



mini'app'les

apple computer user group newsletter

Volume VI No 2

February 1983

CALENDAR	CALENDAR	CALENDAR	CALENDAR	CALENDAR
WHICH	WHEN	WHERE	WHAT	
Pascal Note 1	Wed Feb 2 7:30pm	Minnesota Federal 9th Ave S Hopkins	Regular Pascal Special Interest Group Meeting.	
St. Paul Branch - Note 3	Tue Feb 8 7pm-10pm	Minnesota Federal White Bear Lk Shp Ctr	Dan Mayer on DB Master	
Dakota County Branch	Tue Feb 8 7pm-10pm	St. John Neumann Chch Pilot Knob Rd, Eagan	General Meeting Note 7	
Officer's Note 5	Wed Feb 9 7:30 pm	Hugh Kurtzman's place	General club business	
Business Note 10	Thu Feb 10 7:00pm	Minnesota Sch of Bus's 11 S. 5th St., Mpls	Ron Androff, et al, on Income Tax Software	
Genealogy Note 11	Sun Feb 13 2.00pm	Minn Historical Soc. 690 Cedar St., St. Paul.	Minn Genealogical Soc Computer Interest Group	
REGULAR MINI'APP'LES Note 2 Map Inside	WEDNESDAY Feb 16th Prgm-7:00pm SIGs-8:00pm+	PENN COMMUNITY CENTER 84th & Penn Bloomington	Mark DeVries of Bi-Comm Systems will demonstrate PCI, Bi-directional device control and feedback over power lines.	
Investment Note 4	Thu Feb 17 7.00pm	Minnesota Sch of Bus's 11 S 5th, Mpls	Visicalc™ for Investment Stock Analysis. Chrys Zaglifa	
VisiCalc Note 9	Tue Feb 21 7.00pm	PBS 4306 Upton Ave S.		
Minnetonka Branch	Wed Feb 23 7pm-10pm	Minnetonka High Sch Cafeteria	Beginners, Business, Education and Graphics. Note 8	
Pascal Note 1	Wed Mar 2 7:30pm	Minnesota Federal 9th Ave S Hopkins	Regular Pascal Special Interest Group Meeting.	
Dakota County Branch	Tue Mar 8 7pm-10pm	St. John Neumann Chch Pilot Knob Rd, Eagan	General meeting Note 7	
St. Paul Branch - Note 3	Tue Mar 8 7pm-10pm	Minnesota Federal White Bear Lk Shp Ctr	Woody Woodward on The Graphics Magician	
Board Meeting Note 5.	Wed Mar 9 7:30 pm	First Devine Science Ch. 4401 Upton South	General club business. Meeting is open to all members.	
Business Note 10	Thu Mar 10 7.00pm	Minnesota Sch of Bus's 11 S 5th, Mpls	Storage Devices	
REGULAR MINI'APP'LES Note 2 Map this issue	WEDNESDAY Mar 16th Prgm-7:00pm SIGs-8:00pm+	UNIVERSITY MINNESOTA ST. PAUL Room B45 Bldg 412 Near State Fair	Dr John Tilleli on using the Apple to monitor intensive care patients in a hospital.	
Investment Note 4	Thu Mar 17 7.00pm	Minnesota Sch of Bus's 11 S 5th, Mpls	Compu Trac - Tentative	

Notes: (See page 2 for telephone numbers.)

- | | | | |
|--------------------|-------------------|------------------|----------------------|
| 1. John Schoeppner | 4. Eric Holterman | 7. Bob Pfaff | 10. Subir Chatterjee |
| 2. Chase Allen | 5. Ron Androff | 8. Martin Thames | 11. Bill DeCoursey |
| 3. Pete Halden | 6. Dan Buchler | 9. Mike Carlson | |



MINI'APP'LES

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INFORMATION

This is the Newsletter of Mini'app'les, the Minnesota Apple Computer Users' Group, Inc., a non-profit club. Articles may be reproduced in other User Groups' publications except where specifically copyrighted by author.

Questions

Please direct questions to appropriate board member or any officer. Technical questions should be directed to one of the Technical Advisers listed here.

Membership

Applications for membership should be directed to the Membership Co-ordinator. \$12 buys membership for one year. Members receive a subscription to this newsletter and all club benefits.

DOMs

The 3 most recent DOMs (Disk of the Month) are available at meetings for \$5/disk or any DOM may be ordered by mail for \$7.50/disk. Contact Software Sales coord'r.

Dealers

Mini'app'les does not endorse any specific dealers but does promote distribution of information which may help club members to identify the best buys and service. Consequently, the club does participate in bulk purchases of media, software, hardware and publications on behalf of its members.

Newsletter

Contributions

Please send contributions directly to the Newsletter Editor. Hard copy binary or text files are preferred, but any form will be gratefully accepted. Deadline for publication is the 1st Wednesday of the month preceding the month in which the item might be included. An article will be printed when space permits if, in the opinion of the Newsletter Editor, it constitutes suitable material for publication.

Advertising

Direct Advertising inquiries to our co-ordinator Eric Holterman at: 19S 1st St., B1704 Minneapolis, MN, 55401 612-332-8460

Circulation this issue: 1800

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ORDERING DOMs

A reminder that DOMs are available by mail at \$7.50 each. Send your order to:

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Usually the latest three DOM's are available at club meetings.

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ANNOUNCEMENTS

INVESTMENT SIG

by Eric Holterman

At our December meeting Rick Parker of PBL demonstrated The Personal Investor. The current version of the program aids the investor in news and quotation retrieval from Dow Jones, portfolio updating and record keeping of past transactions for tax and profit/loss purposes and limited assistance in analysis. It can also serve as a terminal program for services other than Dow Jones and for purposes other than investing. It accommodates all existing features on Dow Jones and new ones as they become available. Multiple portfolios, stock splits and partial sales of a given position are also handled. Holdings other than long positions in stocks and accumulation of dividend income are not part of the current version.

Rick indicated that an upgrade version is expected by the end of the second quarter which will include short positions, options, bonds, mutual funds and treasury bills. Files that can be accessed by VisiCalc will be used so that you can do whatever analysis you choose using VisiCalc.

We regret that we were unable to complete the hook-up with Dow Jones for part of his presentation. Hopefully we learn as we go and this won't happen again.

Since our January meeting date follows the newsletter deadline, a report on that meeting will be in the next issue.

Our February 17 meeting will be at 7:00 PM at the Minnesota School of Business, 11 So. 5th St. in downtown Minneapolis. Chrys Zaglifa will demonstrate the use of VisiCalc and VisiPlot/Trend in the analysis of security prices using different techniques such as oscillators, rate of change and moving averages. He will also show how to set up VisiCalc templates for analysis or other purposes. This is a "How to do it on your machine" meeting and will include comments on evaluating the results of your analysis.

Carefully check your March newsletter on the March meeting. It is tentatively planned to cover Compu Trac on March 17 at the Minnesota School of Business. Both location and subject may change.

Business SIG

by Subir Chatterjee

The Business SIG met on Jan 13, 1983 when Kathleen Leo and Brent Lewis presented Quick & Easy - a program generator that enables a non-programmer to create complex record keeping databases with large numbers of records. The programs, once written, do not require the generator to run. Instead, a complete turnkey system is created. The programs have the ability to create menus and 'Help' screens, in order that an inexperienced operator could use the system. Kathleen and Brent came to Quick & Easy via DB Master and dBase II - primarily because of speed, flexibility, and record size limitations. The programs run under CP/M. Our thanks to them for an excellent slide show (how about the Club buying a large screen monitor for the Business SIG?!) - it was quite the most professional presentation seen to date at the Business SIG.

The next month's program will be a topical subject - Taxes! The one thing we will NOT be covering is 'tax advice' - for that you will have to pay!! The program will review some different types of software, and so, if there is a package you are particularly impressed by, bring it along. Ron Androff will take us through HowardSoft's Tax Preparer to start out the meeting.

If there is any reader who is conversant with Business Graphics programs, I would be very interested in contacting you: I would like to include Business Graphics in a future SIG meeting. I can be reached on 330-7347.

Vice President

At the January board meeting, the club board received the resignation of Chase Allen from the office of Vice President of Mini'app'les. Chase has contributed much to the club and we will miss him as Vice President. However he remains on the board.



Announcements Continued

NOTE TO ADVERTISERS

by Eric Holterman

In the past we have asked that display ads that are less than a full page be submitted at 125% of final size. This was because we reduced the original newsletter copy in the production process. With our new printer, copy is utilized without reduction, so all ads should be submitted in final size. If you now have copy on file with us, we will adjust it to the proper size for you.

Please do not submit original artwork which has been prepared on heavy card stock. In such cases photostats should be submitted. We do not have facilities for making 'stats and it is difficult to integrate heavy card stock into a pasted-up master.

Following are the dimensions for standard ad sizes:

- Full page: 8 1/2 X 11 inches
- Half page: 8 1/2 X 5 (Horizontal)
- 3 3/4 X 10 (Vertical)
- Quarter page: 7 1/2 X 2 1/2 (Horizontal)
- 3 3/4 X 5 (Vertical)

The deadline for both classified and display advertising is the second Friday of the month preceding the month of publication. All questions should be directed to:

Eric Holterman (612) 332-8460
19 South First St. B1704
Minneapolis, MN 55401

Medical SIG

Anyone interested in forming a SIG for medical and psychological applications, please call Stewart Haight at 644-4375.

Genealogy SIG

The Genealogy SIG meets on the 2nd Sunday of even months at the Minnesota Historical Society.

Bylaws

The current bylaws will be reviewed at the general meeting in March, time permitting.

FIND OUT ABOUT THE COMPUTER CAMP REVOLUTION!



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Midwinter Madness

The Robbinsdale Amateur Radio club is sponsoring a combination computer/ham radio day on:

Saturday, Feb 26th, 1983,
8:30am - 2:30pm

at
Sacred Heart Church Auditorium,
4087 West Broadway,
Robbinsdale.

There will be a flea market of ham radio and computer things, retail exhibits and seminars on ham radio including interfacing radio to computers. A slide show or video tape of the Atlantic crossing on the HJEMKOMST will be included. Last year over 1000 persons attended.

For information Call 535-0168 (eve).





DOMs 18 thru 21

(Disks of the Month)

by Alan Peterman

This month we are creating not one, but FOUR diskettes of material. The programs are not new, but they are ones that seem to be in high demand by members who have heard of them and want to try them out. The 4 disks include DIVERSI DOS to enhance your disk operations (and some other I/O operations), FIRE ORGAN for graphics, and two parts of the EAMON system for adventurers.

DIVERSI DOS (DOM#18) is a modification of the Disk Operating System that has many features, which are fully covered in the extensive documentation that comes as part of the program disk. The heart (or at least the start) is a series of changes that speed up DOS operations including LOAD, WRITE and text file access. There are also some options to add a keyboard type-ahead buffer and even a print buffer using a RAM card. In addition there are options to load DOS into the RAM card and free up 10K more memory. As an editorial note, I am beginning to see more and more answers to the question of why one should have a RAM card and with the Revision E computer being 64K it seems that this will become the "standard" configuration. There are several unique things about DIVERSI DOS including the fact that it is a commercial program that is distributed free and licensed by sending in the \$25 fee if you decide you like it and want to use it legally. The creator, Bill Basham, should be credited with an unusual marketing scheme. There are a few things that you lose with this system, the main ones being that the DOS error messages will print only a code number instead of the full message, and if you use the keyboard buffer some PEEKS that poll the keyboard will not work.

DOM #19 is FIRE ORGAN, an exciting graphics/sound system that is written in a custom language called CEMAC. This disk is also a promotion (of a sort) by its creator, Brooke W. Boering. It will present you with a different graphic display for nearly any key you care to try pressing and most of these displays can be modified by the arrow keys or the game paddles (joystick). Most of these graphics should be viewed on a color screen for the full effect to be seen. Also on the disk are several binary files that are accessible with the BRUN commands to show you what the designers of the graphics had in mind when they wrote their 'scores'. After booting this disk, it is a good idea to hit the 'ESC' key to get the instructions.

