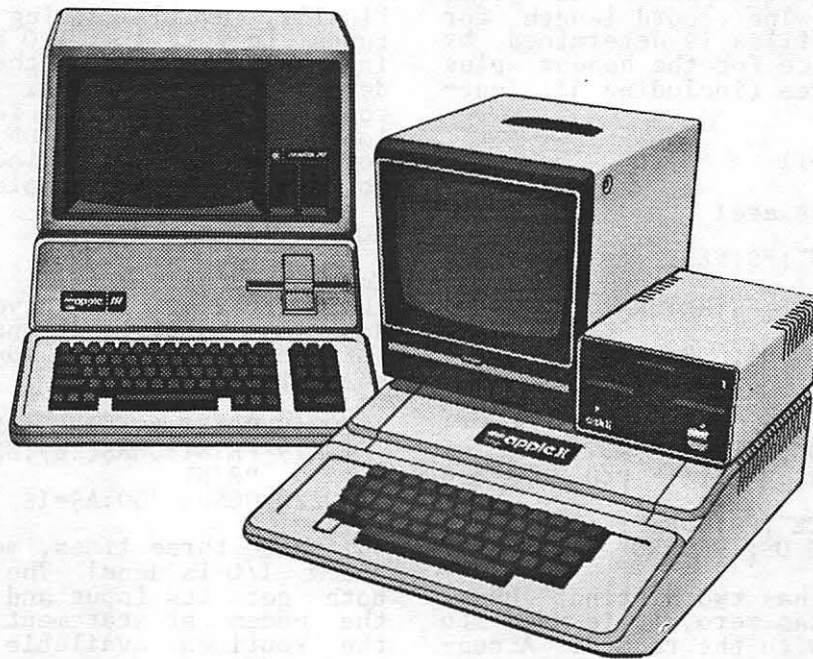
contd.

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Since the WAP ABBS uses passwords, it can ensure that there will never be a "FROM" equal to "EMPTY". In your system, you may decide to use some special characters or other indication of an empty message.

DISK I/O ROUTINES

You must write your message file to disk in an initialized format. Therefore, the disk I/O routines are described next. The name I'll use for the message file is (surprise!) "MESSAGES" and it will be on the disk in slot 6, drive 1. The following lines are additions to the initializations:

```
10070 F$="MESSAGES"
10080 FE$=","S6,D1"
```

The disk I/O subroutines include six separate routines; open, close, read starting at a specified place, continue reading from where it was left off, write at a specified place, and continue writing from where it was. There is one other routine which uses these to read a message into the M\$ array, and later I will give a routine to read ancillary sequential disk files and print them to the modem. The record length for the random access files is determined by the size of the space for the header plus the message text area (including all carriage returns).

```
10085 RL=40+10*40+11
```

The disk I/O routines are:

```
500 PRINT D$;"OPEN";F$;FE$;","L="";RL:
    RETURN
510 PRINT D$;"CLOSE";F$:RETURN
520 IF P<0 THEN 525
521 PRINT D$;"READ";F$;","R="";R;"P="";P:
    IS=""
522 GET A$:IF A$=C$ THEN PRINT D$;:RETURN
524 IS=IS+A$:GOTO 522
525 PRINT D$;"READ";F$;","R="";R;IS=""
526 GET A$:IS=IS+A$:P=P+1:IF P<0 THEN 526
528 RETURN
530 PRINT D$;"WRITE";F$;","R="";R;"P="";P:
    PRINT O$:PRINT D$;:RETURN
```

The P for position has two distinct uses. If it is greater than zero, it is used to position the input with the record. A negative value reads the absolute value of P characters into IS.

So a typical initialization loop to initialize the disk (done once) could be:

```
10090 INPUT "INIT OR RESTART? (I/R);A$
10100 IF A$="I" THEN GOSUB 11000:GOTO
    10130
10110 IF A$="R" THEN GOSUB 11100:GOTO
    10130
10120 GOTO 10090
10130 REM REST OF PGM
11000 O$="EMPTY "+C$+" "+C$+" "
    +C$+"01234567890123456789"+C$
11010 GOSUB 500
11020 FOR I=1 TO MN
11030 R=1:P=0:GOSUB 530
11040 NEXT I
11050 RETURN
```

The procedure to initialize the M\$ array is similar but is done on each startup of the system:

```
11100 GOSUB 500
11110 FOR I=1 TO MN
11120 R=1:P=-40:GOSUB 520
11130 M$(I)=IS
11140 NEXT I
11150 RETURN
```

The above examples do not use record 0 in the file. It is useful for storing information such as the size of the message area, the number of messages in the file, the last message number used, etc.

A few more words are in order about disk I/O before pushing on to other routines. In a BBS system, it is important to keep the disk file accurate. APPLE DOS delays writing many I/O requests to the disk. Therefore, it generally is necessary to open, do I/O, and then close the disk everytime I/O is needed to the disk. Avoid asking for input from the modem while the disk file is open; if the user hangs up, it can be hours before the next user calls. In this time, your machine may get glitched which can cause your disk file to be crashed.

Finally, avoid getting ON ERROR interrupts in your disk I/O by explicitly writing null records on the disk so you can detect them on input. The ON ERROR gets too confused after a few GOSUBs and FOR loops! Do set up an ON ERROR exit to shut down the modem phone line if something does go wrong (see the example below).

MODEM I/O ROUTINES

Enough about disk I/O - you knew how to do that already! Didn't you? By now you've done your initializations and you are ready for someone to call. Your code should look something like:

```
10210 PRINT D$;"IN#";SN:PRINTD$;"PR#";SN
10219 PRINT CHR$(26);C$:POKE 1912+SN,6:
    PRINT
10220 GOSUB 300:A$=IS
```

In these three lines, most of the magic of modem I/O is done! The computer is set to both get its input and put its output to the modem at statement 10210. This uses the routines available on the D.C. Hayes Card. (See the discussion below about some of the shortcomings of using the standard routines.) In line 10219, the modem is explicitly hung up (just in case) and then it is set up by the POKE to put the Micro-modem into "transparent" mode. This prevents Ctrl-Y's and other controls from taking over your computer and blowing away your BBS. The Micromodem will wait for someone to call. When the phone rings, it waits to detect a carrier. When the carrier is detected, the Micromodem simulates the input of a carriage return. During the time it is waiting, your computer keyboard is active and you can type in special commands as described below.

Of course, this leaves the necessity for you to have input routines at 300. It turns out that this input routine is one of the more complicated routines. It has three distinct entrances; the first is for a command or answer and the result must be upshifted to make comparison easier; the

contd.

second outputs O\$ and a prompt and then does the input; the third just does the input. There are several flags that control enabling/disabling of linefeeds and printing to a printer.

```

280 GOSUB 290:GOSUB 950:RETURN
290 O$ = P$: GOSUB 100
300 REM
320 I$ = ""
325 IF LEN (I$) > L9 THEN 343
326 GET AS: IF AS = CHR$(4) OR AS =
CHR$(7) OR LEN (AS) = 0 THEN 326
328 IF AS = CHR$(10) THEN N9 = NOT N9:
GOTO 326
332 GOTO 339
333 IF AS < > CHR$(8) THEN I$ = I$ +
AS: GOTO 325
334 IF LEN (I$) = 0 THEN PRINT "?";:
GOTO 320
335 IF LEN (I$) = 1 THEN PRINT " ";
CHR$(8);: GOTO 320
336 I$ = LEFT$(I$, LEN(I$) - 1):
PRINT " "; CHR$(8);: GOTO 325
339 GOSUB 342: IF AS = C$ THEN RETURN
340 IF AS = CHR$(10) THEN 325
341 GOTO 333
342 IF AS < > C$ THEN PRINT AS;:
POKE -16256 + 16, ASC (AS): RETURN
343 IF N9 THEN PRINT CHR$(10);
344 PRINT : POKE -16256 + 16, ASC (C$):
POKE -16256 + 16, 10
345 FOR I9 = 0 TO N8: NEXT I9: RETURN
950 IF LEN (I$) = 0 THEN RETURN
955 FOR IZ = 1 TO LEN (I$)
960 IF ASC (MID$(I$, IZ, 1)) >= 97 AND
ASC (MID$(I$, IZ, 1)) <= 122 THEN
GOSUB 980
970 NEXT IZ: RETURN
980 I1$ = "": IF IZ > 1 THEN I1$ =
LEFT$(I$, IZ - 1)
981 I1$ = I1$ + CHR$(ASC(MID$(I$, IZ, 1)) - 32)
982 IF LEN (I$) > IZ THEN I1$ = I1$ +
MID$(I$, IZ + 1)
983 I$ = I1$: RETURN

```

Obviously, sending the prompt and printing O\$ requires an output routine; it also has a couple of entrances - one to add a carriage return to the end of the line and one that won't.

```

90 O$ = O$ + C$
100 I = 1
110 IF MID$(O$, I, 1) < > C$ THEN PRINT
MID$(O$, I, 1);: POKE -16256 + 16,
ASC (MID$(O$, I, 1)) + 128: GOTO 120
111 IF N9 THEN PRINT CHR$(10);
112 PRINT : POKE -16256 + 16, ASC (C$):
POKE -16256 + 16, 10
113 FOR I9 = 0 TO N8: NEXT I9
120 I = I + 1: IF I <= LEN (O$) THEN 110
130 RETURN

```

A little digression is in order before continuing onward to new topics. (Hang in there, these are the most complicated routines to understand, but are relatively easy to use...) The POKE statements perform output to a printer. The normal PRINT statements are not used because of the slowness of DOS as it changes the I/O hooks and because a printer hang will hangup the program as well, if the PRINT statements are used. The printer card assumed is an Apple parallel printer card in slot 1 - you may have to change the POKES for other cards. Note the peculiar ordering that causes linefeeds to be printed prior to carriage returns - this keeps the interface

with APPLE's DOS a little more straightforward.

SPECIAL CONTROLS

You can be a little sneaky and put some "hidden" commands in the system just after line 10220. When the modem answers the phone, it returns a carriage return to your program. However, your keyboard is active - you can type in a command to be decoded that only you will be able to enter. A couple of features that are useful are local/remote modes and a dial-up facility.

Local/Remote

```

10221 IF LEN(AS) < > 9 THEN 10223
10222 IF LEFT$(AS, 5) = "DATE=" THEN D1$
= MID$(AS, 6, 4): GOTO 10220
10223 IF LEN(AS) < 5 OR LEN(AS) > 6 THEN
10130
10224 IF LEFT$(AS, 5) = "LOCAL" THEN
PRINT D$; "IN#0": PRINT D$; "PR#0":
GOTO 10220
10225 IF LEFT$(AS, 5) = "REMOT" THEN
PRINT D$; "IN#": SN: PRINT D$; "PR#":
SN: GOTO 10220
10226 IF LEFT$(AS, 5) = "TERMI" THEN
PRINT D$; "IN#0": PRINT D$; "PR#0":
GOSUB 28000: GOTO 10219

```

Dialup

```

28000 INPUT "NUMBER TO DIAL?"; I$
28010 PRINT D$; "PR#": SN
28020 PRINT CHR$(17); I$
28030 POKE 2040 + SN, 9
28040 PRINT D$; "PR#0"
28050 PRINT D$; "IN#": SN
28060 POKE 1912 + SN, 138
28070 INPUT I$
28080 PRINT D$; "IN#0"
28090 INPUT "AGAIN? (Y/N)"; I$
28092 IF I$ = "Y" THEN 28000
28100 RETURN

```

The Date command could be superfluous if you are lucky enough to have a clock card. The Local command switches input/output so that it is exclusively to your keyboard. This prevents the astonishment of your being in the middle of entering and reading messages and having your modem answer the phone and put some confused person into the middle of your session. The Remote command merely allows the BBS to answer phone calls again. The Dialup command is a convenience so that you can call other systems without having to start the BBS running from scratch. (It can take several minutes to initialize when starting from the beginning.)

