



mini'app'les

apple computer user group | newsletter

Special Edition

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September 1983

Volume V No. 9

Minnesota Apple Computer Users' Group Incorporated



MINI'APP'LES

The Minnesota Apple Computer Users' Group, Inc.
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Be Sure to visit the
Mini'app'les BOOTH
at the
COMPUTER SHOW
Sept 15-18

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 officer. Technical questions should be directed to the Technical Coordinator.

Membership

Applications for membership should be directed to the Membership Co-ordinator: Ann Bell 544-4505
8325 39th Avenue N.
New Hope,
Minnesota, 55427

\$12 buys membership for one year. New members and persons renewing after letting membership expire, pay a \$5 administration fee. 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 Terry Schoepner,
Box 241, Inver Grove Heights
MN, 55075 (455-8613)

Members may have DOMs copied to their own media. Contact Chuck Thiesfeld - details within this newsletter.

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 co-ordinator Eric Holterman at:
PO Box 21-425
Eagan, MN, 55121
612-454-5628



VOLUME VI No 9

SEPTEMBER 1983

CALENDAR

CALENDAR

CALENDAR

WHAT	WHEN	WHERE	WHAT
St. Paul Branch - Note 3	Tue Sep 6 7pm-10pm	Mahtomedi Fire House Hallam & Stillwater.	Bruce Fellows Voice Box speech synthesizer.
Pascal Note 1	Wed Sep 7 7:30pm	Minnesota Federal 9th Ave S Hopkins	Regular Regular Pascal Special Interest Group Meeting.
Business Note 10	Thu Sep 8 7:00pm	Minnesota Sch of Bus's 11 S 5th, Mpls	SoftGraph by Ken Ruzik.
Dakota County Branch	Tue Sep 13	St. John Neumann Church	Cancelled because of Board meeting - Note 7
Board Meeting Note 2	Tue Sep 13 7:30 pm	Norwest Bank S 1st St., Hopkins	General club business. Meeting is open to all members.
CP/M Note 5	Wed Sep 14 7:00pm	S.L.P. Comm. Res. Ctr., 6300 Walker, S.L.P.	Hands On with Corvus CP/M Omninet.
Twin City Computer Show	Sep 15 - 18	Minneapolis Auditorium Note 6	MicroComputers and lots of Apple stuff.
REGULAR MINI'APP'LES Note 2 Map facing BC	WEDNESDAY Sep 21st Prgm-7:00pm SIGS-8:30pm+	UNIVERSITY MINNESOTA ST. PAUL Room B45 Bldg 412 Near State Fair Ground	Computer Professionals will demo Apple Lisa
Investment SIG	Wed Sep 21	After Regular Mtg.	Note 4
Education SIG	Wed Sep 21	After Regular Mtg.	Software Demos - Note 12
Medical SIG	Wed Sep 21	After Regular Mtg.	Note 13
Minnetonka Branch	Wed Sep 28 7:30pm	Glen Lake Community Ctr 14300 Excelsior Blvd	Note 8
St. Paul Branch - Note 3	Tue Oct 4 7pm-10pm	Mahtomedi Fire House Hallam & Stillwater.	Chuck Thiesfeld on
Pascal Note 1	Wed Oct 5 7:30pm	Minnesota Federal 9th Ave S Hopkins	Regular Pascal Special Interest Group Meeting.
Dakota County Branch	Tue Oct 11 7pm-10pm	St. John Neumann Church 4030 Pilot Knob Rd, Eagan	Note 7
Business Note 10	Thu Oct 13 7:00pm	Minnesota Sch of Bus's 11 S. 5th St., Mpls	Beginners' Seminar See announcements
REGULAR MINI'APP'LES Note 2 Map next issue	WEDNESDAY October 19th Prgm-7:00pm SIGs-8:00pm+	PENN COMMUNITY CENTER 84th & Penn Bloomington	Program to be announced. Tentative meeting location Check next month's issue!
Investment SIG	Thu Oct 20	To be announced	Note 4
VisiCalc Note 9	Tue Oct 25 7:00pm	PBS 4306 Upton Ave S.	
Minnetonka Branch	Wed Oct 26 7pm-10pm	Glen Lake Comm. Ctr. 14300 Excelsior Blvd	Note 8
CP/M Note 5	Wed Oct 26 7:00pm	Minnesota Federal 9th Ave S Hopkins	

- Notes: (See page 2 for telephone numbers.)
- | | | | | |
|--------------------|--------------------|------------------|----------------------|--------------------|
| 1. An Schoeppner | 4. Eric Holterman | 7. Bob Pfaff | 10. Subir Chatterjee | 13. Stewart Haight |
| 2. Chuck Thiesfeld | 5. W. Scott Ueland | 8. Martin Thames | 11. Bill DeCoursey | |
| 3. Pete Halden | 6. Dan Buchler | 9. Mike Carlson | 12. Jane Chatterjee | |

THOUSANDS OF COMPUTERS ARE GATHERING AGAIN IN MINNEAPOLIS

If you've been thinking about buying a business computer, a word or data processor, a video game or a personal or home computer, The Second Annual Twin Cities Computer Show being held at the Minneapolis Auditorium is the place to go to compare all the makes and models.

The Computer Show offers you the opportunity to learn about, try out and compare nearly five thousand different products including computers, accessories, peripherals, services and an incredible array of software packages, in a non-intimidating, no-obligation, fun-filled atmosphere. If you decide to buy at the Show, you'll save hundreds, even thousands of dollars because everything that's on display is for sale at super show prices.

The Show's nearly three hundred displays feature all of the hardware and software made for every major computer for business, industry, the professions, government, education, home and personal use. The show is open to the public, and admission is \$6 for adults, \$3 for children.

Thursday-Sunday
September 15-18, 1983
Show Hours:
Thursday-Saturday
9:30am to 5:30pm
Sunday
11am to 5pm
Minneapolis Auditorium
Third Avenue
Minneapolis, MN

THE
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-4-

For more information about exhibiting or attending call or write: National Computer Shows, 822 Boylston Street, Chestnut Hill, Mass. 02167, Tel: 617-739-2000.



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Club Activities - (page 7) - Announcements.

General Interest - Pages 9-26. Contains software reviews, word-processing techniques, human interest and general interest articles.

Mini'app'les Software - Pages 27-37. Describes the new high quality software being distributed by the club.

Business Applications - Pages 39-46. A collection of articles describing experiences and points of view of members using their computers in business related areas.

Hardware - Pages 47-51. New hardware reviews and hardware building techniques.

Programming - Pages 52-61. For Beginning and advanced members - tutorials, programming tools, program modifications, etc.

The map on the cover was created nearly 2 years ago by Stephen K. Johnson using an Applesoft program intended for generating a weather map of the state.

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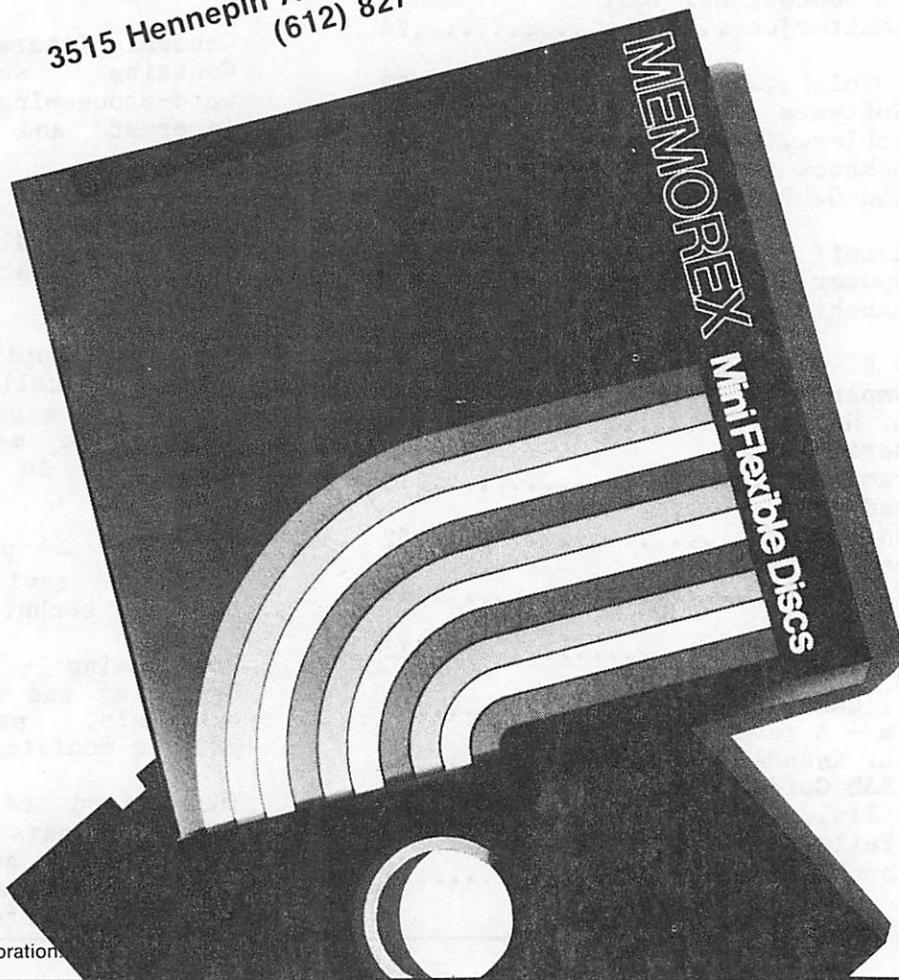
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ANNOUNCEMENTS

Twin Cities Computer Show (TCCS)

The TCCS will be in the Minneapolis Auditorium Sept. 15th thru 18th. Although not an AppleFest (show dedicated to Apple compatible equipment and software), it promises to be an event every Mini'app'les member should attend. The show is not so much a manufacturers' convention, but rather a supplier/retailer exhibition at which everybody is trying to outdo everyone else with dazzling products and often low prices. Be prepared to spend money, and you usually won't regret it.

As was the case last year, we will have a booth at the show staffed by volunteers from the club. The three Mini'app'les Software disks described elsewhere in this issue, recent DOM's and new club memberships will be on sale at the booth. Be sure to stop by and see us.

Investment SIG by Eric Holterman

The September Investment SIG will meet as one of the cluster groups following the main program at the Regular Meeting on September 21. The meeting will feature a brief question & answer period followed by a software demonstration.

We will probably resume meeting on the third Thursday of the month in October. Topic and site have not been chosen so watch the October newsletter for details.

In the past we have looked at a number of commercial investment programs and user developed applications for programs such as VisiCalc. Perhaps there are some among us who would be interested in forming two or three small groups to operate model portfolios in competition with each other. Maybe the 'technicians' vs. the 'fundamentalists' vs. the S & P 500? If you are interested, give me a call at 454-5628. We may even find a prize for the most 'paper' profits (or least losses?)!

Printer Buffer Bulk Purchase by Eric Holterman

The printer buffer bulk purchase is now complete, with a total of 26 buffers ordered. Final prices were about \$1 to \$5 less than the original quote, depending on model and size. All went well, except delivery of the last two buffers was delayed when the wrong items were shipped by the manufacturer.

By the way, if there is sufficient interest in a bulk purchase on the Koala Pad, I may try a

bulk purchase on it with delivery by Christmas. If strongly interested, give me a call at 454-5628 soon.

Business SIG by Subir Chatterjee

This month's Business SIG meeting will take place on Thursday, September 15, at the Minnesota School of Business. Ken Ruzik will demonstrate SoftGraph, a Softtalk program. Ken has also made some modifications to the program, which enhance it considerably.

Our thanks to Steve Johnson, Ken Ruzik, Al Peterman, Kathy Leo, Dick Marchiafava & Subir Chatterjee for their presentations at the August seminar. Our thanks also to Dave St. George for use of the college facilities.

DOMs by Mail

New Service for Mini'app'les Members

by Chuck Thiesfeld

Now members can order DOMs (not Mini'app'les Software) using their own diskettes. Here is the procedure:

Make up a package containing the following:

1. Blank diskette (or diskettes if more than one is desired).
2. Mailer. Diskettes will be returned in same protective device used to send the diskettes provided such will fit in the mailer.
3. Send correct postage in stamps - do not send money in lieu of stamps.
4. Self-addressed return label.
5. \$1.00 copying fee per DOM or disk.
6. A note indicating which DOMs are desired.

Send to:

C. Thiesfeld
8416 Xerxes Avenue S.
Bloomington, MN 55431

Please allow 60 days for delivery in USA. Incomplete packages will not be returned. DOMs 1 thru 23, except 18, EAMON #3, and 8 Pascal disks are currently available. General questions about DOMs should be addressed to Terry Schoeppner. Questions on DOM content should be addressed to Al Peterman, our DOM editor.

Please note that DOMs may also be purchased on club-supplied media by sending \$7.50 to the software sales coordinator. See inside front cover. Also, the latest DOMs are available at regular meetings, and at some Branch meetings, for sale to members at \$5 each.



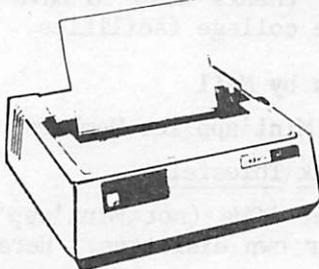
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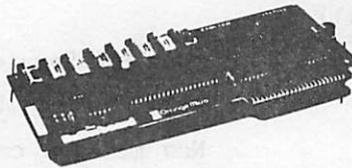
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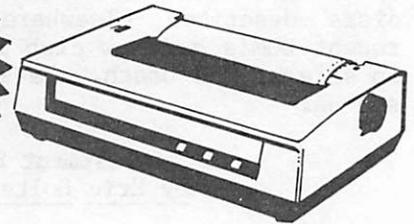


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Daisy Wheeling

Looking Back a Fest

by Arsen Darnay

The year was surely something of a peak or watershed in the world of personal computers.

I mean 1982, of course, not 1983. Time Magazine put a computer on its cover as 'Machine of the Year.' The Star and Tribune said the same thing a little ahead of Time. Warner Communications (of Atari fame) had not yet learned humility. More people knew PacMan's name, I venture to say, than Prime Minister Begin's (to pick at random). And the great unwashed masses, myself one of the great unwashed, lined up before the retail counters and begged for admission to the world of Tron.

Now, it wouldn't surprise me at all to learn (the opposite would surprise me) that more of the larger personal computers — the Apples, Commodores, IBM PC's, the Osbornes — will have been sold by the time we kiss beneath the mistletoe at midnight sharp on December 31, 1983. But the atmosphere has changed. This is the first year of the rest of the computer age, as it were, not the Great Year of coming to age, baptism, what have you . . .

I was so excited about computers last year I barely noticed the phenomenon. I thought it was just me.

Take Computer Fest - 1982. I had to go, of course. I made time on a Thursday morning so that I wouldn't have to fight the weekend crowds. As I drove up to the auditorium, masses of people streamed toward the building from the scattered parking lots around about, and I was sure that they were heading for some other, some important exposition. Surpri-i-ize!! They all had come to see the new baby of the electronic age. The lobby couldn't hold the people. Six, eight lines snaked forward toward as many windows. A stiff admission. And then, past the turnstiles, you could already sense a great carnival over on the left hand side . . .

Now, mind you, I'm a veteran of commercial expositions. I've been to many over the years, so many, in fact, that McCormick Place (Chicago) has a homey atmosphere for me. The old, the new, the technological fads as they've come marching down through time, I've seen them all displayed. Yet never . . .

Well, I'd never been to a show before where, on a Thursday morning, tenish, such armies came to view and lust.

I thought of the ratcatcher of Hamelin, the fairy tale about a fellow who caused rats and people both to follow him by no other feat than playing beautiful music . . . Million-dollar charm, baby. Million-dollar charm!

There is a part of me that's never taken in and simply looks and sees. It seemed to that part of me exceedingly strange that I would run from booth to booth to stare with longing at weird-looking electronic boards the only function of which was, say, to make a VisiCalc™ model of 90 by 200 cells load in seconds. Or to stare at glare-free screens, envious. Or watch a printer rip off three-color graphics. Or finger devices that would cool my computer. Or wonder if I could afford a card that would give me CP/M, a clock. Did I need a board that could emulate a Winchester? I needed it not at all. But I wanted it badly. And how come, by the way, that all this jargon meant something to me. It would've been purest Greek in 1981.

I had a glorious ball last year. The show impressed me to such an extent that I took my wife that coming weekend. It was my show. I wanted to show it to her as if I'd staged it myself, as if all this power and graphic glory were an extension of myself, as if the highways of light encased in tiny chips were the speed-of-light routes to an unnameably diverse, mind-blowing future.

But every show, even one as fascinating for me as that one was, has some superlative aspect, some towering peak. For me it was Music. I spent much of my time haunting one booth — Mountain Computer's — listening to their alternating concert of Bach and jazz synthesized. Some day . . . Someday I shall compose !!

This year will be different, I venture to say. The feel will be more relaxed, the eye much more discerning, the greed a little better harnessed. But I'll be there. That old sound, that old flute — it's irresistible!



PPP

Puzzles, Problems and Prizes
by Ron Androff

Mostly for Beginners, Past Presidents and Club Members

Well, I'm not sure how this all came about, but you may recall several months back our editor sent out a call for trivia - fill - curios, etc., to be used in the newsletter to fill those white gaps that mark the ends of articles. For some reason editors hate white gaps on their pages. Answering that call, I dug out a little problem and submitted it to Dan with solution and all (a mistake, I should have held back the answer) and he commented (complained...whined, I can't remember) that the problem was not computer oriented. Absentmindedly, I suggested he could request a software solution from the readers, and perhaps he could even offer a prize. Well, I fully appreciate now the frustrations of being misquoted or quoted out of context. And talk about adding insult to injury! First he 'credits' me with offering the challenge - I did not. Then he tells me I have to be the judge - a thankless no-win job if I've ever seen one. And, now he wants me to provide the prize yet!

OK. Make the best of a bad situation, I always say. I refuse to accept authorship of the article(s), but since I must judge, I feel I must also define what I will judge upon. First, important to any program, all cases must be accounted for (i.e., the case of no solution). And, that the range of variables be realistic - no negative ages, for example. This problem would not have been so trivial if the solution was left out, but given the solution (on the printed page) the relationships $X - Y = k$ and $-X/2 + Y = k$ can be used for a quick solution, thus:

```
100 FOR X = 1 TO 98
110 Y = 98-X
120 IF X - Y = Y - X/2 THEN PRINT "HE
    IS ";X;" YEARS OLD AND SHE IS ";Y;
    " YEARS OLD" : X = 98
130 NEXT X
140 IF Y = 0 THEN PRINT "THERE IS NO
    SOLUTION"
150 END
```

For when $X - Y = -X/2 + Y$ you have a solution. But once you know that relationship you probably do not need a computer to solve the problem anymore, either. However, this would have been my solution. It allows the range of ages from one to 97 for each mate; not entirely reasonable because if he or she was between the ages of one and say 15, they probably could not be married but the marriagable age varies around the world, so I simply included those ages, too.

In the case where we have a solution, line 120 detects it, prints out the solution and terminates the FOR-NEXT loop by setting $X = 98$. This is important to do because if it is not done the loop would continue until $X = 98$ and Y would be calculated to be equal to zero (line 110) and then line 140 would determine that Y did equal zero and print THERE IS NO SOLUTION when in fact there was one. By terminating the loop in line 130, Y is left equal to the solution value and line 140 correctly determines that Y does not equal zero, and does not print the no solution message.

It is neat if not elegant. I would have awarded the prize for something like the above. In fact, maybe I will. No, not yet anyway. Obviously, it is not the only solution, as evidenced by the other programs submitted. (It sounds like he is trying to justify himself as the prize winner. - Ed.)

Let us examine the solutions offered by the valid candidates. AHM! The editor, incidentally, can forget about winning any prize -- he got me into this mess.

I wish to thank the contestants for their efforts and to state ahead of time that my critique of their effort should not be construed as criticism. All did a credible job, but since it is a contest, I am forced to resort to nitpicking.

For Mr Yauger's program, he looks for a solution when:

$$(Y - (X - Y)) * 2 = X \text{ is met.}$$

$$(Y - X + Y) * 2 = X$$

$$Y - X + Y = X/2$$

$$Y - X + Y - X/2 = 0$$

$$Y - X/2 = X - Y$$

This is the same relationship we used in the hypothetical program, but for some reason he assumed that the man could not be less than 50 years old (FOR X = 50 to 100). Reasonable if you know the answer, but would one make that assumption if one did not? I don't know.

For Mr. George's solution, he cleverly hides everything being done by nesting or merging several unrelated operations together. The meat of the program, for our purposes though, is:

$$X = X + 1 : Y = 98 - X :$$

$$\text{ON NOT } ((Y - (X - Y))/2 = X - Y) \text{ DO AGAIN}$$

GOTO 11

PPP Concluded from page 10

I cannot imagine how he comes up with that combination of terms, but he expects a solution when:

$$(Y - (X - Y))/2 = X - Y$$

$$(Y - X + Y)/2 = X - Y$$

$$(2*Y - X)/2 = X - Y$$

$$Y - X/2 = X - Y$$

and again the same relationship.

For Mr. Dewitt's solution, he says when $((98 - X) - 14)*2 = X$ he has found the solution. Since, from the solution in the original article, $Y = 98 - X$, $k = X - Y$ and $k = 14$ (Is this where Mr. Dewitt came up with the 14?) thus it becomes:

$$(Y - k)*2 = X$$

$$Y - k = X/2$$

$$Y - (X - Y) = X/2$$

$$Y - X + Y = X/2$$

$$Y - X/2 = X - Y$$

and again the same relationship, but I agree with Dan (no, he still doesn't win), that the use of the value 14 is not fair.

None of the candidates' programs handles the case of 'no solution', except to let the program print out the ending values of X and Y as the solution.