DOM #20 and DOM #21 are part of the EAMON series. EAMON is an adventure game/system, written by Donald Brown, whereby one goes through adventures and builds up his fictional character. You MUST start with the Beginner's Cave (DOM#20) to get a character before trying any of the more advanced caves. At present I believe that there are about 15 different adventures available in the public domain.

EAMON MAKER (DOM#21) lets you create your own adventure. There are many possibilities of traps, mazes, room exits, and options available; you can create whatever you want. There is extensive documentation as part of the disk to tell you how to create these scenarios. I have been told that there is a contest from CALL A.P.P.L.E. for the best EAMON adventure and some sort of prizes. Also, at least one of our members has written a quite long and difficult EAMON adventure. If I get some requests for more of these EAMON adventures as DOMS, I will be glad to release as many as wanted!



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DAYTON'S



DAN ON PRINTERS

Selecting a Daisy Wheel Printer

by Dan Buchler

If you read the minutes in December's newsletter, you might have noticed that the club board authorized me to go ahead and find a printer suitable for producing the newsletter. The criteria which I used to select a printer are not too different from what I believe should be used by anyone who would want a letter quality printer for a small business or industrial application. Broadly, the criteria are:

1. Excellent print quality. The quality must approach that of typesetting.
2. High reliability. Service costs are sufficiently high these days that a few service calls could cost more than the original price of the printer. One should expect the printer to run for a couple of years without being in a shop. That is, the Mean Time Between Failures (MTBF) should be greater than the number of hours used during those two years. Today the better printers are getting MTBFs of 2500 to 3000 hours. (30 hours/week for 2 years) To me such performance is very satisfactory.
3. Cost. Letter quality printers have followed the general trend in the micro-computer industry and have come down in price as a result of advances in electronics. One should expect to capitalize on this trend.
4. Features. For the newsletter I probably demand more bells and whistles than the average business user might need. For example, the following features are important to me:
 - Proportional spacing. This means the ability of the printer to respond to proportional spacing commands from word processors that support that feature. Such word processors are: Executive Secretary, Format II, Screenhandler II, Wordstar and an upcoming enhancement to Pie Writer. Beware that some printers, such as the Olympia, may appear to have Proportional Spacing but the feature provided is internal to the printer, such that the spacing cannot be controlled by the word processor. This so-called proportional spacing is, in my opinion, a gimmick and

absolutely useless! Note that this article has been prepared using incremental spacing. In this case the characters are at an even pitch, 12 per inch here, but the inter-word spacing has been adjusted so that it is the same for all words on a line.

- **Bold and/or Shadow print.** **Bold Print** allows the program to tell the printer to print 'bold' (i.e. multi-strike the characters in the word) one or more words. **Shadow print** is similar to bold except that the print head moves 1/120" before restriking. Some word processors provide the capability to make multiple passes over a line, selectively restriking certain words. With such software you do not need the **Bold** or **Shadow Print** capability.
- **Graphic mode.** This allows you to plot lines or do graphic sorts of things similar to what can be done with most dot-matrix printers. Graphic mode usually comes in conjunction with bi-directional paper movement and programmable vertical paper motion. Besides the obvious use for graphing, the latter allows you to do superscripting and subscripting. The little map of Minnesota at the end of each story in this newsletter was prepared using Graphic mode.
- **Programmable vertical paper motion.** This allows you to print with line spacing other than the usual 4 or 6 lines to the inch. All of the printers evaluated which had this feature move the paper in 1/48th inch increments.
- **Bi-directional printing.** This allows you to print successive lines without returning the head all the way to the left margin. It effectively increases your print speed.

There are many other features offered on some of the printers. Their utility will depend a lot on how inquisitive you are. There is not room here to discuss every conceivable feature. All I can suggest is that you read the specifications carefully.



Dan on Printers Continued

Below is a table which shows how the printers evaluated stacked up with respect to specific features, capability and cost.

Twelve printers were evaluated. The full names of each of these printers together with the corresponding abbreviations used in the table below are:

Abbreviations Used in Printer Specifications

Apple LQP	Apple Letter Quality Printer
Brths HR1	Brother HR1
C.Ito Star	C.Itoh Starwriter
Comrx CR-1	Comrex CR-1
Daisy 2000	Daisywriter 2000
Diabl 620	Diablo 620
Diabl 630	Diablo 630
NEC 35xx	NEC 3510/3520/3530
NEC 77xx	NEC 7710/7720/7730
Olymp 102	Olympia ESW 102
Qume 9/45	Qume Sprint 9/45
Qume 11	Qume Sprint 11

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PRINTER SPECIFICATIONS

	Apple LQP	Brths HR1	C.Ito Star	Comrx CR-1	Daisy 2000	Diabl 620	Diabl 630	NEC 35xx	NEC 77xx	Olymp 102	Qume 9/45	Qume 11
Price - Low	1900	850	1400	800	1125	1200	1900	1600	1900	1350	1850	1776
range - High	2195	1200	1800	1000	1400	1600	2400	2200	2600	-	2200	
Speed - Chr/sec	40	16	40/55	17	16	20	40	35	55	17	45	40
Chars on wheel	130	96	96	96	96	98	96	128	128	96	96	96
Available print wheels	25	12+	see Diabl 630	12+	12+	18	40+	50+	50+	24+	125	125
Proportional spacing	x	-	x	-	x	x	x	x	x	-	x	x
Graphics	x	-	x	-	x	x	x	x	x	-	x	x
Bold Shadow & Underline	x	-	x	-	x	-	x	-	x	(2)	x	x
15 char/inch	x	x	x	x	x	x	x(1)	x	x	x	x	x
Chars/line at 10cpi	132	132	136	132	132	132	132	136	136	132	132	132
Parallel interface	-	x	x	x	x	-	x	(3)	(3)	x	-	-
Weight - lbs	37	36	31	36	35	?	40+	37	45	29	45	37
Quality of manual	Fair (4)	?	Good	?	Good	Poor	Poor (4)	Good (4)	Good	Fair	Good	Good
Dimensions:												
Height - ins	7.1	6.7	6.0	6.7	6.7	7-est	9-est	8.7	8.7	6.4	6.5	7.1
Width - ins	24.5	22.4	22.5	22.4	22.4	23est	25est	21.6	24.8	23.0	24.3	24.5
Depth - ins	15.0	14.1	15.9	14.1	14.7	17est	19est	14.6	16.3	18.2	16.7	15.0



Dan on Printers Continued

Notes:

- (1) You can software-select a horizontal spacing of 8/120ths of inch but I couldn't find a 15 pitch print wheel!
- (2) The spec sheet says you can bold double print but there was nothing in the manual telling you how to do it. It might be a typewriter function which, like the proportional spacing, is useless to the serious word processor user.
- (3) NEC models 3530 and 7730 have parallel interfaces.
- (4) Manual is for operators only. An excellent product description or specification is available in which all programming details are well laid out. In the case of Apple, they claim to be working on a comprehensive manual.

Not included in the table above are several other daisy wheel printers. Among these are:

Olivetti DY211. This printer is similar to the Olympia and priced slightly less. The ads claim proportional spacing. I don't know whether it can or not.

SCM TP-1 SCM is Smith Corona and this is the printer that has the distinction of being the lowest priced Daisy Wheel on the market. It often sells in the \$600 to \$700 range. It has limited features and is slow - 12cps. One of our members, Arsen Darnay uses it extensively and likes it (I think).

The Apple LQP is in fact a brand new Qume, which is designated by Qume as a Qume Sprint 11/130 - 130 character print wheel. Qume are marketing the new printer as a Qume Sprint 11. The Qume version retains the 96 character print wheel used on the Sprint 9 series. The older Qume Sprint 5s had some reliability problems, as did most of the daisy wheel printers of 2 and 3 years ago. One person reported some minor reliability problems with the 9/45. However, I have heard negative things from at least one source on every printer evaluated. The Qumes produced very nice quality print.

The Apple LQP and Qume Sprint 11 differ from the older Qume Sprint 9/45 mainly in the electronics. The Sprint 9/45 has its electronics on 3 printed circuit boards. The 11 has been put on one board through use of large scale integrated circuit technology. The reliability should therefore be improved. The Apple LQP has slightly different firmware than the Qume Sprint 11.

All of the printer manufacturers provide an optional adjustable paper tractor mechanism priced between \$200 and \$300. Note, however, that some manufacturers supply both uni-directional and bi-directional tractors, the latter being more expensive. If you want to use a bi-directional print motion capability, you must purchase the bi-directional tractor. Some supply cut sheet feeders which can sometimes cost as much as the printer!

All of the printers provided excellent quality of print in the sample viewed or during demos except the C.Itoh which printed unevenly and was obviously mis-adjusted. We couldn't find anything in the manual telling one how to re-adjust, although I'm sure that there must be a way. The fact that it was apparently delivered that way bothered me somewhat.

NEC have the largest variety of printers. Both the 35xx and 75xx are new units with many program features. Like the Apple LQP, the electronics has been consolidated onto one board compared to earlier versions. The NEC 3515 and 7715 are Diablo 1610/1620 compatible printers. If you have software designed for the old Diablos, you can plug in the xx15 and expect it to work. The NEC 3510 and 7710 have serial interfaces. The 3530 and 7730 have parallel interfaces. Supposedly NEC are bringing out a brand new machine within the next few months, but I don't know anything about it.

The NEC thimble has a tendency to show uneven print in the vertical direction. This weakness is hard to spot and may be of no consequence to most people.

GOTO 11

WORD MACHINE

WHO IS NIFTY INFO?

While the Apple II enjoys the widest selection of software available for any computer, there are many applications where the available software lacks affordability, friendliness, and speed. Nifty Info is a group of computer enthusiasts who have organized to develop and market software that fills this gap. Our first software package is a word processor. Although there are many word processors on the market, Word Machine will satisfy the needs of many users better than anything now available and at \$39.95 its affordable.

WHATS A WORD PROCESSOR?

In general a word processor is a program designed to manipulate text. Functions common to most word processors allow the easy correction, insertion, deletion and rearrangement of text. Its widely recognized that word processors are among the most useful programs available for either home or business.

"DO IT ALL" SYNDROME

Beyond the basic abilities common to the majority of word processors, most of the extra features offered by the "Do It All" programs are designed to support special hardware or to simplify the composition of highly formatted documents. However, in making complex operations simple, simple operations have become complex. All microcomputers have limitations and once the complexity of a program saturates its host computer, the addition of more features must result in tradeoffs. Its evident by sluggish operation, multiple operating modes and cluttered displays that many of the word processors now on the market have gone beyond the saturation point and have sacrificed fundamental performance in favor of extra features. What this all boils down to is that no single word processor does all types of word processing well. The same programs that are best for highly formatted work often are slow and cumbersome when working with normal text such as memos, letters, lists, school papers, Etc.

WORD MACHINE

Word Machine is a true word processor with many advanced features. However, unlike most word processors, Word Machine is optimized for normal text. The "free form" assembler and uncluttered display allow Word Machine to operate in a very natural (logical) manner while the single mode editor and advanced menu system make is easy to learn and use.

Also available at COMPUTER KING SOUTHDALE, - 7101 France Ave. S. - Edina 920-1154

SYSTEM REQUIREMENTS:

48K APPLE II OR II PLUS
WITH APPLESOFT IN ROM &
1 OR 2 DOS 3.3 DRIVES.
WORKS WITH MOST PRINTERS

TIRED OF WAITING?

Others talk about speed but Word Machine's 100% machine language assembler/editor delivers. Scrolling speed is twice that of a Basic program listing. You can insert or delete whole lines of text in just a third of a second and the character insert or delete keeps-up with the repeat key. search through 20,000 characters a second to find, edit, delete or replace any word. Move blocks of text as large as 10,000 characters in just half a second. Word Machine loads and stores text in half the time of many other programs.