COMMAND PROCESSING

Well, you've answered the phone, so it's time to get and process commands. The following is a skeleton for you to fill out with your list of commands:

```

10270 GB=0: GOSUB 1000
10280 O$ = "THANKS FOR CALLING": GOSUB 90
10290 FOR I = 1 TO 1000: NEXT I: GOTO
10220
1000 O$ = C$ + "COMMAND"
1001 GOSUB 100
1010 GOSUB 290: IF LEN (I$) = 0 THEN
1000

```

contd.

```

1017 ZZ = FRE (0)
1018 GOSUB 950
1020 GOSUB 1100
1030 IF GB THEN RETURN
1040 GOTO 1000
1100 IF IS = "G" THEN G = 1: RETURN
1110 IF IS = "H" THEN GS = "HELP":
      GOSUB 600: RETURN
1120 IF .... (put other stuff here)

1199 OS = "SORRY, I DIDN'T UNDERSTAND.
      TYPE H IF YOU NEED HELP": GOSUB 90:
      RETURN

```

To see if you were reading carefully, I threw a couple more new things at you with that code segment. Just after getting the command (or just before it) is a good place to force Basic to perform a string garbage collection so it doesn't interfere with someone typing data in; the FRE (0) statement does this. There is another subroutine called to print out the help text. (Remember, I had promised earlier to give you this routine?) It is coded:

```

600 PRINT DS; "OPEN"; GS
610 PRINT DS; "READ"; GS
620 IS = ""
630 GET AS: IF AS < > CS THEN IS =
      IS + AS: GOTO 630
640 OS = IS: GOSUB 100
650 IF LEN (IS) > 0 THEN 620
660 PRINT DS; "CLOSE"; GS: RETURN

```

The routine assumes that a text editor similar to the Fullscreen Text Editor(s) was used to create the file. Any text file will work as long as it has an extra carriage return at the end to denote the end of file.

The above system will function fairly well as a BBS once fleshed out with appropriate routines for entering messages, reading messages, deleting messages and the like. You can test the whole system from your keyboard without having anyone call in. To run it as a BBS, it is useful to have a separate phone line - otherwise, people will be calling all hours of the night to use the system! (P.S. That's why the input routine throws away beeps - they were waking me up!)

ERROR SHUTDOWN

If your program has a bug, the disk has an I/O error, or you get a transient error in your hardware (this happens suprisingly often when running 24 hours a day, 7 days a week), an ONERR routine should capture and shut down the modem. Therefore:

```

5 ONERR GOTO 32000
32000 PRINT "SYSTEM ERROR - EMERGENCY
      SHUTDOWN":PRINT "ERROR ";PEEK (222)
32010 PRINT "AT STMT "; PEEK (218) + PEEK
      (219) * 256
32020 POKE -16251 + 16 * SN,0: IN#0:
      PR#0: END

```

The error number printed is either the DOS or the Applesoft error encountered. Do not ever modify and save your system to disk after it has been running unattended without reloading the program to memory from disk. Always keep backup copies of your latest changes. The POKE causes the phone to hang up. The IN#0 AND PR#0 will discon-

nect DOS.

ADVANCED MODEM HANDLING

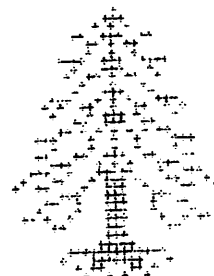
As an exercise to the more advanced readers, I'll leave the most interesting (and only non-Basic) problem remaining. The routines at 90 and 300 do not detect that anything is wrong if the user hangs up... So, the problem is to essentially duplicate those two routines using machine code that will go faster (no character garbage collections); detect missing carrier and modem errors and allow the BBS to reset if the other guy hangs up in the middle; detect control character inputs during outputs to suppress long printouts, pause the output, restart the output; and detect a ring while in local mode and give an option of answering immediately either in chat mode or with a startup of the system. To directly program the D.C. Hayes Micro-modem in this fashion, it is useful to refer to (3).

SUMMARY

Well, that's about all the hints. Remember to keep the headers in M\$ consistent with the disk. When you write out to disk, change it in memory. The rest, so to speak, is an exercise for the reader! For those that try to bring up a BBS, I invite you to keep me posted on work in progress via the WAP ABBS. Hopefully, this will stimulate some BBS experiments within the club, and perhaps some will branch out into message networks - having systems call each other up to exchange messages and files at night! The WAP ABBS software will be available shortly in the Club Library.

REFERENCES

- (1) Ward Christensen, Randy Suess: "Hobbyist Computerized Bulletin Board", BYTE Vol. 3, No. 11 (November 1978), pp 150-157.
- (2) D.C. Hayes Associates, Inc.: "MICRO-MODEM II OWNER'S MANUAL", Third Edition, October, 1979. Also including various application notes and manual updates, typically undated.
- (3) Motorola: "MC6850 Asynchronous Communications Interface Adaptor Data Sheet". Also various application notes.
- (4) John Moon: "The Sysop Replies", WASHINGTON APPLE PI, Vol. 3 No. 8 (September, 1981).
- (5) Walter Lee: "A Simple Fullscreen Text Editor", WASHINGTON APPLE PI, Vol. 3 No. 10 (November, 1981).



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COPYRIGHT AND COMPUTER PROGRAMS

by James M. Burger Esq. and Kenneth L. Hautman Esq.

I. INTRODUCTION

This article overviews two areas of copyright law and computer software. First, how to seek copyright protection for programs. Second, what should the copyright protect against.

The original copyright act was written under the Constitution's Copyright Clause to protect author's "writings." (Despite our favorite computer company's ad, the founding fathers did not have access to an APPLE][+). Thus, copyright law applies awkwardly, at best, to computer programs. Moreover, protection of programs is a developing area and new legislation is definitely needed.

There are three fundamental principles of copyright law: (1) the copyrightable part of a program is the programmer's "expression." The ideas or actual processes contained in the program are not. Thus, the concepts or algorithms on which the program is based are not protected by copyright law. (2) The program must be original, independently created, and not a copy. Copyright law can protect a program which is part original and part copied if the program as a whole is an original "expression." Moreover, the copied part cannot violate an existing copyright. (3) If the program meets (1) and (2) it should be entitled to protection from the moment it is in a fixed form that can be read, reproduced, or otherwise communicated directly or by machine.

Finally, an important word used in this article is "publication;" it is public distribution of copies by sale, gift, rental, leasing or lending.

II. COPYRIGHT PROTECTION

A. Notice

For protection a copyright notice must be placed on published materials. There are several form notices suggested by the U.S. Copyright Office. For international and domestic protection, however, the following form is frequently used:

Copyright © <Year of Publication>
<Owner's Name>

For programs, The Copyright Office recommends four places to put the notice: (1) with or near the title, or at the end of a "visually perceptible printout;" (2) displayed on user's terminal at sign on; (3) continuous on the terminal display; or (4) on a label permanently attached to the disk or other container holding a copy of the program. Locations (2) and (4) are most commonly used, while (1) is used on most printouts.

A modified program uses the copyright date of the original program if the modifica-

tions are "trivial." If the modified program has "distinguishable variations" it must use the date when it was published. To be safe, some programmers use two dates - the original date and the modified program's date. This is not necessary for trivial modifications. But what is or isn't "trivial" sometimes is hard to say. This is one of many problems the courts have not addressed for programs.

Trivial changes for books are fixing spelling, punctuation, grammar and typos. Thus, fixing similar bugs in programs would likely be trivial. But, adding a new section of coding is probably a "distinguishable variation;" the new date is needed. A test is whether the modifications are ones that you would not want copied.

B. Registration

Registration of the program with the Copyright Office is not required for protection. But, to bring an infringement action you must register. Modified programs containing distinguishable variations ("derivative works") need to be registered separately.

Filing consists of a \$10 fee, completing Copyright Form TX and meeting deposit requirements discussed below. (The Copyright Office classifies computer programs as "Nondramatic Literary Works." No one there has tried an SSI game).

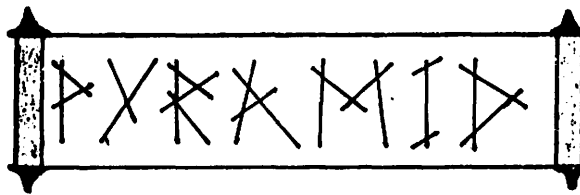
Most programs are published in machine-readable copy only, (i.e. disks). Therefore, you must deposit one copy of the "identifying portions" - first 25 and last 25 pages - of the program. However, anyone can go to the Copyright Office and look at those pages. But, copying them is not generally permitted.

Often we are asked, should a program be registered? As long as proper notice is on each copy, you could wait until, if ever, you wanted to file an infringement case. There are, however, some advantages to registering.

If you register within three months of publication, the Copyright Act permits statutory damages from \$250 to \$10,000 plus attorney's fees, even if you cannot prove damages. Otherwise, you are limited to an injunction and damages, if any, you can prove occurred after registration.

Also, a registration certificate, obtained within 5 years of publication is proof, on its face, of the copyright's validity. Moreover, registration protects the copyright even if you distribute many copies without a notice. You must, however, make a reasonable effort to add the notice right after the omission is discovered. Finally, early registration allows you to file an action immediately upon discovery of the infringement. You do not have to wait

contd.

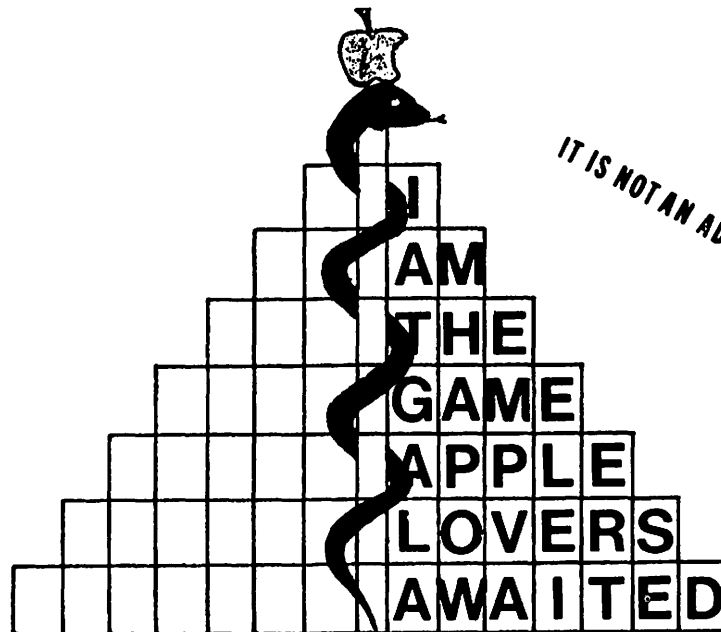


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until after registration.

There is a disadvantage to registering programs not widely distributed; ones, for example, that you might want to keep secret for your business only. Copyright registration may deprive you of the common law protection of trade secrets. This is not covered here. But if you have such a program, and are concerned about keeping it confidential, you might want to consult an attorney.

Much has been discussed about registering the object code versus the source program. Previously, the object code was most frequently filed. The Copyright Office, however, has recently been issuing an Official Guide Letter to persons submitting object code. This letter requests that source code be submitted. The Copyright Office decided to make such requests because the copyright examiners were allegedly finding it difficult to determine whether a program registered only in object code met the minimal "original work of authorship" test necessary to be copyrightable. Although, the Copyright Office will accept object code deposits, if the registrant submits a letter certifying that the program for which the object code has been submitted does constitute an "original work of authorship", many more persons are now registering source code. Other persons, not wishing to jeopardize a source program's trade secrecy protection, continue to file only object code.