Dan's solution is looking better. In case you missed it, he suggested:

```
10 PRINT "HIM -- 56  HER -- 42": END
Cute.
```

So, partly because he did not restrict the range of X from values that would seem likely, and partly because I cannot figure how he came up with the equation; I have decided to award the prize to Steve George for his entry. (Congratulations, George! - Ed.)

THE SOFTWARE CENTRE located in the Southtown Center in Bloomington provided the reward and/or prize for this contest and will for the next one - which is announced below. My appreciation to them, and if you are in that part of town (south) perhaps it would be worth your time to wander through and say hello.

NEXT MONTH'S PUZZLE

This time I will offer a puzzle and a prize for the correct solution (a program of course) to the following problem:

You have decided to take up farming, having being laid off from your job. After contacting a sympathetic government agency

they offer to loan you the money you need to get started. But, since the offer is from the government, there is a hook in it. Luckily, you have not hocked your Apple yet (let the kids go hungry) so perhaps you can meet the agency's requirements. To wit:

- You must buy only cows, chickens or pigs.
- You must buy exactly 100 critters.
- You must spend exactly \$100 dollars.

The agency has also fixed the price for each animal (they need that sense of control):

- Cows sell for \$10.
- Pigs go for \$3.
- Chickens are only \$0.50 each.

Assuming you could find anyone dumb enough to sell for these prices, how many of each will you buy? Submit program and solution to Dan Buchler, our editor (turnabout is fair play). Next month maybe I can come up with another problem. By the way, if this becomes popular we will be looking for good puzzles and problems, not to mention sponsors. (Answers submitted in AIDA, SANSCRIT or RONTRAN will be rejected. - Ed.)



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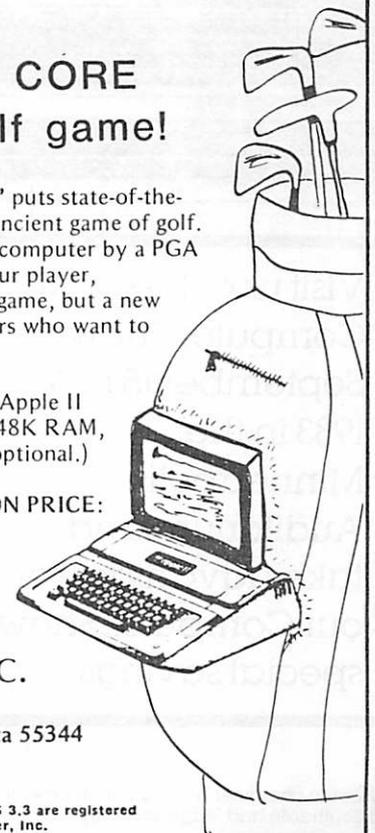
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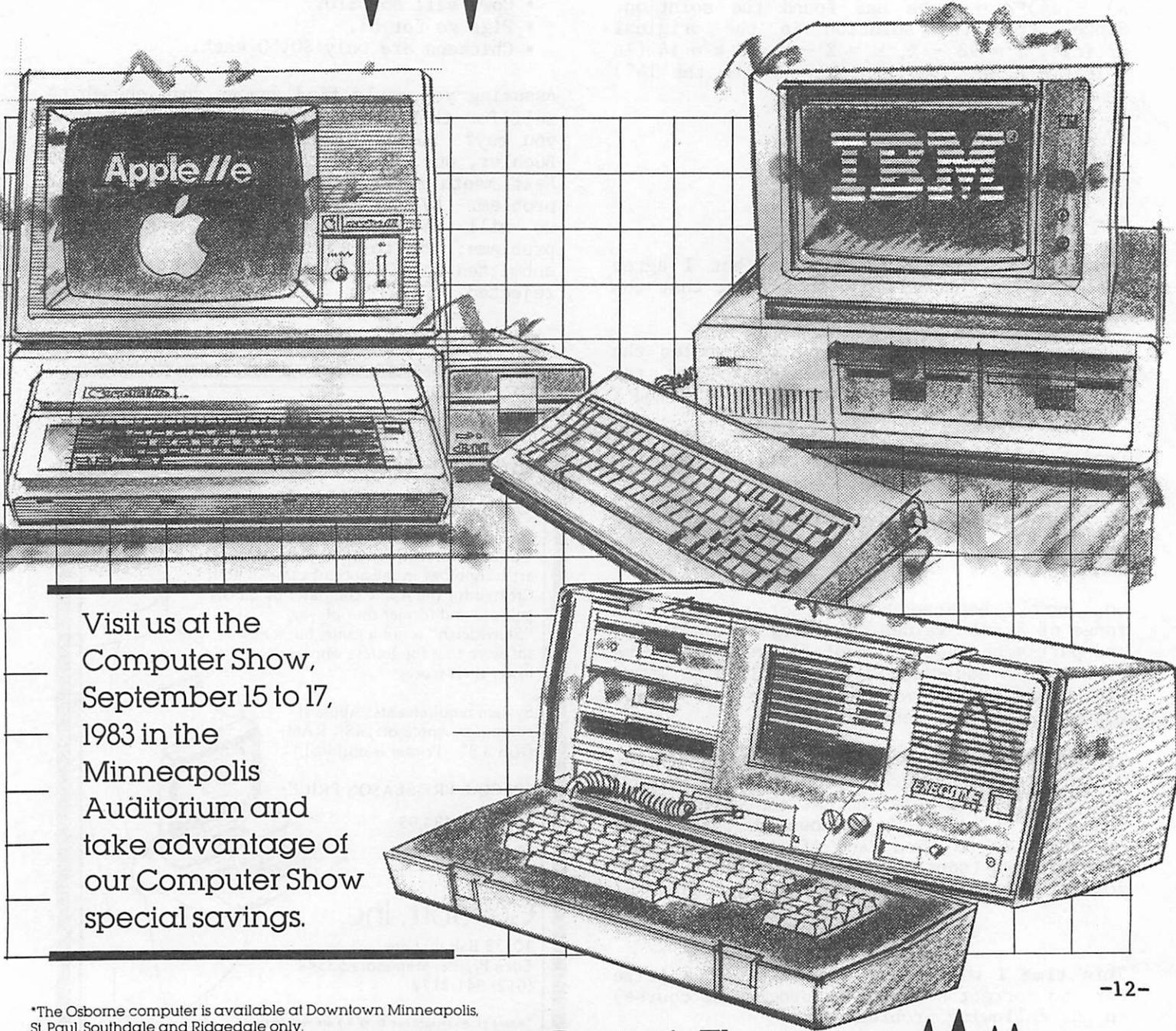
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DB Master Version 4

A Software Review

by Paula Ozols

PRAIRIE MICROSYSTEMS, INC.

I was very interested to lay my hands on the latest version of Stoneware's popular data base management program. Released in mid-July after more than a year of development, this is a major revision, yet still compatible with DB Master Version 3, both the Utility Paks and the Stak Pak. The privilege of buying a copy (\$350 versus \$229 for Version 3), or of upgrading for existing DB Master owners (\$150 directly from the manufacturer) is not cheap. Therefore, this review will try to help you decide whether the enhancements warrant the extra cost.

Note at the start that Version 4 requires 64K of memory. As with Version 3, only one disk drive is necessary, but two drives are recommended. Those of you who have tried to operate DB Master with one drive can attest to that. The package comes with a greatly revised manual, two program disks, and a third sample data file diskette. New worksheets for form design, report design and report reference functions, as well as a Master Reference Chart detailing the program's routines are also included. It is my opinion that these worksheets, if used judiciously, will greatly aid in the design and creation of data bases and their reports. And the Master Chart should help tremendously in providing a road map to new users lost in the DB Master forest (I sure wish I'd had one way back when).

As a matter of fact, one of the primary issues apparently addressed by Stoneware in this new version is the difficulty of getting going in the program. They have attempted to ease the pain in several ways, which I shall detail below.

To begin with, two different paths from the title screen(s) into the program are presented, one with instructions for beginners and another for experienced operators. The beginner's path has considerably more screen prompting; overall, prompting has been improved, with less cryptic and more useful messages, informing rather than rebuking the user, and providing specific information on the error, and how to fix it.

The new manual is also much easier to interpret. I especially welcomed the Reference Guide which comprised the entire second half: organized alphabetically, it answered most questions about the program's functions in depth, or directed you to the answer

elsewhere. This Guide sure beat the sorry excuses for indices that I have encountered in other programs' documentation.

As mentioned, a third diskette is included containing sample data files and an interactive tutorial for "getting one's feet wet." These sample files are an employee record (personnel) file, a mail list, a home inventory, and a collection file (in index card format). The sample files could be used as is or modified for a similar application. Unfortunately, the sample disk included with the program I received was defective (it kept telling me to "Insert Volume 1, Slot 6, Drive 1, File DB MASTER") whenever I tried to run the tutorial. A call to Stoneware finally reassured me that I was not crazy, and a corrected diskette was soon on its way.

Stoneware is promising to provide continuing support for all registered owners of Version 4 via a "File Design Guideline" which will include design hints, advanced uses of the program, and so on.

* * * * *

Now for a comparison of the functional changes and improvements between the two versions. First of all, Version 4 is much faster than the prior versions. There is very little of the "please wait ..." prompts when chaining between different areas of the program or when accessing a particular record. I don't know if it is 20 times faster as they claim, but the increase in speed is notable. Using part of the additional RAM as a buffer, printed output is also quicker; Stoneware claims 30% faster.

The program is organized such that all of the necessary procedures for day-to-day use are found on on the first program diskette, whereas diskette #2 contains routines for file creation, building of "short forms", etc. Therefore, the existence of a second program diskette will not cause any disk swapping per se, as normally only one diskette will be in use at a session. Incidentally, the program can be booted using either diskette.

My initial hope, when I learned of Version 4, was that it would incorporate all or most of

GOTO 14

DB Master

Concluded from page 13

the features of the Utility Paks, especially the ability to restructure an existing file. Well, 'fraid not. The only Utility Pak feature added to the new version is being able to reset the number of records in case of a disk crash/power surge disaster. However, the improved, more extensive editing of fields (being able to change a field's location on the screen, moving from page to page, etc.) found in Utility Pak #1's restructuring routine is now being used by the file create routine of Version 4.

Some other new features are: larger files (containing more records) than before; a maximum of 100 characters in alphanumeric fields (versus 30) to readily accomodate comment-type fields; recognition of a lower case adapter so that lower case letters may appear on the screen; an expanded report set-up menu for making more changes prior to printing; and last but not least, the temporary sort diskette generated to print a report in out-of-file sequence can be reused. In other words, if the same report is to be reprinted the next day, this can be done without having to go through the entire process of resorting and rewriting to a temporary diskette.

The reporting area has a rather significant enhancement. A new type of report format — "one line per record data format" — has been added to generate reports quickly and easily. Using this format produces output similar to that of PFS: a single line is printed for each record, with a single line of column titles (using the field name as title) being printed automatically over each column. Here is a good example of Ozols' Law of Conservation of Difficulty† in that this type of report is easily produced, but is limited in appearance and content.

To sum up, do I think that Version 4 warrants the additional cost? I will have to hedge on that a bit and state that it all depends on how heavily you use or intend to use DB MASTER, and how significant the faster speed is to you. New users must also weigh the value of an easier-to-use program, bearing in mind that even with its improvements, DB MASTER is not going to be a "piece of cake" for the novice.

Before begining my review of Version 4, I jotted down a "wish list" of items, big and small, that I would like to have seen changed. They ranged from being able to restructure a file without needing the Utility Pak (big), to the ability to produce "label" reports such as

for an invoice (big), to the allowance for more operands in a computed field (medium?) to including the specifying of commas in numeric fields on a report as part of the report format instead of prior to each printing (small), among others. Sorry to say, none of these items made it into Version 4.

In the long run, however, the issue of whether to upgrade may become moot, if Stoneware decides to follow the example of other software houses and force an upgrade by removing their support from any prior versions.

† My article "A Consultant's View...", appearing elsewhere in this newsletter. 

Write Protect Failure

by Dick Marchiafava

I recently got two boxes of blank disks, a brand that I would not normally purchase, from a friend. They are the the kind that never forgets.

When I started using the disks I found that the write protect tabs that were supplied with the disks were as elephantine as the name of the disks! Well I was surprised, but it seemed that these large tabs, which are probably intended for 8 inch disks, would work. Then I found that I could cut them up and get 40 tabs from the 10 large tabs furnished. I was delighted!

A short time later I was transferring some files to some of these disks. I realized that I had neglected to remove the write protect tab from the disk that I wanted to put a file onto. I waited for FID to stop trying to write on the disk and tell me that the disk was write protected, but it didn't stop! When the transfer was complete I verified that it had been transferrd. A visual examination of the disk upon removal from the drive revealed a noticeable indent in the tab. Further testing showed that these tabs would, more often than not, allow writing to a protected disk.

The tabs in question are made of a single layer of a black plastic material that resembles electrical tape. The failure of these tabs was due to the soft, thin, elastic nature of the tab material. The pressure of the write switch arm on the tab would cause the material to stretch enough to enable the switch.

GOTO 15



Strictly for Beginners

(not just)

by Jo Hornung

You've heard the old bromide, I'm sure, "Them that has gets." Well, here's a new one for you: She who offers help gets!

For a few months now, by way of this newsletter, I have been offering to try to help beginners find answers to their problems, after complaining in noisy type about the problems I was having trying to make my printer do what I thought I was telling my Apple to have it do, using Apple Writer II.

The support, encouragement, and commiseration I received from other beginners, as well as from some of the more experienced members whose help I had solicited, is so heart-warming I want to share it with you. I am convinced that we have, in our Mini'app'les organization, some of the finest, most generous, most caring people anywhere!

Notice, if you will, that in the first paragraph, above, I have underlined one word. I couldn't do that a couple of months ago. I couldn't figure out how. And notice that I just used boldface for two words, something else I didn't know how to do either. (Jo, you told us that last month, but you say such nice things about us, I'll publish it again anyhow - Ed.)

In the original "Strictly for Beginners" article (May) I had to use caps for words I wanted to emphasize. Now, thanks to the help I have received from some really neat Mini'app'les members (and the new C. Itoh manual) I have the courage to try BOTH **boldface** and underline at the same time. (Can you believe this!) (Jo, you'll be out of luck when you set up your C.Itoh to print Katakana; the club Apple LQP won't do ;ÄÖ ÜÄÑÆäö üänéüèä æiðçR\$..... Ed.)

Meanwhile, I'm still offering help. If there are beginners who have questions which could be addressed in future issues of this newsletter, please do call me (922-7665), and I will try to find the best available person to answer. I'm sure many people went home feeling greatly encouraged after the last few meetings, with the help and suggestions offered by people like Stephen K. Johnson and Chuck Boody. Incidentally, be sure to read Dan Buchler's article on printer commands elsewhere in this newsletter. It explains very clearly how to do some of the operations with which I had so much trouble. More help will be offered at future general meetings, SIGs, and in future newsletters.

In the June newsletter I mentioned that the new user manual for C. Itoh Prowriter and Prowriter II printers is directed to the TRS-80. This is true, but it should be noted that suggestions for use with Apple are also included. Actually, the new manual, put out by Leading Edge Products, Inc., is a huge improvement over the manual which came with my printer.

Incidentally, the "What do you do after you plug it in?" column in the July issue of Popular Computing is very interesting reading, relative to the types of frustrations we have been talking about, only it goes beyond printers and into software, as well. With more and more people speaking out and rebelling against inadequate manuals, publishers and manufacturers do seem to be paying some attention to the problem. Maybe we can hope for more improvement in forthcoming manuals and documentation.

All in all, I find myself becoming more optimistic, or less frustrated, at any rate. I have been giving some thought lately to the fact that the computer industry is still in its infancy, after all. Perhaps we should be more patient. In ten years or so we'll probably be reminiscing fondly about the way things were in the "olden days" of personal computers.

One of my earliest recollections is of listening to radio via a crystal receiver. What a magnificent invention! True, it may have had a few shortcomings, but we kids thought it was wonderful.

So's my Apple!



Write Protect Failure Concluded

Write protect tabs furnished with other brands of disks are stiff and less elastic in nature. Most of them are made of a laminated material that appears to have a layer of aluminum in it.

It may be a good idea to check to be sure that the write protect tabs you use will do what they are intended to.

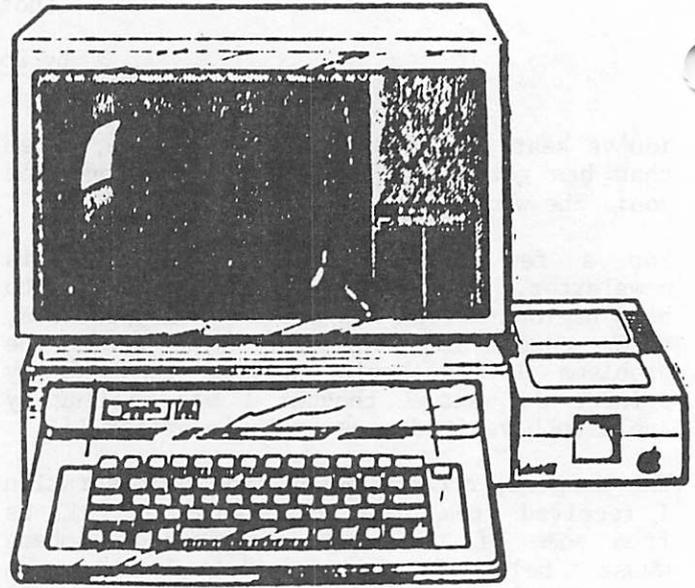
This is not a criticism of the brand of disks involved, but of the tabs that were packed with them. (Moral of the story - vote for Mondale. - Ed.)



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Dan on Printers

by Dan Buchler

Make your Printer Play
with your Word Processor
Mostly for beginners!

Jo Hornung, myself and others in the club are frequently asked by beginning Apple enthusiasts how to make their particular printer underline, print boldface, or utilize some specific feature of the printer in conjunction with their particular word processor. Frequently, the complaint is that the manual just doesn't address the problem, or they can't understand the manual. We have all had similar experiences at one time or another. This article attempts to address the issue in a way which might help some of you relate to the particular printer manual.

Most printers are directed to do their thing by printer control characters. These special character(s) convey to the printer a request to change mode. For example, if I am printing on an Epson at 10 character/inch spacing and I wish to change to condensed (16.6 characters/inch), I am making a mode change. Most printers will stay in a particular mode until directed to change. Included in modes are such things as:

- boldface
- underline
- shadowprint (daisywheel printers)
- pitch (8,10,12,13.3,16.6 characters/inch)

One exception is the doublewide on the Epson. However a continuous doublewide feature is also available. The regular doublewide reverts to normal width when a carriage return is received by the printer.

Most printer manuals will discuss these control characters in two ways:

1. How you control the printer from a BASIC program with reference to things like CHR\$(27)..... Well, forget that section of the manual.
2. How you control the printer with control characters directly. Look for a place, often most easily found in an appendix, which tells you to send something like
Esc X
in order to turn on underline.

Item 2 is the information you need, but, before you can make use of that information you have to learn how your word processor can be coaxed into sending the right stuff to the printer.

Lets expand on the underline example:

Using the above sentence you see the word underline underlined. Reading from the C. Itoh manual, for example, one might get the idea that to turn on underline, all you need to type is the ESC key followed by the X, followed by

u n d e r l i n e d .

Unfortunately this will not work because most word processors, on receipt of an ESC character, will do something particular to that word processor. On many systems, the ESC is a Shift for those poor souls with Apple][s or][+s who have not installed the shift-key mod. On other systems it has other meanings, but never by itself will an ESCape character be generated. Fortunately, most word processors have made provision for direct output of control characters. Each system is different. For example in AppleWriter, you tell it, AppleWriter, to send control characters by hitting a CTRL-V. That is you, hold the CTRL key down and press the V key. This puts AppleWriter in a mode in which it will pass through to the printer all keys hit until another CTRL-V is hit. Thus to print on a C.Itoh Prowriter underlined we type:

```
CTRL-V ESC X CTRL-V u n d e r l i n e d
CTRL-V ESC Y CTRL-V
```

The ESC X is called an ESCape Sequence because the ESC key (abbreviation for ESCape) indicates a special sequence of characters is to follow. Sometimes ESCape sequences contain more than 2 characters. This is particularly true when you are sending a value to the printer such as the number of lines on a page. For example, on the Apple LQP printer, to set forms length to 66 lines, we send the printer

```
ESC F 6 6
```

Thus if you were using AppleWriter, you would send

```
CTRL-V ESC F 6 6 CTRL-V
```

Many of the word processors employ techniques such that you may predefine ESCape sequences or combinations of ESCape sequences and control characters. Each word processor is different in this respect. Applewriter has a glossary. You define your own glossary entries by typing:

```
CTRL-G ?
```

You now can enter the single character by which you wish to identify the sequence

GOTO 18



Dan on Printers continued

followed by any combination of ESCape codes and control characters (up to 255 for one sequence). You end the sequence with a RETURN. To use the sequence, type CTRL-G followed by the single character you used to define the sequence. For example, the ESC F 6 6 sequence could be defined as a glossary item "F". To use it, you type: CTRL-G F

Screenwriter employs a similar scheme in which you, the user, define a glossary-like item called a macro.

Some word processors provide special commands which invoke either a predefined sequence of printer commands which are selected by naming your printer during installation of the software. MagicWindow II is in this category. Other word processors provide the above capability, but in addition allow you to redefine a particular sequence. Pie Writer is one of those.

It is not possible within the scope of this article to discuss in detail glossary techniques, macros or system definition

GOTO 19

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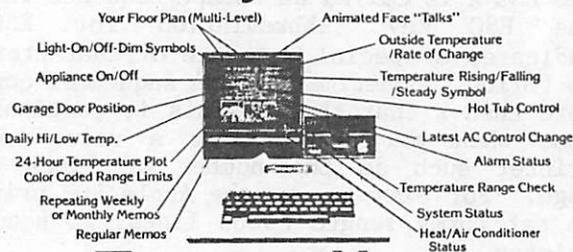
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Dan on Printers concluded from page 18

options. Beginning users of word processors can obtain the full power of their printer hardware by utilizing the capability of their word processor to output control codes directly as described earlier in this article. Space does not permit us to cover every combination for every printer and word processor. However, to assist in the application of the most common features of several popular printers and word processors, the table below may be of interest. Within each table are shown the actual keystrokes to accomplish one of several printer functions for 4 different word processors. There is a separate table for each of 3 printers. Note that keystrokes for Applewriter appear as two lines. The @V appearing on the 2nd line is simply the last character of the sequence on the line before.