FRIENDLY

Word Machine sets new standards in user friendliness. The advanced menu system along with numerous prompts and status displays minimize mistakes and keeps you informed. If you need help and don't have the manual handy, there are over 30 screens of instructions that can be easily accessed without disturbing your text. Files can be accessed by name or menu number and many files can be locked, unlocked or deleted in a single operation.

MORE FEATURES

Typically programs selling for this amount are nothing more then text editors. Word Machine however, is a true word processor and besides the features already mentioned, other features include... Right justification: Hyphenation alert: Auto paging: Supports printed lines of from 40 to 132 columns: Supports user definable embeded printer commands: Reassignable editor keys: Printout hold and restart, continue, abort: numerous cursor and text access controls: A comprehensive set of utilities is accessible right from the menu.

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Because our motto is "Friendly Affordable Software" and because we want to give people an incentive to get to know us, we are offering Word Machine at less then half the price of comparable software.

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Dan on Printers Continued

Some print wheels are easier to change than others. The Diablo 620 just drops into place. The NEC thimble is lifted out by placing two fingers inside the thimble and pulling straight up. One of the hardest to change in my opinion is the Diablo 630 which requires pulling the wheel forward by its hub in what amounts to a very tight space. Olympia, Brother, Comrex and Daisywriter are usually dispensed from little plastic cartridges. Incidentally the SCM printer has the lowest cost daisy wheels.

The Diablo 630, which in Diablo's own words is a 'mature design', seems to require a metal print wheel in order to make a decent looking image. The other printers all print nicely with their standard plastic wheel. Some say the metal print wheel is stronger, but it is also brittle and can fracture. At around \$45 apiece they are not cheap. I, personally, would rather replace plastic print wheels a couple of time a year and have one or two spares on hand.

The Brother, Comrex and Daisywriter all use the same print mechanism. The Brother, in particular, seems to have gotten a reputation for reliability although it's only been out on the market for about 6 months. The specifications for the Comrex are so similar to the Brother that I suspect it may be made by the same company, but I don't know that for a fact! The Daisywriter literature states that its print mechanism is made by Brother. The reliability of the Brother is probably due to its mechanical design simplicity. A linear stepping motor drives the head along a stainless steel track without belts or pulleys.

Except for the Daisywriter, all of the printers with proportional spacing provide head movement resolution of 1/120th of an inch. The Daisywriter moves in 1/60th inch steps. Unfortunately this is probably a design limitation caused by using the linear stepping motor. The result of this limitation is that character spacing in proportional mode will not be as smooth as on other printers. The shadow in shadow printing will be offset by 1/60th instead of 1/120 inch. However, the printing accuracy is still equal if not better than on other daisywheel printers. The Daisywriter also has one other interesting feature - emulation of the protocol of NEC, Diablo 630, Qume and other printers.

All of the printers provide bi-directional printing. All of the printers can write at least 132 characters on a line at 10 pitch, and correspondingly more at more characters to the inch. See table above.

All of the printers are available with serial interfaces. Many of the printers come with parallel interfaces as shown in the table. Generally, it is cheaper to provide a parallel interface card and you can be assured that the printer will operate at maximum speed. Also one doesn't have to worry about strapping a serial interface card. This isn't hard but can be frustrating.

All of the printers offer some sort of character buffer. A buffer prevents the computer from waiting for the printer to do a RETURN, or the printer waiting for the computer to send more information when the cumulative print speed is faster than the average rate at which the computer outputs information. I wasn't able to obtain buffer information on all of the printers. The Diablo 620 comes with 1536 bytes standard; the Diablo 630 with 768 standard, 2688 optional. NECs, except NEC 7730, have 256 char buffers. The 7730 is selectable up to 163 characters. A 16k buffer option is available on some NECs. The Daisywriter has 16k standard and 48k optional. A 15 cpi pitch was a requirement for our application although some might not use it. In many cases the 15 pitch wheels are only sold by the manufacturer and are not available through DP supply houses. I did see, or locate in a catalog, 15 pitch wheels for the NEC, Olympia and Apple LQP.

The availability of service is of paramount importance. Daisy wheel printers are electro-mechanical devices. In the introduction to this article I stated that a MTBF of two years was very acceptable. That year will pass, and the printer will eventually break down. Some places where you can expect reasonable quality service are:

Apple	Apple and Qume dealers.
Brother	PBS, Digital Den, Team and other dealers sell one or other of these. Several dealers sell both of these printers.
Comrex	Same as Brother.

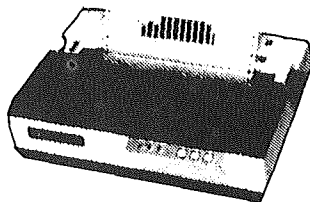
GOTO 13

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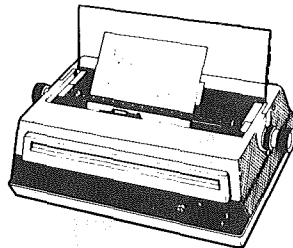
NEC PC-8023 Dot Matrix Printer



- Graphics—proportional spacing
- Lower case decenders
- Bi-directional logic seeking
- 136 characters per line
- 100 CPS print speed
- Friction and tractor feed
- Adjustable tractors
- 2K Buffer

Qty. _____ @ \$499.95

SMITH CORONA TP-1 Daisywheel Printer

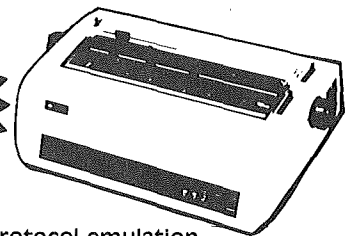


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- Simple to operate
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- Drop in ribbon cassette
- Easy to change Daisywheels

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- Protocol emulation
- Built in 16K memory buffer (48K optional)
- Intelligent software commands
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___ Visicalc	@ \$189.95
___ Visitrend/Visiplot	@ \$266.95
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___ Utility Pacs	@ \$ 74.95
___ ASC II Express "Professional"	@ \$115.95
___ The Home Accountant	@ \$ 59.95
___ Locksmith	@ \$ 79.95
___ Watson	@ \$ 44.95
___ Frogger	@ \$ 28.95
___ Chop Lifter	@ \$ 28.95
___ Wizardry	@ \$ 39.95

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___ Verbatim Datalife	@ \$
___ Maxell MD1	@ \$30.50
___ Library Cases	@ \$ 2.00
___ Loose Leaf	
___ Storage Pages (10)	@ \$ 6.50
___ Flip n' File (holds 50)	@ \$22.00

Qty

HARDWARE

___ Parallel Interface w/Cable	@ \$ 85.00
___ Grappler + Graphics	
___ Printer Interface	@ \$127.00
___ Microsoft Softcard	@ \$289.95
___ Microsoft Ramcard	@ \$ 77.96
___ Novation Applecat II Modem	@ \$289.95
___ D.C. Hays Micromodem II	@ \$295.00
___ Zenith 12" Green Monitor	@ \$105.00
___ Kraft Joystick	@ \$ 50.95
___ System Saver	
___ (fan & power cond.)	@ \$ 72.95
___ C. ITOH Prowriter	@ \$499.95
___ BIT 3 80 Column Card	@ \$249.95
___ NEW ITEM: Rana Disk Drives	@ \$325.00
___ EPSON MX-80 F/T III	@ \$545.00
___ EPSON MX-100	@ \$725.00

Qty

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CITY DESK COMPUTER WAREHOUSE

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Dan on Printers Concluded

C.Itoh Recycled Music Systems, Prairie Microsystems, PBS and others sell this printer. However it is not clear that there is a knowledgeable service capability in town - yet!

Daisywriter City Desk sells it and you probably could get the mechanism serviced by Brother/Comrex dealers. I'm not sure about the electronics itself.

Diablo Xerox stores. Xerox own Diablo! Computerland, PBS, Digital Den and others sell Diablo, too.

NEC Computer Professionals sell NEC and can get them fixed. Team and PBS also sell the NEC.

Olympia PBS/Hagen

Qume There's at least one Qume repair place in town. PBS, Digital Den and City Desk sell Qumes but are not authorized repair depots for Qumes.

Smith Corona Most of the dealers carry this printer. You probably can get it serviced by SCM typewriter agents.

I am sure there are other places which can repair the devices but I wanted to feel secure in this requirement.

Some of the printers evaluated are not of the real heavy duty type (MTBF > 2500 hours). The less than heavy duty units include the Diablo 1620, the Olympia and Olivetti. This doesn't mean that they should not be considered. If you only plan to print 1 hour per day, then you don't need a heavy duty unit.

Warranties vary between 90 days and 1 year. Check this out before buying.

WHICH ONE?

Only the Apple LQP, NEC, Qume and C.Itoh met my requirements for versatility, heavy duty printing and word processing features.

I selected the Apple LQP.

The Apple LQP has a 130 character print wheel. Unfortunately, the standard print wheel that comes with the Apple machine is filled up with Swedish, German and other European special accented letters. This

is unfortunate, because most people could theoretically order a custom wheel with 2 or 3 special symbols should they require such a thing. The nice thing about 130 characters is that you could squeeze 2 complete character sets on to one wheel. I am keeping my fingers crossed that Apple/Qume will provide such a wheel! There are currently 6 wheels listed for the Apple LQP including the standard 12 pitch, a 10 pitch, a 15 pitch and a bold.

If you don't care about the 130 characters and the Apple label, consider the new Qume Sprint 11 with 96 character print wheels. At a list of \$1776 versus \$2195 for the Apple LQP, you can probably buy it for less!

The NEC with 128 characters is, of course, similar in print font capability. NEC does have the advantage of having 125 different thimbles on the market. However, many of those are minor variations of a similar font to achieve the same sort of character set as provided by the Basic Apple LQP wheel. NEC also has print thimbles in Arabic, Kana, Russian and other foreign alphabets. There are also several thimbles on which there is a complete upper and lower case font and a different upper case font.

The Apple LQP, the C.Itoh and the NEC offer more program features than the others.

Service for the Apple LQP should be available from Apple and Qume Dealers. Service for the Qume is only available from Qume dealers. We print the equivalent of 500-1000 pages a month or 20 to 40 hours of printing per month. This puts us in the heavy duty user category.