It has been argued, however, that the object code cannot be "perceived" by or "communicated" to human beings and, therefore, it is not entitled to protection. In hard copy, the strings of 0's and 1's are meaningless to most human beings. Two courts recently considered if unloading and copying ROM object codes would be an infringement. One said yes, one said no; not much help! The Copyright Office has not taken a position. As a result, in an effort to be safe, some register both.

If the filed object code is copied, a strong argument can be made that there has been an infringement. But what if the undeposited source program is copied? This is another unresolved problem. It has been argued that registering a program's object code protects the unregistered source code. The closest analogy is book translations. It is an infringement, for example, to translate and publish, without permission, a copyrighted English book into French. Whether the transformation of source code to object code is a similar "translation" is difficult to say.

The extent of copyright law protection for programs remains in doubt, despite an attempt by Congress to clarify the law in 1980. Some experts are calling for new laws further qualifying the extent of copyright protection for programs. In future articles, we hope to keep you posted on such efforts.

III. INFRINGEMENT

A. What is Infringement

The essential element of infringement,

(assuming courts are willing to give the program protection), is obviously copying. In most cases it is impossible to show direct evidence of "copying." Usually, it is proved by showing: (1) access to the copyrighted work and (2) "substantial similarity". These two are interrelated. If clear proof of access to the copyrighted program is shown, then less proof of substantial similarity is required. Likewise, a showing of striking similarity requires less proof of access. There are two ways to show substantial similarity.

First is "literal similarity." A court will examine the amount of material copied and its qualitative importance. If, however, an idea can be expressed only in a more or less stereotyped form, then there is no infringement. Thus, if only a few variations of a coding can instruct a computer to perform a specific task, those limited variations would not be protected.

The second, "pattern" test, is less followed and difficult to apply to programs. Substantial similarity is found where a particular idea expressed in each work is treated the same, even though the coding is not "literally" the same. The pattern test becomes important where there is an unauthorized translation of a program from one computer language to another.

B. Authorized Copies

The Computer Software Copyright Act of 1980 permits the owner of a copy of a copyrighted program to make additional copies in limited circumstances. First, you can copy or adapt a program if it is "an essential step in the utilization of the computer program in conjunction with a machine." Thus, conversion from one language to another is most likely protected.

Second, you can make a backup copy. But the Act requires that copy's destruction when possession of the original is no longer rightful. Moreover, the copy can be transferred only if you sell the original. It is not clear, however, that keeping and using the copy while selling the original is an infringement.

Many software producers include licensing agreements with the sale of the original copy of the program insisting that all copies be transferred or destroyed when the original is sold. In fact, licensing agreements have become widespread. Some prohibit even making a backup copy. Making a backup copy under such circumstances would not infringe on the copyright. The software manufacturer would have to sue for breach of contract. The courts have not, however, examined software licensing agreements in this context extensively.

Finally, to copy a program is not an infringement if it constitutes "fair use." What is "fair use" is not an easy question to answer. Traditionally, there are four factors. (1) Purpose and character of the use of the copy (commercial versus noncommercial). (2) Nature of the copyrighted work. (3) Amount and substantiality of the use in relation to each work as a whole. (4) Effect of the use of the copy on the market for or on the value of the copy-

contd. on page 36

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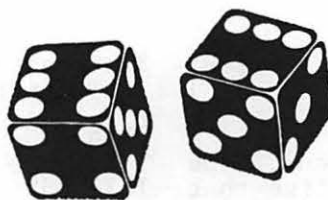
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A PASCAL TEXT SCREEN UNIT

by Ed Knepley

"Wow! Look at that output on the screen! Sure wish I had a copy of it! Too bad I didn't include output to the printer!"

If you have experienced this scene, you know how frustrating it is to realize that your choices at this point are to copy the data by hand, rewrite the output code of your program, or kick the dog. Well, better days are here. This article describes a Pascal UNIT which allows you to direct the screen text buffer to your printer. The feature is very handy in those situations where you aren't certain what, if anything, you'd like to have printed. Now you can review the output on the screen and obtain printed output on a screen by screen basis if and when you want - just press a key. You use only the default output (to the terminal) in your program, just as you would if you had no desire for printed output, and the UNIT takes care of the rest.

This UNIT is the text screen analog to the Hires graphics screen dump that I described in the October 1981 issue of WAP - Two Pascal Graphics Units.

THE PRINTSTUF UNIT

This is a Pascal Regular UNIT. It can be linked to any host program to provide the capability to dump any desired portion of the text screen to the printer. No previous provision for printer output is necessary in the host program; merely include calls to the TEXTDUMP procedure of this UNIT in the appropriate locations of the host program. If your program is running and you see something on the screen that you'd like to have printed, hit a key and you've got it. The screen in this case is the standard Pascal screen of 24 rows by 80 columns. It is not necessary to have an 80 column board or upper/lower case mods in order to obtain 80 column upper/lower case printout using this UNIT. The 80 column window and inverse/normal video upper/lower case features of Apple Pascal Version 1.1 are all that are needed. If you have an upper/lower case mod, you may have to change a few constants in your character code conversion portion of TEXTDUMP.

This unit consists of three procedures: TEXTDUMP, PRINTLINE and WHATOPRINT.

WHATOPRINT is used to identify what portion, if any, of the text screen to dump to the printer.

TEXTDUMP is called by the host program and has no parameters. TEXTDUMP performs three functions:

1. Scan the portion of the 1920 screen text buffer locations (row by row) which has been selected to be printed.
2. Determine the ASCII character content of each location.

3. Organize this data for output to the printer.

PRINTLINE sends the output to the printer.

TEXTDUMP and PRINTLINE work together to generate the printed output as efficiently as possible. (Efficient in the sense that no unnecessary blank spaces are "printed".) The UNIT produces an exact printed image of the text screen. If the entire screen is to be printed, this would involve the printhead sweeping across 80 columns of 24 rows - regardless of whether there is anything to be printed or not. After all, a blank (ASCII 32) is as valid a character as a non-blank, especially if it's a space (or spaces) separating non-blank characters, and so we cannot omit blanks indiscriminantly. At the same time it wastes a lot of time to sweep the printhead across an empty line (or even beyond the last printable character in a short line). (Watch VisiCalc - every blank is "printed".) All of this is taken care of in the two procedures. TEXTDUMP identifies blank lines and PRINTLINE disposes of these with a carriage return/linefeed combination. Furthermore, in the interest of saving both time and paper, nothing is printed beyond the last non-blank line on the screen. PRINTLINE scans all non-blank lines to determine the position of the last non-blank characters in the line and prints only to that point before returning to the left margin. This determination is accomplished by the SCAN function, a Pascal byte-oriented built-in function. This function scans a range of memory bytes looking for a single character target. In PRINTLINE the scan is from right to left and the target is the first non-blank character. The value of the function is the number of bytes scanned before the target character is found (the starting byte is counted as zero).

I might add that an "exact printed image" means just that. Whatever is on the screen gets dumped to the printer regardless of how it got there. Specifically, output data generated by the operating system, as well as output from your program, are printed if they are on the screen. Once something is in the text buffer the program has no way of knowing (or caring) how it got there, and off to the printer it goes.

The user identifies what portion of the screen is to be printed. The range is from all to none - and all points in between. When the UNIT is called from the host program, the cursor is moved to the upper leftmost corner of the screen and the program waits for input from the keyboard. Only six inputs are accepted; anything else rings the bell and waits for a valid character. The valid inputs are <ESC>, <CTRL-O>, <CTRL-L>, left arrow, right arrow and the letter D (either upper or lower case). The rectangular screen area to be

contd.

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printed is defined by moving the cursor to the upper left and lower right corners of the area, in that order. The cursor moves just as it does in the Pascal Editor, i.e. left and right by means of the arrows, and up and down by means of <CTRL-O> and <CTRL-L> respectively. The cursor wraps around the screen, top and bottom. When the cursor is positioned at the appropriate corner (upper left followed by lower right), the <ESC> key is pressed to have the position accepted (once at each corner). If the second corner is to the left of or above the first corner, the program interprets this to mean "DO NOT PRINT ANYTHING". This technique for identifying the area to print should be familiar to VisiCalc users. If the entire screen is to be printed, entering a "D" (for Default) will accomplish this without having to run the cursor all over the screen. The wrap-around feature makes the upper left and lower right most corners of the screen only two cursor moves apart (one UP, one LEFT in any order), so the default isn't really essential. Also, the repeat key works if you want to use it. Pressing <ESC> twice is the quickest way to return to the host program without printing anything.

After printing, the output from the host program resumes on the screen starting at the row immediately following the last position of the cursor. This could give an unexpected display if you are not aware of this. As an example, if "D" is the first character entered, the output will resume on the second row of the screen (the cursor is in the top row, remember). This will result in subsequent rows being overwritten (sometimes only in part if the new row is shorter than the old row). There are ways to alter this effect, so long as you are aware of it. In the previous example, if you want the output to continue following the current last line, move the cursor to the end of the last line before entering the "D". The host program can also compensate to provide the desired result; PAGE (output) and GOTOXY(0,23) built-in procedures would be good choices.

The code for this UNIT is straightforward. Regular UNITS and the SCAN function are described in the Apple Pascal language reference manual. A "PEEK" capability is implemented via the Pascal variant record structure - specifically the free-union variant. A nice writeup of this and other Pascal "tricks" is contained in the October 1981 BYTE magazine article "BITS AND BYTES IN PASCAL", and in Grogono's book "PROGRAMMING IN PASCAL". Text screen buffer address information can be found in the APPLE II Reference Manual. The relationship between the left and right halves of the screen can be seen in the code of TEXTDUMP. Text buffer page 1 is on the left half of the screen and page 2 is on the right. Character code conversion data is available in several of the Apple manuals, but is best determined through a little experimentation on your own particular configuration, particularly if you have an upper/lower case mod kit. I'm not certain, but I suspect that with one of these mods you're going to have to change one or more of the four code conversion constants found in the IF...IF ELSE statements in TEXTDUMP. It's a simple

change to make.

A TEST PROGRAM

=====

A sample program has been included to demonstrate at least one way to use the print UNIT. The program just writes characters to the screen and provides an opportunity to interrupt the output and print it (if desired). The Pascal KEYPRESS function is used to interrupt the program. This Boolean function returns a "true" if a key has been pressed on the keyboard since the program started or since the last time the keyboard was read (whichever is more recent). KEYPRESS does not read the character. The character entered to activate KEYPRESS is sitting in the keyboard buffer to be used by the next input statement which takes its data from the keyboard. In this case, that is the GETCHAR function in our UNIT. GETCHAR is looking for one of the six valid characters. If you use one of these six to interrupt your host program, GETCHAR will take it and use it as its first entry. For example, if you interrupt the program with a "D", a dump of the entire screen will begin immediately. A safer approach is to interrupt with any key except one of the six valid inputs. This will get you a "beep" and a fresh start. The main portion of this program just writes lines of characters to the screen. One word of caution - if you do not have an 80 column board be certain that the left hand screen (columns 0-39) is displayed before starting the print UNIT, i.e. before entering the "D" command to print the entire screen, or the second <ESC> to define the bottom/right corner of the print area. If for some reason column zero is off the left of the screen use the <CTRL-A> command to bring it back. Failing to do this gets the column address computation confused (to say nothing of the ordering of your columns coming off the printer). contd.

Copyright contd. from page 32

righted work. The fair use doctrine offers limited guidance. (In fact the U.S. Court of Appeals in California recently ruled that home videotaping for noncommercial purposes is not a "fair use").

