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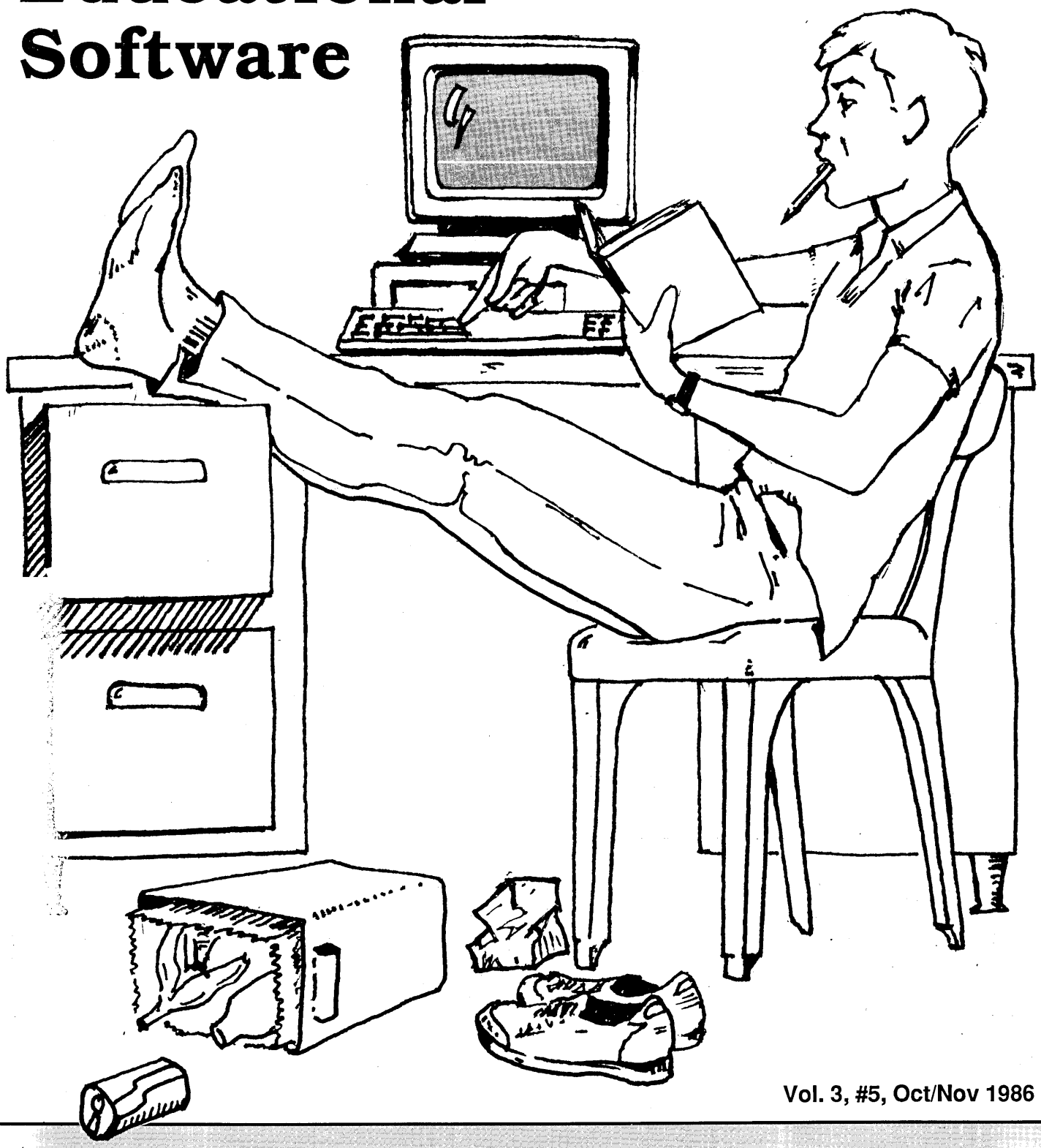
The International Magazine for Users of Morrow and Other CP/M Computers