In each table the following Key should be noted:

- @ means CTRL or hold the CTRL key down while pressing the following letter.
† means ESC key. (Note many word processors display the † (ESC) key as a flashing [.

C. Itoh Prowriter/Apple DMP

Table with 7 columns: Processor, Bold On, Bold Off, Under line On, Under line Off, Set to 4 line per in Note 3, Condensed. Rows include Apple-writer, Screen-writer, Pie-writer, and Magic-Window.

- Notes: 1. See article by Byron Gilman, March 1982 Mini'app'les. 2. Recent MagicWindow 2 (rev2.2) provides macros for certain printers which reduce the number of keystrokes required. However, the @B is retained and the keystrokes shown should still work. Information courtesy of Dick Marchiafava.

3. Vertical line spacing is expressed in x/144th inches. 36/144" = 1/4" or 4 lines/inch.

Epson MX80/FX80/RX80/MX100/FX100

Table with 7 columns: Processor, Emph-a-siled, Emph. Off, Ital. On, Ital. Off, Set forms=llinch, Condensed. Rows include Apple-writer, Screen-writer, Pie-writer, and Magic-Window.

- Notes: 4. The @K is a CTRL-K. This is often a confusing aspect of the Epson. The Epson requires values sent to it to be single characters where the ASCII code represents the value. In this case The @K, representing 11 inches, is an ASCII 1110.

Apple LQP/Quime Sprint 9 or 11

Table with 7 columns: Processor, Bold On, Bold Off, Under line On, Under line Off, Set forms=66line, Select 10char pitch Note 5. Rows include Apple-writer, Screen-writer, Pie-writer, and Magic-Window.

- Notes: 5: 12 x 1/120ths of inch = 1/10th inch.





Spreadsheet Comparisons

by John L. Hansen

After I read the "Call-A.P.P.L.E." review of Spreadsheet Programs by Steve Ross, I decided to expand the timing measurements that appeared in the June issue of our newsletter.

The timing tests shown below were run on the following spreadsheets:

SS1 (40): THE Spreadsheet © Ver. 1.0 (40 col)
 SS2 (40): THE Spreadsheet © Ver. 2.0 (40 col)
 SS2 (80): THE Spreadsheet © Ver. 2.0 (80 col)
 VC (40): Visicalc © Ver. VC-202B0-AP2 (40 col)
 VC (80): Visicalc © Ver. VC-202B0-AP2
 (80 col — converted to 80
 col using VC-Expand/80 © Ver. 6.5)

For the tests I used a spreadsheet of 35 columns and 116 rows that I had developed for the Minnesota Zoological Garden. To fit SS1, I reduced it to 92 rows.

Times are shown as second (7.49 seconds, 46.55 seconds) or minutes and seconds (1:46.76 = 1 minute 46.76 seconds. NA = Not applicable and TFTM = Too fast to measure (faster than my reflexes).

TEST	SS1 (40)	SS2 (40)	SS2 (80)	VC (40)	VC(80)
1. Save text file	NA	46.82	47.00	46.55	51.21
2. Save binary file	7.49	NA	NA	NA	23.34
3. Load text file	NA	1:37.60	1:47.76	2:00.66	2:22.96
4. Load binary file	5.46	NA	NA	NA	43.40
Recalculation:					
5. Manual at E92	14.73	20.20	20.28	18.22	20.48
6. Manual at AI92	14.68	20.32	21.12	18.24	21.08
7. Auto, data addition	14.67	20.26	20.87	17.90	21.24
8. Auto, data deletion	14.61	20.22	20.88	17.79	21.11
9. SUM(E7..E91)					
9a. Auto	15.16	20.65	20.81	18.03	20.75
9b. Manual	0.64	TFTM	TFTM	TFTM	TFTM
Cursor Movement:					
10. From A1 to A92	<0.30	0.44	2.68	0.35	1.30
11. From A92 to A1	<0.30	0.40	2.57	0.34	1.30
12. From A1 to AI92	0.54	0.49	2.82	0.40	1.73
13. From AI92 to A1	0.32	0.48	2.66	0.39	1.42
Scrolling Times:					
14. Row 21 onto screen	TFTM	0.44	2.30	TFTM	TFTM
15. Right Col. onto screen	TFTM	0.47	2.15	TFTM	TFTM
Replication:					
16. E94 = D94*1.1 from F94..AB94					
16a. Auto Recalc.	14.97	20.90	21.10	18.84	21.85
16b. Manual Recalc.	15.12	20.84	20.89	0.88	1.07
17. E92 = SUM(E7..E91) from F92..AB92					
17a. Auto Recalc.	14.93	24.10	24.37	24.07	27.50
17b. Manual Recalc.	15.00	27.67	24.18	4.31	4.88

COMMENTS:

1. THE Spreadsheet Version 2.0 was run in 80-column configuration using the Videx Videoterm™ Card. Visicalc was run in 80-column configuration using the Videoterm Card plus the Saturn Systems 32K RAM Card and VC-Expand/80 ©. VC-Expand/80 Version 6.5 adds a binary-save format not present in Visicalc. /SW saves a binary file; /SS saves the normal text file. /SL loads either type of file.
2. Times were measured at least in duplicate using a 100ths-second-reading stopwatch. Maximum variation between duplicate times was 0.08 second, with typical differences of 0.02-0.04 second.
3. During SUM(E7..E91) in Automatic Recalculation Mode, SS2 and VC immediately show the sum, but additional data cannot be entered until the time period shown has elapsed.

With SS1 the sum is not shown until the time period has elapsed (See Line 9a).

4. An attempt to replicate a formula in Manual Recalculation Mode with SS2 duplicates the value in the cell being replicated in all the cells of the indicated range or block, but the formula is not replicated until you manually recalculate with "!". This is somewhat startling the first time it is encountered and I spent much time trying to work out what mistake I had made. In Automatic Recalculation Mode, the value in the first cell is again replicated to all the cells of the range.

GOTO 21



**Spreadsheet Comparisons
concluded from page 20**

The formula is then immediately replicated, giving the correct values. SS1 and VC both replicate the formula whether you are in Manual or Automatic Recalculation Mode. In fact, the VC replications in Manual Mode are extremely rapid compared to SS1 and SS2 (See Lines 16b and 17b).

5. If the cursor is on Row 20 or in the rightmost column of the screen and you wish to scroll the next row or column onto the screen, the time required to do so is listed above as the Scrolling Time (Lines 14 and 15). SS1 and VC scroll with no delay. SS2 requires nearly over two seconds to scroll each line or row.
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SUMMARY:

In comparison to Steve Ross' tests I find the following:

1. I did not find SS2 to be the fastest in raw recalculation speed. SS1 was significantly faster in all but one test and VC (40) was faster than either SS2 (40) or SS2 (80).
2. In 80-column configuration using the Videx Videoterm Card (same as Steve), I found SS2 (80) to be the slowest of the three for screen update speed.
3. For speed of loading a model, SS1 is outstanding. The others weren't even close. VC (80) with VC-Expand/80 saves twice as fast as SS2 and loads in about 40% of the SS2 time.
4. In one evaluation-form tabulation I was doing, I found I could outtype my type-ahead buffer with SS2, but not with SS1 or VC.

Two outstanding features of SS2 are automatic checking for extra RAM memory up to 512K and the ability to set individual column widths. VC requires a pre-boot to

get expanded memory and SS1 has individual column widths. However, by setting column widths to zero with SS2, it is possible to print out selected columns (the data can be recovered by reassigning the original column width). Neither SS1 nor VC can do this.



]] = //e concluded from page 61

In the immediate mode you can enter:

```
]BRUN RAM.FP
]BRUN SHIFTER
```

and you are ready to edit programs and run them with complete SHIFTkey capability.

Modifications:

The case conversion routine, as written, resides at memory location (decimal) 768 where many people have their own machine language routines. Therefore, one of the first things some people may want to do is have the program relocated above the DOS buffers where it will be protected.

[Basically, you would have to re-assemble the routine SHIFTER to reside just below DOS (i.e., somewhere just below \$9D00). The routine would store in \$9D00 and \$9D01 the address of your new MAIN ROUTINE minus \$26 (to allow for file buffer name space). Finally, it would jump to a DOS routine at \$A7D2 to re-initialize the DOS buffers to below your new SHIFTER routine, thereby protecting it from overwrite by anything less than a re-boot of DOS. I have placed my implementation of this procedure on the same DOM, appropriately named. I'm not very experienced with assembly language yet, so I would appreciate anyone's comments about my procedure. But, it worked!-SG]

Another place might be on the extra 4k bank of the RAMcard, but this will take some fancy footwork indeed! [INDEED!] You could also make the program perform Macros with special keystrokes. The limits are really up to you. [If you make any changes to the machine programs, please let me know. That way I can learn by example and also pass the information along to the author as he would like to see what others do with the routines. - SG]



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Using Apple Writer II

by Arsen Darnay

The Footnote

Those of you who use Apple Writer][and delved deeply into the manual will no doubt have been pleased to learn that you can insert footnotes into the text you're writing and then — and this is the good part — have those footnotes appear in tidy order on the bottom of the page when you print the text.

And so far, so good.

But those of you who've actually tried to use this feature have probably also discovered another and much less desirable one.

When the footnote is longer than the width to which you're printing, the text stays within the margins you have set but the footnote, alas, prints to the left of your left margin and makes the page look unprofessional.

Some time back I had a call about this and could give no solution. But we live and learn. I've come up with the answer at last, and here it is.

When Apple Writer encounters the open parenthesis and the less-than sign, it prints whatever follows as a footnote. It goes back to printing text when it meets with the footnote cancel configuration, which is the greater-than and the close parenthesis sign. The following text, in Apple Writer, would become a footnote: (<1. Hello, I am a footnote.>) The demarcators, of course, would not print.

What the software doesn't do is to keep track of your margin settings when printing footnotes. But you can do so and thus trick Apple Writer into producing decent-looking scholastica at the bottom of your page.

Let's take an example.

Suppose that you have set your margins at 15 for the left and 75 on the right — leaving a 60-column space for printing.

But suppose that the footnote you wish to print is 94 characters wide, i.e. should normally spill over on a second line.

Let's say that the footnote is as follows: (<1. Webster's New Collegiate Dictionary, G. & C. Merriam Company, Springfield, Mass., 1960, 521.>)

If you leave it at that, the end portion of the footnote will show up on the second line,

all right, but it will start in column 1 (!!)

rather than in column 15 where it belongs.

The way to solve the problem is to break the footnote into two pieces as follows:

(<1. Webster's New Collegiate Dictionary, G. & C. Merriam>) (< Company, Springfield, Mass., 1960, p. 521.>)

Notice two things. First — and this is essential — there is a space between the end of the first and the start of the second delimiter. That space is necessary. Second, notice the three spaces after the start of the second set of delimiters. Those spaces are there to ensure that 'Company' lines up neatly under 'Webster's.'

If you want to print a blank line between your footnotes, you can do it by typing the following sequence: (<RETURN>). The RETURN, of course, is a single keystroke on your Apple.

When you enter the (<RETURN>) formula into your text, an actual carriage return will be executed right then and there and your text will be broken. But when you print the text, the paragraph will be printed properly. What will happen is that a blank line will appear between your footnotes.

You can also use this technique to separate your footnotes from the text by a line. The formula (<_____>) will produce a line 15 spaces long to separate text from footnotes. To produce the underline marks, you must type CTR-Shift M.

To See What You Will Get

One sometimes annoying feature of Apple Writer][is that it doesn't format text the way you'll actually see it on paper.

I've found two ways around this problem that may help those of you with 80-column boards.

The first is to use the software as if it were a typewriter, the second is to print the text to screen.

- Typewriter Emulation

In this mode I use the information Apple Writer provides on the Status Line to tell me when to use the RETURN key.

GOTO 25

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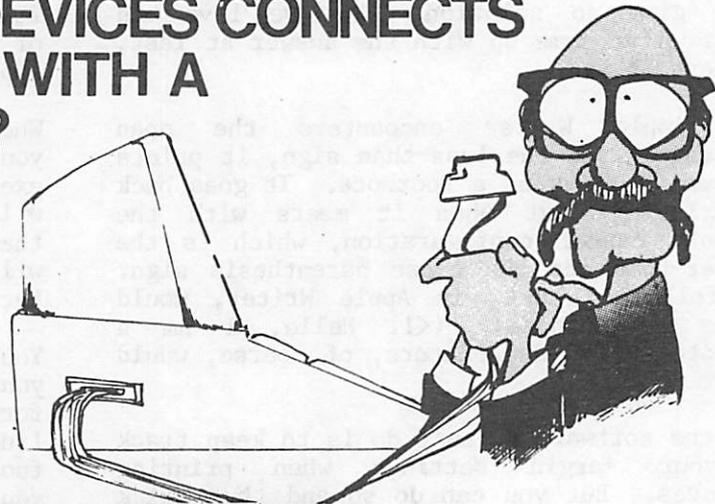


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Using Apple Writer II continued from page 23

The TAB field of the Status Line tells you the position you have reached on a given line. Let's say that you want to print text in 60 columns. Very well. You start typing. And when the TAB reading reaches 60 (or thereabouts) you press RETURN — much as you'd throw the carriage on a typewriter.

This will produce text exactly as it'll print later. It will all be against the left margin of your screen, of course, but you can center the page later when assigning the left margin setting on the Print Menu.

The main drawback of this method is difficulty in editing. Once you disarrange a paragraph by inserting or deleting text, you have to adjust all subsequent lines in that paragraph one by one. And that can get tedious.

- Printing to Screen

Apple Writer lets you print text to the screen. To do so, you go to the Print Menu (CTRL-P-?-RETURN) and set Print Destination to 0.

After you give the command to print (np), text will rush by on your screen at a fantastic rate. It will be formatted as it would appear on paper. Unfortunately, if you are printing an entire page, you will only see the bottom part of it. The top will have disappeared into the sky of your screen.

But, as they say, there is always a way.

What I do is to look at a page in sections. I set Printed Lines (pl) to 20 and Page Interval (pi) to 22.

What that does is to print only so much of my text to the screen as will fit. Then, by setting the Single Page (sp) option to 0, Apple Writer will wait for a RETURN before printing the next portion of the text to the screen.

To make this technique work properly, it is also desirable to activate the Top Line (header) and Bottom Line (footer) features by typing, t1///// and b1/////.

Once I am satisfied that the pieces of the text look right, I print the entire page to screen to make sure that the bottom breaks are where they ought to be.

To make all this work more or less painlessly, I have stored two 'printing formats' on the master diskette. I've substituted one of these — the one that prints in little

sections — for the Default print format of Apple Writer. After the system boots up, I can look at my text in pieces anytime I want to by pressing CTRL-P-np-RETURN.

The other one, which I call FORMAT, has the full-page settings. I call it up when I am done (from the CTRL-Q Menu) and print the entire text to the screen one page at a time.

After I am satisfied, I change the Print Destination to 1 and then let her rip.

Printing More Than 80/40 Columns

Why go through all this bother, you might ask, when you can get software that shows you what you'll get on screen without a lot of CTRL-Ping?

It's a good question. I've answered it for myself, in a way, by buying Format][— and this article is written using that software.

But the What-You-See-Is-What-You-Get systems also have drawbacks.

Format][, for instance, will give me up to 80 columns on paper. Period. But if you print using an Epson, a C. Itoh, or some other printer capable of switching from Pica to Elite to Proportional to what-have-you — and can, consequently, deposit far more than 80 characters on a line without using the full width of an 8-1/2 by 11 inch page — then the more 'sophisticated' systems may be unable to use the full capabilities of your printer.

Apple Writer][will. You can set its margins to any width you like — provided that your printer can accommodate the number of columns you specify.

If you set a page width of, say, 90 columns, printing that page to the screen will still work. But each line will scroll around so that the text will have a ragged appearance. Nonetheless, printing to screen will have the value of showing you the end of your page — which comes in handy when you want to end a letter after two pages, for example. You can tell how far you are from the bottom. If you exceed the two-page length you've set for yourself, you can go back and chop out unnecessary verbiage to make your goal.

All of the above applies to those of you who use Apple Writer on a 40-column screen — with the difference, obviously, that the text lines will scroll after 40 rather than 80 columns.

To see where the bottom of the page is, you have to insert a Form Feed following the last



The Micro as an Educational Tool

by Jane Chatterjee

CONROY ASSOCIATES

Microcomputers are available in the price range from under \$100 to several thousand dollars.

Any microcomputer can be used as an educational tool. The decision of the individual or institution intending to purchase a micro is "What do I want to do with it?"

If the foremost need at present is to learn or teach a programming language, then an inexpensive micro may be the best bet.

However, if the need is to make use of existing software, then the buyer should take time to find out what software is available to fit his needs. Apple is one of the micros which scores best here.

What kinds of software are currently available?

The home microcomputer software market.

There exists various management software which can be useful in managing the home. Recreational software is obviously available, particularly in the form of various kinds of games. Educational software of quality is becoming increasingly available.

The better home educational software (see below for examples) is aimed at teaching through the use of games and puzzles. It uses excellent quality computer graphics, which are relevant to the learning; it is interesting and enjoyable for the learner. Much of this software aims to teach basic skills, such as number, letter, simple math, pattern recognition and matching other packages concentrate on reasoning skills, logic, deduction, etc. Most is aimed primarily at the preteen market, with a couple of notable exceptions.

Earlier, I mentioned game software. Games have obtained a poor educational reputation, perhaps deserved in some cases. However, the strategy and simulation type of game is of educational value, in that it encourages reasoning and planning.

The school microcomputer software market.

A number of the large publishing companies have software based courses in the basic skills - math, English and reading. Software to teach computer programming languages is

available, and some foreign language teaching software exists.

Various other software is available, depending on the subject area. This may be public domain (free; non commercial), small company produced, or in a few cases, available from the larger publishers.

The variation in quality of educational software is considerable.

I am most familiar with the educational software available in the sciences. Here, some of the earlier programs have been developed as a result of curriculum projects. Some of the more interesting software developed recently attempts to simulate lab experiments, and even to interface lab equipment with the microcomputer.

The Minnesota Educational Computing Consortium (MECC) has done a great deal to promote the educational use of micros, and has developed a considerable range of reasonably priced software.

There exists, I believe, a gap in quality between most of the educational software available and the home educational materials I mentioned.

In addition to being educationally valid and addressing a central part of the curriculum, the software needs to be interesting and fun. The graphics capability of the micro can be much better exploited to this end.

Until recently, much educational software has fallen into one of two categories: That which has been produced by educators, who are relatively unsophisticated programmers, resulting in many dull drill programs. That which has been produced by programming wizards, and looks great, but has little real educational value.

Good software needs the services of good educators and good programmers. The difficulty so far has been that programmers and educators have rarely spoken the same language!

I believe that we are beginning to see more cooperation between the two fields, and that a wide range of better quality educational software will be available in the next year or two.

GOTO 54



Mini'app'les Software

by Dan Buchler

Starting with the Twin City Computer Show, Mini'app'les will be sponsoring a series of Mini'app'les Software Disks (MSD) containing professional quality software. MSDs will be available to members at special prices. Unlike, the regular DOMs, these MSDs will be copyrighted. The authors receive a small royalty, and the club makes a small profit. It is the royalty that gives the program authors the incentive to allow us to sell these excellent programs. The quality of the software is equal or better than many similar sorts of programs available through retail channels. The club is grateful to all of the authors who have provided these programs. In most cases those authors could make much more money selling the software on the open market. Their reasons for giving reproduction rights to the software are varied, and have no place in this article.

All of the MSDs contain appropriate documentation. In all cases, the documentation will be contained in TEXT files on the disk, and a suitable program to print or display the documentation will be included on the disk. Should printed documentation be required on future MSDs, it will be provided in a booklet format.

During meetings, and at the TCCS, MSDs will be sold to members only at the special price of \$15 each (\$14.15 plus tax of 0.85). During the TCCS, they will be sold to non-members for \$20.00. Members may order the special DOMs by mail from the DOM coordinator, Terry Schoepner (see front of newsletter) for \$17.50 each.

To help the membership get acquainted with these disks, we are including in this newsletter articles describing 5 of the disks. These articles are not reviews. They were derived from the documentation provided with the disks. However, we think that they will give you some idea of what each special MSD is about. Your newsletter editor encourages members who buy the disks to provide feedback and perhaps a review, so they we may all better understand how good or bad the MSDs are.

The first 3 of these MSDs will be available at the TCCS and September club meeting. The availability of MSD 4 and 5 will be announced.

The first 5 MSDs are described herein:

Available immediately:

- Mini'Scrip Checkbook Financial System - MSD #1. A home and small business checking and accounting package by Leighton G. Siegel.
- Micro-mailer - MSD #2. Mail list program by Juris and Paula Ozols of Prairie Microsystems Inc.
- Higher Text Extensions - MSD #3. Contains Higher Print by Dan Buchler, Message Maker by Charles C. Boody and Higher Word-processor by Don Hagberg. Message Maker requires the A.P.P.L.E./Synergistic Software package HIGHER TEXT; not required for Higher Print and Message Maker, but recommended for maximum usefulness.

Availability of following MSDs to be announced.

- Amper subroutines - MSD #4. Machine code utilities, by Charles C. Boody and Hopkins School District.
- Ugun - MSD #5. An expanded Applesoft, by Earl Benser

The summary articles for these programs are all printed together so that you may extract the pages and insert them in your MSD (or DOM) Catalogs.