This article is not meant to be an exhaustive treatment of copyright law and computer programs. Instead, it is an overview. If you have questions on matters not covered in this article you can reach Jim at (202) 822-1093, and Ken at 822-1230 (both during the day). Given the high value of software, and the ease of reproduction, programmers that intend to widely sell their programs should seek legal counsel before publishing their works. As a final personal note, we strongly support WAP's stand on copying. Personal copying for backup purposes should be, and in most cases is, permitted. But unauthorized copying for commercial purposes should not be condoned.

TOOLS1:PRNTSTUF.TEXT - PAGE 1

```

(*$S+*)
UNIT PRINTSTUF; (* DUMPS SCREEN TEXT BUFFER TO PRINTER *)

INTERFACE

  VAR
    TIGER : TEXT; (* PRINTER FILE *)

  PROCEDURE TEXTDUMP;

IMPLEMENTATION

  CONST
    MAXCOLUMN = 79; (* COLUMNS 0 THRU 79 *)
    ABLANK = ' ';

  TYPE
    TEXTARRAY = PACKED ARRAY [0..0] OF CHAR;
    TEXTTYPE = RECORD
      CASE BOOLEAN OF
        TRUE : (POINTER : ^TEXTARRAY);
        FALSE : (ADDRESS : INTEGER)
      END;
    LINEBUF = PACKED ARRAY[0..MAXCOLUMN] OF CHAR;

  VAR
    TEXTBUFF : TEXTTYPE;
    X, Y, PEEK, LINECOUNT, STARTROW, STARTCOL, ENDROW, ENDCOL : INTEGER;
    ROWADDRS : ARRAY[0..23] OF INTEGER;
    TEXTLINE : LINEBUF;
    BLANKLINE : BOOLEAN;

  (* DETERMINE PORTION OF SCREEN TO PRINT BASED ON USER POSITIONING OF CURSOR *)
  PROCEDURE WHATOPRINT(VAR STARTROW, STARTCOL, ENDROW, ENDCOL : INTEGER);

  TYPE
    SETOFCHAR = SET OF CHAR;

  VAR
    ROW, COLUMN, CORNER : INTEGER;
    DONE : BOOLEAN;
    DIRECTION, LEFT, RIGHT, UP, DOWN, ACCEPT, DEFAULT1, DEFAULT2 : CHAR;
    OKSET : SETOFCHAR;

  (* VARIABLE INITIALIZATION FOR PROCEDURE WHATOPRINT *)
  PROCEDURE INIT(VAR ROW, COL, CORNER: INTEGER;
    VAR DONE : BOOLEAN; VAR OKSET : SETOFCHAR);

```

TOOLS1:PRNTSTUF.TEXT - PAGE 2

```

  CONST
    L = 8;      (* LEFT ARROW *)
    R = 21;     (* RIGHT ARROW *)
    U = 15;     (* CTRL-O *)
    D = 12;     (* CTRL-L *)
    ESC = 27;   (* <ESC> *)
    DEF1 = 68;  (* ASCII D *)
    DEF2 = 100; (* ASCII d *)

  BEGIN
    LEFT := CHR(L);      (*****
    RIGHT := CHR(R);     (* LEGITIMATE *)
    UP := CHR(U);        (* KEYBOARD *)
    DOWN := CHR(D);      (* INPUTS *)
    ACCEPT := CHR(ESC);  (* -- *)
    DEFAULT1 := CHR(DEF1); (* -- *)
    DEFAULT2 := CHR(DEF2); (*****
    ROW := 0;
    COL := 0;
    DONE := FALSE;
    OKSET := [LEFT, RIGHT, UP, DOWN, ACCEPT, DEFAULT1, DEFAULT2];
    CORNER := 0;
  END; (* INIT *)

  (* READ KEYBOARD & ACCEPT ONLY CHARACTERS FROM THE "OK SET" *)
  FUNCTION GETCHAR(VAR OKSET : SETOFCHAR) : CHAR;

  VAR
    WHICHWAY : CHAR;
    OKINPUT : BOOLEAN;

  BEGIN
    REPEAT
      READ(KEYBOARD, WHICHWAY);
      OKINPUT := WHICHWAY IN OKSET;
      IF NOT OKINPUT THEN WRITE(CHR(7));
    UNTIL OKINPUT;
    GETCHAR := WHICHWAY;
  END; (* GETCHAR *)

```

```

  (* PASCAL DOESN'T HAVE A "MAX" FUNCTION; EASY TO BUILD ONE *)
  FUNCTION MAX(X, Y: INTEGER) : INTEGER;

  BEGIN
    IF X > Y THEN
      MAX := X
    ELSE
      MAX := Y
    END; (* MAX *)

```

contd.

TOOLS1:PRNTSTUF.TEXT - PAGE 3

```

(* FIGURE OUT WHAT CURSOR MOVEMENT WAS ENTERED VIA GETCHAR & "MOVE IT" *)
(* DO IT LIKE VISICALC. USE CURSOR TO DEFINE CORNERS OF AREA TO PRINT. *)
(* MAKE THE CURSOR MOVEMENT KEYBOARD ENTRY JUST LIKE UCSD SYSTEM EDITOR *)

PROCEDURE MOVECURSOR(DIRECTION : CHAR; VAR ROW, COLUMN : INTEGER;
                    VAR DONE : BOOLEAN;
                    VAR ENDROW, ENDCOL, STARTROW, STARTCOL : INTEGER);

CONST
  MAXROWS = 24;
  MAXCOLS = 80;

BEGIN
  (* WRAP THE CURSOR AROUND IF NECESSARY *)
  IF DIRECTION = UP THEN
    BEGIN
      ROW := (ROW - 1);
      IF ROW < 0 THEN ROW := MAXROWS - 1;
    END (* IF UP *)
  ELSE IF DIRECTION = DOWN THEN
    ROW := (ROW + 1) MOD MAXROWS;
  ELSE IF DIRECTION = LEFT THEN
    BEGIN
      COLUMN := (COLUMN - 1);
      IF COLUMN < 0 THEN COLUMN := MAXCOLS - 1;
    END (* IF LEFT *)
  ELSE IF DIRECTION = RIGHT THEN
    COLUMN := (COLUMN + 1) MOD MAXCOLS;
  ELSE IF (DIRECTION = DEFAULT1) OR (DIRECTION = DEFAULT2) THEN
    BEGIN
      (* DEFAULT TO FULL 24X80 PASCAL SCREEN *)
      STARTROW := 0;
      STARTCOL := 0;
      ENDROW := 23;
      ENDCOL := 79;
      DONE := TRUE (* SCREEN AREA TO PRINT HAS BEEN DEFINED *)
    END
  ELSE (* ONE OF THE 2 CORNERS OF THE RECTANGLE TO BE PRINTED IS HERE *)
    BEGIN (* ACCEPT *)
      CORNER := CORNER + 1;
      IF CORNER < 2 THEN
        BEGIN (* 1ST CORNER *)
          STARTROW := ROW;
          STARTCOL := COLUMN;
        END
      ELSE
        BEGIN (* 2ND CORNER; CAN'T BE LEFT OR ABOVE 1ST *)
          ENDROW := MAX(ROW, STARTROW);
          ENDCOL := MAX(COLUMN, STARTCOL);
          DONE := TRUE (* SCREEN AREA TO BE PRINTED IS IDENTIFIED *)
        END
      END (* ACCEPT *)
      GOTOXY(COLUMN, ROW) (* BUILT IN PROC; PERFORMS ACTUAL CURSOR MOVE *)
    END (* MOVECURSOR *)

  BEGIN (* WHATOPRINT *)

```

TOOLS1:PRNTSTUF.TEXT - PAGE 4

```

INIT(ROW, COLUMN, CORNER, DONE, OKSET);
GOTOXY(COLUMN, ROW); (* MOVE CURSOR TO UPPER LEFTMOST CORNER *)

REPEAT
  DIRECTION := GETCHAR(OKSET); (* WHERE TO MOVE THE CURSOR ?? *)
  MOVECURSOR(DIRECTION, ROW, COLUMN, DONE,
             ENDROW, ENDCOL, STARTROW, STARTCOL) (* MOVE IT *)
UNTIL DONE;

END; (* WHATOPRINT *)

(* PRINT NON-BLANK LINES & <CR>/LF FOR BLANK LINES *)
PROCEDURE PRINTLINE(VAR TXT : LINEBUF; NMBR, STARTCOL, ENDCOL : INTEGER);

VAR
  I, LASTCHAR : INTEGER;

BEGIN
  FOR I := 1 TO NMBR DO (* WRITE APPROPRIATE NUMBER BLANK LINES *)
    WRITELN(TIGER);

    (* FIND THE END OF THE LINE TO MINIMIZE PRINTHEAD MOTION *)
    LASTCHAR := ENDCOL + SCAN(-ENDCOL, <> ABLANK, TXT(ENDCOL));

    FOR I := STARTCOL TO LASTCHAR DO (* PRINT THE LINE *)
      WRITE(TIGER, TXT(I));
    WRITELN(TIGER)
  END; (* PRINTLINE *)

  (* SCAN THE TEXT BUFFER; DECODE CONTENTS; ARRANGE FOR PRINTING *)
  PROCEDURE TEXTDUMP;

  BEGIN
    UNITCLEAR(6); (* RESET PRINTER TO IT POWER-UP STATE; DOES THIS WORK? *)
    LINECOUNT := 0;
    BLANKLINE := TRUE;
    (* FIND OUT WHAT AREA OF THE SCREEN TO PRINT - IF ANY *)
    WHATOPRINT(STARTROW, STARTCOL, ENDROW, ENDCOL);
    FOR Y := STARTROW TO ENDROW DO (* ROW BY ROW SCAN OF DESIGNATED AREA *)
      BEGIN
        FOR X := STARTCOL TO ENDCOL DO
          BEGIN
            TEXTBUFF.ADDRESS := ROWADDRS(Y)+X MOD 40; (* SCREEN ADDRESS *)
            (* IF RIGHT HALF OF SCREEN THEN IT'S PAGE 2 *)
            IF X>39 THEN TEXTBUFF.ADDRESS := TEXTBUFF.ADDRESS+1024;
            (* DO A "BASIC - UGH SAYS WO" PEEK *)
            PEEK := ORD(TEXTBUFF.POINTER+103); (* CONTENTS OF BUFFER *)
            (* DECODE IT; UPPER/LOWER MOD CHECK THESE OUT!!!! *)
            IF PEEK>159 THEN
              TEXTLINE(X) := CHR(PEEK MOD 128) (* NON-PRINT CHARACTER *)
            ELSE IF (PEEK>127) AND (PEEK<155) THEN

```

contd.

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TOOLS1:PRNTSTUF.TEXT - PAGE 5

```

TEXTLINE[X] := CHR((PEEK+96) MOD 128) (* LOWER CASE *)
ELSE IF PEEK<31 THEN
TEXTLINE[X] := CHR((PEEK+192) MOD 128) (* UPPER CASE *)
ELSE TEXTLINE[X] := CHR((PEEK+64) MOD 128);
IF TEXTLINE[X] <> ABLANK THEN
BLANKLINE := FALSE (* JUST CR/LF FOR BLANK LINES *)
END; (* FOR X... *)
IF BLANKLINE THEN
LINECOUNT := LINECOUNT + 1
ELSE
BEGIN
PRINTLINE(TEXTLINE, LINECOUNT, STARTCOL, ENDCOL);
BLANKLINE := TRUE;
LINECOUNT := 0
END (* ELSE *)
END (* FOR Y... *)
END; (* TEXTDUMP *)

```

```

BEGIN
REWRITE(TIGER, 'PRINTER:');
FOR Y := 0 TO 23 DO (* COMPUTE COLUMN 0 ADDRESS FOR ALL 24 ROWS *)
ROWADDRSCYJ := 1024+128*(Y MOD 8)+40*(Y DIV 8)
END.