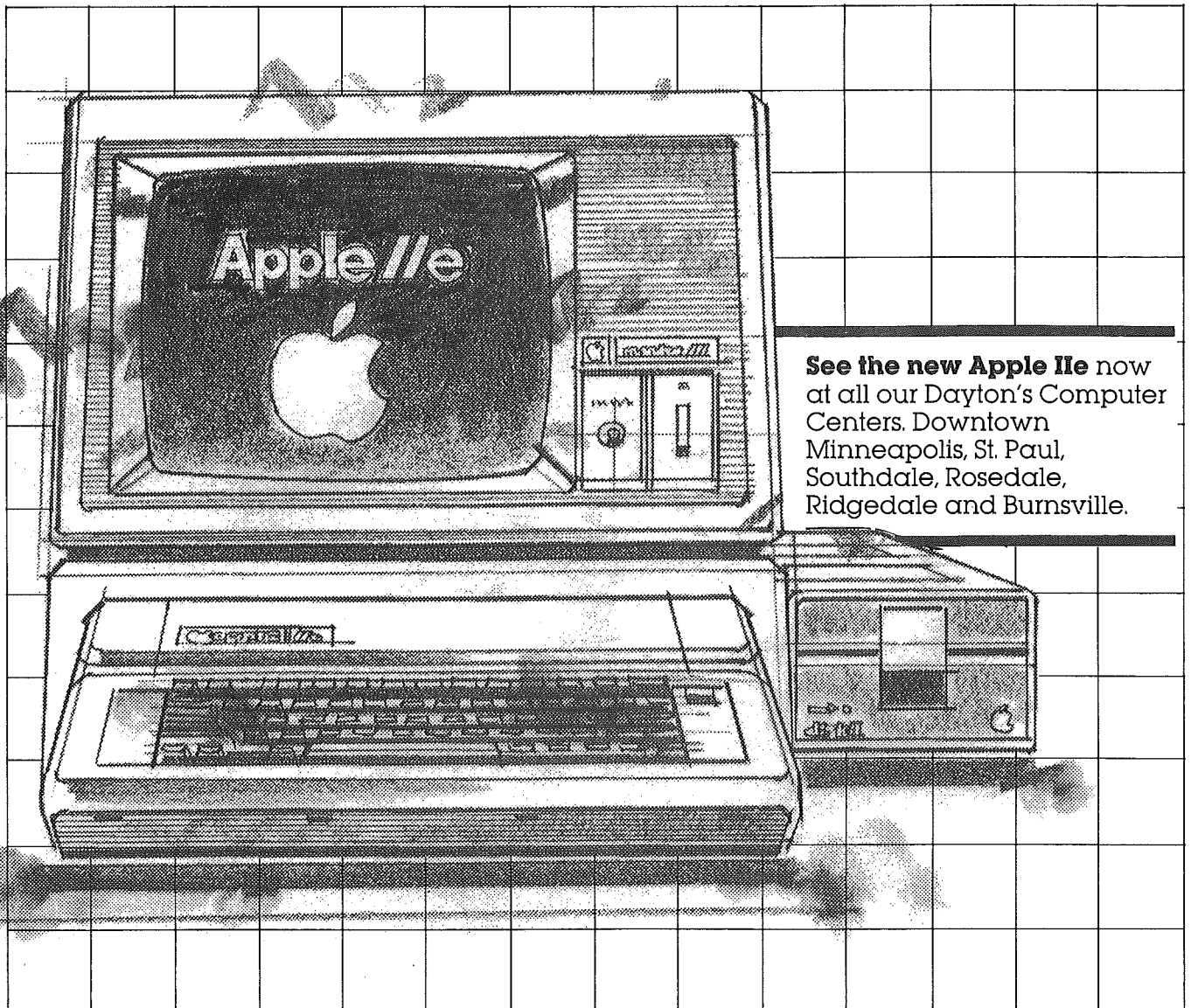
For our newsletter application the Apple LQP gets highest marks, with the NEC 3530 a close 2nd.

However, if you don't need all the jazz, than consider the Brother, Comrex or Daisywriter 2000. The Daisywriter offers more features at a slightly higher cost. All of these machines are low in cost and print really nicely.

Finally, you might consider the Olympia, Diablo 1620 or Olivetti if you don't need a heavy duty unit, but do want some additional features.



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DAYTON'S



The DATA REPORTER

An Overview and Some Helpful Hints

by

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6932 Crest Road
Rancho Palos Verdes, California, 90274
(213) 541-2766

- Part 1: (this issue) An Overview
- Part 2: (coming soon) Some Helpful Hints
- Part 3: (planned) The Report Generator
- Part 4: for) Data Plotter
- Part 5: future) Some Advanced Hints

Part 1: An Overview

Before describing The Data Reporter by Synergistic Software, let me give you some background about myself and my experience with Micro-computer Data Base Management Systems (DBMS), so that the reader may be able to evaluate the source of these ideas. I am not a computer expert. Before I purchased my Apple II+ two years ago, I had never touched a computer. But I do love the Data Reporter and have found some things about it that the FIRST-TIME user without computer knowledge may find helpful. I have on my shelf four data base programs:

1. The Informer by Apple Orchard

This program is apparently no longer available and the company seems to be out of business. I purchased it when I purchased my computer, on the advice of the dealer. It is (was) a good DBMS for a beginner, but the search is very slow unless you know the record # of the record for which you are searching. Also, the edit mode is somewhat cumbersome. I still have some of my data bases on The Informer and use it on occasion.

2. The Data Factory by Micro Lab

This is a very good DBMS. The best feature over the others with which I am familiar is its ability to manipulate numerical data between fields and then store the results in as many fields as desired. I use Data Factory for those data bases that require a lot of such arithmetic operations. I have both Version 4.0 and Version 5.0, but I have used version 5.0 only as a learning experience. It seems overly complicated and more sophisticated than I need and is rather intimidating at times. Its newest features do not seem that useful to me.

3. DB Master by Stoneware

I bought DB Master some time ago when I was planning a data base for the saving of computer magazine articles. I realized it would be the largest data base I had worked with up to that time. Most of the dealers with whom I spoke regarding the

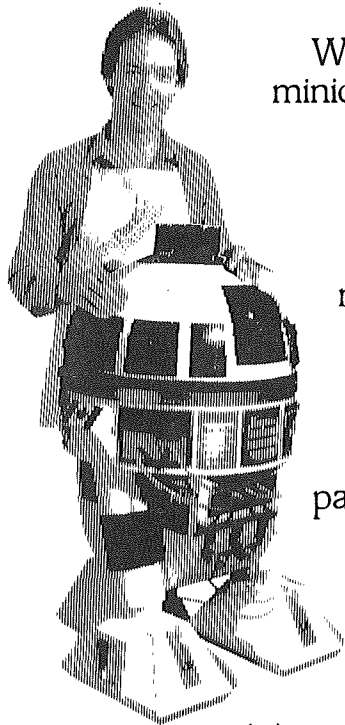
best program for handling large data bases indicated the only one to use was DB Master. I am aware DB Master is the largest selling DBMS for the Apple, but for me, it has many drawbacks. First, it takes a VERY long time to set up a data base properly. Next, after a data base is set up, the program is insufferably slow in moving from module to module. Also, DB Master has no provision for saving a sorted file or the results of a search to another new data base file. I do not have either of the DB Master utility packs, and it may be that some of these problems have been overcome, but as of now, all the files I had on DB Master have been moved to Data Reporter, and I no longer use DB Master.

4. The Data Reporter by Synergistic Software

This is by far the best DBMS I own. All of the bugs of the earlier versions seem to have been removed. Synergistic is very helpful and concerned about the users of the program. Periodically they publish a newsletter free to users which is full of tips and enhancements. For me, the greatest feature of Data Reporter is that each file is memory-resident, and so searches and sorts are done without disk access and are unbelievably fast. After a sort is done, the sorted file may be saved to the same data disk or to another data disk without losing the original file. A file may be searched for all records that meet certain criteria and all records found may be saved to their own new file if desired. This allows almost unlimited access to and manipulation of records. In addition, files may be reformatted at any time so that a new file can be started using only some of the fields of the old file or adding new fields to the new file. The ONLY real drawback to the program that I can find is the inability to take numerical data from one field, operate on it by numerical data from another field and store the results in still another field. Data Reporter can do this only once, rather than unlimited manipulations, as does Data Factory.

The apparent limitation of file size to computer memory is not a real concern. The program has the ability to search through multiple files on one or more disks and thus is able to treat multiple files as one file, saving the results of a

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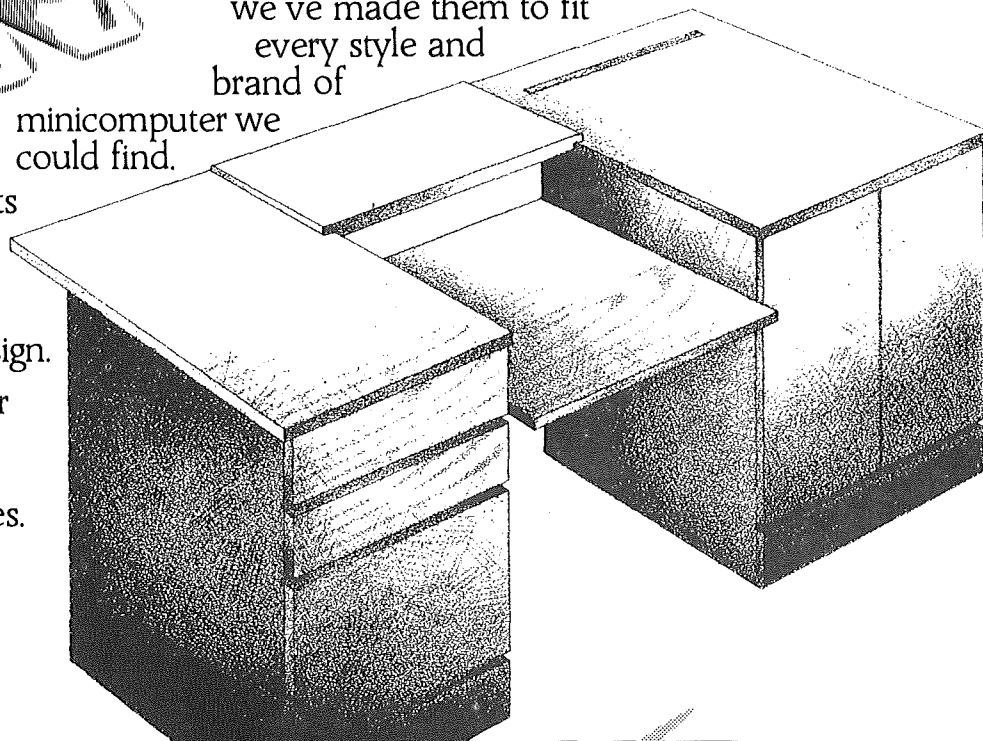
One side accommodates a 3-drawer file giving you extra storage for software and filing space. On the other side, the printer stand doubles as a place to store and feed paper. The paper runs smoothly through a slot on the back of the desk top.

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minicomputer we could find.

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ASSEMBLY LANGUAGE REFERENCES

By John L. Hansen

If you are interested in learning or learning about Apple Assembly Language, there are an increasing number of books available. Many of these are designed to help you learn on your own. I have found the following books in B. Dalton and several of the computer stores. I have not used all of them and do not have the assembly language capability to rate them adequately, though I do have a few comments. I suggest looking at the first five and selecting the one that meets your needs. The remainder of the list consists of books that relate to 6502 assembly language and not specifically to the Apple, though some of them have programs that have been verified on the Apple II.

APPLE ASSEMBLY LANGUAGE

Marvin L. DeJong
Howard Sams & Co., 1982. \$15.95
Uses the Apple 6502 Assembler. Appears to be well-written with clear explanations. Shows how to interface with outside devices. This is my first choice.

ASSEMBLY LINES: THE BOOK

Roger Wagner
Softalk Publishing, 1982. \$19.95
Uses the Merlin Assembler (similar to A.P.P.L.E.'s "Big Mac", but with enhancements -- same author). This is an expanded version of the first 12 or 13 sections of Roger's column in SOFTALK and has many good examples. It is well-written.

APPLE II ASSEMBLY LANGUAGE EXERCISES

Leo J. Scanlon
John Wiley & Sons, 1982. \$9.95
Uses the Apple 6502 Assembler. Has 18 hands-on exercises and problems, good diagrams, and explanations. He recommends that you have one of the other books as a reference manual.

USING 6502 ASSEMBLY LANGUAGE

by Randy Hyde
Datamost, Inc., 1982. \$19.95
Uses LISA Assembler. The first of three volumes, this book has been recommended by many reviewers. The explanations include well-done cartoons that help explain the software steps.

APPLE MACHINE LANGUAGE

Don and Kurt Inman
Reston Publishing, 1981. \$9.95
No assembler is used with this book; the Mini-Assembler is discussed. After a review of Applesoft, you use POKE, PEEK, and CALL, and then use a BASIC program to enter and execute machine language programs. This book has some excellent explanations. After hunting through several books, I found a clear explanation of backward and forward branches in this one.

PROGRAMMING A MICROCOMPUTER: 6502

Caxton C. Foster
Addison-Wesley, 1978. \$8.95 (1978)
Discussion of Assembly Language programming based on KIM-1 Computer.

6502 ASSEMBLY LANGUAGE PROGRAMMING

Lance A. Leventhal
Osborne/McGraw-Hill, 1979. \$9.50
This is a very comprehensive book on 6502 Assembly Language. I tried to learn to program using this one. I'm sure it can be done, but I would recommend this one as a reference manual.

6502 ASSEMBLY LANGUAGE SUBROUTINES

Lance Leventhal, Winthrop Saville
Osborne/McGraw-Hill, 1982. \$12.99
Very interesting book. The first three chapters provide 155 pages of reference material to 6502 Assembly Language and the next 348 pages cover more than 40 useful subroutines. All were done on the Apple II.