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Mini'Scrip

Checkbook Financial System

Summary of the Mini'app'les Software Disk (MSD) #1
A powerful checkbook program for home or business.

by Leighton G. Siegel

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Editor's introduction: The following is a summary - in fact mostly a direct extract - of the documentation that comes on the disk as two large Text files. Also included on the disk is a program to print the documentation. All you need is a printer. If you don't have one, ask a friend to print it out.

The documentation contains the following chapters:

Features
System Requirements
Special note
How to get started
Menus and commands
The Account Code list
The Regular Vendors and Comments list
Monthly and Financial Record Data
Master Account Menu
E)nter Checks &/or other Transactions
Hand-written personal checkpad entries
P)rint Checks &/or Transaction Registers
J)ournalize a Data Disk & Print a Report
L)edger Combine & Summarized Journals
Y)ear End Cash Receipt & Disbursement Journal
V)endor/Comment - Edit/Print/Scan
A)ccount Codes - Edit/Print/Scan
I)nititalize a Data Disk
C)onfigure Printer
How to begin and end a month or year

INTRODUCTION

(From the documentation)

One of the common promotions for a personal computer is the ability to manage your home finances in a more accurate and efficient fashion. The usual example is that of a checkbook. There are, in fact, a great number of checkbook programs available. Most of them are either costly, lacking in important areas or are so inefficient to use that they are actually a nuisance and are thus abandoned. Business accounts payable systems suffer from the same problems and include numerous unwanted features making them both very expensive and impractical in many situations.

MAJOR FEATURES

(From the documentation)

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3. You can combine traditional handwritten checkpads with computer generated checks and records.
4. Transactions are easily edited for correction, even in past months.
5. Checks are printed with addresses for windowed envelopes.
6. Other financial records, not related to the checking account, may be recorded for a more comprehensive financial report.
7. Any standard printer that works with your APPLE computer can be used.
8. A list (a database) of regular vendors is kept to avoid having to retype names and addresses of those who are paid frequently. You can add to the list or recall a vendor from the list while you are writing a check.
9. Up to 5 different account codes may be assigned for each transaction. An account code is a number representing a purpose. For example, charitable donations might be # 8000.
10. Up to 100 different account codes can be created.
11. Check and other Transaction registers may be printed by date, order of entry, check number, by vendor or using other options. Provision is made to easily verify canceled checks.

See introduction to Special Software for information on how to obtain a copy of this program.

GO 33



Higher Text Extensions

A summary of the Mini'app'les Software Disk (MSD) #3.

INTRODUCTION

Higher Print provides a high density print capability with a selection of fonts and more if you own Higher Text from A.P.P.L.E. Message Maker requires that you own Higher Print. It serves as a tool to create and display, on your screen, messages which scroll up and down, left and right and do other useful things.

Higher Word Processor is a easy to use line oriented text editor suited to letter writing and everyday home use. It integrates with Higher Print.

Part 1 - Higher Print

by Daniel B. Buchler

Rewritten from an Oct 1981 Letter
Mini'app'les newsletter article

Higher Print is a program which provides a super high-resolution and large font character sets for the following printers:

- Epson MX-80 (Graftrax or Graftrax Plus)
- Epson MX-100 model III (Graftrax Plus)
- Epson FX-80/100 (with modifications)
- Epson RX-80 (with modifications)
- C.Itoh Prowriter
- Apple DMP (by patching C.Itoh version)
- Paper Tiger 440
- Paper Tiger 460
- MPI 88G

The character sets themselves are derived from the Synergistic Software/Call Apple package Higher Text. Approximately 40 fonts are available either with Higher Text or as an add-on package to Higher Text called Higher Fonts. Also compatible are the fonts for Easy Draw. If you do not already own Higher Text,

Epson Large Font

Epson Emphasized

Epson Condensed

MIXED REGULAR EPSON LETTERS ON 1ST LINE
AND ON 2ND LINE

Epson Anglo Font

Epson Emphasized

Epson Condensed

Anglo Condensed Is Quite Nice
to use with First Caps

although not required to run Higher Print, it must be purchased separately as it is a copyrighted software package. Besides providing additional fonts, Higher Text gives you an excellent font editor that allows you to create your own fonts. I recommend it without reservation. Higher Text Plus is available to members of A.P.P.L.E. for \$27.50, and Higher Fonts I for \$13.00.

However, to get you started, two modified fonts are provided with Higher Print.

Higher Print can be used with Applesoft, Integer Basic and several of the word processors, such as Pie Writer (Hayden Book Co.), which provide for user defined software interfaces. This includes Higher Word Processor, which is summarized in Part 3 below. A member has volunteered to provide an article on integrating a driver into Screenwriter. This may tell us how to make Higher Print work with Screenwriter.

Included on the Higher Print Disk is documentation for Higher Print with appropriate listing program. Higher Print was written by Dan Buchler, and modified to work on the C.Itoh by Chuck Boody.

Hardware Considerations

A 48K Apple][, Apple][Plus or Apple //e (A Franklin might even work) with Disk is required.

Higher Print will work only with certain printer interface boards. The following are supported and others may work but we cannot guarantee that every board will work.

C. ITOH PROWRITER GOTO 31

LARGE
SINGLESTR

LARGE DOUBLESTRIKE

SMALL

VERY SMALL

LARGE DOUBLESTRIKE

LARGE DOUBLESTRINE



Higher Text Extensions
Higher Print
continued from page 30

- TYMAC (no modifications required)
- EPSON with the high order bit line connected to Game port, annunciator output 0. If you are interested in this option, somebody in Mini'app'les can help.
- EPSON with an integrated circuit added to the board which will output the high order bit if the 'DEVICE SELECT' address is odd. (Modification published in April, 1981 edition of the Mini'app'les Newsletter)
- Regular Epson card
- Wesper Microsystems BPO
- Orange Micro Grappler
- AIO and many other parallel cards which use same Centronics type I/O scheme as the Epson interface card.

Higher Print Modes

You will be able to print any large Higher Text font as a high resolution font called Condensed or as large characters. Depending on the printer, a variety of large characters are available. Note, the fonts contained with the Apple Tool Kit™ are small low resolution fonts and consequently cannot be substituted for Higher Text fonts.

How It's Done

Large letters are printed on the paper in exactly the same way they are displayed on a screen in a 14 wide by 16 high dot matrix. For example, using the Epson in 480 Dot Graphic mode (that's the standard mode used to do a screen dump), the printer puts out 60 dots/inch. Therefore, one gets a maximum of $480/14 = 34$ characters per line or 4.3 characters/line.

Again with the Epson, emphasized large letters are exactly analagous to the regular Epson Emphasized mode in which two dots are printed 1/2 dot apart for each dot in the letter matrix. The 960 dot mode at 480 speed is used to accomplish this.

For both the C.Itoh and the Epson, condensed letters use the Higher Text - 14 by 16 matrix, except that the dot spacing is 1/2 dot in both the horizontal and vertical direction. Unfortunately, the dot size on the printer is a little too large for optimum utilization of all fonts, so some letters, like an 'e', tend to fill in. Using the editor supplied with Higher Text, it is easy to change fonts so as to make it print to your liking.

With all printers which use 8 wires of their 9 wire head, and which are passed 8 bits by the interface board, the print head makes two passes to print each line, in order to print the 16 rows of dots. In the case of the

condensed characters, every 2nd or odd numbered dot is printed on the first pass, the printer is upspaced one half dot and the even numbered dots are printed. The registration in the vertical direction is as great as it is in the horizontal direction.

With certain interfaces and with the older IDS 440, only 7 wires are available, and the print head has to make 3 or 4 passes in order to print one row of characters. A 7 wire capability is not available with the C.Itoh, so some interfaces that might work with the Epson won't work with the C.Itoh.

With the C.Itoh, 10 sizes of large letters are available, and two sizes of the high density small letters. The C.Itoh Pica, Elite, Condensed and Proportional spacing modes (you don't get proportional characters in Higher Print) are selected (through the use of POKES) in combination with 3 Higher Print options (selected by control characters) to provide 11 sizes of characters. A 12th very small size (see example), is selected by a control character.

Using Higher Print

Higher Print is easily called from a BASIC program. Control characters are used to turn the modes on and off. In BASIC, these are CHR\$(24), CHR\$(25) and CHR\$(26). CHR\$(23) is used with the C.Itoh only for very small.

If you have PIE WRITER or a word processor which allows you to provide your own Printer driver, or you fire up Higher Word Processor, you can imbed the control characters (CNTRL W, X, Y, and Z) recognized by Higher Print in your text. We actually haven't gotten this to work with anything except Pie Writer and Higher Word Processor at this time, but it certainly possible. For example, Magic Window uses separate driver interface programs for various printers. If there is an adventurous Mini'app'les member out there who has Magic Window, perhaps with help from the supplier, a driver interface could be modified. Please note that we do not know at this time how to modify AppleWriter II or Screenwriter II.

With an EPSON, (and perhaps with the C.Itoh), you can select the vertical spacing between lines (line feed distance). This allows you to use special fonts such as the Logo on the top of each page of this newsletter, or the castle building block font that comes with Higher Fonts.

SYSGEN

A SYSGEN program is provided, which will allow the Epson, Paper Tiger and MPI Printer users to customize their configuration.

GOTO 32



Higher Text Extensions
Higher Print
concluded from page 31

Part 3 - Higher Word Processor
A Mini Word Processor

Part 2 -Message Maker

Summary by Dan Buchler

by Charles Boody

Program by Don Hagberg

The following description has been extracted from the documentation contained on the MSD.

The Message Maker is a Higher Text enhancement designed to allow creation and display of messages and standard Apple HIRES pictures in creative ways. Message Maker will then allow continuous display of selected sets of messages and pictures—using the Apple as a message center.

To use this program you will need to have the Higher Text programs available from Call A.P.P.L.E. or Synergistic Software.

Owners of the Apple IIe should know that as of this writing, Higher Text does not function correctly on their machines, and so neither will the Message Maker. We all hope that this limitation will be overcome by the producers of Higher Text at some future date.

Message Maker is menu driven and consequently reasonably user friendly.

A message to this program is either a standard HIRES picture saved to disk as a binary file or a series of "pages" of text created with the rudimentary text editor that is part of the MESSAGE MAKER program itself. Each page of text is 12 lines long and 20 characters wide, and is intended to be displayed using one or another of the large fonts designed for use with Higher Text.

Associated with each message are a series of parameters describing how the message can be displayed. The user can control the method of display (page by page, vertical scrolling or horizontal scrolling), the background and character colors of the message, the font used, the pause time at the end of a message, whether or not the message is to be flashed, whether the message is to be horizontally or vertically centered on the screen, and how many times the message is to be repeated before going on to the next message.

Once a message is created and the parameters are assigned, it can be saved to disk. To display the messages, the user creates a set of messages by specifying them by name. This set of messages is saved to disk under its own name, and can subsequently be run as a continuous display.

This mini word processor (MWP), is the 3rd program on the MSD#3. It will work with or without Higher Print and like Higher Print can benefit from the availability of Higher Text and the fonts that accompany that program. MWP is so easy to use that no documentation is required or provided. It is completely menu driven, and each option is displayed at the appropriate time so you do not have to memorize codes.

MWP requires a lower case adapter and the shift key modification. (Anyone doing word processing should install the shift key modification to maintain their own sanity.)

The main menu gives you the option to ENTER, EDIT, SAVE to disk, RETRIEVE from disk, PRINT, CATALOG and toggle to other DRIVE.

MWP is a line oriented editor. This means you enter a line and manually control what is contained within that line. The system provides margin setting to assist in knowing when you reach end of line. The user can set tabs at user specified intervals and then tab across with a CTRL-Q. An underline cursor is provided rather than the flashing box of Applesoft. A line numbering capability is included. MWP is fast enough to keep up with fast typing (75 words/minute).

It is easy to enter control information for your own printer. The ESC character and most control characters are entered by simply typing the control character with the CTRL held down. A few control keys are reserved for commands to the program. A double space option is provided. A menu of Higher Text Fonts is included. Except for the two fonts that come on this disk, the other fonts must be obtained from Higher Text or Higher Fonts.

When you select the EDIT mode, you are given the option to erase a line, delete a character or insert a character. During edit, you specify the line that you wish to edit.

If you are a writer or create a lot of text on your Apple, then you should consider a full blown word processor such as Apple Writer, ScreenWriter, Pie Writer, Magic Window, Word Handler, Word Star, etc. But if you only occasionally use your Apple for word processing you may find this to be exactly what you need. No complicated commands memorize or with which to get confused.



Amper Subroutines

Summary of the Mini'app'les Software Disk (MSD) #4.
A set of powerful user callable subroutines
to be used with APPLESOFT programs.

Program by
Charles C. Boody

Summary by Dan Buchler

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Note: the release date of this disk has not been determined.

The disk contains full documentation which may be optionally displayed in upper case inverse video (you don't need a lower case adapter) or printed out (still in upper case). This article summarizes that documentation.

Now, to use the routines, you don't need the assembly language source code. However, many hackers will want it, so they can customize the code. Therefore, if you think you need the source code, contact Chuck Boody or Dan Buchler, at which time we will determine the appropriate course of action. The original source was written for the SC Assembler. Conversions to files compatible with BIGMAC or Apple TOOLKIT ASSEMBLERS are possible. The binaries are as assembled by the SC Assembler.

The routines are set up so you can either call them with an & Command, or via a CALL. There is one exception - PRINT USING is accessible only through the USR function.

Following is a partial list of the routines supplied:

- Print A\$ string on the HIRES page.
- Swap string A\$ with B\$.
- 'READ' specified DATA statement.
- GOTO calculated statement number or GOTO variable name.
- GOSUB calculated statement number or GOSUB variable name.
- Remove specified array names from program.
- Search for specified set of characters in specified string.
- INPUT anything; INPUT anything except control characters; INPUT only numbers and sign; INPUT in date format.

- PRINT USING through USR. User specifies format of string to be printed in a specified string.

The authors plan to enhance the features available prior to release. Hence the delay! If and when available, future updates will be provided to members buying this MSD for a small undetermined charge, depending on the frequency and complexity of the updates. 

Mini'Scrip
concluded from page 28

12. A Journal reports monthly transactions by Account Code.
13. A Ledger combines any group of Journal Summaries for quarterly, year to date or other special reports.
14. A Year End Report will merge all individual transactions entered during the year into one large report sorted by account code.
15. Onscreen help menus are always present indicating what actions are possible and how to do them. Nothing need be memorized or looked up.
16. Wordprocessor-like features allow insertion and deletion of characters and easy cursor movement on the screen.

SYSTEM REQUIREMENTS (From the documentation)

- A. 48k APPLE][plus or APPLE IIe compatible computer. (I hope it also works with Apple][- Editor.)
- B. Two Disk Drives.
- C. A printer (10 pitch / 6 lines per inch).

This MSD, with on disk documentation, is available during meetings and at the TCCS to members for \$15. See Mini'app'les Software, above, for more details. 

UPGUN

APPLESOFT Enhancements

The UPGUN software will be released soon as Mini'app'les Software Disk (MSD) #5

by Earl H. Benser

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This article covers one person's experience with reworking APPLESOFT to improve the functions available to the Basic programmer. The changes developed by the author represent but one possibility; only the limit on available space within the \$D000-\$FFFF range restrains new developments.

The key to making changes in APPLESOFT is the general disuse of the cassette functions by Apple owners. By freeing the space currently used for cassette functions for program rewrites, major additions or expansions can be made. The nominal APPLESOFT language is in unchangeable ROM, but every System Master Disk has FPBasic available for loading into the Language Card (16K RAM in Slot 0). With a minor change to DOS and FPBasic, the Apple will recognize FPBasic as a second language just as it now recognizes INTBasic. Then, the user can rewrite the RAM version of FPBasic as he/she desires.

Initial DOS and APPLESOFT Modifications

DOS uses the byte at \$E000 to identify the language currently in use. APPLESOFT has '4C' at this address; Integer Basic has '20' at this address. The commands 'FP' and 'INT' in DOS load the appropriate ID code and checks both ROM and RAM to locate this code. If the ID code is found, DOS leaves either RAM or ROM active and reinitializes internal code to maintain the selected language for further operations. If the ID code cannot be located, the Apple responds with 'Language No Available'.

The basic (no pun intended here or elsewhere) nature of APPLESOFT requires that \$E000 be the start of a 'JUMP' command. The '4C' version of 'JUMP' must be changed for the RAM APPLESOFT, else DOS will find the '4C' first in ROM and never look in RAM. The only available alternative is 'JUMP-INDIRECT', i.e., '6C'. To use '6C' as the ID code, two bytes must be freed to take the bytes currently in \$E001 and \$E002. Then, \$E001 and \$E002 will hold the location of the moved \$E001/\$E002 bytes. This completes the change in APPLESOFT needed to provide a separate ID code.

With the change in APPLESOFT, corresponding changes in DOS are needed. These changes involve the replacement of the '20' ID code

currently in the DOS subroutines handling language change with the new '6C' value. The most efficient changes have not yet been identified, but an effective change is:

Location	Old Value	New Value
\$9DC5	20	6C
\$A59F	20	6C
\$A8F1	49 (I)	55 (U)
\$A8F2	4E (N)	50 (P)
\$A8F3	D4 (T)	C7 (G)

These changes can be written into DOS by a Binary program easily stored in the available space at \$0300-\$30CF. This same space can also hold the inverse of the changes, and, if the

GOTO 35

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UPGUN continued from page 34

user has 32K RAM available in Slot 0, the Apple can hold normal APPLESOFT in ROM, and both Integer Basic and the Modified APPLESOFT in RAM. Bank switching commands can be added to the 'DOS-change' programs in Page 3 of memory (\$300-\$3FF) to complete the full language conversions. The following is an example of the needed program:

Location	Code	Disassembled
0300	EA EA	NOP NOP
0302	49 AD	LDA #\$AD
0304	8D BF 9D	STA \$9DBF
0307	A9 20	LDA #\$20
0309	8D C5 9D	STA \$9DC5
030C	8D 9F A5	STA \$A59F
030F	A9 49	LDA #\$49
0311	8D F1 A8	STA \$A8F1
0314	A9 4E	LDA #\$4E
0316	8D F2 A8	STA \$A8F2
0319	A9 D4	LDA #\$D4
031B	8D F3 A8	STA \$A8F3
031E	A9 00	LDA #\$00
0320	FO 22	BEQ \$0344
0322	A9 AA	LDA #\$AA
0324	8D BF 9D	STA \$9DBF
0327	A9 6C	LDA #\$6C
0329	8D C5 9D	STA \$9DC5
032C	8D 9F A5	STA \$A59F
032F	A9 55	LDA #\$55
0331	8D F1 A8	STA \$A8F1
0334	A9 50	LDA #\$50
0336	8D F2 A8	STA \$A8F2
0339	A9 C7	LDA #\$C7
033B	8D F3 A8	STA \$A8F3
033E	A9 A0	LDA #\$A0
0340	85 FC	STA \$FC
0342	A9 01	LDA #\$01
0344	8D 84 C0	STA \$C084
0347	8D 81 C0	STA \$C081
034A	4C 9E A5	JMP \$A59E

....END

CALL 770 then activates the INT/FP set, while CALL 802 activates the UPG/FP set, given, of course that 32K+ RAM exists in Slot 0 to take both languages.

The available space in the \$D000-\$FFFF range (APPLESOFT plus AutoStart Monitor) is as follows:

\$D8B0 to \$D8C8	old 'SAVE' for cassettes
\$D8C9 to \$D8EF	old 'LOAD' for cassettes
\$F39F to \$F3BB	old 'STORE' for cassettes
\$F3BC to \$F3D7	old 'RECALL' for cassettes
\$F775 to \$F7D8	old 'SHLOAD' for cassettes
\$FCC9 to \$FBOB	cassete read/write routines
\$FECD to \$FF2C	" " "

Other space in APPLESOFT may also become free as subroutines are modified to use the above listed areas. Typically, as a subroutine is modified, a 'JUMP' command must be used to move from the original program area to a free space for further expansion. The involved logic requirements can leave spaces between the new 'JUMP' command and the end of the original subroutine. Such spaces should be minimized by adapting them for other uses once they have become available. Efficient use of all space is essential for effective modifications to APPLESOFT.

One word of caution...APPLESOFT frequently employs 'overlay' techniques, where the end of one subroutine is also the beginning of the next, often with a byte offset from what normal disassembly would read. Before any modifications are attempted, a printer listing of the original APPLESOFT should be searched to ensure that no instruction would 'JUMP', 'BRANCH', or 'JSR' into the modified area incorrectly after the modification. (The hidden overlays do not appear to involve subroutine exits.)

The modifications initially developed for an improved APPLESOFT were selected based on the author's decisions as to what features would be most useful. These modifications were:

1. an 'IF-THEN-ELSE' command, allowing multi-line THEN and ELSE statements, and multi-layering of the 'IF-THEN-ELSE' sequences;
2. an improved 'GOTO' subroutine allowing search-ahead for GOTO lines which are greater than the current line number (The current GOTO subroutine will search-ahead only if the GOTO line number has a high byte greater than the high byte of the current line number), and;
3. a 'RESTORE' command which allows the data pointers to be set to any data line, not just the first data line.

In designing these modifications, it was necessary to ensure that the modifications were backwards compatible, i.e., they would work with conventional APPLESOFT programming. This was accomplished for the 'RESTORE' command by letting a simple 'RESTORE' reset the pointers to the first data line, while 'RESTORE XXX' resets the pointers to data line XXX. For the 'IF-THEN-ELSE' command, the command defaults to the conventional 'IF-THEN' if the first line does not contain the token word 'IFEND' as its first entry. The improved 'GOTO' subroutine needed no fix for compatibility.

GOTO 36

UPGUN continued from page 35

The addition of the token word 'IFEND' was accomplished by changing one of the now unused cassette commands and its corresponding subroutine address in the internal APPLESOFT directory. The token word 'ELSE' was added in the same manner. At this writing, 'SAVE', 'RECALL', and 'SHLOAD' are still open for redefinition. Since 'IFEND' and 'ELSE' are normally handled in the 'IF-THEN-ELSE' subroutine, the directory addresses were changed to make these tokens equivalent to 'REMARK' if encountered outside the 'IF-THEN-ELSE' subroutine. (Note : Redefinition of token words is greatly simplified if the new token word is the same length as the old one. Also, 'IFEND' was used, rather than 'ENDIF' because 'END' is the initial token, and the Apple would break 'ENDIF' into 'END' plus 'IF', with the 'END' terminating the program.)