```

DEMO (TEST) PROGRAM

TOOLS1:SCRNPRNT.TEXT - PAGE 1

```

(*$!*)
PROGRAM PRINTEST; (* TEST OF UNIT TO DUMP TEXT SCREEN BUFFER *)
(* ALLOWS OUTPUT TO BE PRINTED WITHOUT EXPLICIT WRITE
TO THE PRINTER; JUST PRESS A KEY *)

```

```

USES APPLESTUFF, (*$U PRNTSTUF.CODE *) PRNTSTUF;

```

```

VAR
I, J : INTEGER;

```

BEGIN

```

FOR I := 1 TO 76 DO (* FILL THE SCREEN WITH OUTPUT FOR THE TEST *)
BEGIN

```

```

WRITE(I : 2, ' ');
FOR J := 1 TO I DO
WRITE(CHR( ORD('A') + ((I + J) MOD 50) ));

```

```

IF KEYPRESS THEN TEXTDUMP; (* EXECUTE TEXT SCREEN DUMP UNIT *)

```

```

WRITELN
END (* FOR I *)
END.

```

E
restarting...

```

1. C
2. DE
3. FFG
4. FCHI
5. GHIJK
ijk
jkl
klm

```

OUTPUT using
the DEMO
program

PEXecute what file? *pt

```

1. c
2. de
3. efd
4. fshi
5. shijk
6. hijklm
7. iijklmno
41. klm
42. lmn
43. mno
75. [\]t_ 'ab
76. \]t_ 'abc
56. hijklmno
49. ABCDEFGHIJKL M
50. BCDEFGHIJKL MN
51. CDEFGHIJKL MNO

```

← operating System Msg.

Program Output; several (5)
separate "text dumps";
#1 is full screen;
remainder are "partials"

```

49. ABCDE
50. BCDEF
51. CDEFG
52. DEFGH
49. ABCDEF
50. BCDEF
KLMNOPQRSTUWXYZ
LMNOPQRSTUWXYZ
abcde fshij klmnop
hdefgshij klmnop

```

```

49. ABCDEFGHIJKL MNOPQRSTUWXYZ [\]t_ 'abcde fshij klmnop
50. BCDEFGHIJKL MNOPQRSTUWXYZ [\]t_ 'abcde fshij klmnop
51. CDEFGHIJKL MNOPQRSTUWXYZ [\]t_ 'abcde fshij klmnop
52. DEFGHIJKL MNOPQRSTUWXYZ [\]t_ 'abcde fshij klmnop
53. FFGHIJKL MNOPQRSTUWXYZ [\]t_ 'abcde fshij klmnop

```

```

UVW
VWXY
WXYZI
XYZI [\]
YZI [\]

```

TID-BITS from NEWS1G

by Bernie Benson

This month let's clear up some fuzzy pictures on the APPLE II screen. There are two types of devices that you can use as a computer monitor, a standard video monitor or a regular television set with an RF (radio frequency) modulator. Either device should produce a sharp, steady, clear display of the APPLE 40 column text, or graphics output. There are as many as seven adjustments that can be made to clear up the picture.

We'll start with the APPLE. Inside on the large motherboard in the back right hand corner, just behind and to the right of the game I/O plug is a round flat knob (potentiometer), blue on our computer. This controls the level of the video signal or picture that the computer is continuously producing. The level of this signal greatly affects the quality of the picture. Different monitors and TVs unfortunately respond best to different signal levels. Initially, turn the knob clockwise almost all the way. All these adjustments can be made while the computer and monitor or TV is on. The screen should have some text displayed on it; listing any Basic program will be fine. All adjustments should be continued until the best possible picture for the moment is obtained. Previous adjustments should be repeated after each step is taken. Note: this first step is not necessary or effective if you are using an RF modulator or other device that plugs in somewhere other than the RCA type video out plug on the back of the APPLE.

An RF modulator is a small device that converts the video signal from the APPLE, to one that can be processed on a specific channel by an ordinary home TV set. If you are using a video monitor, no RF modulator should be used. Some RF modulators have a small adjustment screw on them. This usually controls the fine tuning of the TV channel the modulator works on. Making this adjustment is not that critical because the TV can also be fine tuned to the modulator. Some modulators get their power from the computer's power supply; others require batteries. Weak batteries are of course a major cause of a poor picture; they should be checked occasionally. All connections between computer, modulator, and TV must be tight and secure.

The last device to be adjusted is the monitor or TV. First, if you are using a TV set it must be set to the channel of your RF modulator. You must then fine tune the TV. This is very important and usually the biggest cause for a poor picture. Next, the horizontal and vertical hold knobs must be set so the picture is not rolling or jumping. They are found on monitors and TVs. Finally, the contrast and brightness can be set. I like to turn them both all the way down and then slowly bring up the brightness to a pleasing level. You may want a little more contrast, but not much. All dots on all letters should be visible

and displayed at the same intensity. The picture should not jump or weave and the letters should not look fuzzy or out of focus. Graphics often require some readjustment and tuning. Color is much more sensitive and requires more attention to adjustments at all levels, but usually worth the extra effort.

Take some time and experiment with your system. You will feel more comfortable with it as you learn more about it. Hopefully you will get a clearer picture of how the APPLE works and what it is displaying.

BUGS AND OTHER PARASITES

Steve Ryner submits the following 'Errata':

WAP March, 1982, p 33 (Change SRTDIR to PAKDIR!) - * 7007:234
* 7008:234
* 7009:234

does not work on my machine.

The following does work on my machine:

* 7007:EA
* 7008:EA
* 7009:EA

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LETTERS TO THE EDITOR

A PROTECTION KEY HINDRANCE ENCOUNTERED WITH THE ACCOUNTANT

by Richard Pratt

Dear Editor,

Prospective purchasers of The Accountant, the home finance program reviewed in the December 1981 Washington Apple Pi Newsletter, should be made aware that users must deal with a vendor furnished "protection key." This nuisance was not pointed out in the Newsletter review, and the potential hardware requirements imposed by the key have not been listed in Decision Support Software's monthly advertisements.

There is no hardware requirement if one's use of the Apple II is such that the protection key can be left all the time where it must be to run the program, namely, in the game I/O socket. However, many home finance program users will have game playing children. Of course, there still is no hardware requirement if one is prepared to remove the key from the game I/O and plug in paddles and visa versa when switching between accounting and gaming.

I personally feel it is irresponsible to suggest that it is proper for diverse family members to be constantly plugging and unplugging devices into and out of the Apple motherboard. Thus the need for additional hardware, in the form of an external game I/O extender or expander.

Unfortunately, besides costing money, most external game I/O extenders/expanders don't work with Decision Support Software's protection key. The company recommends use of EZ PORT by Versa Computing Inc.

I, for one, vowed I would not use The Accountant unless I could leave the protection key, game paddles, and the standard shift key modification all plugged in at once. In other words, my criteria are no plugging and unplugging, and no delicate pins lying around on the table. Here is one solution that meets these criteria:

Buy a Paddle-Adapple I/O expansion adaptor (apparently the only other extender/ expander that will support the protection key).

Route the standard shift key modification wire as instructed (to one of the S2C pins in the jumpers socket).

Make jumpers socket connections from G0C to G0A(B), G1C to G1A(B), G3C to G3A, S1C to S1B, and S0C to S0B (others are not needed and may cause problems).

Throw the switch to position "B."

Put the protection key in socket "A" and

the game paddles in socket "B," and leave them there.

WHEN LOADING THE ACCOUNTANT, HOLD DOWN THE FIRING BUTTON OF PADDLE No. 1 (the button may be released when you are asked for a password).

No special action is required to use the game paddles.

What price the software piracy protection desired by Decision Support Software! Surely there is a better way.

The three programs reviewed in the December 1981 Washington Apple Pi newsletter form the non-game cornerstones of our household's fledgeling software library. Super-scribe II is indeed superb, and Appleroots does its job as stated. Hopefully The Accountant, now that we have it up, will also prove to merit its rave review.

THE AUTHOR REPLIES

by Ernie Forman

Dear Editor,

I am responding to the above letter by Dick Pratt, that addresses the use of a protection key, that we, Decision Support Software (DSS), use to protect The ACCOUNTANT Finance Data Base System. Mr. Pratt states that the protection key was not mentioned in the review of The ACCOUNTANT that Dr. Bickel wrote for the December WAP Newsletter, nor has the key been described in DSS advertisements. There are three points that I would like to address concerning this issue, one specific to The ACCOUNTANT, one concerning advertising, and one about port/extendors.

At first, DSS used no copy protection at all. In response, DSS received constant pressure from dealers to protect the system. The obvious way was the easiest (and less costly); record the disk so that it could not be copied with standard copy programs. This, however, would be detrimental to our users. The ACCOUNTANT can operate with either one disk drive or with two, with separate program and data disks, or a single disk containing both programs and data. If the disk were protected, then users would be forced to place their data on a second disk; users with only one drive would have to swap disks occasionally as opposed to not at all. Furthermore, users could not easily back up the program disk. Nor could they modify programs if they so desired.

Some simple modifications have already been made by our users. DSS advertising states that Applesoft is required on ROM. One user with Integer in ROM but with a 16K

contd.

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board took it upon himself to purchase The ACCOUNTANT anyway, figuring that he could load Applesoft on the 16K board and be off and running. The ACCOUNTANT also uses the extra memory in slot No. 0, when it is available, to optimize performance. Because the programs were not protected it was a trivial matter for the user to resolve the conflict. Another reason for not protecting the disk is that DSS makes the file formats available to users so that any desired program customizing such as report formats, can be accommodated easily. This could not be done if the disk were protected.

DSS did not protect The ACCOUNTANT until a reasonable method could be found, in spite of the pressure from the majority of dealers for some sort of protection (there were some dealers who were opposed to protection as well). The reasonable method appeared when port extenders such as EZ PORT became widely available. Dealers told us that these extenders would become almost standard equipment on APPLE II computers. We tried the key with a port extender and were convinced that it presented no inconvenience. Our conclusion was confirmed in a January 1982 review of The ACCOUNTANT by SOFTALK editor Peter Olivari, who wrote that using the key "...is easy to do and should present no problem at all to the user."

Dick's letter is well intentioned. It suggests that the need for a key could have been pointed out in the WAP Newsletter review and in DSS advertising. The review was written by a user, not DSS. If my memory is correct, the review was based on an earlier version of The ACCOUNTANT that did not have the key protection nor did it have numerous of the other features that have been added.

Advertising is also relevant to this discussion since Dick's letter suggested that the use of a key for protection should be explained in our advertisement. I suspect that very few people could accurately guess how expensive it is to advertise in the national magazines. I certainly would not have guessed that the prices were so high before I received the publishers rates. The list price of an one-half page advertisement is typically in excess of \$1000, and costs more than \$2500 in that "big thick" magazine. Some discounts are available for yearly contracts, but even so, a company that includes just a one-half page black and white advertisement in three or four magazines a month, will pay more than \$50,000 for magazine advertisement alone. Because the cost for the limited space is so high, we obviously cannot include all the information that a prospective purchaser would like to know. Many of The ACCOUNTANT's unique features and performance statistics are not even listed in the advertisement. Thus, it is not too surprising that information explaining the use of a key is not in our advertisement. I do not recall seeing advertising for other products such as VisiCalc and DB MASTER state that the software came on protected disks.