BEYOND GAMES: SYSTEMS SOFTWARE FOR YOUR 6502 PERSONAL COMPUTER

Ken Skier
BYTE/McGraw-Hill, 1981. \$14.95
Assembly Language plus subroutines. Since it provides copies of each program for the Apple, PET, Atari, and Ohio Scientific computers, you really buy a lot of non-usable stuff.

PROGRAMMING THE 6502

Rodney Zaks
Sybex, Inc., 1978. \$9.95
This is the first book I bought on 6502 Assembly Language. I feel it is a pretty good book, but I think, rightly or wrongly (your choice), that I get more out of a book written specifically for the Apple.

I should point out that in some cases the books I purchased in 1978 and 1979 have been reprinted with new covers, new prices, and not much new information.



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SOFTWARE



PROTECTION of COMPUTER SOFTWARE

by Kurt Oelschlager
and
condensed by Alan Peterman

PART 1 of 3 Parts

One of the most important challenges confronting the computer industry is how to define and protect ownership interests in software.

Recent legislation 18 U.S.C. #2319, enacted May 1982, and Minnesota Statute 609.87-.89, approved March 1982, impose harsher criminal penalties for the piracy and counterfeiting of computer software and data bases.

Under federal jurisdiction the maximum penalty would be five years and/or \$250,000, limited by the exclusions of 17 U.S.C. #117 -- ("It is not an infringement for the owner of a computer program to make another copy or adaptation of it if such copy or adaptation is an essential step in the utilization of the computer program in conjunction with a machine and is used in no other manner or if it is for archival purposes only.")

The Minnesota statute sets lesser sentencing guidelines but sets legal definitions for computer software, programs, systems, networks, access and property.

The protection of a software developer's investment can be accomplished by three traditional types of "intellectual property" laws: PATENT, COPYRIGHT and TRADE SECRET.

This month, we will talk about PATENTS. COPYRIGHTS and TRADE SECRETS will be covered in a future issue (probably next month).

PATENTS

Of these three principal means of protecting proprietary interests in software, a patent provides the most comprehensive protection - if granted.

But in practice, according to the National Commission on New Technological Uses of Copyrighted Works-Final Report 29,94(1979), patent protection has been the least accessible. Despite strong interest on the part of the software manufacturers and strenuous industry efforts, few patents have been issued.

The process of obtaining a patent is tedious and expensive. And post-approval litigation is a certainty when a computer program is involved.

Another problem is that patent protection and secrecy are incompatible. Once a patent application has been granted, the program is available for public inspection, and the theoretical monopoly of the patent holder may have no value.

Even more problematic than these practical barriers are the institutional and legal obstacles. There is the concern about whether the patent system could process the volume of applications that could potentially be generated by the industry (estimated as high as 10,000 new programs a day - 18 Jurimetrics J.355,n.10).

The legal questions bearing on the patentability of software are even thornier. The principal question is whether programs are "new and useful processes" and thus constitute patentable material, subject matter under #101 of the Patent Act.

In GOTTSCHALK v. BENSON 409 U.S.63(1972), the first Supreme Court decision to deal with the patentability of computer software, the Court held that a programming algorithm for converting binary coded decimal numbers into ordinary binary numbers was not patentable subject matter. The Court was unwilling to grant a patent which would effectively preempt the use of a mathematical algorithm.

The next software patentability case to be decided by the Court, PARKER v. FLOOK 437 U.S.584(1978), involved a method for updating alarm limits during catalytic conversion processes.

The Court again disallowed the patent claims, reasoning that the only novel step in Flook's method was the use of a mathematical algorithm useful in producing automatic computerized adjustments in alarm settings. Since the application for use of the algorithm was not independently novel, it did not provide a sufficiently independent basis for patentability and thus did not take the algorithm out of the Benson ruling.

GOTO 27



The taxman cometh. . . .

April 15th draweth nigh!
Be prepared this year!
The following two articles deal with
using your Apple to do your taxes.

TAX PROGRAMS

by Dan Buchler

Several Mini'app'les members, including myself, have used HowardSoft™'s Tax Preparer to prepare our tax returns. I bought Tax Preparer mail order, before it was available locally, for \$60. The list price was then \$100. HowardSoft™ mails out cards to all registered owners and for the first year, tax returns for 1981, they charged \$35 for the update. This year they wanted \$50 for the update and the list price has gone to \$225. I balked and so have some others. Somehow I think HowardSoft™ have lost sight of who their customers are!

Tax Preparer covered (for tax year 1981) Form 1040; Schedules: A, B, C, D, E, F, G, R & RP, SE; Forms: 2106, 2110, 2210, 3464, 4562, 4625, 4726, 4797, 5695, 6251. That takes care of most things. You can create an attachment to any form for any line item. That is Tax Preparer's real forte in my opinion. The normal procedure is to select a secondary form, and to make a pass through it during which the program proceeds from line item to line item asking for a value or whether you want to create a supporting document. Where other forms are cross referenced and have been previously created, the program will pickup the corresponding values. You must make a pass though 1040 at the end to carry all the figures to their final destination (the 1040 itself).

When you are all done with entry, you proceed to the print phase. The IRS requires that Form 1040 submissions be on actual 1040 forms. All other forms may be 'emulated' on plain paper. HowardSoft™, like most of the tax program houses, provides a Form 1040 fill in program. You can buy 1040s with tear off pin feed edges, or you can tape a form to blank paper.

The program, written in BASIC, works OK but is incredibly slow. If you have only one drive, theoretically you can survive the print phase. In practice, it would drive you to the Hennepin Detox center! I used Tax Preparer successfully last year.

One of our members ended up doing his taxes manually! Several of us had trouble carrying information forward from the 1980 tax year files to the 1981 tax year files. HowardSoft™ provides a utility for that purpose, but it didn't work very well. I have 4 major complaints about Tax Preparer

1. The price.
2. Speed of execution.
3. Flexibility. Though the ability to create individual supporting statements is a great feature, I sometimes want to deviate from the normal method of tax preparation. Tax Preparer is simply too complicated a program to try and modify.
4. No Minnesota capability.

I have therefore switched to another approach for 1982 tax returns. There are at least two companies which sell complete Visicalc™ models for tax preparation. PanSophics is one. The other,

Atsuko Computing International,
303 Williams Avenue,
Huntsville, Alabama 35801.

offers Taxman-83 which covers form 1040; Schedules: A, B, C, D, E, F, G, RP, ES, U, W; Forms: 1116, 2106, 2119, 2210, 2440, 2441, 3468, 3903, 4136, 4137, 4255, 4562, 4625, 4684, 4797, 4798, 4835, 4874, 4952, 4970, 4972, 5329, 5405, 5544, 5695, 5884, 6249, 6251, 6252, 6478, 6765.

The price is \$95. Their update policy is undefined as of now. I reviewed their brochure and on the strength of that ordered a copy, which will supposedly be shipped on Feb 1st. I am gambling on being able to convert the Visicalc™ models to THE Spreadsheet. Transfer of data from form to form is accomplished using DIF files. THE Spreadsheet text files should be equivalent.

Now Atsuko doesn't support Minnesota, but, I think it should be relatively easy to modify for the state. After all, if you have Visicalc™ or THE Spreadsheet, you undoubtedly have learned the elementary uses of same. Using a spreadsheet for table lookup is explained below in Arsen Darnay's article.

I'll let you know more when I have had a chance to play with the Atsuko version. Meanwhile, if you don't have lots of different form types, you might try Arsen's approach following.....



The taxman cometh . . . continued.

IRS on SPREADSHEET

by Arsen Darnay

The taxman cometh . . .

And users of Visicalc™ or THE Spreadsheet can now prepare for April by putting the federal and state returns on the computer and turn the chore of tax preparation into play.

You don't have to be particularly skillful. The math involved is simplicity itself. The only tricky parts of the job relate to LOOKUP tables and using the Boolean functions in those few places where contingent calculations are necessary.

I've got my taxes on a single page of THE Spreadsheet -- federal and the state returns with all supporting schedules. I run a small business and have the schedules you need for reporting that sort of income as well, complete with itemized business costs and depreciation calculations.

I got myself thoroughly confused at the beginning until I laid out the scheme on paper first, a course I strongly recommend. With only 40 columns showing, the Apple's screen is not the ideal surface for providing you with an overview, and it helps to have the plan in front of you. (I have my monitor off to the side and use the Apple's surface as a table; until I hit on that approach, life was a lot harder.)

I've placed the LOOKUP tables on the extreme left of the spreadsheet. If your wife/husband works, and your separate incomes fall into different brackets, you'll need three LOOKUP tables -- federal for both (joint filing) and two for the Minnesota state return. In Minnesota each earner pays at his or her separate rate even on a joint return.

The LOOKUP took some experimenting because the instructions are not exactly selfevident. Let's say that you want to set up a LOOKUP table for the following range of earnings:

Income is . . .

Over-	But not Over-	Tax is	amount over-
20,200	24,600	2,013+22%	16,000
24,600	29,900	4,037+29%	24,600
29,900	35,200	5,574+33%	29,900

All right. Let's assume that the LOOK-UP table will begin at A1 and that your taxable income is stored in Cell B5. Here is what you would enter:

A1 - 20201
 A2 - 24601
 A3 - 29901
 A4 - ((B5-20200)*.25)+2973
 A5 - ((B5-24600)*.29)+4037
 A6 - ((B5-29900)*.33)+5574

The actual LOOKUP command would be given in Cell B6, let's say, the cell in which you want the tax to show up. The command in B6 would be as follows:

B6 - LOOKUP(B5,A1.A3,A4.A6)

B5, here, of course, is the taxable income. A1 through A3 is the source range; A4 through A6 the destination range.

Here is what happens: THE Spreadsheet takes your taxable income (as stored in B5) and compares the value in B5 to those stored in Cells A1 through A3. It selects the cell which is closest to but no more than the value in B5.

In the example above, a taxable income of \$19,000 in Cell B5 will result in an ERROR message because it is less than the lowest value in the range. Any value between 20201 and 24600 will return the result of the formula stored in its corresponding destination range, in our example the formula stored in A4.

The procedure works pretty much the same way in Visicalc™. In both THE Spreadsheet and in Visicalc™, you can use Boolean formulas to determine whether you owe them money or will get a refund.

Let's say that your tax obligation is \$3890 and that value is stored in Cell B6. And let's further suppose that your

GOTO 22

**The taxman cometh . . . continued**

withholding and estimated tax payments are summed in Cell B7. To find out what you owe or what you will get back, you can do as follows:

B8 - (B6 > B7) * (B6-B7)
 B9 - (B6 < B7) * (B7-B6)

Let's say that your payments to the government were \$4200. In that case the first part of the formula will be "\$3890 is greater than \$4200" -- which is untrue and hence will return a 0. Zero times any number is zero, therefore you don't owe them anything, and Cell B8 will say 0.

On the other hand, in Cell B9 the front portion of the formula will say "\$3890 is less than \$4200," which is true and will return a 1. The second part of the formula will then take 3890 away from 4200, leaving 310. This times 1 is 310. And that's your refund.

In my model I use the actual line numbers and a one word designation as labels on the spreadsheet itself so that I can walk from the real world to the computer world and back again without getting lost.

All the schedules, of course, can be linked to one another. And if the tax laws change -- as they always do -- editing is easy enough. You change a few formulae and are ready to run again when . . . the tax man comes!

Postscript
 by Dan Buchler

The edition of Twin Cities Computer User (TCCU), Vol 1, number 6, published on January 15th, has an article on page 7 entitled *Sreadin'it* in which a complete VisiCalc™ model of a Minnesota Tax form is presented.

Research Press, Inc., Box 8137-P, Prairie Village, Kansas, 66208 offers an eleven page single spaced report called *Let the Government Pay For Your Computer*. The price is \$6.00. I haven't seen it, but it sounds interesting and is of course relevant to tax returns!