Educational Software



Vol. 3, #5, Oct/Nov 1986

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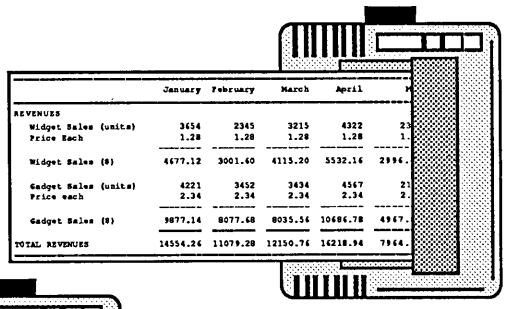

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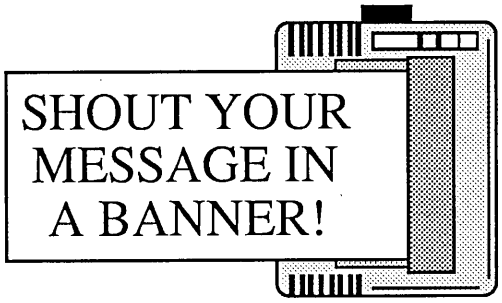

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Editorial

Fall is, for most of us, a time of renewal. Although in nature's realm the leaves may turn and die, signaling a season of retreat, in our human culture we tend to start new projects after summer ends and vacations run out. Our kids go back to school, and the rest of us re-immerse ourselves in work. Maybe we take a night class or revive a hobby. All of us go in for some sort of education or re-education.

There's lots happening in our MOR community. First, MOR's new image. Gone are the days of MP200-printed pages. This issue was typeset in Times Roman. Lovely for the reading eye, don't you think? We also switched to a new printer and mailing house in Missouri from which we can expect high quality work at a lower cost. We changed paper as well. Now our half-tones will look the way they ought. Less visible but equally important: no more slow third class mail. After eight months of suffering through an educational experience with the U. S. Postal Service, MOR now has a second class mailing permit. This should improve delivery significantly.

We in the MOR office are burning to find out whether you like the changes we made. We'd also like your opinions on other aspects of the magazine. We will soon mail a questionnaire to about 500 randomly selected MOR subscribers. We want you to tell us how we are doing and how we could do better, both as a magazine and as a service organization for the users' community. If you want to be sure to receive this questionnaire, let us know. We'll mail you one.

New goodies on the FLOBs: The contents of this month's Floppies of the Bimonth are designed to educate you, your kids or your pupils. The first two floppies are filled with 30 splendid articles by columnist Ted Silveira on a variety of CP/M issues. Ted originally wrote these for the Bay Area biweekly *Computer Currents*. The third floppy is mainly occupied by a small book, written by Art Kazmerczak, guiding you through his set of MBASIC programs aimed at teaching math to young children. See page 24.

New software: MOR is getting ready to distribute, at discounted prices, commercial software specifically geared towards Morrows. Our first software issue is the commercial version of ZCPR3, developed specifically for the MD3 by Echelon. Read Ted Silveira's article on page 34 of this issue. ZCPR3 replaces a good deal of your CP/M 2.2 system and turns it into a more convenient and more powerful operating system. Ted feels that ZCPR3 is what CP/M Plus should have been. Echelon has plans to make a ZCPR version that can be grafted onto CP/M Plus, but, MD11 owners, don't hold your breath.

ZCPR3 is especially valuable if you are contemplating adding a hard disk to your MD3. By installing the two together, you can transform your MD3 into a machine that is superior to and more useful than an MD11. To make this combination available to you at an affordable price, MOR is about to make a deal with Advanced Concepts. The arrangement will allow those of you who buy MOR's ZCPR3 package to also purchase, at a greatly discounted price, Advance Concept's 10 MB hard disk (floppy drive-sized). Put them together, and for about half a grand you have an MD3-Turbo. Or should we call it the MD300?

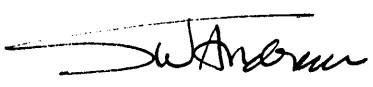
Various versions of ZCPR have been available in the public domain for quite some time. Many people did not bother to install it because of the skill, ingenuity, time and perseverance it took to put ZCPR together and make it work. That's why MOR acquired from Echelon this license to distribute a bootable, self-installing, Morrow-oriented version that does not require you to spend hours of tinkering to evoke the promised magic.