The third point that I would like to address concerns the external game I/O ex-

tender/expandrs. This should be of general interest to club members whether or not they plan to use The ACCOUNTANT. Dick's letter states that not all "extenders" work with the DSS protection key. Yes, we too found out that some companies are selling extenders/expanders that are not what the name implies. One would think that an extender would extend ALL the connections on the game I/O port. Wrong! All of the extenders being marketed DO NOT. One would think that an extender with two, or even five sockets is better than an extender with only one. Not necessarily. An extender with one Zero Insertion Force (ZIF) socket, makes it extremely easy to insert and remove paddles, keys or whatever, with absolutely no stress on the pins. I strongly prefer that to an extender with two or more sockets that require a considerable amount of tugging and pushing to remove and insert equipment. The ACCOUNTANT's documentation comes with a recommendation for EZ PORT by Versa computing, which is a ZIF extender. We have made sure that such an extender is available in local stores (and I believe that the club has carried this product in the past). The DSS key will work with any extender that does just what they word extender implies. The quasi-standard pin No. 4 shift key modification will also work with the DSS key. Many people seem to have purchased the Paddle-Adapple expansion adapter and have called us when it did not appear to work with the DSS key. This adapter comes with jumpers and instructions for various configurations, one of which will work with The ACCOUNTANT. Dick's letter describes this configuration and nicely explains how it can be used with both the key and the paddles connected at the same time.

In concluding his letter to the editor, Dick suggests that "Surely there is a better way" (of protection). We, too, would like to find one. The answer lies in part with people's (dealers and users) expectations. CPM software is not protected. The ACCOUNTANT is being converted to run under CPM; that version will not be protected. But the APPLE segment of the microcomputer industry demands that software be protected. I have already discussed why DSS chose to use a key instead of copy protecting the disk. Many people have told us that they are very happy with this arrangement. The only significant difficulty has been with a very small percentage of users who happened to have defective game I/O ports (and did not even know it since the paddles do not use all the connections of the port). One user was delighted to find that his game I/O port was defective before his warranty expired.

I have explained the pressure for software protection that exists in the APPLE environment and why we feel that a key is better for our users than copy protected disks. I welcome club member's comments and suggestions that may help us find "a better way".

by Duncan Langford

The standard - tiny - button must have caused everyone a sore finger or two. It's just too small. Commercial paddle replacements have attractive 1/2" buttons, but they're costly. Changing buttons is the answer.

- 1) A screwdriver, for the screw under the paddle
- 2) A soldering iron
- 3) Solder
- 4) A small ROUND file
- 5) Some grips, or a small spanner
- 6) Two new buttons; Radio Shack 275-609 do just fine.

You'll see the existing button has two wires soldered to it; touch the solder with your - hot - soldering iron, to disconnect the wires. Remove the old button. Lever off the control knob; remove the variable resistor.

Fit the button, tightening down the fixing nut. Solder the two wires back onto the terminals of the button; it doesn't matter which way round they go. Reassemble the bits you took off; repeat the process on the second paddle.

Also, here is a "little quickie" to try:

The flashing "space" flashes at the same rate as the GET, and hides it from view. Looks neater! &

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SOFTVIEWS

by David Morganstein

AMPERSOFT (Author: Cornelius Bongers)

C. Bongers should be a familiar name to many APPLE owners, especially those who are subscribers to APPLE related magazines like A.P.P.L.E. and NIBBLE. Cornelius has been sharing his creative talents with us all for a long time. This is his first commercial product; it is a collection of several truly valuable utilities for the APPLE user. These utilities are for the basic programmer, novice or expert, who has a computational problem to solve and results to display. (Many commercial utility packages are for the very sophisticated programmer, perhaps requiring the use of machine language. This package can be easily and effectively used by any Basic programmer.)

All of the utilities are invoked with the "mysterious" Applesoft & command. I say mysterious only because it is a very useful though practically undocumented (in the Applesoft Manual) command. Actually, it is well documented in the Apple literature, perhaps because the Apple manual says so little about it. Quite simply, the & is a path into a machine language program. When the Applesoft interpreter sees an "&" as the first character of the line, it does a JSR (jump to subroutine) to the hex location \$3F5 (decimal 1013). Here, the machine language programmer puts a JMP (jump) to wherever he desires. The user supplied routine is terminated with an RTS (return from subroutine) which brings the APPLE back to the line after the "&". While the above comments are of interest to understand how the AmperSoft utilities work, you need know nothing about machine language to use the utilities. They are as easy to use as (yes, here it comes...) Apple Pi.

First, let's summarize the new & commands that are added to Applesoft when you boot up the AmperSoft disk.

&-Memory. Moves the DOS onto a 16K memory card, adding about 10K of RAM for use in Applesoft.

&-Directory. (Not a true & command) Changes the CATALOG to display a unique symbol for each file. The files can later be accessed using just the symbol for the file name.

&-Print. One of Applesofts weakest areas is its print display. This command allows all the power of the well known PRINT USING command found in other Basics.

&-Sort. Machine language array sorting routine for numbers or strings.

&-Matrix. Adds powerful matrix functions like inversion and multiplication by reference to the array name only. No more unsightly and time-consuming nested DO-loops.

&-Store/Recall. Provides for very fast storage and retrieval of numeric arrays. Similar to the cassette commands, only works to disk using the array name and a user supplied file name.

Now for a few details about each of the added commands. &-Memory is not really a command, nor is &-Directory. After booting the AmperSoft disk, the DOS is moved onto an existing 16K card, freeing up valuable RAM. If you need access to Integer Basic, a RAM version is supplied which loads at \$A000. The &-Memory adds one new command, PADDR which displays the start and length of the most recently loaded Binary file, and removes one command, the INIT. If you need to initialize a diskette, you will have to re-boot with a standard DOS disk. Since a modified DOS is in use, many of the standard utilities like FID, MUFFIN, COPYA, etc., will not work properly. C. Bongers has included patches to all these so you will not lose them!!!

The &-Directory changes the CATALOG command to display a unique single character next to each file name. The files can be referenced by using the symbol as an abbreviation. (This feature does not apply to the DELETE, OPEN, SAVE OR BSAVE commands. Since these commands replace old version of files, abbreviations could be dangerous anyway...)

The &-Print is one of the best features, as anyone who has ever computed and printed data with Applesoft will discover. If you are familiar with the PRINT USING command available on some Basics, such as Microsoft MBASIC, or if you have ever used Fortran format statements, then you know how important this feature is. By supplying a string variable containing a display format, numbers can be displayed right justified with specified numbers of decimal places, in exponential notation, rounded, with leading "\$"s, or with embedded commas. Whew!!! Thats not all...strings can be right-justified or centered.

An example usage as shown in the accompanying manual:

```
A$="NO##.## TEST # RESULT #.## ^^^ MONEY  
$###.###.##"  
defines the display format.
```

The Basic command:

```
& PRINT USE A$;1,2,3,4000
```

results in the following display:

```
NO 1.00 TEST 2 RESULT 3.00E+00 MONEY  
$ 4,000.00
```

The # is used to specify numeric fields. "##.##" says use two digits to the left and right of the decimal point. The "^" requests the output in scientific notation. We all understand the "\$"...

contd.

As a statistician, (C. Bongers' profession as well) I often use matrices to manipulate numeric data. Several more-sophisticated Basics have built-in matrix manipulation routines. Now I do too!!! With commands as simple as $A=INV(B)$, I can invert B and store the results in A. $A=B+C$ will add conformable matrices together without the need for loops and indices. Other matrix functions included are: setting up an identity matrix, taking a transpose, finding the minimum, maximum or absolute maximum, and printing a matrix contents.

Many people have used the Ampersort routine to quickly sort one and two dimensional arrays at machine language speeds (1000 items sorted in several seconds). The & SQR command is part of this package and allows for easy sorting in the same way. An often needed capability is to access an array in the original order or in a sorted order. This feature is included. By sorting on the second column of an array which contains the original index order in the first column, the indices are retained. After this, the array can be accessed using the sorted indices. The two dimensional sort is limited to an array with many rows and only two columns, column zero and column one. In this case, the second column only is sorted. This feature with some added code does allow you to obtain a sorted version of a general two dimensional array of any size permitted by memory limits.

If I have any suggested changes at all regarding this package, it is in the brevity of the manual. The manual is completely adequate for learning how to use the utilities provided. However, I would like to have seen a few words about the "&" command since many users of the package may not know about it. Most of the utilities have been published before so the source code is readily available to those of us with extensive libraries. I would like to have seen the source code included as well. Yes, it would have lengthened the manual. I believe the educational value would have been worth it, though.

I rate this package very highly. It can be obtained from Micro-Sparc Inc., Box 639, Lincoln, MA. 01773 for \$59.95. (617) 259-9710.

"NIGHT MISSION" PINBALL (Author: Bruce Artwick)

For anyone who has played the excellent pinball simulation, Raster Blaster by Bill Budge, the question "How could you beat that?" comes to mind. Bruce Artwick has his answer: include a 16 page manual describing the game parameters which are user definable; allow the user to set up tournaments with varying degrees of difficulty for the game; and include a "save high score" to disk option.

The game theme is a WWII night bombing run and the layout contains a bomb release line and dive bomb chute. Up to 4 balls can be in motion simultaneously, and up to 3 can be captured in the dive bomb chute. The user can adjust factors such as gravity, bounciness and stickiness to create a

variety of effects. The display includes five bumpers, seven standup targets, nine rollover targets and two spinners. The game is designed for competitive play and adjustable format. A save high score and defined mode feature makes competitive play easy.

The adjustable parameters include: balls per game, inclination, spinner friction, tilt effect (yes by hitting keys on the left side of the keyboard you get tilt left, keys on the right side give the opposite tilt), ball speed, sound on/off, keyboard flipper delay and dozens of others.

For the novice pinball player, a short glossary of pinball terms is contained in the manual.

The color is excellent, the display realistic. The flippers can be controlled from the paddle buttons or from the keyboard. If you get exhausted and need a rest, type "!" to freeze the play.

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Apple III

APPLESEEDS CORNER

APPLESEEDS OFFICERS

PRESIDENT - David Stern
VICE PRESIDENT - Brian Van Flandern
LIBRARIAN - Mike Forman

REVIEW

Program Name	HORIZON V
Author	NASIR GEBELLI
Publisher	GEBELLI SOFTWARE
Cost	\$34.95

APPLESEEDS

Appleseeds is a group of kids who meet during the monthly WAP meeting. Our meetings consist of a speaker presentation (first 30 minutes), and discussion of general points of interest. If you have special knowledge in a topic relating to the APPLE and would like to give a presentation for Appleseeds, please contact David Stern at 881-2543.

Rating Scale

A - Highly Recommended
B - Recommended
C - Average
D - Terrible

Horizon V is a version of "Battlezone" for the APPLE. While the game is not an exact copy of Battlezone, it is the closest (and the only) game for the APPLE resembling it. The game consists of many levels. Passing from level to level is not so easy. First, you have to find the time tunnel. This is accomplished by using the directional markers on your control panel (top of the screen). Then stay in one place for about 5 seconds. You will find yourself in the time tunnel. After shooting quite a few of the G-Bellians, you leave the time tunnel and find yourself in a strange place. Large circles are advancing toward you. They can't hurt you, but you must stay inside of them if you are to dock. The game has beautiful graphics and excellent sound, the usual trademarks of Nasir's work. I rate this game as an "A".

David Stern

WE ARE NOT ALONE

I was very happy and a bit surprised last month when I was handed the current issue of "sNAKs", the monthly newsletter of the Newton Apple Kids (NAK). It had several game reviews, an article on local (Newtonville, Massachusetts) computer fairs, and a Hex-Dec, Dec-Hex conversion program. This fine program, written by NAK's Vice President is listed in this issue of Appleseeds Corner. Appleseeds would like to thank Raines Cohen, the President of NAK, and Richard Stoddart, the Vice President of NAK, for sending us their newsletter. We hope to hear from them soon.