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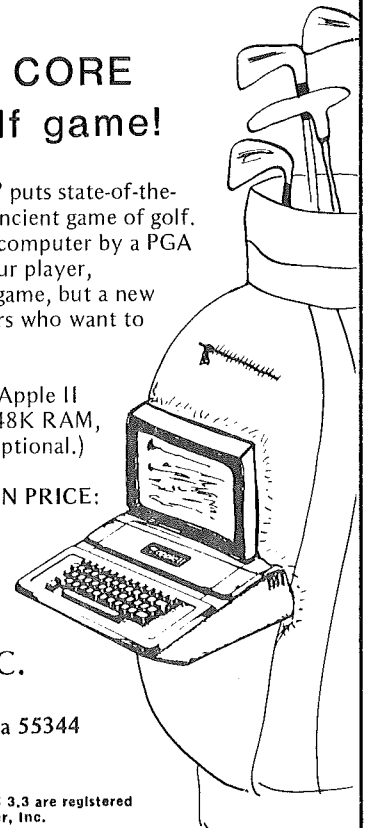
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**The Data Reporter Concluded**

sort or search to new files if the user desires. One important note of caution: It is ALWAYS important to make back-up copies of your data disks BEFORE you start to do any data manipulations. This is especially true when doing a sort or search on multiple files, since this is one time the program will over-write the old file, with a new one without first asking the user for permission. However, if you have a back-up copy, then you will have both old and new files on separate disks.

The Data Reporter disk also has two secondary modules (Report Generator and Analyzer/Plotter) that are very useful. However, it is important to realize that until you need these modules, the disk is rarely accessed due to the memory-resident nature of the program. This means there is very little disk-swapping, even with a one-disk system.

To be continued...





MICROCOMPUTERS IN EDUCATION

An Overview

by Jane Chatterjee
Conroy Associates

This is a short article on educational software, available for microcomputers. Later articles in the series will discuss some of the following areas in detail. As with other applications, the development of educational software has lagged the hardware availability. The first software available was mostly to teach computer programming, then more mathematical applications followed. First, we should distinguish such terms as Computer Based (or Managed) Instruction (CMI) from Computer Aided Instruction (CAI). The first terms refer to courses taught entirely or mainly on computer, with student testing and grading incorporated. CAI implies that the computer is one of the instructional media incorporated into the total course.

What types of software are available? The simplest type is drill and practice, where the student is repeatedly tested on a basic skill, for example, the use of mathematical operations. Tutorial-style programs teach concepts using an interactive tutorial approach, incorporating sophisticated branching to provide help on an individualized basis. Simulations are perhaps the most interesting type of program, educationally. They involve continuous student interaction, and can teach problem-solving skills.

The learning games, more of which are becoming available, provide some of the better quality educational software on the market. Computers may be used in the experimental setting in school, for data analysis, or linked into an experiment, to give a direct readout.

Computer software is available for all ages. There is a small, but increasing, amount of preschool software. At the elementary level, most of the software is in the basic skills areas of math, English and reading; however, other types are available. At the higher levels: junior

high, senior high and junior college, the software is naturally subject specific, and has usually been developed by individual teachers, on topics of their own interest. We should distinguish between educational software for home use and for school use. Software for home use needs to be reusable, to justify the initial cost, and a game approach is one way of ensuring this.

Educational software is usually developed by individual educators, and published by anyone, from the developer up to the nationally known text book publishers. There are now a number of specifically educational software vendors, such as Banana Software, owned by Marcia Braverman, who was instrumental in starting the Mini'app'les Educational SIG. Unfortunately for Mini'app'les, Marcia moved to Ohio.

The best educational software is developed as a result of cooperation between educators and programmers. Extensive use of graphics is important from the interest point of view, and quite sophisticated programming techniques are required. The educator is vitally important, to ensure that educationally valid instructional techniques are used. Software should be evaluated in the educational setting, prior to sale.

One of the serious pitfalls of producing educational software is to produce too simplistic materials, which are uninteresting and have little student interaction. Both dull drills and 'text books on disc' come in this category. The production of time-consuming, educationally-valid software is complicated by the difficulties surrounding copyright, and many game publishers are unwilling to enter the educational market. Among the benefits of using effective educational software are the novelty value to students and, more important, the degree of individualization possible, tailoring instruction to student need.



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DAISY WHEELING

Own-a-Lisa
by
Arsen Darnay

The arms race, thank you, is doing just splendidly. And you, my friend, are about to discover (if you haven't felt it before) the dubious joys of 'falling behind' . . . the other side. Unless, of course, you're willing to increase your defense budget by a couple of magnitudes.

By the time you read this, corporate Apple will have unveiled the mysterious Lisa computer.

Along with Lisa, the Macintosh (a Lisa scale-down) and the Apple IIE (a II+ scale-up) will be shown to the world, and the Apple II+ will be on the scrap heap of obsolescence.

I haven't seen any of these brave new contenders yet. Lisa is playing hard to get. According to the Wall Street Journal, dealers must apply for Lisa in writing and submit evidence to show that they can finance her acquisition. Mac and IIE may be visible sooner.

My purpose, thus, is not to speak of Power and of Speed, Graphics Galore and Oceans of Memory. I want to talk about the arms race in the world of Tron. Should I try to own a Lisa? Or budget failing, a Macintosh, an Apple IIE?

These questions really hide another one: What do you really do with your computer? Do you really need what the new hardware offers?

The answer for me is clearly No.

I came into Wonderland last summer. And while I haven't exactly slouched in the computer literacy department (on which more later), Apple II+ is still largely terra incognita for me.

It does everything I want it to do. It's fast enough -- but I'm not in a hurry. I tend to scoff at 'user friendliness' -- but then I enjoy figuring things out on my own.

That feeling of excitement in the pit of my stomach when I read about new product in the world of Tron -- that's nothing more than greed, of course. If Moscow has a bigger missile, I want one too -- whether I need it for defense or no!

I use my Apple a lot more than most. It's a tool in my business and works about 20 hours a week. It writes reports, keeps accounts, and does numerical analysis. I still do checks by hand. My own memory is good; I don't need Apple to remind me to take out the trash. And my furnace is smart enough to adjust its own temperature.

If I don't need to own a Lisa, why should the yearning masses of the rest of mankind?

Well, to be sure, Lisa is not meant for the home at all. It's positioned to compete with Xerox, CPT, and others for the small business market. But it makes you wonder, nevertheless.

We already have, out in the market, millions of Apples, Atari's, Commodores, TRS-80's, IMB's installed in homes. And more to come. We'll have computing power orders of magnitude above any genuine requirements.

To use a computer effectively in the home, you have to be damned well organized and you have to love keying. Most people are not all that well organized at home -- life's too short for pedantry. Menus, checkbooks and family budgets may go on the computer for a year -- but then they'll go right back to the back of the envelope, the scratch pad, and the index card.

As for games -- you really won't need to own a Lisa to zap the aliens. And alien zapping will grow old no matter how great your graphics capability.

Which leaves education, the justification for buying the chip. The nation has begun to worship computer literacy -- which seems to me much easier and much harder to acquire than commonly held.

Easier in this sense: it's not that hard to learn how to run software packages.

To learn to program Tron is quite another matter. Literacy here means command of several languages (Cobol, RPG-II, Fortran, etc.). And knowledge of CPU structures and assembly codes. And more: It's knowledge of the computer's fast-changing technological environment that really



OCTAL and HEX

by Ron Androff

Decimal or base 10 is useful because it is our "native" numbering system; we think in decimal. Binary or base 2 is useful because it is the computer's "native" numbering system; it "thinks" in binary. The transposing of decimal to and from binary, though, is awkward. We can work in binary, and when we are concerned with bit level operations, we should. But, when dealing with bytes of data or addresses (double bytes), binary becomes unwieldy. We often transpose ones and zeros and in general make mistakes in binary.

Octal and hex to the rescue;

- binary easily translates to hex or octal
- octal and hex is more like decimal, and we are more comfortable with larger base numbering systems.

You might wonder why both octal and hex systems are used. Well, my guess is that octal was used because it is a subset of the decimal and that simplified operations on a computer and on reports to deal only with "numbers". Hex, on the other hand, uses alpha symbols (alphabetic letters) for the range above nine, which requires special handling - a disadvantage. But on the plus side, the partitioning or grouping of data favors hex because, as it works out, there are usually equal multiples of four. With full groups of bits, each number in each position can assume all of the values in its range. What happens when they are not equal? Well, a byte has eight bits, for conversion to octal, break it up into two groups of three with one group of two bits left over. The range of that last number position can only be from 0 to 3 (%00 to %11). When you forget that and try to make it four or larger, the computer can't accept it, and it takes you a moment to catch on as to why it won't. With hex in even multiples, all positions may assume their entire range. Well, regardless of the reasons for each system, the various users each chose a system and have argued which is better to this day.

To summarize, binary numbers can range from zero to one and each position has a power of two. Decimal numbers range from zero to nine, and each position has a power of ten. Octal numbers range from zero to seven and each position increases by a power of base eight. Each octal position represents three binary bits.

Thus the binary values from %000 to %111 are represented by the value 0ø to 7 (% identifies a binary number and ø identifies an octal number).

Hex numbers range from zero to fifteen, which poses a problem, as we have no symbols for numbers larger than nine. Being innovative and clever, though, the industry eventually decided to use the first five alpha characters as symbols for the five values above nine. Again each hex character represents four binary bits. Thus %0000 to %1111 can be represented by a value from \$0 to \$F (\$ before or an H after the number identifies a hex number). The following table shows the relationship between the various bases and the value of each position.

Binary	Octal	Decimal	Hex
8 4 2 1	8 1	10 1	1
0 0 0 0	0 0	0 0	0
0 0 0 1	0 1	0 1	1
0 0 1 0	0 2	0 2	2
0 0 1 1	0 3	0 3	3
0 1 0 0	0 4	0 4	4
0 1 0 1	0 5	0 5	5
0 1 1 0	0 6	0 6	6
0 1 1 1	0 7	0 7	7
1 0 0 0	1 0	0 8	8
1 0 0 1	1 1	0 9	9
1 0 1 0	1 2	1 0	A
1 0 1 1	1 3	1 1	B
1 1 0 0	1 4	1 2	C
1 1 0 1	1 5	1 3	D
1 1 1 0	1 6	1 4	E
1 1 1 1	1 7	1 5	F

To transpose from binary to octal, break the binary number into three bit groups starting from the right with a partial group, if any, at the left. Examine each binary group and mentally add the three numbers to obtain the octal value. For example %101; from the far right, two to the zero is 1 and there is a one thus 1*1. The next is two to the one or 2 but there is a zero, so skip it. Finally two to the two is four and there is a one thus 4*1, and 4*1 + 2*0 + 1*1 = 4 + 0 + 1 = 5. This is the same way we translated small numbers from binary to decimal, if you recall. But in octal, larger numbers can be evaluated as easily. The number %10011101, which we determined was 157 in decimal last month can be translated to octal thus: take the first three bits from the right 1 0 1 = 4 + 0 + 1 = 5, then the next three bits 0 1 1 = 0 + 2 + 1 = 3, and the last two bits 1 0 = 2 + 0 = 2, and finally reversing the order and putting them together, equals 235ø (ø for octal).

To convert from binary to hex one must



Protection of Computer Software Concluded

While the Court refused to allow the patenting of software in Benson and Flook, it was careful to leave open the possibility that under the right circumstances, some types of computer programs might be patentable.

Such a case was decided in March 1981, in DIAMOND v. DIEHR (101 S.Ct. 1048). There the Court held that a process for molding cured precision rubber products by using a computer to monitor mold temperatures and constantly recalculate the exact curing time was patentable. The Court distinguished Benson and Flook on the grounds that the parties seeking the patent in Diehr did not seek to protect the algorithm but merely the use of it, with their process.