The actual development of the APPLESOFT modifications was evolutionary. First, there was the need to trace current APPLESOFT subroutines to gain some understanding of the functions involved. Second, once the desired modification is selected, a prototype model is needed. Often, basic patterns can be found among the various '&'-hooked program options, such as are often listed in CALL-APPLE. Using the prototype model, an applicable algorithm for APPLESOFT then must be written and tested, with multiple revisions as glitches are encountered. The location of the modification also typically is changed as the result of finding ways to use the available space more efficiently.

There is no particular point at which the modification can be said to be finished. There are always ideas about how it could be made better, and in time, further modifications could be made. There is also the point, however, that the modifications are of no use if they aren't put to use. This point generally dictates a termination of the development as soon as the initial objectives are implemented.

Further Applesoft/Monitor Modifications

With the adaption of APPLESOFT to provide the additional capabilities, a question came to mind about modifying the Monitor as well. The immediate answer was to upgrade the Apple][+ into an equivalent of the Apple //e. My Apple][+ has a Lower Case Adaptor, and the Shift Key Mod, so I was off to a running start. The need was to get the Monitor routine to also recognize the lower case mode.

This was accomplished by reworking the \$FDOC range in Monitor, with various subroutines

located in the old cassette areas. The new subroutine first checks the state of the CAPSLOCK byte, and if lower case is selected, the Shift Key Mod input is checked with every keystroke to decide between capital and lower case letters. The original 'capitalize everything' code was removed, and special provisions were made for the normal Cap 'M', 'N', and 'P' symbols. The reverse bracket and 'at' sign were dropped, and shift 'O' was made the carat symbol, to keep the exponential code. To provide a separate visual cue for the alternate APPLESOFT language (temporarily at least called Up-Gun:Mod 1, or UPG for short), the cursor was reworked to provide a CHR\$(255) alternating with the character, if any, present at the cursor position. The flashing inverse mode does not work because the Apple][+ character generator does not have inverse lower case available.

The CAPSLOCK function was achieved by modifying the existing 'ESCAPE' subroutine, such that 'ESC <' toggles the high bit of a selected Page 1 address. If the high bit is present (\$80 - \$FF), the lower case mode is enabled. If the high bit is not present, the normal Apple][+ keyboard is functional. The case shift can be made at anytime outside of programs with the 'ESC <' input. Within a program, a POKE to the Zero Page address accomplishes the same end.

Once the Apple][+ had the operational lower case mode available from Boot, there was a problem in that neither UPG or DOS understood lower-case commands. It's not much good to have lower case when it doesn't do anything. The answer was to go once more back into DOS and UPG for more changes. DOS was relatively easy, a subroutine was packed into an open set of bytes to convert all DOS inputs to capital letters during the parsing routine, i.e., the checking against the legal DOS commands. DOS then understood these commands no matter whether upper, lower, or mixed case.

The same approach was also used in UPG for its parsing subroutine. Once UPG has recognized a reserved word, it is converted to the appropriate token. In any subsequent list, the reserved word is reprinted in upper case, even though entered in lower case. The Apple reserved word directory does not have room to store both upper and lower case options.

With DOS and UPG now understanding lower case commands and programming, another problem surfaced. UPG (and APPLESOFT as well) did not recognize lower case variable names. This caused confusion if lower case was active, in that the incorrect name could be written in error. In attempting a fix for this problem,

GOTO 37



UPGUN concluded from page 36

it was found that a rather small subroutine addition would give UPG the ability to use lower case variable names, and to recognize the difference between lower and upper case variable names. With this subroutine, 'aa', 'Aa', 'aA', and 'AA' are four different but legitimate variables. In APPLESOFT, only 'AA' would be accepted as legitimate. As always, variable names cannot include any reserved word, regardless of case.

With that, my current experiments with rebuilding the Apple][+ software came to a temporary halt. There is room for more additions, as long as they can be done simply, but no candidate changes have been identified. In time, no doubt, a few more ideas will come along that warrant inclusion, and once more the innards of APPLESOFT, or rather Up-Gun:Mod 1, will be reworked to see just how far I can go.

Up-Gun Continued....

Since the last line above was written, a new idea has come to light. The standard 16K RAM bank used to hold a language actually uses only 12K, i.e., the equivalent of \$D000 to \$FFFF. The board logic provides alternate \$D000 to \$DFFF sections, one activated by addressing \$C080, the other by addressing \$C088. In either addressing, the \$E000 to \$FFFF section is also activated. With this form of switching logic, the potential exists to have the full 16K available for Up-Gun:Mod 1, not just the 12K now used by APPLESOFT.

The trick is to develop internal bank switching commands in Up-Gun. Redefined token words, parsed in the current \$D000-\$DFFF range can be given addresses in open areas above \$E000. At these addresses, the following general machine language program can be used:

```

STA $C088  Switches the lower $D000-$DFFF to
            the alternate bank
JSR $Dxxx  'GoSub' to subroutine start address
            in the alternate bank
STA $C080  Switches back to the 'main'
            $D000-$DFFF bank when finished with
            the subroutine RTS
    
```

With this switching technique, over 4000 additional bytes become available for new subroutines, with each redefined token having its own version of the above program to activate its corresponding subroutine. Similar techniques can be used if any of the new subroutines need to reach subroutines in the 'main' \$D000-\$DFFF bank. One method would be to use the following routines:

In the alternate \$D000-\$DFFF bank:

```

PHP          Push Accumulator on stack
LDA LoByte  LoByte of desired subroutine
            address
STA $0B     Store LoByte in 'USR'
LDA HiByte  HiByte of desired subroutine
            address
STA $0C     Store HiByte in 'USR'
PLP
JSR TRNSFR  'GoSub' to Transfer subroutine
            located above $E000
    
```

TRNSFR then has the following form:

```

STA $C080  Switch to main $D000-$DFFF bank
JSR USR    'GoSub' to desired subroutine via
            'USR'
STA $C088  Switch to alternate $D000-$DFFF
            when when subroutine is done
RTS       Return to calling location
    
```

Only one TRNSFR subroutine is needed, since the 'steering' is done by changing the 'USR' address in the calling subroutine.

So now we have 4000 more bytes to play with, and the means to get to them and back. We also have three commands left over from the previous mods to use, plus little used commands like 'Let' could also be redirected. There is also the potential to have another parsing routine in the alternate bank, such that 21 more commands (24 total new commands counting the three yet to be used from the original APPLESOFT list) can be defined. The 4000 bytes should be more than sufficient to handle the desired new subroutines, even with one of them being a "print using" function. Using a second parsing routine in the added \$D000-\$DFFF range will retain the tokenizing procedure essential to APPLESOFT, and will permit maximum density machine code in the new range.

There also exists the possibility that several 4K extensions to Up-Gun could be written, each tailored to a specific general user mode. One could be a financially oriented package, a second could be a data base oriented package, a third could support machine language programming, i.e., a built-in assembler, while others could be anything that specific user groups might desire. There is no inherent restriction in what extensions could be devised, other than the space and number of commands available.

Anyhow, now that we know how, does anyone have any suggestions? And how about some prototype programming to go along with the suggestions?





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A Personal Computer in a Small Business

by Dick Marchiafava

In the fall of 1981 I began searching for a computer to use for accounting and other applications for my small business. The business is a sole proprietorship with no employees, engaged in wholesale food distribution.

The decision to computerize was reached after months of learning about the capabilities of personal computers in business. I had reached the point where I had become dissatisfied with the turn around time involved in dealing with my accounting service. The time lag from the point where I sent them the manual bookkeeping data till I got back a computer generated accounting statement hovered around 25 days. I felt blind during this period, and the accounting data was seldom fresh. In addition I was concerned about reducing my overhead expenses.

I saw that I could shift the money I was paying for routine accounting toward the purchase of a computer. By doing accounting in house I would have the accounting data available faster, and shifting the accounting budget would pay back the cost of the computer and generate an investment tax credit. I was also aware that I would be gaining a great many other capabilities.

I went shopping for software to do the accounting. I tried to get stores to demonstrate general ledger programs to me in order to determine which software would do what I needed. For the most part, I had little success. The sales persons were either unable or unwilling to demonstrate accounting software. Accounting software is involved and it is likely that they just did not know how to use it.

Many sales persons tried to steer me to much larger systems (around \$20,000) than I felt were needed and for which I had budget (up to \$5,000). Since they didn't seem to be capable of demonstrating the software I needed, I did not pay any attention to the push for more computer. I completed the purchase under budget (less than \$4000). With some enhancements and additional software, my total expenditure was still less than than \$5000. I have since become aware that businesses much larger than mine operate with a computer no bigger than mine.

I then turned to consultants to determine what software would fit my needs. I contacted two consultants and gave them the necessary details about my business and expressed what I

wanted to accomplish. One responded negatively, the other did not respond at all.

Then I met with another consultant who was familiar with hardware and programming, so as to discuss my needs. He suggested a general ledger (G/L) package that he thought would work, and then selected equipment around that. Since he was not certain that the G/L package would work, I had an accountant who uses that G/L for his clients come on site to determine if it would fit my needs. It did.

I got the computer in April of 1982. Then things got difficult! I had expected to have the accounting up and running in 60 days. The reality was 5 months. I had the impression that I would be able to set up the accounting package myself, with a little help. The software was written by accountants for accountants, and is very capable. But the manual did not take into consideration the business person with little or no accounting background. I had the accountant on site again to set up my books.

Today, after 15 months of living with this package, I am comfortable with my system until I am faced with something new. Then I call my accountant (who is also familiar with the G/L).

I use my computer for accounting and word processing, which I use extensively for correspondence and printing price lists. Since price lists change often, the ability to print the number of up to date price lists as needed is a boon. I do not waste time printing obsolete price lists and I have current and personalized price lists for my customers and prospects.

I have a database program with which I have done some work, but I have not really learned to use it yet, and do not utilize it for any business purpose. I am in the process of learning one of the second generation spreadsheets now, and am quite excited about it. I realize that some of the tasks I had intended to do on the database, such as inventory and price work sheets can be readily implemented on the spreadsheet.

One of the things that becomes apparent in this article is that I was isolated when planning my computer purchase. I had no friends or business contacts on whose

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Personal Computer in a Small Business concluded from page 39

experiences I could draw. I even tried to get advice from the Small Business Administration's SCORE program, but no one there was familiar with the capabilities of personal computers.

In making and implementing the decision to get a computer for a small business, one should talk with other persons who have them. In my case I was able to contact and join a User's Group a few months after I got my computer. Looking back, the hardware and software that I have is for the most part satisfactory, but I would have been able to make as good or better decisions sooner if I had been involved with the User's Group before I purchased. This is what I recommend to anyone who is interested in business computing.

Before concluding any purchase of software and hardware, get a clear understanding of how much support you are going to get. I am not trying to suggest how much support the dealer one will do business with owes you, but know how much you can count on in order to avoid expensive delays before calling in help.

(Editor's Note: In case anybody wondered, Dick does use an Apple][+, and the User's Group to which he refers is Mini'app'les. On behalf of Mini'app'les, I would like to point out that Dick is also one of our regular contributors and is active in club affairs.

Using an Apple for Business

by Erik V. Carlson Harvest States Cooperatives

In the Communications Department of our regional agricultural cooperative, the Apple Computer has been a very effective tool. The need for the micro-computer became evident 2 years ago when we created a new manager training program. Because of the priority of grain accounting on our main frame computer, getting a mailing list for our managers would take over two weeks. Enter the Apple...

Our initial unit consisted of an Apple II+, 2 drives, a CRT and a Qume 5 Daisy-wheel printer. The first software was CCA-DMS (now upgraded to VisiFile), VisiCalc and the Easywriter Professional word processor. These continue to be our mainstay in software. We have since added a second Apple II+ and a Prowriter dot matrix printer. New software includes DB Master, SignUp, a unique program for making signs and banners, and various utility programs.

Our applications have expanded much beyond the original mailing list; personalized letters in response to ad inquiries from various publications; a data base, monitoring the progress of participants in various training programs (a base of 800 managers); a mailing label application for several publications within our company (5000 on one list alone!); inventory control of promotional items; ordering and billing for the Uniform Clothing Program and other promotional material. We do not do any programming, but rely on existing software, and adapt our procedures to fit.

The portability of the Apple allows us to take it into the field and use it for various applications on location. In the manager training program, a business-simulation game has real-life applications to everyday problems in elevator management. There are other "games" that deal with a health and fitness program presented to the managers. Registration for out-state meetings is another application where the Apple has been effective.

Future applications for our Communications Department will include the addition of a modem to access the national networks such as Source, as a resource for our writers and editors, and electronic mail with one of our out-state divisions. The addition of a hard disk for greater data base storage is another possibility. New software availability allow us to interface with our main-frame and other minis and micros within the company.

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A Heretic's Approach to Microcomputers in Corporations

by Subir Chatterjee

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Having spent almost 18 months co-ordinating a Business Users' Group within Mini'app'les, I have heard, and participated in countless discussions regarding the use of microcomputers in business. Rather than writing an article reviewing various ways of using microcomputers in business, I decided to focus on my perspective on the role of microcomputers in the corporate world.

In particular, I wish to address what I see as being some of the stumbling blocks to acceptance of microcomputers by corporations. Other articles in this issue address the use of microcomputers by business, particularly small business.

My assumption about the corporate environment is that accounting and database needs are being met using mainframes. I have also determined that few corporate computer systems have developed to the point that large numbers of employees in line functions can routinely manipulate data for the purpose of conducting job related analyses. Further, where the climate enables such endeavor, the user of data is usually insulated from its source by an information group. Given this environment, I suggest that there are significant opportunities in improving the quality of line management decision making as a result of incorporating microcomputers. The rest of the article will be devoted to exploring some of these ideas, and addressing some of the implicit objections.

I see two significant areas where microcomputers can contribute today. The first is where microcomputers are used to increase line productivity by being used for analysis work (sales, manufacturing, finance, distribution, etc.) - the role of the microcomputer is analogous to calculator, paper and pencil. The number crunching ability of the microcomputer is harnessed to conduct more detailed examinations of company performance and the ease of editing (recalculation) encourages alternatives being examined. The outcome of this is in new insights about the corporation and new opportunities. Further, the fact that the interpreter of analyses and the computer operator are one and the same removes one obvious source of poor communication! All the above could be conducted on a mainframe system; however, because the problems are specific to the tasks, and because the

individual paybacks may be as low as \$100,000, it is often uneconomical to allocate the task to an information system function. A practical and cost effective way to address these types of tasks is to think of freestanding, 'dedicated' microcomputers, where their primary task would be to handle one or more of these regular analyses. The benefits that accrue from such analyses can also be identified to the person or department that initiated the change.

The second significant area is less tangible and the savings consist of 'soft dollars'. Included in this area would be business graphics, annual budgeting, executive wordprocessing, etc. The reason I consider these areas as less tangible is that no direct savings accrue unless some budgets are reduced!

Both these areas are implementable today, with technology that is 1980-based! In other words, waiting for tomorrow is not necessary. Both hardware and software abound and there is an adequate history of product performance. There is even a pool of trained, motivated, personnel within large corporations, who, given the resources, could present bottom line dollars within one fiscal year.

Why, then, do corporations feel the need for caution in embracing this technology?

The answer, I suggest, lies in the fact that a considerable amount of Information System resources is being spent in two other areas, both influencing corporate microcomputer philosophy.

The first such area is busy creating a 'big box' and filling it with all the corporation's wisdom: a large corporate database. The objective is laudable; once the information is available, line management requests can be complied with easily. Unfortunately, this solution requires investment and time, measured in years. I have another slight problem with this solution: that it has the ability to become unwieldy.

The second such area is more difficult to explain. It goes variously under the name of 'electronic mail' or 'the office of the

GOTO 42



Heretic's Approach concluded from page 41

future'. It appears that enormous sums of money are being devoted to this area of corporate productivity, at least as measured by column inches!! My problem with this idea is that I can't find the client; it certainly cannot be the administrative function, because telephone, telex and paper costs aren't quite the key issues in America's reindustrialization effort. What, then, provides the impetus? One possibility is that the glamour of 'the future' is sufficient to generate corporate momentum, "lest we get left behind". The other possibility, which I think is the more likely, is that the disciplines required to solve the challenges of corporate databases and electronic mail are more within the mainstream of Information Systems training, while the mundane task of a person altering his work habits to replace slide rules and calculators for microcomputers is too mechanistic and routine for the I.S. professional.

In contrasting the two possible scenarios for implementing microcomputers, we find the following: In the first instance, the focus is on free standing equipment, devoted to specific tasks, decentralized control and with maximum attention given to the user's requirements. Accountability is apparent. In the second instance, the focus has shifted from the day to day operations to a centralized information system driven organization, where the immediate benefits have been superseded for some future, undefined good. A key requirement in this scenario is conformance, which necessitates control. Accountability for productivity gains is not apparent, and quantification is even more elusive.

The question still remains, How are these two scenarios to be reconciled?

The answer is to recognize that the two needs are not mutually exclusive. In other words, there is a legitimate need today for line staff to improve productivity without waiting for 'all encompassing' solutions. There is also the potential for additional productivity gains as a result of applying futuristic communications technology.

A possible way to have the best of both worlds, in my opinion, is to treat free standing microcomputers as any other productivity-enhancing tool. Their justification should depend on whether there is an adequate payback, from identified, hard dollar savings. As long as the need for the tool exists, and the microcomputer is capable

of performing the task, there is no inherent need to place additional demands on it, for example, in future communication system projects. In other words, leave a working tool alone! Quite separately, as and when communication systems evolve to the point that specific projects can be initiated, let the incremental costs be justified by the incremental gains.

"Ah! but what about equipment compatibility?" I hear you say.

The problem, in the case of microcomputers, is actually less acute than is given credence. My reasons are twofold:

1. I anticipate paybacks of 2 years or less for most applications, and I suggest that microcomputers should be seen as having a useful life of around 3-5 years, IRS schedules notwithstanding. As such, I suggest that old microcomputers should be put out of circulation, either by employee sales, or through donations to schools.
2. The second is that if a microcomputer was purchased for production planning, then leave it running production planning tasks even after 'the office of the future' becomes reality. In other words, equipment does not become obsolete just because more advanced equipment is available.

As is clear from the title of the article and its slant, my background is not in the field of Information Systems. Instead, I happen to be an avid microcomputer user and have found them to offer tremendous opportunities at work. What I have found makes the statement "the future belongs to the person with information" a reality today. The future is here now - let's capitalize on it.



Check Caution

by Dick Marchiafava

Some persons with personal computers are purchasing checks from vendors that do not meet the American Banker's Association encoding specifications. If the checks are not up to encoding specifications, your bank will not be able to process these checks by computer. In addition, if the check number is not encoded in the Magnetic Ink Character Recognition field, the check reading equipment will not be able to read check numbers to print them on a list, or to locate stop payments automatically.

GOTO 56.

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Disabled & Microcomputers

by Connie David

With the economy in the shape that it has been for the past few years, getting a job has been tough. If one's background is in Human Services, the challenge is even greater. Unless, of course, you are somewhat enterprising.

I found myself in just such a predicament. The problem: how to support myself. The solution: self-employment.

I decided to start brailleing menus for restaurants. It is most inconvenient, when eating at a restaurant, to be unable to read one's own menu, and only a very small percentage of restaurants offer braille menus.

Transcribing menus into braille by hand is a rather slow process. If a small mistake is made, the amount of time needed to correct it is considerably longer than the time needed by, say, a Selectric typewriter. If the mistake is a large one, it may require rewriting the entire page. This is not only time consuming, but also very frustrating.

It then came to me that there should be some way of using a microcomputer to make the process of brailleing menus more productive and less time consuming. The problem would be in the actual printing of braille. Braille printing was being done, but the people with whom I spoke informed me that the quality of braille was not very good: specifically, it would not hold up well to repeated readings. Braille menus would have to be of good copy, and able to withstand numerous readings. So, I prepared myself to locate people who were willing to put their expertise to the test: to modify a dot matrix printer to print in braille. I would also have to find a program to translate printer character code (ASCII) into braille symbols. In addition to the basic 26 character alphabet, braille has 189 short cuts + special symbols!

The next immediate problem was financing. Being unemployed had taken its toll of my bank account, so alternative sources had to be found.

I started with the Minnesota State Services for the Blind. Staff in the agency are not familiar with microcomputers and were somewhat skeptical. I was advised to submit a proposal for consideration. The proposal was to detail the items required with an estimate of cost, including a 'best estimate' for modifying the printer. I had also decided to incorporate a

'speech output' device, that would verbally read whatever appeared on the monitor.

The first place I was directed was to a small New Brighton company, AVOS, that was modifying Osborne computers. They were equipping them with speech synthesizers, and modifying applications programs. After seeing a demonstration, I decided that that was what I wanted. Then, much to my surprise, I was read an article which discussed the use of an Apple][+ in combination with an Echo II speech synthesizer. The article named several people, including Dr. Ashcroft of Vanderbilt University, Nashville, TN, and David Holiday of Louisburg, PA, who were working on modifying software to be used in conjunction with the speech synthesizer and braille printer. The article discussed the use of a braille printer, known as a Kramer Braille. As a result of reading the article, I decided to alter my proposal to be based on an Apple][+, with 2 disk drives, monitor, Kramer Braille, modem, Echo II speech synthesizer and conversion programs. The total cost for the package was \$5800.

As of writing the article, no decision has been made concerning the funding of this project by State Services for the Blind. If they should turn down my request, then I shall look elsewhere for financing.

I have discovered many things in the last few months. One very important thing is that with some added accessories, I, too, can become an active micro user. My use of the micro is only limited by my lack of knowledge. By attending User Group meetings, and talking with knowledgeable microcomputer users, my ignorance is being replaced with a growing list of possible uses.