David Stern

LIBRARY

The Appleseeds library is growing rapidly. We now have a total of 10 programs!

This month's program was written by Richard Stoddart, the Vice President of NAK (see "We Are Not Alone").

Program Name	Hex-Dec, Dec-Hex Converter
Author	Richard Stoddart
Language	Applesoft

LIST

```

1  HOME
10  CLEAR : PRINT "DEC-HEX (D) OR HEX-DEC (H)": GET R$: IF R$ = "D" THEN 1
    5
12  GOTO 200
15  INPUT "DEC";X
20  N = 16:S = N ^ 2:C = N ^ 3
30  HOME
40  A% = X / C
50  B% = (X - A% * C) / S
60  C% = (X - A% * C - B% * S) / N
70  D% = X - INT (X / N) * N
80  A% = A% + 176 + 7 * (A% > 9)
90  B% = B% + 176 + 7 * (B% > 9)
100 C% = C% + 176 + 7 * (C% > 9)
110 D% = D% + 176 + 7 * (D% > 9)
120 T = T + 13: IF T = 13 OR T > 27 THEN PRINT :T = 1
130 HTAB T + (X < 100000) + (X < 1000) + (X < 100) + (X < 10)
135 VTAB 12
140 PRINT X;"=";"$"; CHR$(A%); CHR$(B%); CHR$(C%); CHR$(D%): PRINT

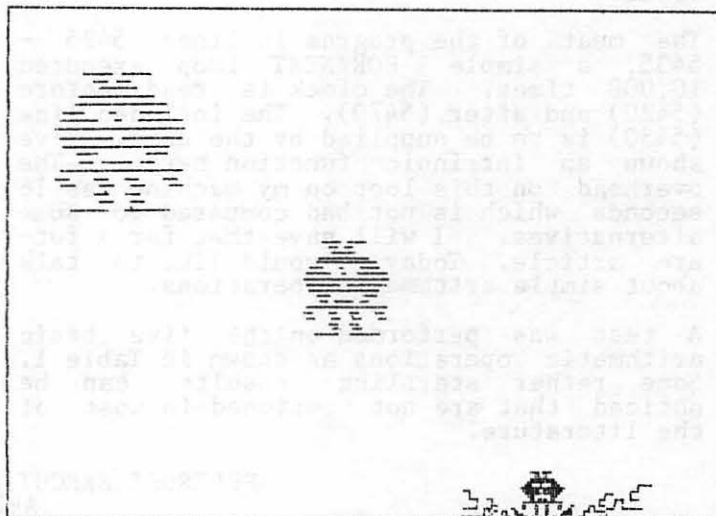
```

contd.

```

150 GOTO 10
200 HOME : INPUT " HEX:$"; XZ$
205 T = 0
210 NC = LEN (XZ$): IF NC = 1 THEN XZ = CHR$ (48) + CHR$ (48) + CHR$ (
    48) + XZ$
230 IF NC = 2 THEN XZ$ = CHR$ (48) + CHR$ (48) + XZ$
235 IF NC = 3 THEN XZ$ = CHR$ (48) + XZ$
240 IF NC = > 5 THEN PRINT "TOO BIG!! TRY AGAIN": GOTO 200
250 FOR XYZ = 4 TO 1 STEP - 1
260 V$ = MID$ (XZ$, (XYZ), 1): V = ASC (V$)
270 IF V = 48 THEN L$ = "0000" + L$
275 IF V = 49 THEN L$ = "0001" + L$
280 IF V = 50 THEN L$ = "0010" + L$
285 IF V = 51 THEN L$ = "0011" + L$
290 IF V = 52 THEN L$ = "0100" + L$
295 IF V = 53 THEN L$ = "0101" + L$
300 IF V = 54 THEN L$ = "0110" + L$
310 IF V = 55 THEN L$ = "0111" + L$
320 IF V = 56 THEN L$ = "1000" + L$
330 IF V = 57 THEN L$ = "1001" + L$
340 IF V = 58 THEN L$ = "1010" + L$
350 IF V = 59 THEN L$ = "1011" + L$
360 IF V = 60 THEN L$ = "1100" + L$
370 IF V = 61 THEN L$ = "1101" + L$
380 IF V = 62 THEN L$ = "1110" + L$
390 IF V = 63 THEN L$ = "1111" + L$
397 IF V > 70 OR V < 48 THEN 200
400 NEXT XYZ
410 FOR XZZX = 16 TO 1 STEP - 1
420 ER$ = MID$ (L$, (XZZX), 1): MUL = MUL * 2: IF MUL = 0 THEN MUL = 1
430 IF ER$ = "1" THEN T = T + MUL
440 NEXT XZZX
450 PRINT "$"; XZ$; "="; T
460 GOTO 10

```



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IT'S ABOUT TIME AND YOUR FAVORITE MICRO

by W.R. Simpson

There have been a lot of articles on how to save execution time by trimming down statements, or performing alternative ways of calculating, but I have not seen a summary of actual executions for comparisons. Being inventive, and having an available Thunderclock, I decided to try to generate these for myself. The listing is enclosed for those with similar equipment and inclinations. And here is a rundown on how it works.

The meat of the program is lines 5425 - 5435, a simple FOR/NEXT loop executed 10,000 times. The clock is read before (5420) and after (5470). The included line (5430) is to be supplied by the user. I've shown an intrinsic function here. The overhead on this loop on my machine was 16 seconds which is not bad compared to some alternatives. I will save that for a future article. Today, I would like to talk about simple arithmetic operations.

A test was performed on the five basic arithmetic operations as shown in Table 1. Some rather startling results can be noticed that are not mentioned in most of the literature.

1. Integer Computation takes the same amount of time (approximate) regardless of whether they are done with variables (i.e., $A = I\% * J\%$) or constants (i.e., $A = 2 + 3$). This can be noted in the Integer column of every operation for each of the tests. In fact, if it were not for division, the numbers would have hardly changed.
2. Real variables are really faster than real constants with operations. Really, at 2 or 3 to 1 as shown in the Table.
3. Real variables compute as fast (approximately) as integers. This is a real surprise.
4. Do not exponentiate unless you have to. The table is extremely clear on this. For example, $2 \wedge 3$ would be better off as $2 * 2 * 2$.

These values, of course, will change for bigger, more complex programs, but their relative value should remain the same. I hope to examine Integer Basic, as well as assignment statements, intrinsic functions and others in future articles.

APPLESOFT EXECUTION TIMES - SECONDS
TABLE 1

OPERATION	TEST A		TEST B		TEST C	
	INTEGER	REAL	INTEGER	REAL	INTEGER	REAL
+	44	121	46	81	47	40
-	46	122	47	82	47	40
*	53	139	54	99	55	58
/	61	144	68	102	70	60
^	514	579	503	544	510	499

LIST TEST A = CONSTANT (OPERATION) CONSTANT
TEST B = VARIABLE (OPERATION) CONSTANT
TEST C = VARIABLE (OPERATION) CONSTANT

NOTE: EXAMPLES: INTEGER CONSTANT 3
INTEGER VARIABLE I%
REAL CONSTANT 4.2
REAL VARIABLE X

```
5200 D$ = CHR$ (4)
5410 A = 1.4:X = 34.2:Z = 54.7:Y =
      - 18.2:I% = 5:J% = 14:Q = 4
5415 Q$ = "HI":R$ = "LONG ASCII ST
      RING FOR TESTING OF EXECUTION
      TIMES"
5420 PRINT D$"PR#3": PRINT D$"IN#
      3": INPUT " ";T1$: PRINT D$"P
      R#0": PRINT D$"IN#0"
5425 FOR I = 1 TO 10000
5430 A = ATN (Z)
5435 NEXT I
5470 PRINT D$"PR#3": PRINT D$"IN#
      3": INPUT " ";T2$: PRINT D$"P
      R#0": PRINT D$"IN#0"
5500 X1 = VAL ( RIGHT$ (T1$,6))
5505 T1 = X1
5510 X2 = VAL ( RIGHT$ (T2$,6))
5515 T2 = X2
```

```
5530 X1 = VAL ( MID$ (T1$,10,2))
5535 T1 = T1 + 60 * X1
5540 X2 = VAL ( MID$ (T2$,10,2))
5545 T2 = T2 + 60 * X2
5560 X1 = VAL ( MID$ (T1$,7,2))
5565 T1 = T1 + 3600 * X1
5570 X2 = VAL ( MID$ (T2$,7,2))
5575 T2 = T2 + 3600 * X2
5580 DT = T2 - T1
5582 DH = INT (DT / 3600)
5583 DT = DT - 3600 * DH:DM = INT
      (DT / 60):DT = DT - 60 * DM
5590 PRINT D$;"PR#1"
5595 LIST 5430
5596 PRINT SPC( 20);" TOOK "DH"
      HRS "DM" MIN "DT" SEC"
5600 PRINT D$;"PR#0"
```

HANDY ACCESS TO INTEGER LANGUAGE

by Boris Levine

APPLE users who arrived in the era of Applesoft-in-ROM may be missing the good programs in the Washington Apple Pi library because they are in Integer Basic. This article describes a way to get that capability conveniently and at little cost.

Do two things:

First, get a copy of the program called "Integer Basic-Disk". This is on WAP Library Disk 14. NOTE: it goes into RAM and it's in binary, which makes it sort of neutral. BLOAD it, then BSAVE it on an available disk, as follows:

```
BSAVE INTEGER BASIC-DISK,A2048,L5305.
```

Don't forget the address A and length L!

Next, write a little reminder program in Applesoft. The one I wrote for this purpose is at the end of this article. Give it a title like "Integer Instructions" and save this program also. Since the title "Integer Instructions" is in Applesoft, it will appear that way in the Catalog, and will be instantly accessible.

Speaking of Catalog, note that when you boot a disk which is entirely in Integer you will get the error message, "LANGUAGE NOT AVAILABLE". Don't be intimidated! Just type in "CATALOG" and you will get the listing anyway.

Now, to run an Integer-language program, run "Integer Instructions" and follow them. By the way, it is handy to have these two programs SAVED to each disk that has a lot of Integer programs on it.

This Integer Basic-Disk program is surprisingly effective; it will even handle programs which use 30 to 40 sectors, like some programs on the System Master disks.

It does have some limitations. One is that it will not work with programs which must have Integer in ROM. Another is that it occasionally gets stubborn when going from one program to another and gives out with an error message like "PROGRAM TOO LARGE. OUT OF MEMORY". After making some tests, I found that this was just pretense. Simply re-boot the "Integer Basic-Disk" program and it will accept the next program.

About forgetting the address: If you forget it, at least remember that you can find help on page 144 of the DOS Manual, under "DOS Entry Points" (same page number for both 3.2 and 3.3). The instructions for getting the address and length of a BLOADED binary program are there. For example, on a 48K APPLE you can get the address by typing:

```
PRINT PEEK (43634) + PEEK (43635) * 256
```

and the length by typing:

```
PRINT PEEK (43616) + PEEK (43617) * 256
```

The reminder program below is a little longer than absolutely necessary because it includes relevant documentation.

```
50 HOME
55 ?::
60 ?"**** INTEGER INSTRUCTIONS ****"
70 ?
100 ?"THESE ARE INSTRUCTIONS FOR USING THE
    'INTEGER BASIC-DISK' PROGRAM."
110 ?::
120 ?"FIRST, MAKE SURE THAT 'INTEGER BASIC-
    DISK' PROGRAM IS ON THE DISK YOU ARE
    USING. IF NECESSARY, CHECK THE
    CATALOG."
130 ?"NEXT, TYPE:"
135 ?::" BRUN INTEGER BASIC-DISK"
140 ?::?"AND PRESS RETURN KEY"
145 ?::
150 ?"WHEN PROGRAM IS LOADED IT WILL SHOW
    THE INTEGER CURSOR >"
155 ?
160 ?"NOW LOAD AND RUN DESIRED PROGRAM"

200 REM FOR BSAVE, THE ADDRESS IS A2048,
    L5305.
```

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FAN LETTER

by David Walker

Dear Dr. Wo:

This is a fan letter.