While the decision in Diehr confirms the patentability of computer programs in some limited contexts, it does not reduce the general uncertainty concerning the patentability of software. In the first place, the Supreme Court's analysis of an algorithm continues to equate them with mathematical formulae. An algorithm is really only a method for handling a particular task on a particular machine and may or may not include a mathematical formula. Thus, all computer programs are algorithms. By blurring this distinction the Court confuses the central issues and narrows the potential range of patentable programs (7 Ruttgers J.Comp.& Law 333-35 1980).

Secondly, Diehr was, in fact, almost indistinguishable from Flook. The only real difference was one of drafting: the claim in Diehr was framed to place more emphasis on the curing process as a whole and Flook stressed the calculation in the conversion process. Joel M. Freed, during the Eighth Annual Judicial Conference (92 F.R.D.183), contends the Court of Customs and Patent Appeals... "seems to permit the patenting of most computer-implemented inventions so long as detail is paid to the claim language."

Because of these cases' factual similarities and their divergent results, the scope of patent protection for software remains unclear. To date, it appears, any effort to secure a patent on software as software is less likely to succeed than an effort to patent a narrowly defined process which incidentally uses the software.

To be continued.



only define one more bit, two to the third or eight. Using our example again, %10011101 can be divided into two groups, as such, %1001 1101. The first 1001 is 8 + 0 + 0 + 1 or 9, the next is 8 + 4 + 0 + 1 or 13. Here is where the five alpha characters come in; after nine would come 10 or A, then 11 or B, and 12 or C, then 13 or D, 14 or E and finally 15 or F. Thus 13 is represented by "D" and the number is \$9D, or 9DH (with the dollar sign or the H denoting hex base).

It is, I think you will agree, easier to remember \$9D, or even 2358 than %10011101. This is even more apparent when the numbers are longer (CDC's CYBER® has 60 bits in each word) or one is examining long columns. It is also easier to examine columns of two hex numbers for an error than columns of ones and zeros.

Converting from hex or octal to binary is as simple, and after some experience one can convert both ways visually. A number like \$B7 is converted thus: \$B = 8 + 3 and 3 is 2 + 1 thus \$B = 8 + 2 + 1 or %1011 and \$7 = 4 + 3 and 3 is 2 + 1 and \$7 = 4 + 2 + 1 or %0111, and finally putting it together, %10110111 is the number. To put it another way, if the hex number is equal to or larger than eight, subtract eight from it and put a one in the fourth position. Otherwise put a zero in the fourth position. Then examine the remainder, if there is a four in it subtract four, and put a one in the third position else a zero. Again examine the remainder, if there is a two in it subtract two, and put a one in the second position else a zero. Finally put a one or a zero in the first position as the remainder is a one or a zero. As I said last month the explaining of the method of converting from one base to another is more complicated than the method itself is.

The process of converting from decimal to either octal or hex is accomplished in the same way we converted from binary to decimal and vica versa. That is from octal or hexadecimal, find the value of each power and multiply that value with the number in that position. Finally add up the sub-totals. Boy, that sounds hard, even if it is simple. Let's do an example. Take the octal number 458. The value in the 5 position is eight to the zero or one, and in the 4 position is eight to the one or eight. To continue, 5*1 + 4*8 = 5 + 32 = 37.

GOTO 28



Daisy Wheeling Concluded

separates the girls from the women. Playing with LOGOS or PLATO will not make junior obsolescence-proof in tomorrow's job market.

A prediction: Wouldn't surprise me at all if in 1988 you could buy any home computer at garage sales for \$25. Neither would I be surprised to read in 1988 that there's a glut of people with advanced degrees in computer science -- but a dreadful shortage of teachers.

All of which is a way of saying that we're still a gadget-happy nation. We haven't absorbed today's technology yet -- but already the drums call us to the altar. Sacrifice to the latest state-of-the-art! Own a Lisa!

As for me, I think I'll watch and wait. Don't need the power and the glory or that little 'mouse'-like pointer to pick things off the screen.

But with all the hue and cry -- and falling prices, and pride of prowess -- don't look too closely if you see me at the dealer's.



Now, if the number were \$45 the 5 position is 16 to the zero or one, and in the 4 position is 16 to the one or 16. Again continuing, $5*1 + 4*16 = 5 + 64 = 69$.

To go the other way, from decimal to octal or hex, divide the decimal number by the base number (8 or 16) you wish to convert to and keep track of the carries as we did with binary.

Personally, I like to convert to binary from decimal, and then visually convert to octal or hex; or from octal or hex to binary, then to decimal. There are fewer rules to observe and mistakes to make, I feel. In any case, you do what ever is comfortable, and a little practice makes perfect. I wish you good luck with your efforts.



Note The logo at top of each page was printed using D. Buchler HIGHER PRINT program and a LOGO Font.

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Apple II.1 Instruction Set

by Ken Slingsby

Rumor has it that Apple will announce a new model soon. While there has been much speculation as to the processor Apple will choose to use, there has been little said as to the software that will be available to make that processor do its thing. The following instruction set is under consideration for at least one of the new models soon to be announced.

Mnemonic Description

AGO	automatic garbage out
BBW	branch both ways
BEW	branch either way
BH	branch and hang
BOB	branch on bug
BOD	beat on disk
BOI	byte operator immediately
BPO	branch on power off
BST	backspace and stretch tape
CLBR	clobber register
CLBRI	clobber register immediately
CM	circulate memory
CPPR	crumple printer paper and rip
CRN	convert to roman numerals
DC	divide and conquer
DMNS	do what I mean, not what I say
DMPK	destroy memory protect key
DO	divide and overflow
EIOC	execute invalid op code
EMPC	emulate pocket calculator
EPI	execute programmer immediately
EROS	erase read-only storage
EXPP	execute political prisoner
FSRA	forms skip and run away
HCF	halt and catch fire
IBP	insert bug and proceed
IIB	ignore inquiry and branch
LCC	load and clear core
MLR	move and lose record
OEEP	on error erase program
PD	punch disk
PI	punch invalid
POPI	punch operator immediately
RASC	read and shred card
RPM	read programmer's mind
RSD	on read error self-destruct
RSTOM	read from store-only memory
STF	spew tape on floor
ST	stretch tape
SPSW	scramble program status word
SRO	sort to random order
SRZ	subtract and reset to zero
STROM	store in read-only memory
TDB	transfer and drop bits
WBT	water binary tree

Original author: unknown

CUBAN FANTASY

A Review
by Stephen K. Johnson

Cuban Fantasy
Yukon Computer Products, Inc.
Minneapolis MN
Price \$14.95

Cuban Fantasy is a low-resolution graphic implementation in 3D of the popular puzzle known as Rubik's Cube™. Through the use of two orthographic views of the cube displayed on the low-resolution graphics page, all six sides of the cube are visible at once. The six faces of the cube can be rotated with simple commands. All commands are easy to remember, and can be chained together (up to 100 moves). Also you can save a cube at any point on the disk and recall it back later to continue solving the puzzle.

Unfortunately, I never had much luck solving the original Rubik's Cube™ and after two months of frustration I bought "the solution". I tried to use "the solution" book to solve the Cuban Fantasy. This is when all my problems with Cuban Fantasy became apparent. Commands were not included to rotate the entire cube so that the blue side could be positioned on top, as it was supposed to be to complete the solution. Since I now was completely disorientated, I just aimlessly fumbled my way, rotating faces of the cube, without getting any closer to solving the mixed up cube. I really don't think that this was the fault of the software. It's probably just me, as the cube is the only puzzle I have that I haven't solved yet.

With it's low price I feel that Cuban Fantasy is a good bargain for any one who likes solving the Rubik's Cube™.

Rubik's Cube™ puzzle and "the solution" are trademarks of Ideal Toy Corporation. A thank you to Yukon Computer Products, Inc. for providing a copy of this software for review.

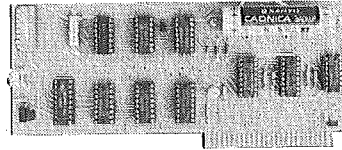
Note Most of this newsletter was prepared on an Apple LQP (Qume Sprint 11) printer using an Elite (12 pitch) daisy wheel. Line feed increment is set to 7/48". Pie Writer was used as the word processor outputting text in incremental mode.

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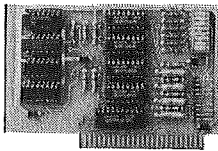
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- Will enhance programs for accounting, time and energy management, remote control of appliances, laboratory analysis, process control, and more.
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- On board battery backup power for over four months power off operation (battery charges when Apple is on).



- Twenty-seven page operating manual included with many examples of programs to use with your Apple in any configuration.
- Includes disk containing a DOS Dater and many other time oriented utilities plus over 25 user contributed programs at no extra cost.

PRICE \$129.00

SUPER MUSIC SYNTHESIZER



- Complete 16 voice music synthesizer on one card. Just plug it into your Apple, connect the audio cable (supplied) to your stereo and boot the disk supplied and you are ready to input and play songs.
- It's easy to program music with our compose software. You will start right away at inputting your favorite songs. The Hi-Res screen shows what you have entered in standard sheet music format.

- We give you lots of software. In addition to Compose and Play programs, the disk is filled with songs ready to run.
- Easy to program in basic to generate complex sound effects.
- Four white noise generators which are great for sound effects.
- Plays music in true stereo as well as true discrete quadraphonic.
- Envelope control.
- Will play songs written for ALF synthesizer (ALF software will not take advantage of all the features of this board. Their software sounds the same in our synthesizer.)
- Automatic shutoff on power-up or if reset is pushed.
- Many many more features.

PRICE \$159.00

ANALOG TO DIGITAL CONVERTER

- 8 Channels
- 8 Bit Resolution
- On Board Memory
- Ratiometric Capability
- Fast Conversion (.078 ms per channel)
- Eliminates The Need To Wait For A/D Conversion (just PEEK at data)
- A/D Process Totally Transparent to Apple (looks like memory)

The analog to digital conversion takes place on a continuous, channel sequencing basis. Data is automatically transferred to on board memory at the end of each conversion. No A/D converter could be easier to use.

Our A/D board comes standard with 0, 10V full scale inputs. These inputs can be changed by the user to 0, -10V, or -5V, +5V or other ranges as needed.

The user connector has +12 and -12 volts on it so you can power your sensors. (These power sources can be turned off with on board dip switch).

Accuracy 0.3% Input Resistance 20K Ohms Typ
A few applications may include the monitoring of ● flow ● temperature ● humidity ● wind speed ● wind direction ● light intensity ● pressure ● RPM ● soil moisture and many more.

PRICE \$129.00

DIGITAL INPUT/OUTPUT BOARD

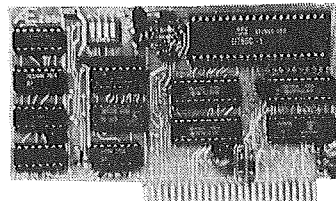
- Provides 8 buffered outputs to a standard 16 pin socket for standard dip ribbon cable connection.
- Power-up reset assures that all outputs are off when your Apple is first turned on.
- Features 8 inputs that can be driven from TTL logic or any 5 volt source.
- Your inputs can be anything from high speed logic to simple switches.

- Very simple to program, just PEEK at the data.
- 4 other outputs are also provided. User 1, reset, interrupt request, non-maskable interrupt.
- Now on one card, you can have 8 digital outputs and 8 digital inputs each with its own connector. The super input/output board is your best choice for any control application.

PRICE \$62.00

Z-80 CARD

- TOTALLY compatible with all CP/M software.
- Executes the full Z-80 and 8080 instruction set.
- Allows you to run your Apple CP/M based programs.
- Does EVERYTHING the other Z-80 boards do, plus supports Z80 Interrupts.
- Hardware and software settable switch options.
- An on-card PROM eliminates many I.C.'s for a cooler, less power consuming board.
- Complete documentation included. (user must furnish software)



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NEW PRODUCTS

by Mike Casey

This column is intended to provide, for your information, a brief summary of some of the many product announcements which we receive each month. We do not endorse these products in any way.