There are 3 things I can pass on to readers:

1. Decide what it you wish to do. Start with one or two ideas, and concentrate on them.
2. Join a microcomputer User Group, and pick one where others own the same hardware (equipment). Draw on the skills of the members to help in solving problems. There is a tremendous willingness to share knowledge.
3. DO IT! There will undoubtedly be many problems, but there also exist solutions to those problems. Many of the solutions are simple and there is expertise out there to

GOTO 46



Consultant's Outlook

A Consultant's View on the Usage of Micros in Small Businesses

by Paula Ozols

PRAIRIE MICROSYSTEMS, INC.

In my dealings with small businesses, I find that APPLES and other micro-computers are being used today primarily in four areas: word-processing, modeling/spreadsheet, financial/ accounting, and data base applications. To a lesser extent, I have also seen them put to use as a dumb terminal for data communications, to produce graphics, and of course a myriad of "vertical industry applications."

None of these usages is particularly novel; what is interesting to watch is the evolution of the users (and this applies in the home as well as in business) toward more sophisticated and greater functionality of their machines. The most difficult step for the average newcomers still appears to be their very first hands-on experience with a micro. Next comes learning to use their first "application program", albeit a simple data base such as a mailing list, or using VisiCalc to construct or modify a model. After these hurdles have been overcome, succeeding applications are much easier to master (as well as succeeding computers for that matter). And it is really exciting to observe my former computer novices becoming independent and exploring the many different ways in which to use their computers.

How would I rank these four primary computer business applications as to ease-of-use? Generally speaking, I believe that the easiest are word-processing applications, then financial, then modeling, and finally data bases. The criteria I have applied in arriving at this order are the depth and versatility of the application, the structure of the program, and the distance between manual and computer methods of handling the job.

In doing so, I have devised a simple rule-of-thumb for determining an application's ease-of-use (Ozols' Law of Computer Application Evaluation also known as Ozols' Law of Conservation of Difficulty.) It is: "The more flexible and powerful a computer application, the more difficult to use it." In other words, a highly structured, rigid, completely menu-driven program is bound to be easier to get started and to come up to speed than one which is very versatile and has many options. The trade-off between the two is obvious: Which application will yield results the fastest? And conversely, which in

the long run is going to be more useful and longer lasting in value?

This may seem to verge on the trivial, but it definitely is not to a first-time micro-computer user. At one end, a new user can be completely overwhelmed by new concepts, procedures, jargon, etc., almost to the point of paralysis in trying to set up a powerful applications program. The program will quite likely be able to do what the user wishes it to, but he can't make it get there. At the other extreme, the user might learn all there is about a program in a few hours, but it will never do more than a fraction of his wishes.

Perhaps I can explain this better by giving examples in the area of data base applications. First I would like to digress a moment to discuss how data or information bases are designed. For starters, setting up a data base is in itself no easy task. The ordinary, inexperienced user must first determine what data is to be tracked, and then try to arrange it meaningfully so that the data can easily be found and updated. Finally, the information to be extracted and reported on must be decided, as well as the format and contents of reports. This is a lot to ask of the average user, no matter how familiar that person may be with the requirements of their business. And the difficulty of achieving this is often compounded by the poor documentation of many of the popular data base programs. I suspect these are the reasons why most of my calls for consulting are in the area of data base applications.

Returning to my example, the classic public-domain data base program FILE CABINET, or even the popular PFS, represent the "easy but restrictive" extreme, whereas DB MASTER qualifies as "very powerful/very difficult to learn" software.

* * * * *

What lies in the future for business applications? The most exciting progress I see is being made in the ability to inter-relate data, either between files, or between applications. Two principal new concepts come to mind: "relational data base programs" and "integrated business software" packages.

GOTO 46



Consultant's Outlook concluded

Disabled and Microcomputers Concluded from page 44

Relational data bases are ones in which several different files containing data can be created so they are linked together, or share a relationship between themselves, and therefore their common information can be updated simultaneously or combined in a report in one step. For example, whenever the "sales amount field" on an individual record of one file is changed, another file containing total sales figures will be automatically computed. Relational data bases are also often described as "program generators" since they can be used to set up such applications as accounting systems, mailing lists, inventory control, etc., all of which are merely ways of "massaging data." Some of the more well-known relational data base programs for the APPLE and other micro-computers are dBase II, Condor, and Personal Pearl (all at this time require CPM).

Integrated software packages are those which contain more than one application and when, loaded into memory, allow the user to manipulate data without having to reenter it, transfer files, or swap disks. A good example is a program by the name of "LOTUS 1-2-3" from Lotus Development Corporation, only available at present for the IBM PC and IBM compatible systems (with a minimum of 192K memory). This program is at present selling 7 - 10,000 copies per month at a list price of \$495!! Like VisiCalc did for APPLE years ago, 1-2-3 is selling IBM PC's! The three areas it addresses are modeling, data base, and graphics, with some limited word-processing functions.

To my knowledge, the only similar software package for APPLE computers (II and IIE) is "THE INCREDIBLE JACK" by Business Solutions (\$179), which combines the functions of a word-processor, database, and spreadsheet. Other companies, such as Software Publishing (PFS), Artsci (Magic Window/Magic Mailer/MagicCalc) and most notably VisiCorp, offer somewhat integrated packages in that all data created by their data base programs can be recognized and manipulated by all of the other programs, but not simultaneously.

I believe that the trends toward, both relational data bases and fully integrated multi-function programs will continue, and that they will serve to extend the capabilities of our APPLES in solving business problems.



help find them. This article was written on a friend's microcomputer using a word processor; actually it was written twice, because the first time, the computer 'ate' my article!! (Your friend has got to back up those disks. Word Handler won't resurrect blown disks! - Editor).

The following is a list of resources which may be of use to readers:

Connie David, C.J. David Enterprises
1020 W. 53rd Street
Minneapolis, MN 55419. 612/823 3862

Dr. Ashcroft, Dept. of special Education
George Peabody College for Teachers
Vanderbilt University
Nashville, TN 37203

David Holiday, Raised Dot Computing
310 South 7th Street
Louisburg, PA 17837. 717/523 6739

Bill Grimm, (Computer Aids)
645 Candlelight Court
Ft. Wayne
IN 46807

Closing the Gap, (newspaper devoted to microcomputing by the disabled)
Dolores Hagen, P.O.Box 39
Henderson, MN 56044. 612/665 6573

AVOS, John Hlivjak, New Brighton,
MN 612/633 4908.

Following is the proposal I submitted to the State Services for the Blind:

Item	Cost
APPLE II+ Second hand	\$ 800
2 disk drives + controller card	\$ 700
16K RAM card	\$ 100
Monitor	\$ 100
Echo II Speech Synthesizer	\$ 150
Kranmer Braille	\$ 3000
Serial Interface card	\$ 150
Modem	\$ 300
Braille edit program	\$ 500
TOTAL.....	\$ 5800

If the Apple //e Family system is used to replace the computer, 2 drives, RAM card and monitor, the cost would jump to \$ 6100.





Disk Drives

by Earl H. Benser

A General Discussion of the Disk Drive Developments Since The Apple Disk][Drive

Most Apple owners are familiar with the basic Apple Disk][drive, unless they are cassette hold-outs. The 35 track device has provided yeoman service, and has fostered all sorts of software for who-knows-what. (We do know...don't we?) But in the last year or so, new disk drive manufacturers have come on to the scene, some with drives having the same capabilities as the Disk [but at lower prices, others with drives with more features at comparable prices. For the most part, the various drives have much more in common than not; Apple compatibility demands that. The questions that most people have are about the importance of the differences. Hopefully, here are some of the answers.

First of all, a 5 1/4 inch disk does not have specific tracks on it. Rather, the number of tracks used are determined by the ability of the head to read and write adjacent tracks reliably at some minimum spacing, and by the capabilities of the disk operating system (DOS) to utilize this minimum spacing. The Disk][is notoriously sloppy in track placement, but equally forgiving in reading sloppy tracks. Based on the Disk][performance, 48 tracks per inch became a de facto standard for the Apple, with the Disk][construction allowing access to about 2/3rds of an inch (35 tracks) of the disk surface. The actual track space available is about 5/6ths of an inch, or 40 tracks at the Disk][spacing. By using higher head placement precision, and perhaps slightly narrower heads, tracks can be written at half the Disk][spacing, doubling the maximum number of tracks per side to 80.

RANA was one of the first departures from the 35 track standard set by the Disk][. RANA's Elite 1 was a 40 track design, using more of the disk space than the Disk][. The Elite 2 was an 80 track, dual head design, using both sides of the disk. The Elite 3 was a 160 track, dual head design, doubling the track density of the Elite 2. All three drives are compatible with the conventional Disk][controller; control variations are accomplished via modifications to DOS. RANA had good ideas and good designs, but did not make any market breakthrough, probably because most Apple owners were satisfied with the Disk capabilities.

Recently, many new drive designs have been showing up. TEAC, BMC, MICRO-SCI, QUENTIN, and

ATLANTIS (Team Electronics) are some of the brand names. Most now offer a full 40 tracks, some are "half-high's", letting a person stack two drives in the same space as one Disk][, and some offer expansion potentials to 80 and 160 tracks. Usually, the price per 40 track drive is somewhere around \$250 to \$300, with controller cards at about \$65. Generally, these new drives offer more performance at lower cost than Disk]['s.

For comparison purposes, a 35 track disk holds 147 Kbytes, a 40 track disk

holds 160 Kbytes, 80 tracks equal 320 Kbytes, and 160 tracks equal 640 Kbytes. Given a RANA controller card that can handle 4 drives at once, and four 160 track drives, one slot can have 2.5 Mbytes of disk storage available, versus the 294 Kbytes of the conventional dual Disk]['s.

The 40 track drives are fully compatible with the Apple, given some software changes. The Disk][is physically restricted to 35 tracks, but both DOS and the VTOC on the disk are designed for 160 track capability. If a 35 track DOS is booted, files can be recovered from all 40 tracks (if used). Writing to a formatted 40 track disk will access only the first 35 tracks, since that's all that DOS expects to find. No problems will be encountered using 35 track disks on a 40 track drive. Full use of the 40 track format requires a minor modification of DOS to change the existing 35 track limits to 40 tracks. All 40 and 40+ track drives, or controller cards, come with the necessary modification programs to change DOS.

If a 40 track disk is used with a Disk][drive, however, the Disk][can only access the first 35 tracks. Thus, custom disks can 'bomb' when used in the wrong drive. Generally, a 35 track format should be used for all disk exchanges, unless it is known for sure that the 40 track format is acceptable.

The 40 track drives pose no difficulty for any copy programs, since the master disks are all 35 track versions. The Inspector/Watson software doesn't like to go past Track 35, but can be coaxed to do so in some cases. The Inspector/Watson can be modified to accept 40



Home Projects (9)

Disk Drive Speed Control

By Roger Flint (771-2868)

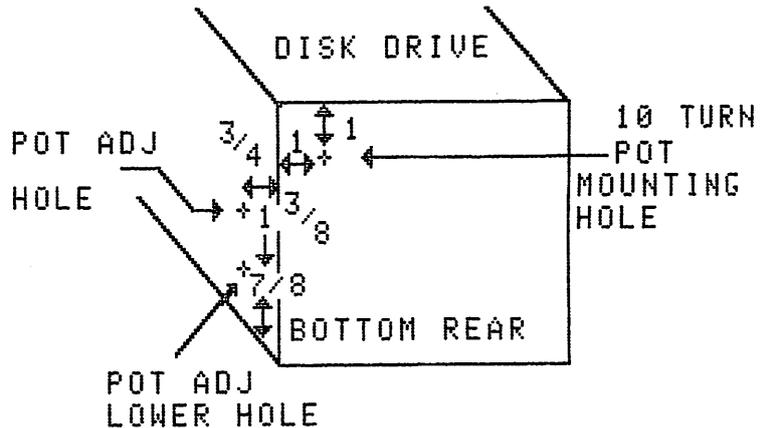
As with all of my projects, this is not intended to be a complete construction article. It simply provides a starting point for constructing an item in conjunction with others doing the same thing. You are encouraged to call me before and during the construction period.

This month is very exciting for me, because we have a combination of three projects going on at the same time. The Eprom burner, The Eprom expansion board and The Slot repeater board. It all started when I said at a main meeting that it would be nice to have boards laid out so the projects could be easier to build. You know, no wire wrapping. I think some people get scared off when they see all those wires. Well, like so many times in the past, a member comes to my rescue! James Stribling told me he has a brother in California who just happens to make computer boards. So, to make a long story even longer, we now have the boards with printed circuits all laid out and ready to be soldered. Due to the amount of instructions on these projects, it would be impossible to fit, in a short article, so if you want to build any of the projects send me a self addressed stamped envelope. The address is:

1096 E Sims,
St. Paul, MN 55106

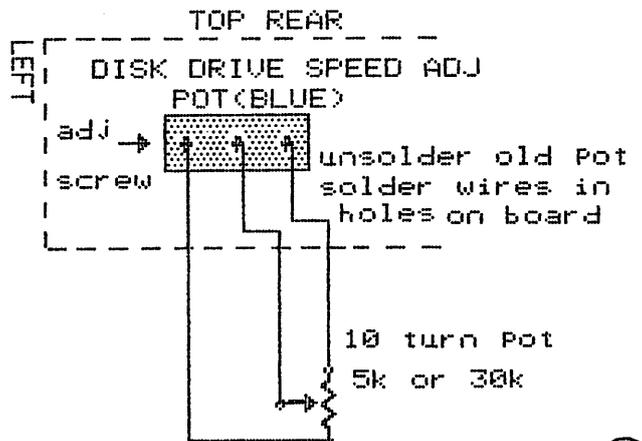
or catch me at one of the main meetings. By the way, the projects are from a book called The Custom Apple which can be picked up at B. Dalton book stores if you want more projects.

This month's project is very handy if you are like me and like to adjust disk drive speed a lot (sync drive). The first method I used was to drill a 1/4" hole in the side of the cover so I could put a small screwdriver through to turn the adj pot screw. I found that not all adj pots are at the same height, some seem to be at 7/8" from the bottom and others are at 1 3/8". Most of the ones that I have seen all seem to be 3/4" from the rear. So, to be on the safe side, you better look. Shut off all power to computer, turn disk drive over and remove 4 screws. The cover will slide off the rear. Look at the right rear and you will see a small blue rectangle box with a screw in it. Measure from the rear and from the bottom to get your hole in the cover in the right position. Now, each time you wish to make an adjustment, all you need to do is remove the write-protect tape which covers the hole (to keep out dirt) and adjust.



The next way is a little more work but really makes it nice and fast to adjust drive speed. Okay, you have the cover removed and are looking at the pot, just like before, but this time do not drill a hole in the side. Drill a hole in the rear 1" down from the top and 1" from the left, if you look at it from the rear. Next, unsolder the three legs of the potentiometer from the board, remove and look to see if it is a 5k or 30k pot. Get the resistance needed in a 10 turn pot (local elect. supply). The reason for using a 10 turn good quality pot is so that you can make fine adjustments. Next solder three wires, #20 gauge should be fine, into the three holes on the board where the pot used to be. Next connect the center wire to the wiper (movable) arm of the pot, then finish soldering the other two wires (see picture). Next mount the

EXTERNAL DISK DRIVE SPEED ADJ.
some drives have 5k or 30k Pots
so check yours before buying





Disk Drives

Concluded from page 47

track functions, except that mapping functions tend to be limited to 35 tracks by the available space on the 40 column screen. Perhaps a further modification might be developed to use the 80 column screen for display if an 80 column card is available.

In general, the new drive designs offer more performance at lower prices than the old Disk]['s, with equal or better reliability. As always, purchases should reflect one's confidence in the dealer and his ability to support the product warranties. With few exceptions, however, that need be no great concern. Most new disk manufacturers are well known companies who are not about to jeopardize their reputations.



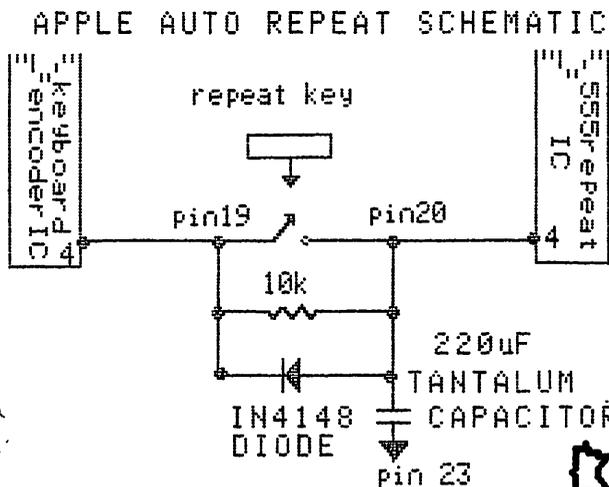
Home Projects (9)

Concluded from page 48

pot in the hole in rear of the drive, install knob and you're almost ready. Boot up a drive speed program (locksmith) and adjust if every thing looks good, shut off power and put cover back on. I have this installed on my drive 1 because it seems to wonder a little and it sure is nice to just reach in the back and turn the knob. Takes 1 sec. Now, remember, this will void your warranty, so wait till warranty ends before doing it.

CORRECTION FOR AUTO APPLE REPEATER --

I made a typo error on the install of the diode, should read "the negative (striped) side to pin 19. (c) the 220u capacitor between pins 20 and 23." I also made a picture to help explain. If you installed it backwards you will get instant repeat as soon as you touch the key.



Clean Two

Or, How To Clean Drive II
(Mostly for Beginners)

by Tom Alexander

For those of you who might be interested in keeping the heads clean on your disk drives, I'd like to pass along a solution to a problem I had recently.

My system is made up of an Apple //e with two disk drives. After listening to a talk by a 3M representative about keeping the heads clean on disk drives, I went out and bought the 3M 7440 Head Cleaning Diskettes.

Everything works fine on drive one. Merely insert the special disk in drive one and turn the computer on. The disk will spin forever but it is recommended that the machine be turned off after 30 seconds. Okay. Now, how do you clean drive two? Here's the solution I came up with:

1. Insert DOS 3.3 System Master disk in drive two.
2. Turn on computer.
3. After the light goes off on drive one type: CATALOG, D2, then Return. The cleaning disk will spin for 5 to 7 seconds then stop.
4. Repeat step 3 five or six times until the 30 second limit is reached.

This procedure is time consuming, so if you or anybody else has a better method, let me know.



Apple Writer II

Concluded from page 25

of your text. This is done by the formula .ff. The formula must be preceded by a carriage return. The period must be against the left margin. And the second f must be followed by another RETURN.

I discovered, incidentally, that if the last item of your text is a footnote demarcator followed by a RETURN, i.e. >>RETURN, the .ff function will only work if you insert a second RETURN before you type .ff.

The .ff function is also useful to see what your footnotes look like before you entrust the whole mess to your printer.

And that brings us full circle. Good doodling.



Videx Ultraterm

A Review

by Scott L. Ksander

The VIDEX ULTRATERM is a new video display card designed for the APPLE computer. Now that 80 column cards are becoming almost "standard equipment" for the APPLE, VIDEX has introduced a card that can provide not only 80 column output but also 96, 128, 132, and even 160 column output. Along with the additional columns, various modes can also provide 32 and 48 lines of output in addition to the standard 24 lines. The ULTRATERM is compatible with APPLE DOS, PASCAL, and CP/M and the manual contains specific information on interfacing the board to these systems. The manual also contains specific instructions on using the board with VISICALC, WORDSTAR, and APPLEWRITER II. Specific display modes of the board are:

- 24 lines by 80 columns
- 24 lines by 96 columns
- 32 lines by 128 columns
- 24 lines by 132 columns
- 48 lines by 80 columns
- 32 lines by 80 columns
- 24 lines by 160 columns

A 24 lines by 80 column mode using a high density character set is also provided. This higher density is also used in other modes and is achieved by using "interlace". This means that every other vertical scan of the screen is delayed by one-half of a horizontal scan time. The result is that twice as many horizontal lines are painted on the screen but the total screen is refreshed only half as often. This can cause "flicker" on some monitors; more about this in a bit. The ULTRATERM can display all 96 ASCII characters with true descenders on lower case characters, 15 line drawing characters, and 7 block graphics characters using 8x9, 8x12, and 9x16 dot character matrices. An optional character set EPROM is also available to display various European character sets. Both the "standard" and "high density" character set are standard with the ULTRATERM and are well designed and very readable. The board also provides for a character-by-character selection of one of two sets of special character attributes. These attributes may include normal/inverse video, and highlight/lowlight characters. The actual board is a very compact multilayer printer circuit board which contains not only the video output hardware but also an internal video switch to select between the extended modes and the standard 40 column APPLE video.

In order to properly display the advanced capabilities of this board it is very important to have the proper type of monitor.

VIDEX has provided a very good description of the specific items that you need to consider in the reference manual which is available separately from VIDEX. Basically, your monitor must have at least 20Mhz bandwidth and have a "persistent" phosphor screen. The bandwidth is necessary to produce sharp character in the higher column modes and the persistent phosphor is needed to eliminate the "flicker" in interlace mode. VIDEX recommends the APPLE III monitor as the best overall choice; however, because of the way the screen width is set, the APPLE III monitor cannot properly display the 160x24 and 96x24 modes. The AMDEK and NEC monitors are also very good and can display all modes. However, the characters are quite a bit smaller than the APPLE monitor, although still readable. I have tried the board on a monitor without a persistent phosphor and the "flicker" is quite annoying. I don't think I would use the interlace modes on that type of monitor. If you have any questions about what type of monitor you have, I strongly urge you to check your monitor with the card BEFORE you buy.