I have been studying with great interest your program "Minifiler" in the collection "INSIDE WASHINGTON APPLE PI". Indeed, after one pass through your Pascal columns, I rushed off my application to join Washington Apple Pi, to be sure of seeing future installments.

"Minifiler" interested me particularly because I have been working at various parts of a routine myself. I was on the point of sending to Val Golding, for Call-A.P.P.L.E., a set of procedures showing how to read the system date and disk directory from a running program, when I discovered that you had already done the job comprehensively. You have saved me a lot of work and have provided a real treasure-trove of information and ideas for future investigation.

In particular, I like your technique for using whatever free memory is currently available as the transfer buffer for the "Krunch" routine, without having to know in advance how much memory will be available. That solves precisely the problem that faced me when I observed the incredible slowness of my own, one-block-at-a-time, version of "Krunch".

What I hope to do now is adapt some of your ideas for use with my firm's APPLE ///. (If you haven't had a chance to work with APPLE /// Pascal, you have a treat in store. The APPLE /// keyboard alone is a very great pleasure to use with the Editor; and the system includes some satisfying touches, such as being able to set the Prefix to a drive number rather than a volume name. Of course a "Krunch" routine is superfluous with APPLE /// Pascal. It handles disk operations through SOS, which allocates free blocks non-contiguously, if necessary, rather like APPLE DOS.)

From experimenting, I have developed some fairly good working specifications of the APPLE /// Pascal directory and file-location structures; but it would be useful to have the full "factory" specification. If you ever get your hands on such a thing, I should very much like to see a copy. In return, if you have a use for information about APPLE /// Pascal, I can contribute what I have learned so far.

Meanwhile, I look forward to future installments of "Blaise Away".

David Walker

(Ed. Note: So do we, Dr. Wo.)

TUTORIALS

MORE WAP TUTORIALS BEING SCHEDULED

by Steve Stern

Based on the enthusiastic response to our club's tutorials to date, we intend to embark on an ambitious program of a tutorial every month or two as well as to examine the feasibility of a summer camp for our younger members.

TUTORIALS ALREADY SCHEDULED

A four session tutorial has been scheduled for Saturdays in May on Pascal to be taught by Dr. Wo. Unfortunately, this tutorial is almost full and registration will close soon.

As a follow-on to his highly successful tutorial on VisiCalc, Dr. Ernie Forman of George Washington University will teach an advanced tutorial on VisiCalc on Saturday, July 10, 1982, from 9:00 AM to 12:30 PM, in Room 2017A at USUHS, 4301 Jones Bridge Road (on the campus of the National Naval Medical Center), in Bethesda, MD. See the registration form at the back of this newsletter.

NEW TUTORIALS

We are considering the following as topics for future tutorials:

- (1) VISI FAMILY - VISIPILOT, VISITERM, VISITREND, VISIFILE
- (2) DB MASTER
- (3) SUPERSCRIBE || WORD PROCESSOR
- (4) ASSEMBLY LANGUAGE
- (5) FORTRAN - GOING FROM MAINFRAME TO MICRO
- (6) LOGO/PILOT
- (7) FORTH
- (8) INSIDE DOS
- (9) GRAPHICS

These tutorials will be held on Saturday mornings at USUHS with 15 to 30 participants. The fee will be \$15 for those bringing their APPLES with disk drives and monitors and \$30 for those not bringing APPLES. These fees include an appropriate demonstration disk containing tutorial materials.

VOLUNTEERS NEEDED

The success of this tutorial program depends on the availability of club members who will volunteer their time to teach these tutorials. Please contact Steve Stern at 881-2543 or Joe Silverman at 384-7176 if you can volunteer to teach a tutorial or wish to comment on the tutorial topics.

SUMMER CAMP

At the March meeting, the suggestion was made to establish a summer camp. Jay Thal and Joe Silverman will discuss this topic at the April meeting. Please contact Joe at 384-7176 or Jay at 244-3649 for further information.

WASHINGTON APPLE PI
MAIL ORDER FORM

Washington Apple Pi has a program library, and disks are available for purchase by anyone. The price to members is \$5.00 per disk and \$8.00 to non-members.

You may pick them up at the monthly meeting or have them mailed for \$2.00 per disk additional. (If you order five or more the additional charge will be \$10.00 total.)

If you plan to pick them up at the meeting, the order must be received by the 1st of the month, and must be paid in advanced.

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Volume 4	Games II	()	*Volume 184	Zyphur Riverventure	()
Volume 5	Games III	()	*Volume 185	Castle of Doom	()
Volume 6	Games IV	()	*Volume 186	Death Star	()
Volume 7	Games V	()	*Volume 187	Devil's Tomb	()
Volume 8	Utilities III	()	*Volume 188	Caves of Treas. Island	()
Volume 9	Educational I	()	*Volume 189	Furioso	()
Volume 10	Math/Science	()	*Volume 190	The Magic Kingdom	()
Volume 11	Graphics I	()	*Volume 191	The Tomb of Molinar	()
Volume 12	Games VI	()	*Volume 192	Lost Island of Apple	()
Volume 13	Games	()	*Volume 181	required with these disks.	()
Volume 14	IAC Utilities IV	()	DOS 3.3		
Volume 15	Games VII	()	Volume 100	Utilities A	()
Volume 16	Utilities V	()	Volume 101	Utilities B	()
Volume 17	Graphics II	()	Volume 102	Games A	()
Volume 18	Educational II	()	Volume 103	Merry Christmas	()
Volume 19	Communications	()	Volume 104	Business A	()
Volume 20	Music	()	Volume 105	FIG-FORTH/Utilities	()
Volume 21	Apple Orchard	()	Volume 106	Science/Engineering	()
Volume 22	Utilities VI	()	Volume 107	Games B	()
Volume 23	Games VIII	()	Volume 108	IAC 10 (Graphics)	()
Volume 24	Games IX	()	Volume 109	IAC 11 (Applesoft Tut.)	()
Volume 25	Utilities VII	()	Volume 110	Personal/Education	()
Volume 26	Stocks/Investments	()	Volume 111	Games C	()
Volume 27	Math	()	Volume 112	Utilities C	()
Volume 28	Planetfinder	()	Volume 113	Business B	()
Volume 29	Utilities VIII	()			
Volume 30	Games X	()	Pascal:		
Volume 31	Plot Utilities	()	Volume 301	PIG1:	()
Volume 32	Games XI	()	Volume 302	PIG2:	()
Volume 33	Accounting	()	Volume 303	PIG3:	()
Volume 34	Solar Tutor	()	Volume 304	PIG4:	()
Volume 35	Garden Management	()	Volume 305	PIG5:	()
Volume 36	Games XII	()	Volume 306	PIG6:	()
Volume 37	Utilities IX	()	Volume 307	PIG7:	()
Volume 38	Games XIII	()			
Volume 39	IAC VII	()			
Volume 40	IAC VIII	()			

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BACK ISSUES AND INSIDE APPLE PI MAIL ORDER FORM

BACK ISSUES

If you would like to order back issues of the Washington Apple Pi Newsletter, please check the appropriate space(s) below. Orders will be filled while the supply lasts. Next to each issue is a rough inventory of supply. The cost per issue is \$1.50 for 1980-1981 issues and \$2.00 for 1982, plus \$.50 postage. If you order five or more we will pay the postage (limited to U.S. only).

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INSIDE APPLE PI

"Inside Apple Pi" is a bound compendium of articles from the Washington Apple Pi Newsletters of 1979 and 1980. We do not plan to print any more of the original 1979 and 1980 newsletters, so this will be the only form in which most of them will be available for purchase. You may order by mail using the form below. Copies will also be available for purchase at our regular monthly meeting (at a slightly lower price than that quoted below because no postage necessary.)

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WAP TUTORIAL REGISTRATION

A WAP tutorial on advanced applications of VisiCalc will be taught by Dr. Ernie Forman, who is a Professor at George Washington University. It will be held on Saturday July 10, 1982, 9:00 AM to 12:30 PM, in Room 2017A, at USUHS on Jones Bridge Road (on the campus of the National Naval Medical Center) in Bethesda, MD. Check the ABBS and club phone for any changes in details.

The fee is \$15 if you bring an APPLE, disk drive and monitor; \$30 if you do not. The fee will include an appropriate library disk with VisiCalc files tailored to this tutorial.

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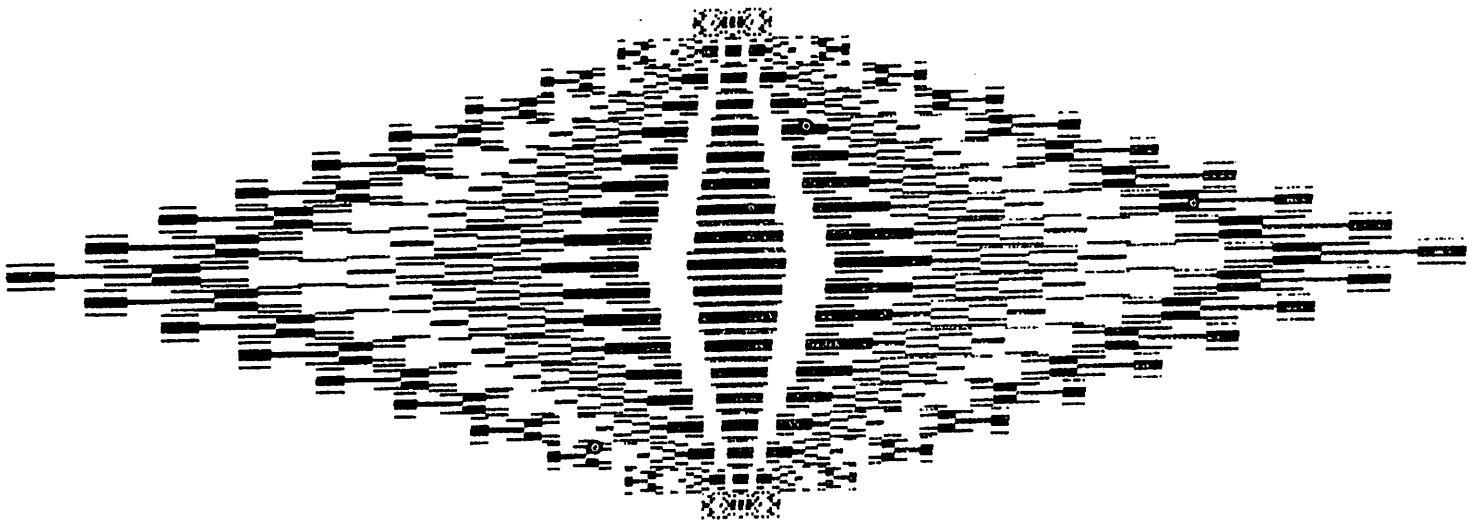
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Please return application and check made out to "Washington Apple Pi" to:

Stephen Stern
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ADVERTISING RATES

The following table shows our advertising rates for 1982. Our newsletter distribution is about 1700 copies, with more than 200 of these going around the country. If you would like to advertise please send camera ready ad copy in black and white (half tones are permitted, but no bleeds) by the 10th of the month to:

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