SOFTWARE:

(Unless noted system requirements are Apple II or Apple II+, 48K, one disk drive, and DOS 3.3)

- Advanced System Editor
Volition Systems
Suggested price \$175.00
Text editor
Audience -- USCD Pascal users

Screen-oriented text editor for USCD pascal. All common commands are used.
- The Big Math Attack
Thesis
Suggested price \$25.00 disk
\$20.00 tape

Tutorial/game
Audience -- School age children

Game covering basic math. Solve problems as they "fall down the screen".
- Game Animation Package
Synergistic Software
Suggested price \$49.95
Arcade type game creator
Audience -- Arcade game players

Makes full screen pictures, two dimensional images and more.
- Quest For The Holy Grail!
Superior Software
Suggested price \$24.95
Graphiic-text adventure
Audience -- Adventurers
!! NOT COPY PROTECTED !!

Search olde England for the Holy Grail. Features: Hi-res, lo-res, music, game save, and more.
- Prisoner II
Edu-ware
Suggested price \$32.95
Adventure
Audience -- Adventurers

Totally redone version of the original game, hi-res added and redone puzzles.
- Genesis, The Adventure Creator
Hexcraft
Suggested price \$49.00
Adventure creator
Audience -- Adventurers

Create new worlds in any time and any place. Create the objects, the goals, the danger. Build for your friends or find someone to build for you.

HARDWARE:

- Dual Serial Card
InterLink Systems, Inc.
Suggested price \$189.00

Requires two slots and provides two complete and independent ports. No special cables required. Standard Apple interface, no special software needed.
- Spool/64
Apparat, Inc.
Suggested price \$399.00

64K printer buffer. Buffers up to 13 minutes of printing. Plugs directly into your printer and computer.
- Apple-Center Model 12
Doss Industries
Suggested price \$239.95

Security cradle for Apple and two disk drives. Key switch for power to Apple and monitor. Unit has a built in cooling fan and surge suppression.
- Apple-Center model 10
Doss Industries
Suggested price \$179.95

Similar to Model 12 described above, difference is the absence of electronics. This unit is compatible with side mounted cooling fans.
- Touch Top II
MicroStand inc.
Suggested price \$99.95

Cursor control system, joystick with two large buttons. Snaps directly into the Apple and comes equipped with cooling vents.
- Key III
Accessory III
Suggested price \$129.95

Detachable keyboard for the Apple ///. Mates to existing keyboard top. 36" extension cable allows convenient placement even back where it usually sits.
- Bumper Sticker
Paul's Electric Computer
Suggested price \$1.50

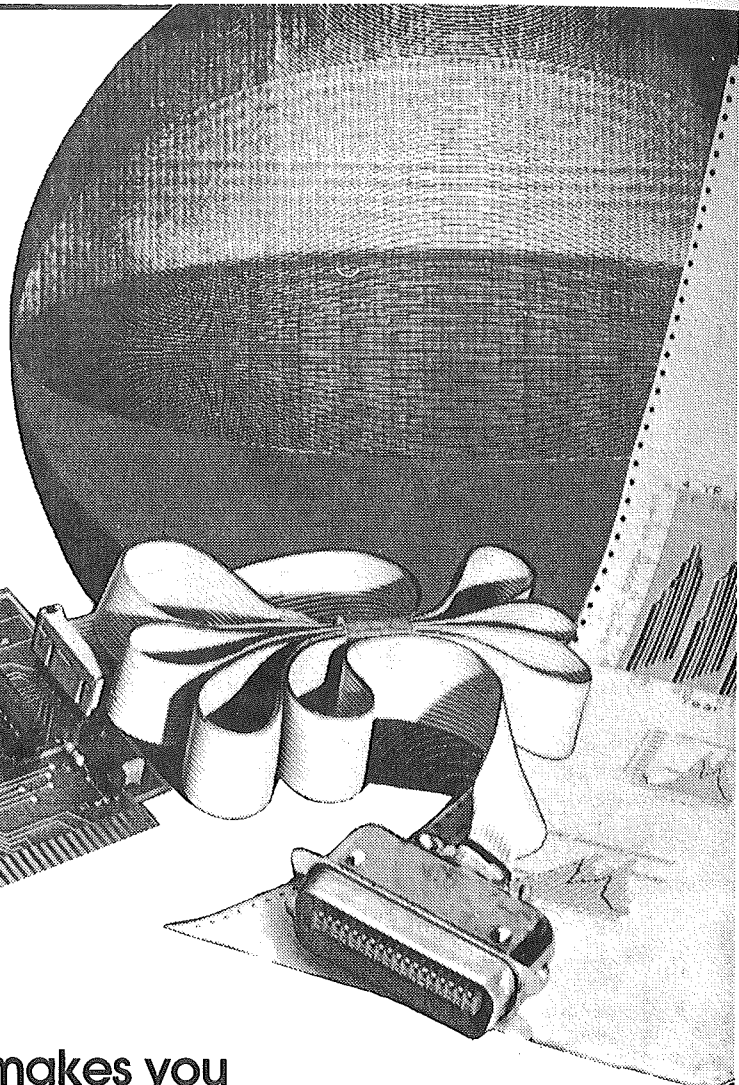
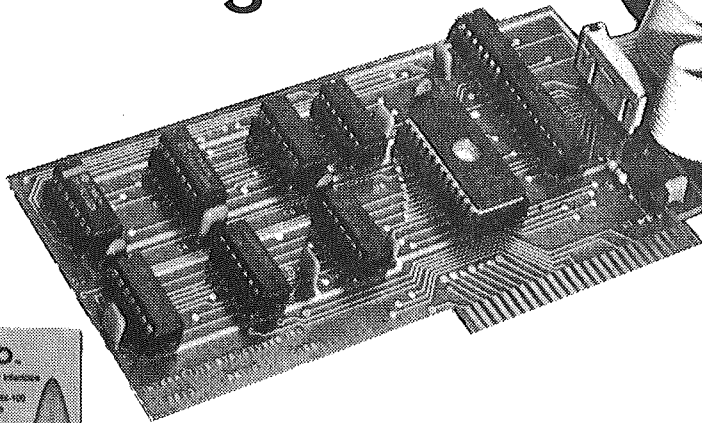
"I LOVE MY APPLE"
Red and black on white field.



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PKASO also adds features to your system. Press a few keys and get a snapshot “dump” of the image you see on the screen—text or graphics. Add new characters and symbols that you couldn't print before, using our SuperFont™ system. Add our new PipeLine™ printing buffer and your printer can take its time while you and your Apple move on to the next task. The PipeLine is a modular add-on to the standard PKASO board.

The PKASO interface is designed for Apple II and Apple III in all the popular configurations. It prints in full color on the IDS Prism Printer, and in striking black on C. Itoh, Centronics, Epson, IDS, NEC, and Okidata matrix printers.

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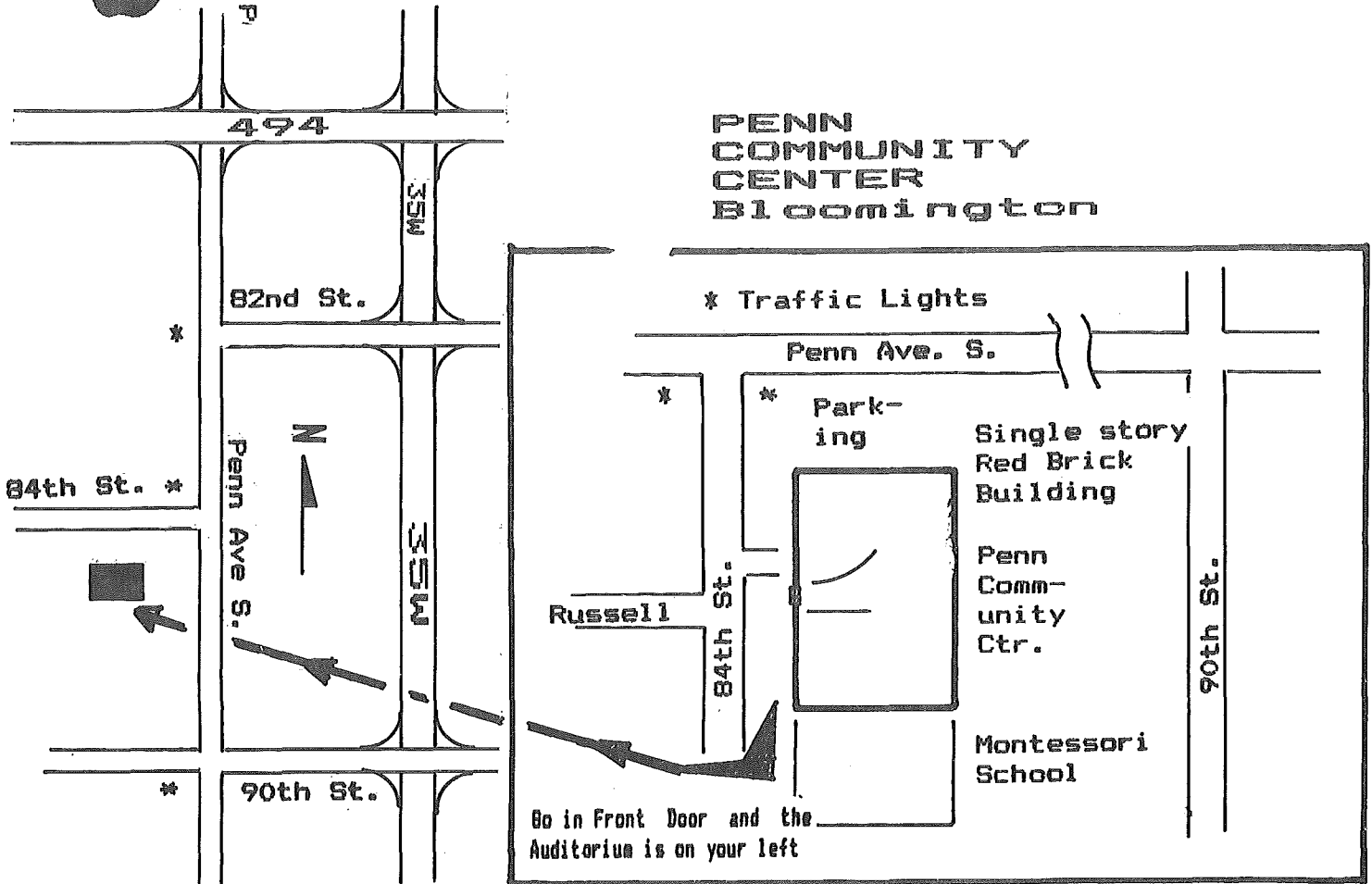
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LEEDEX B & W MONITOR: Very crisp Text, never used, still in box. \$70 or any reasonable offer accepted. Mel 483-0162 (H)

APPLE SILENTYPE PRINTER & INTERFACE: Used very little. \$250. 545-2198 (Eves)

INTEGER BOARD for Apple II: includes programmer's aid ROM and documentation. \$75. Earl Johnson 482-9949 (H) 638-6365 (W)

APPLE II Family System, with or without Monitor. Kitty Francen 340-5791 (W)

MPI-88G printer with Parallel Interface: Complete graphics capabilities. Includes silencer hood. \$395. Suzette 488-9586

MPI-88G printer with Apple II Parallel Interface card: \$325 complete. Chase Allen 432-6245

New Software: Ernie's Quiz, \$30; Spotlight & Instant Zoo, \$35: Janelle Norris 920-1430

Apple Thermal Printer. One year old. \$200 or best offer. Sam Kamens 925-3980

MX PRINTER Interface Kit. Interface board #8131 and cable #8230 with manual. \$40. **MAGIC WINDOW** word processor, used. With manual and user originated demo disk that will show you how to use it and my follow-up support. \$50. Dick 331-2281

Apple II+, 48k, monitor, 2 disk drives, 1 disk controller and several hundred dollars worth of software. Reasonable Bob 770-3010 (after 5)

Microsoft Softcard, #1485: \$230. Jim 941-5753

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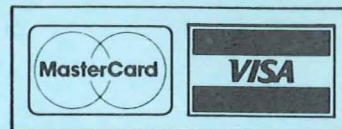
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