The ULTRATERM claims to be completely compatible with the original VIDEX 80 column board, the VIDEOTERM, and all programs I tried that were designed for the VIDEOTERM worked unchanged on the ULTRATERM. In fact, the VIDEX pre-boot systems for VISICALC and APPLEWRITER designed for the VIDEOTERM are the only pre-boots available to utilize the ULTRATERM. (You have to reset the slot to 6 on the first VISICALC storage operation when using the VISICALC pre-boot with the ULTRATERM. This is a difference from the VIDEOTERM and appears to simply be a bug in the pre-boot code.) VIDEX has promised a 128 column VISICALC pre-boot and a new APPLEWRITER pre-boot designed for the ULTRATERM. According to VIDEX, these pre-boots should be in the stores by September. The demo disc that comes with the ULTRATERM does have some sample screens from the 128 column VISICALC and it looks very good. A lot of data can be packed into a 128 column VISICALC template. VIDEX also reports that other software specifically designed for the ULTRATERM is under development. The ULTRATERM is also fully compatible with ASCII EXPRESS. You can use any of the display modes to display data being received via the modem and the more advanced features of the board, such as X-Y positioning and highlight/lowlight, can be mapped via the

GOTO 51

**Videx Ultraterm**

Concluded from page 50

ASCII EXPRESS emulation mode to emulate many common screen terminals.

If you are an APPLE IIe owner, you might well be asking the question "Why would I buy one of these?" especially in light of the \$379 list price. Well, in addition to the obvious increase in output columns, there is an additional feature of the firmware that just might make the board worth the increased cost. The firmware on the ULTRATERM allows you to enter BASIC programs in full upper and lower case. It will automatically translate all input characters to upper case unless they are enclosed in quotation marks. This means no more "shift lock" requirements when entering programs or DOS commands. When you LIST the program, all BASIC commands will appear in upper case and all string within quotation marks will appear exactly as you entered them. This is also useful for those who have "modified" keyboards such as the

VIDEX Enhancer II. I particularly like this feature and I am surprised VIDEX isn't pushing it more. There is a jumper on the board so that it can be used in a IIe with an 80 column or extended memory card in the auxiliary slot.

In general, I am very impressed with this board. The only somewhat negative observation I have is that it runs very hot and a cooling fan may be required if you add this board to a configuration that is fairly fully loaded. The suggested list price is \$379, but I imagine you will be able to find some discounts if you shop around. The manual is very good and comes with a handy 3x5 quick reference card to help you remember the function codes to activate the various display modes. My bottom line is that if you use a lot of 132 column output or you have some large VISICALC templates, you should strongly consider this board (and don't forget the upper/lower case BASIC support). It looks to be another good product from VIDEX.



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Thunderclock and DOS

by Cary Mariash

A File Naming System for Use with a Clock Card.

Those of you who write programs have undoubtedly found that the disk directory rapidly fills with multiple versions of the same program. When you boot the disk at a subsequent date, you find it impossible to remember which version was the latest and, of course, the best. Fortunately, there are several methods available to solve this problem:

One solution is to simply attach a number of increasing value to the program name each time the program is saved. For example, you are developing a new game called "myprogram". The first time you save the program you should type "SAVE MYPROGRAM.1". The next version saved should be called "MYPROGRAM.2", etc. Although this method is simple, easy, logical, and straightforward, it has never worked for me. I usually run out of numbers, or simply forget which number I last used.

Another method to identify the latest version of your program is to attach the date and time the program was saved to the name of the program. In fact, if you have a clock card, it is possible to perform this task automatically. Having recently purchased a Thunderclock, I realized that this would be an ideal way to make use of my card. Unfortunately, I had to write another program to perform this task. In the process of writing this program I no longer remember which is the latest version.

The simple program which accompanies this article is one of the versions which works, and is based on information obtained from the Thunderclock Plus User's Guide (Version 2.0), Worth and Lechner's book Beneath Apple DOS, and Call-A.P.P.L.E. In Depth—All About DOS (especially the article on the Clock Saver). The program modifies DOS resident in RAM. In order to automatically date and save a file you need to boot a disk containing DOS and run the accompanying program. If you then initialize subsequent disks with DOS modified, the time and date feature will be available upon booting.

This three line Applesoft program is all that is needed. Line 110 simply pokes the string defined in line 100 to the GETLN buffer. The GETLN buffer is an area in memory which stores one line of typed information. The line of information actually begins whenever you see a cursor, and ends at a carriage return. Line

```
100 BCDF:8A 48 98 48 A9 A6 20
    OB C7 20 08 C7 A0 OC B9 04 02 99 86 AA
    88 DO F7 68 A8 68 AA AD B6 AA 60 N
    A397:20 DF BC N B203:12 ND823G"
```

```
110 FOR I = 1 TO LEN (HEX$): POKE 511 + I,
    ASC ( MID$ (HEX$,I,1)) + 128:
    NEXT : POKE 72,0
```

```
120 CALL - 144
```

120 uses the Apple Monitor to read and interpret the GETLN buffer as if you typed it in by hand while in the Monitor. Line 100 modifies DOS, and is the main part of the program, written in hexadecimal machine code.

The DOS modification begins at \$BCDF. This area of memory is located within DOS, but is unused by DOS. The program saves the X and Y registers, gets the current time and date from the clock located in slot 7 and places this data at the end of the file name buffer (at \$AA75-\$AA92). Then it restores the X and Y registers and returns to the DOS save routine. The program at \$A397 causes the DOS save command handler to jump to my subroutine at \$BCDF.

The other feature of my modification causes DOS to recognize only the first 18 characters of a file name. Therefore, if you want to load a program which has been dated, you only need to type "LOAD MYPROGRAM" even if your program is listed as: "MYPROGRAM 29 MAY 14:13". If you modify and wish to save the modified version of "MYPROGRAM", you need to either change the name of the program, or delete the original version before saving again. If you try to save using the same name, the updated program will be saved, but the new time and date will not be added. Maybe some Mini'app'les member can tell me how to solve this problem.

The modifications of DOS in this article are also compatible with Diversi-DOS (see DOM #18). If your clock is in another slot, you must change the two occurrences of C7 in line 100 to Cx, where 'x' is the slot number where your Thunderclock is located.

I hope others with a Thunderclock will find this program helpful. I learned quite a bit about my Thunderclock as well as DOS while writing this program. I certainly would be happy to hear from anyone who has suggestions for improvements or questions implementation.



What is a 16K RAM Card?

by Walt Mills

Reprinted from : THE WASHINGTON APPLE PI,
MARCH 1982

Relayed via the IAC Compiler #2

The intention of this article is to describe (in very simple terms) the various uses of the 16K RAM card in the Apple][. If you are currently using a 16K Ram card (or Language card) THEN GOTO the next article; you may be able to tell me a thing or two.

WHAT IS A 16K RAM CARD?

First, a 16K RAM card by any manufacturer may use the same software as the original APPLE "Language Card"; the only difference among these various cards is price and some minor hardware configurations. The 16K RAM card is simply a printed circuit card with 16,384 bytes of additional addressable RAM. (What?) OK, first a couple of definitions: RAM-Random Access Memory- the changeable memory portion of your computer where programs are stored; Byte- A collection of points in RAM used to store a single number (from 0 to 255).

Note: When you POKE or PEEK to memory, you are looking at one byte. If you have a 48K (RAM) machine, you can add a 16K RAM card and increase your memory size to 64K (now we're talking). But, alas, Woz didn't design it that way, so first let's look at how our memory is laid out.

The first location in the APPLE is called Location Zero (0) - (how about that!) - and the first 256 bytes (\$100 hex) are called Page Zero. "Pages" of APPLE memory are divided at every 256 bytes or \$100 in Hexadecimal. You can actually poke a value into location zero with the command POKE 0,65. You can print what is there with the command PRINT PEEK (0). Most locations in Page Zero are called "reserved"- that is, Applesoft uses these bytes to store items it wants to remember. You can use any RAM location, but you will probably bomb something if you POKE around in a reserved space.

Page One is reserved for the system stack; Page Two is the input (typing) buffer. Some of Page Three (locations 768 to 1023) is reserved for DOS. Pages Four, Five, Six and Seven are where the Apple stores the characters to be displayed on the screen. The space between 2049 to 40191 is for the Applesoft or Integer program (8192 to 24575 uses the Hires pages too). The actual Disk Operating System (DOS) is located from 40192 to 49151. BOOM! The top of a 48K machine.

The locations from 49152 to 53247 may be used (these are all above 48K), but these bytes are generally divided among the eight expansion slots in your APPLE and used for storage by the cards. Locations 53248 to 57343 are called the Monitor (Autostart in APPLE][Plus). Locations 57344 to 65535 are used to hold Applesoft or Interger Basic. In the Apple][Plus, the Applesoft ROM Basic (Read Only Memory) resides at this location. When you insert the 16K RAM card into slot Zero, it will fall in line at 53248 to 65535. (Excuse me, but 53248 subtracted from 65535 is 12287 or about 12K not 16K.) Right, the first 4K of the 16k RAM Card can be exchanged with a second 4K on the card as needed (more about that later). With the 16K RAM card in place you have actually duplicated the space from 53248 to 65535 and with the aid of DOS you may choose which area of memory you want to use. Normally, this is accomplished with the command INT and FP.

NOW SOMETHING USEFUL

If you have one, you will have to remove your Integer/Applesoft card from slot zero, lay it gently on the shelf and insert the 16K RAM card (following manufacturer's MFG directions). The first useful thing you can do with the 16K card is load the missing language (Integer will be assumed) to the card. Like the "soft switches" for the screen display (see APPLE][Reference Manual, page 12) the 16K card has switches to control what may happen to it. If you PEEK/POKE to location-16255 you will write-enable the card (like removing the little tab from the disk). If you then BLOAD a program at location 53248 (HEX \$D000) it will await your "Call" (pun intended). Believe it or not, Integer (and Applesoft) is nothing but a big binary program!! If you write-enable the card and type BLOAD INTBASIC, A\$D000 you will have a machine with Integer Basic. (Quick, check the shelf, the old card is still there - Magic!). Actually the DOS 3.3 HELLO program will check to see if you have a 16K RAM card and do this load for you on boot-up. If you did not previously have Integer/Applesoft you can see the obvious advantages. Non-Integer owners will now have the Programmer's Aid #1 (step, trace, renumber, etc.). If you previously had an Integer Card, you will also note that the ESC I,J,K,M work as in Applesoft - this is because the Binary INTBASIC has an image of the new Autostart ROM.

GOTO 54



RAM Card Concluded from page 53

OTHER LANGUAGES

If one secures a disk copy of APPLE Pascal or Fortran then it is a simple matter of loading and running these languages much like Basic.

MOVING DOS

Our user's library has a program that will allow you to actually move DOS up to the 16K RAM card and allow you to regain the use of the 10k now used by DOS in high memory. Other commercial sources have DOS movers that allow you to run both DOS 3.2 and 3.3.

NEAT STUFF

A company called Omega Software Products (the folks that brought you LOCKSMITH) market a program called "THE INSPECTOR" that may be overlaid on the INTBASIC program at location 55296 (\$D800) which is unused by Integer Basic. When called by CALL -10240, a very powerful disk inspector is evoked. The beauty of this type of overlay is that it is totally transparent to other machine internals and remains ready to be called as needed. Other short machine language programs can be hidden in this area. If you BSAVE the memory locations from 53248 (\$D0000 to 65535 (\$FFFF) you will have a copy INTBASIC with your new program neatly "hidden".

Micros in Education
Concluded from page 26

Some educational software of interest to the home buyer:

This software may be obtained mail order, or in a number of cases through local computer stores.

- Bank Street Writer (Broderbund) - wordprocessing
- Mastertype (Lightening) - touchtyping
- Rapid Reader (Silicon Valley) - speedreading
- LOGO (Terrapin, Apple) - programming language, teaches programming concepts
- Software companies offering basic skills products: Xerox, Learning Well, Edu-Ware, Sunburst, Developmental Learning Materials, etc
- Software companies specializing in learning games: Spinnaker, The Learning Company, Early Games, Apple

(CONROY ASSOCIATES is an educational consulting company, designing software for home and school use.)



THE SECOND FOUR KILOBYTES

By again flipping some softswitches you may turn off the first bank 4K of the 16K RAM card and turn on the second bank of 4K in its place. This gives us some interesting possibilities; if we write a clever binary program at location 768 (the first portion of Page Three that is unused) we can actually exchange the 4K of RAM and bring a previously stored program online at location 53248 (\$D000) to 57343 (\$DFFF). A company called Telephone Software Connection has developed a rather unique approach to this concept by actually changing the jump location and syntax of the DOS "CHAIN" command to "CNVRT" which will exchange the 4K and put you into a neat Hex to Dec to Hex converter without clobbering DOS, Basic or variables. This means that at any point while entering a program (FP or INT) you may type CNVRT to jump to the converter!

DON'T THROW THE INTEGER CARD AWAY

Finally, remember to keep that old Integer/Applesoft ROM card around. I understand that you can pull the existing chips and replace them with up to 8 custom PROM's - obviously stuff for another article.



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Series

A Powerful APPLESOFT Entry Point

Mostly for advanced programmers.

by Joseph E. Carroll

Anyone who does assembly language programming is aware of the large number of already coded routines residing in the Apple's ROM and contained within resident DOS. These routines greatly aid the programmer as he/she needs only then to pay attention to their proper use and sequence. These routines are accessed through 'entry points'. This article discusses one such 'entry point'.

During the process of trying to implement higher speed numerical analyses on my Apple II+, I came across the Applesoft entry point \$EF72 which is not listed in publications such as All About Applesoft by Call-A.P.P.L.E. I will call this entry point SERIES because that is what it does; it evaluates a power series expansion of the form:

$$Y = A_0 + A_1 * X + A_2 * X^2 + A_3 * X^3 + \dots + A_N * X^N$$

where X is initially in FAC and the result is left in FAC.

This series computation is, of course, the basis for every math function evaluation in Applesoft: LOG, SIN, COS, TAN, ATN, SQRT, EXP, etc. Series expansions like these are easily found (these days) in such tomes as the Handbook of Mathematical Functions, NBS Applied Math Series 55, 1965. The coefficients A0, A1, etc. for each of many functions have been carefully computed by various people over the years so that we need only enter them correctly to put them to use.

And this last statement is perhaps the most key of the several requirements needed to make use of the Applesoft entry point \$EF72. The coefficients must be stored in the so-called "packed, excess \$80" format. This is the format in which all Applesoft floating point variables are stored and Listing 1 will permit the user to convert decimal values to this format for entry into assembly or machine language programs.

To incorporate the computation of any such series into your program, follow these steps:

1. Decide on the series you want to evaluate and run the program in Listing 1 to convert the coefficients to the desired format.

Enter the assembly or machine language program in Listing 2 substituting the converted coefficients determined in step 1. Be careful! The number of coefficients

less one (N in the above equation) must be entered first, then the coefficients (5 bytes each) in reverse order to the way they appear in the equation. The comments in Listing 2 should help.

3. Appropriately BSAVE the program.
4. At the start of your Applesoft program, BRUN this machine program and it will set up the USR hook. (Of course, the & hook could nearly as easily have been used. In and out of FAC would then have to be done in machine code.)
5. Y = USR(X) in your Applesoft program will then do the trick whenever you wish to evaluate the series expansion for argument X and put the result in variable Y.

GOTO 56

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Series Concluded from page 55

One can see that Listing 2 operates very simply: the Y and A registers are loaded with the MSB and LSB, respectively, of the starting address of the coefficient storage area (actually the address of N). Then one JMP's into \$EF72 (SERIES) whose RTS takes one back to Applesoft.

P.S. As given in Listing 2, the series evaluated is that for the GAMMA function of 1 + X taken from Cecil Hastings, Approximations for Digital Computers, Princeton University Press, 1955, page 158. (Gosh, grandpa, did they even HAVE computers back then?)

Listing 1

```
10 A = 0: REM RESERVES PLACE FOR VARIABLE
20 INPUT "INPUT VALUE: ";A
30 SV = PEEK (105) + PEEK (106) * 256
33 D$ = CHR$ (4)
34 PRINT D$"PR#1"
35 PRINT "DECIMAL VALUE = ";A
37 PRINT "HEX PACKED $80 FORMAT:"
40 FOR I = SV + 2 TO SV + 6
100 Z = INT ( PEEK (I) / 16):I1 = Z
105 GOSUB 200
110 A1$ = Z$
120 Z = PEEK (I) - I1 * 16
125 GOSUB 200
130 A2$ = Z$
140 PRINT " ";A1$A2$;
150 NEXT
160 PRINT : PRINT
165 PRINT D$"PR#3"
170 GOTO 20
200 Z$ = STR$ (Z)
210 IF Z = 10 THEN Z$ = "A"
220 IF Z = 11 THEN Z$ = "B"
230 IF Z = 12 THEN Z$ = "C"
240 IF Z = 13 THEN Z$ = "D"
250 IF Z = 14 THEN Z$ = "E"
260 IF Z = 15 THEN Z$ = "F"
270 RETURN
```



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Check Caution
Concluded from page 42

If you are considering purchasing checks to run on your computer system, talk with your banker to find out the specifications for encoding checks. This could be save you from incurring higher banking charges, or even having to trash a large supply of checks because your bank cannot process them!



Listing 2

```
0300- A9 4C LDA #$4C 0327- A9 63 LDA #$63
0302- 85 0A STA $0A 0329- A0 03 LDY #$03
0304- A9 0D LDA #$0D 032B- 20 72 EF JSR $EF72
0306- 85 0B STA $0B 032E- A2 5E LDX #$5E
0308- A9 03 LDA #$03 0330- A0 03 LDY #$03
030A- 85 0C STA $0C 0332- 20 2B EB JSR $EB2B
030C- 60 RTS 0335- A9 98 LDA #$98
030D- A5 A2 LDA $A2 0337- A0 00 LDY #$00
030F- 8D 5D 03 STA $035D 0339- 20 F9 EA JSR $EAF9
0312- 10 03 BPL $0317 033C- A9 13 LDA #$13
0314- 20 D0 EE JSR $EED0 033E- A0 E9 LDY #$E9
0317- A9 13 LDA #$13 0340- 20 A7 E7 JSR $E7A7
0319- A0 E9 LDY #$E9 0343- 20 8D EE JSR $EE8D
031B- 20 B2 EB JSR $EBB2 0346- A9 5E LDA #$5E
031E- 30 07 BMI $0327 0348- A0 03 LDY #$03
0320- F0 05 BEQ $0327 034A- 20 7F E9 JSR $E97F
0322- A2 35 LDX #$35 034D- A9 66 LDA #$66
0324- 4C 12 D4 JMP $D412 034F- A0 F0 LDY #$F0
0351- 20 A7 E7 JSR $E7A7
0354- AD 5D 03 LDA $035D
0357- 10 03 BPL $035C
0359- 20 D0 EE JSR $EED0
035C- 60 RTS
035D- FE FE FE INC $FEFE,X
0360- FE FE FE INC $FEFE,X
0363- 03 ???
0364- 7B ???
0365- 99 6E 30 STA $306E,Y
0368- 60 RTS
0369- 7D 18 16 ADC $1618,X
036C- 26 B3 ROL $B3
036E- 7E D9 34 ROR $34D9
0371- 84 6D STY $6D
0373- 81 49 STA ($49,X)
0375- 0D A4 2E ORA $2EA4
```



Cheap Tricks - Part 2

by Mark Hull

571-1781

Good morning, campers; today's project is going to be a Step/Trace routine, as I promised in the first installment. First, however, you get a dose of philosophy to start the day off right....

As the alert ones among you have already determined, the purpose of this column is to provide you with a few powerful tools to use in exploring your Apple, and to do it on a low (as in no) budget. To accomplish this, we are tearing into software that already exists in a less-useable form, and modifying it to suit our various bizarre needs. Point number one: we are doing something that is popularly known as "avoiding the reinvention of the wheel". It takes a lot of time to come up with a brand-new routine to allow commas and quotes in Applesoft, for instance, when your real objective is to make your MX missile tracking program work accurately (even if it only works accurately once). My advice, therefore, is to take a program, any program, and modify it until the cows come home, rather than write one from scratch; use routines that others have written, changing them where applicable; always look for an existing piece of code in the Apple monitor, the Applesoft ROM, or the DOS software that you can call or alter for your purposes; and come in out of the rain. 'Modify' used to be my middle name, until I had it changed.

Point number two: some pioneers somewhere had to invent the first wheel (at least that's my theory), and to these people we hackers owe a great debt. For instance, the amount of useful software that comes packed with your brand-new Apple is really amazing, as we shall discover shortly. I have always wanted to say 'thanks' to whoever wrote the ROM code and the DOS stuff for the Apple, since I invariably use some chunk or another for every arcane project I attempt. Thanks, wheel inventors. Now, about those hubcaps....

Enough thinking — now we're going to program. This venture is a Step/trace routine, which functions as a debugging tool for all those programs you wrote using the Mini-assembler from my last column. It permits you to watch your program execute, instruction by instruction, and determine where it is malfunctioning. In step mode, after each instruction executes, the instruction is disassembled and printed on your screen, along with the hex address and register contents. When everyting stops, and you can either step the next instruction, proceeding through the program, or you can change register contents, memory contents, or whatever, in

your quest for knowledge and power. In trace mode, the program does the same thing, except that it never stops until it hits a breakpoint (the 'brk' instruction, hex 00, is the one with the built-in sound effect) or you intervene to interrupt processing. (I usually use an axe.) Both of these functions are invaluable for any serious debugging of machine-language programs; more information on how to use them can be found on pp. 51-53 of the Apple II Reference Manual.

This is another program that came with your computer; unlike the Mini-assembler, however, this one resides only (as far as I know) in the Reference Manual, on pp. 160-161. These pages are part of the listing of the "old monitor" ROM, which didn't come with your Apple II+. We are going to adapt the Step/Trace routine found there to run under its own power as a self-sufficient program, where and when we tell it. Sort of makes you feel powerful, doesn't it?

At this point, let me encourage any of you with a modicum of patience to tackle this project on your own. I extracted the routines, inserted a couple of lines to allow USER-Y vectors, and assembled the whole mess; if you would like to do the same, read no further. For the rest of you, I am providing a listing of the adaptation that was assembled to lie above the Mini-assembler, at \$5600, so the two programs can be resident (that is, in memory) at the same time. I used the same labels and comments as listed in the Reference Manual, so that if you care, you can compare one back to the other to see what I did. Basically, I just changed a few references to its new location at \$5600, and got rid of some code that was not pertinent. The real original stuff is in \$5600-\$560A; this sets up the USER-Y vector, so that every time you enter a CTRL-Y from the monitor, control passes to the Step/Trace program. Thus, to use Step/Trace, substitute a CTRL-Y where the Reference Manual tells you to type 'S' or 'T'. "300S" would step the instruction at hex 300, according to the Manual; you would enter "300CTRL-Y". Similarly, to step the next instruction, the Manual says to enter an 'S', but you would enter a CTRL-Y. Trace works the same way, with CTRL-Y being substituted for the 'T' command. Trace mode is selected in my version by sticking a non-zero value into memory location \$56A8 (type "56A8:FF" from the monitor). A zero value in the same location enables the single step function.

GOTO 58



Cheap Tricks
Concluded from page 57

One word about the listing: if you are wondering what I'm doing by saying things like "LDA RTNH", when you know perfectly well that none of those letters are hex values, here's the scoop: fancy assemblers, unlike the Mini-assembler, allow variables (labels) to be assigned as one is writing the program. "RTNH" is defined on line 35 as being "equated to" the value \$2D, using what is known as a pseudo-op, or pseudo-operation-code (in this case, the "EQU"). The assembler substitutes the value of the label (\$2D) for the label (RTNH) in the process of assembling the program, because of this pseudo-op. It is "pseudo" because the EQU instruction itself never generates any machine-language code, being merely a directive to the assembler disguised as an operation code, to simplify parsing. What does that mean to you, if you don't have a fancy assembler? Just that you'll have to look at the left-hand side of the listing to determine what value to type. Continuing the previous example, with the "LDA RTNH" instruction on line 130, you would type "LDA \$2D" using the Mini-assembler, or "5683:A5 2D" from the monitor. By the way, this listing is from the DOS Toolkit Assembler.

To use the Step/Trace program, type in the program and make sure its correct, then type:

BSAVE STEP/TRACE,A\$5600,L\$A8

To run it, just enter:

BRUN STEP/TRACE This will initialize the CTRL-Y key, and come back with a prompt. Now, from the monitor, when you enter a step or trace command using the CTRL-Y (see above), it should work just like the Apple Reference Manual says it should.

For extra credit: modifications that you might want to make to the program include a verification message that the Step/Trace program initialized the USER-Y vector; a unique prompt character that indicates the lurking presence of the step/trace beneath the monitor; a less-awkward command sequence to type than CTRL-Y; or a better mechanism to differentiate between step and trace modes. The sky's the limit, so have fun. Speaking of skies, my MX missile tracker is beeping, so I have to go!



Step/Trace

Table with 4 columns of assembly code: Address, Hex, Operation, and Comment. Includes instructions like LDA, STA, BEQ, etc., with various hex values and comments.



Making Your][+ a //e

by Steven Martin

Reprinted from "the Seed" newsletter,
June 1983, Boulder, Colorado.
Keyed in by Steve George and Hugh Kurtzman

[Text, RAM.FP, and SHIFTER by author, DEMO and modified SHIFTER (SHIFTER PROTECTED BY BUFFER) by Steve George.]

Ever since Scott Knaster came in with the Apple //e at the March meeting I have wondered how much of what it does could be emulated by the][+. I already have a lower case adapter and the Shift wire mod is no real problem. So what would it take to make software that handles the input routines like the //e?

The Problem:

What I wanted to do was make upper and lower case available to BASIC and DOS with the SHIFT key. [As presented, neither DOS nor Applesoft recognizes lower case commands. Anyone with a solution? - SG] {Yes SG - Read summary, in this issue, of UPGUN, the new Mini'app'les Special Software DOM} At the same time, I wanted to emulate a CAPS-LOCK and if possible generate some of the special characters. I wanted to be able to use the standard ESCape key editing commands but all of the routines that do this now are located in the monitor ROMs, which makes altering them impossible. Or does it? We could change the DOS hooks on page zero to point to our own new routine but this would mean rewriting all of the editing commands, which would take up memory space and time. Why can't we use those routines while altering the upper-lower case conversion in our own routine?

The big problem is a routine (at hex \$FD7E) called CAPTST, which checks for lower case input and converts it to upper case. This routine is directly in the monitor GETLN routine and will cause problems as long as it exists. The solution is to change CAPTST to jump to our own upper-lower case conversion routine.

WHOA! How's that again?

By now you are convinced I am talking about another machine, since that routine is burned into a ROM and cannot be changed. Well, if you are like thousands of other Apple owners out there, you probably have a 16k RAMcard plugged into slot 0... Now it gets interesting!

The Trick:...

It has recently been shown by several sources

that the Apple monitor can be used to move all of its ROM routines onto the RAM card in slot 0 very quickly. And, once in RAM, rewriting stuff is a snap. This trick will not work if you intend to use Integer BASIC on the RAMcard or if you would like to relocate DOS onto the card. But, I have found little use for both languages resident at the same time and I do not use those DOS mover routines very often. If you have an older Apple][with Integer on the motherboard you will have to change these routines to write the changes to the Card once Applesoft is loaded from Disk. Then an Apple][owner could have both BASICS available at the same time! There may be an advantage to the old machines yet!

Some preliminaries:

If you do not have the SHIFtkey modification in your Apple these routines will still work, but case shifting will be done with Ctrl-A only and you will not be able to do a normal shift with the SHIFtkey. The SHIFtkey mod simply relies on a wire connected between the game I/O socket pin 4 and the keyboard connector pin 24. What this does is hardwire the SHIFtkey to the game BUTTON #2, which is normally not used. Software then monitors hexadecimal location \$C063 to determine whether or not the SHIFtkey is being pressed. [If you are not sure of exactly how to do this, ask a member of the club who has made this mod - SG]

The programs:

The source and object codes for the programs used to do all of this are named RAM.FP and SHIFTER. [The source codes are in Big Mac.LC format and may be obtained from Steve George or Dan Buchler. If there is sufficient demand we will put them on a DOM. - DBB/SG] The Disassembly listings of each of these programs follow this article. If you want help keying in the program, call a club officer. If there is sufficient demand we will place the binary (B) files on a DOM.

The first program moves ROM onto the RAMcard and makes some changes to the monitor and DOS to do the following things:

1. When you 'CATALOG', you may exit with an ESCape key rather than paging all the way through a lengthy CATALOG listing.

GOTO 60



][= //e

continued from page 59

2. The 'CATALOG' command will show the number of Free Sectors on the disk.
3. DOS will now allow lower case in Text files.
4. When you press the ESCape key for editing, a flashing plus sign (+) will show up in the cursor position. Just like an Apple /// ! Any key other than an I,J,K or M following the <ESC>ape command returns the user to "ENTRY" mode.
5. The Bell sound will be modified to a more pleasant tone.
6. The cursor will be a non-flashing square.

This program is my own modification of a program provided in the March, 1983, issue of Call-A.P.P.L.E., by Donald Miller Jr.

The second program is the upper-lower case conversion routine. First, this routine changes CAPTST, which is assumed to already be in RAM, to jump to our case conversion routine. When called, it first checks to see if a Ctrl-A was pressed, which acts as the CAPS-LOCK toggle. If Ctrl-A was pressed, the byte that stores the CAPS-LOCK flag (hex \$3BF) is altered. If Ctrl-A was not pressed then the routine checks the CAPS-LOCK flag; if this is set to upper case then normal keyboard entry takes place. This allows the characters @, ^ and] to be entered as usual. If we are in lower case mode the routine checks for the SHIFT key being pressed, and conversion of the character is handled accordingly. Note that I have put in some additional features to allow special characters:

```
Ctrl-q = { Ctrl-w = }
Ctrl-k = { Ctrl-e =
Ctrl-v = | Ctrl-r = \.
```

Finally, there is my real jewel. Scott pointed out that there is a //e feature, which is enabled with Ctrl-R, that causes the machine to enter a line-editing mode that switches the CAPS-LOCK on and off when a quote mark (") is encountered. This is necessary since the machine will not accept lower case commands but the programmer would be bothered with having to type CAPS-LOCK when entering strings in PRINT statements. This feature is automatically on with my routine. However, if you backspace over the first Quote mark and then continue over it there may be some confusion, and you will have to use the CAPS-LOCK manually.

How to use them:

To use the routines from a BASIC program, do the following:

```
10 PRINT CHR$(4) "BRUN RAM.FP"
20 PRINT CHR$(4) "BRUN SHIFTER"
```

Line 10 alone can be used to get the DOS changes and non-flashing cursor without any uppercase conversion. Once RAM.FP has been called it is no longer needed and your program does not have to worry about it in memory. The second program MUST be used with, and after, the first. As shown here, SHIFTER is BRUN at memory location (decimal) 768 and this area must not be altered or miserable results will ensue.

Both of these programs are completely relocatable so you can put them anywhere you have available memory. However, you must not allow anything to overwrite the SHIFTER routine as the computer will "hang". The INIT routine of SHIFTER (see source file) must not be rewritten or the program will not operate properly. The reason for this is that this routine checks DOS to find out where it was loaded and points to a JSR in CAPTST (which utilizes our new routine). If the INIT routine is changed you must make sure the pointers are set correctly. SHIFTER uses zero page locations 6 and 7 which are not used by DOS or Applesoft but may interfere with your own routine if you are not careful. The results will not harm SHIFTER, but you may end up in the wrong case. I have tested these routines with standard 48k DOS and several BASIC programs. Once you have the SHIFTER routine going, you can control case toggling from within a BASIC program. To do this you need only POKE location 6 with 255 for uppercase or 0 for lowercase. Here is an example:

```
50 LC=0 : UC=255 : CASEFLAG=6
60 POKE CASEFLAG,LC :
   REM NOW IN LOWERCASE ENTRY MODE
70 POKE CASEFLAG,UC :
   REM NOW IN CAPS-LOCK ENTRY MODE
```

The nice thing about having program control over case conversion is that if you need to have an input that is in all upper case then you won't have to remember to type Ctrl-A at the right time. Another nice feature is that BASIC's GET command only reads uppercase. So if you have a statement like this:

```
10 PRINT "Do you want to continue? (Y/N)";:
   GET AN$
```

you don't have to check for AN\$ = "Y" and AN\$ = "y" since GET can only return "Y" no matter what case mode you are in!

GOTO 61



]l = //e
continued from page 60

Listing of RAM.FP

000-	A9 00	LDA	#\$00	6055-	8D C1 AD	STA	\$ADC1				
6002-	85 3C	STA	\$3C	6058-	A9 BA	LDA	#\$BA				
6004-	85 42	STA	\$42	605A-	8D C2 AD	STA	\$ADC2	60A3-	85 40	STA	.\$40
6006-	A8	TAY		605D-	A0 00	LDY	#\$00	60A5-	85 41	STA	.\$41
6007-	A9 FF	LDA	#\$FF	605F-	B9 A1 60	LDA	\$60A1,Y	60A7-	A0 C8	LDY	.\$3C8
6009-	85 3E	STA	\$3E	6062-	99 69 BA	STA	\$BA69,Y	60A9-	18	CLC	
600B-	85 3F	STA	\$3F	6065-	C8	INY		60AA-	B9 F2 B3	LDA	.\$B3F2,Y
600D-	A9 D0	LDA	#\$D0	6066-	C0 27	CPY	#\$27	60AD-	F0 0E	BEQ	.\$60BD
600F-	85 43	STA	\$43	6068-	D0 F5	BNE	\$605F	60AF-	0A	ASL	
6011-	85 3D	STA	\$3D	606A-	A9 20	LDA	#\$20	60B0-	90 FB	BCC	.\$60AD
6013-	AD 81 CO	LDA	\$C081	606C-	8D 39 AE	STA	\$AE39	60B2-	48	PHA	
6016-	AD 81 CO	LDA	\$C081	606F-	A9 DF	LDA	#\$DF	60B3-	E6 40	INC	.\$40
6019-	20 2C FE	JSR	\$FE2C	6071-	8D 3A AE	STA	\$AE3A	60B5-	D0 02	BNE	.\$60B9
601C-	AD 83 CO	LDA	\$C083	6074-	A9 BC	LDA	#\$BC	60B7-	E6 41	INC	.\$41
601F-	A0 00	LDY	#\$00	6076-	8D 3B AE	STA	\$AE3B	60B9-	68	PLA	
6021-	B9 94 60	LDA	\$6094,Y	6079-	A0 00	LDY	#\$00	60BA-	18	CLC	
6024-	99 B3 FB	STA	\$FB3,Y	607B-	B9 D4 60	LDA	\$60D4,Y	60BB-	90 F0	BCC	.\$60AD
6027-	C8	INY		607E-	99 DF BC	STA	\$BCDF,Y	60BD-	88	DEY	
6028-	C0 0D	CPY	#\$0D	6081-	C8	INY		60BE-	D0 E9	BNE	.\$60A9
602A-	D0 F5	BNE	\$6021	6082-	C0 0B	CPY	#\$0B	60C0-	A6 40	LDX	.\$40
602C-	A9 B3	LDA	#\$B3	6084-	D0 F5	BNE	\$607B	60C2-	A5 41	LDA	.\$41
602E-	8D A3 FB	STA	\$FBA3	6086-	A0 00	LDY	#\$00	60C4-	20 24 ED	JSR	.\$ED24
6031-	8D 30 FD	STA	\$FD30	6088-	B9 C8 60	LDA	\$60C8,Y	60C7-	60	RTS	
6034-	A9 FB	LDA	#\$FB	608B-	99 AF B3	STA	\$B3AF,Y	60C8-	A0 BD	LDY	.\$8BD
6036-	8D A4 FB	STA	\$FBA4	608E-	C8	INY		60CA-	A0 D4	LDY	.\$D4
6039-	8D 31 FD	STA	\$FD31	608F-	C0 0C	CPY	#\$0C	60CC-	C3	???	
603C-	A9 EA	LDA	#\$EA	6091-	D0 F5	BNE	\$6088	60CD-	C5 D3	CMP	.\$D3
603E-	8D 13 FD	STA	\$FD13	6093-	60	RTS		60CF-	A0 C5	LDY	.\$C5
6041-	8D 14 FD	STA	\$FD14	6094-	A4 24	LDY	.\$24	60D1-	C5 D2	CMP	.\$D2
6044-	A9 15	LDA	#\$15	6096-	B1 28	LDA	(\$28),Y	60D3-	C6 20	DEC	.\$20
6046-	8D E5 FB	STA	\$FBE5	6098-	48	PHA		60D5-	1B	???	
6049-	A9 38	LDA	#\$38	6099-	A9 6B	LDA	#\$6B	60D6-	FD C9 9B	SBC	.\$9BC9,X
604B-	8D E3 FB	STA	\$FBE3	609B-	91 28	STA	(\$28),Y	60D9-	F0 01	BEQ	.\$60DC
604E-	A9 20	LDA	#\$20	609D-	68	PLA		60DB-	60	RTS	
6050-	8D C0 AD	STA	\$ADC0	609E-	6C 38 00	JMP	(\$0038)	60DC-	4C 2C AE	JMP	.\$AE2C
6053-	A9 69	LDA	#\$69	60A1-	A9 00	LDA	#\$00	60DF-	00	BRK	

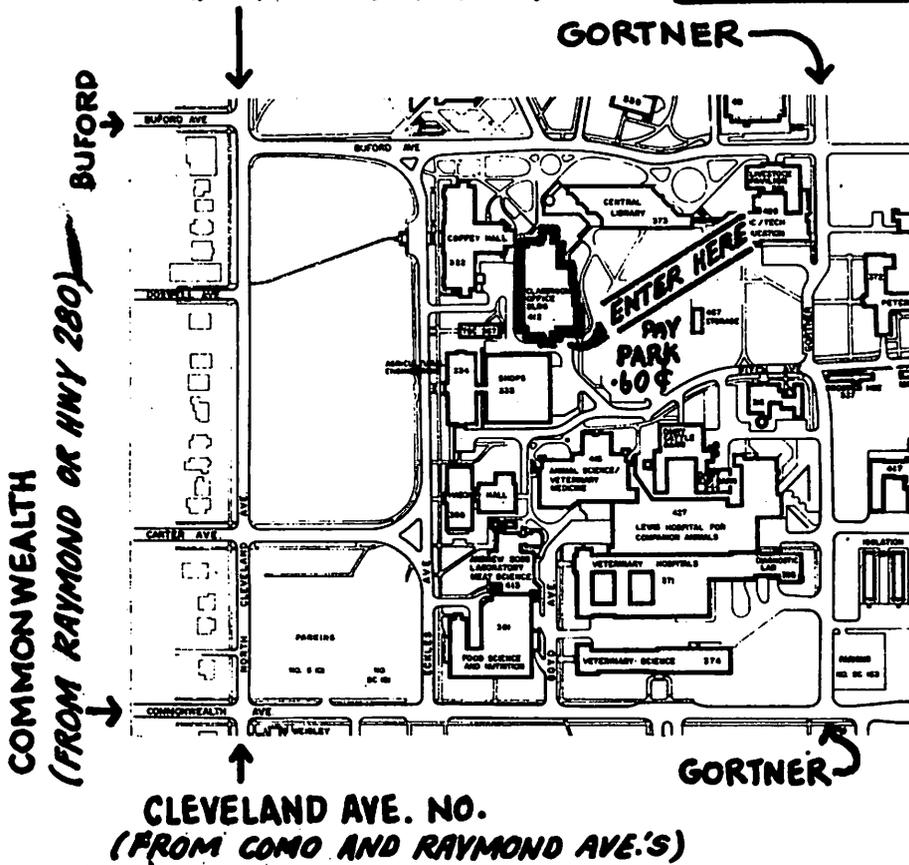
Listing of SHIFTER

0300-	C9 81	CMP	#\$81	0334-	C9 8B	CMP	#\$8B	0367-	60	RTS	
0302-	D0 18	BNE	\$031C	0336-	F0 33	BEQ	\$036B	0368-	A9 CD	LDA	.\$3CD
0304-	A5 06	LDA	\$06	0338-	C9 91	CMP	#\$91	036A-	60	RTS	
0306-	C9 FF	CMP	#\$FF	033A-	F0 32	BEQ	\$036E	036B-	A9 DB	LDA	.\$8DB
0308-	F0 09	BEQ	\$0313	033C-	C9 97	CMP	#\$97	036D-	60	RTS	
030A-	A9 FF	LDA	#\$FF	033E-	F0 31	BEQ	\$0371	036E-	A9 FB	LDA	.\$8FB
030C-	85 06	STA	\$06	0340-	C9 85	CMP	#\$85	0370-	60	RTS	
030E-	68	PLA		0342-	F0 30	BEQ	\$0374	0371-	A9 FD	LDA	.\$8FD
030F-	68	PLA		0344-	C9 92	CMP	#\$92	0373-	60	RTS	
0310-	4C 75 FD	JMP	\$FD75	0346-	F0 2F	BEQ	\$0377	0374-	A9 DF	LDA	.\$8DF
0313-	A9 00	LDA	#\$00	0348-	C9 96	CMP	#\$96	0376-	60	RTS	
0315-	85 06	STA	\$06	034A-	F0 2E	BEQ	\$037A	0377-	A9 DC	LDA	.\$8DC
0317-	68	PLA		034C-	48	PHA		0379-	60	RTS	
0318-	68	PLA		034D-	C9 C1	CMP	#\$C1	037A-	A9 FC	LDA	.\$8FC
0319-	4C 75 FD	JMP	\$FD75	034F-	90 0F	BCC	\$0360	037C-	60	RTS	
031C-	48	PHA		0351-	C9 DB	CMP	#\$DB	037D-	A5 07	LDA	.\$07
031D-	C9 A2	CMP	#\$A2	0353-	B0 0B	BCS	\$0360	037F-	C9 FF	CMP	.\$8FF
031F-	F0 5C	BEQ	\$037D	0355-	AD 63 CO	LDA	\$C063	0381-	F0 08	BEQ	\$038B
0321-	A5 06	LDA	\$06	0358-	C9 80	CMP	#\$80	0383-	A9 FF	LDA	.\$8FF
0323-	C9 FF	CMP	#\$FF	035A-	90 04	BCC	\$0360	0385-	85 07	STA	.\$07
0325-	F0 39	BEQ	\$0360	035C-	68	PLA		0387-	85 06	STA	.\$06
0327-	68	PLA		035D-	69 1F	ADC	#\$1F	0389-	68	PLA	
0328-	C9 C0	CMP	#\$C0	035F-	60	RTS		038A-	60	RTS	
032A-	F0 36	BEQ	\$0362	0360-	68	PLA		038B-	A9 00	LDA	#\$00
032C-	C9 DE	CMP	#\$DE	0361-	60	RTS		038D-	85 07	STA	.\$07
032E-	F0 35	BEQ	\$0365	0362-	A9 B0	LDA	#\$D0	038F-	85 06	STA	.\$06
0330-	C9 DD	CMP	#\$DD	0364-	60	RTS		0391-	68	PLA	
0332-	F0 34	BEQ	\$0368	0365-	A9 CE	LDA	#\$CE	0392-	60	RTS	

GOTO 21

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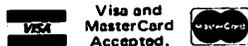
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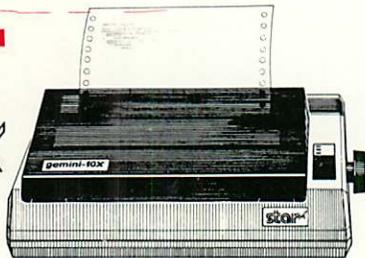


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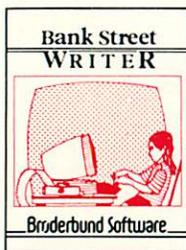
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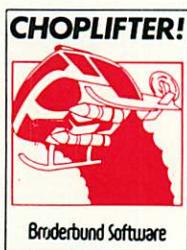
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