Does MOR make a profit on selling ZCPR3? We hope so! MOR will break even once a certain number of packages are sold. Any profits made beyond that are sorely needed to support the magazine. Most, but not all, MOR offerings turn a profit after a while. Without this, MOR would not be able to make ends meet. Our modest subscription income, plus advertising revenue, cannot possibly support the magazine at its current quality level. MOR's major expense is staff wages, and good staff is essential to maintaining and developing a quality magazine.

New subscribers: This fall MOR is embarking on a big promotion campaign. We're going after the 90 percent of Morrow owners who, so far, do not subscribe. A pilot campaign last May revealed that most such owners simply don't know that MOR is available; and when they find out, many choose to subscribe, especially now that Morrow Designs is gone. We're betting a lot of money on an all-out promotion campaign. Wish us luck.

As you can see, many new projects are in the works. It's the season for it. Next issue we'll look at new Morrow hardware, developed in small shops and basements across the country. This entrepreneurial activity shows that Morrow computers continue to evolve even after the parent company has died.

Have you ever pondered all those strong, green shoots coming up around the stump of the redwood tree that was cut down before its time?



Letters to the Editor

Keyswitches, MOR Manuals and Pals

Dear Editor:

Thank you for publishing Lee McKusick's article on cleaning the MT70 keyswitches. Some keys on my keyboard had the problem. Thinking they were bad, I was looking for new keyswitches. Cleaning the keys restored normal operation. Believe me, new keyswitches are hard to find, I haven't found any yet!

Thank you for providing the MOR Manuals. I needed them badly. My MD11 died. It would go through the motions of booting up, then, just when it was about to display the CP/M prompt, it would quit. After receiving the manuals, I was able to put the MD11 into the diagnostic routines. These didn't run well either (due to the malfunction). So I dug deeper and learned about the state machine performing the disk controller function for both the hard disk and floppy disk. I ordered the five chips that make up the state machine from Loveland Computer Center, Inc., in Loveland, Colorado (I found Loveland Computer in the Classifieds section of the Jun/Jul MOR). The failing chip was U59, a PAL chip; I replaced it. My MD11 and I have been happy ever since!

Thank you for publishing a very needed source of information for Micro Decision owners. Both the hardware and software articles are very interesting and informative.

Bernie Lavezza
Bolingbrook, IL

More Articles on Pearl Applications

Dear Editor:

Your publication is a delight to discover.

One thing I am always looking for is new ways to use my computer that I never thought of.

A suggestion to you is for articles on specific uses of Pearl. For example, MOR Vol. 3, #1, has a letter from Neil H. McCabe describing "forms and reports we have designed with Pearl" in his law office. I would like to see an article on that, with copies of the forms and reports, along with detailed descriptions on their use.

Paul W. O'Hanlon
Pittsburg, PA

Some Satisfaction from Every MOR

Dear Editor:

Over the last several years I have subscribed to a number of different magazines. At this time I have subscriptions to *Personal Computing* and *BYTE*, but none of these have given me the satisfaction that MOR has given. I realize that not every article in every copy will bring something to everyone. I believe I have gotten something of importance from every issue of MOR, a statement that I cannot make about any other other magazine. I appreciate what you and your staff are trying to do and hope you can keep it up for a long time to come.

Roscoe A. Norton
Appomattox, VA

Almost Like a Family Letter

Dear Editor:

You wanted to know when we've bought something from the MOR advertisers—well, I bought an MD3 kit and ordered an MD5 from Silicon Valley Surplus.

Surely appreciate all the hard work that goes into producing the MOR! It is almost like a family letter —very warm and sensitive and a terrific source of information. Thanks!

Ronald Waddell
Bethany, OK

Manuals Saved the Day

Dear Editor:

Last month MOR saved my life! I had two MD11s and one MD3 all on the fritz. Motherboard problems (we think a *low* voltage problem caused all three to go, but we're not sure—coincidence is too great for three machines).

After an infuriating three weeks waiting for motherboards from Morrow Inc. to be shipped to Pure Logic, I was ready to give up.

Finally I found a shop that would attempt repairs if I could get the manuals. MOR came through! Now all my machines are running good as gold (for many months, I hope).

For people living in Connecticut, I recommend Matt Durin at Advanced Micro Service, 253 Prospect St., Naugatuck, CT 06770 (203/723-7803). I've told him he can borrow my manuals if he needs them.

Thanks again for the emergency shipment of the manuals.

Ed Botwick
New Haven, CT

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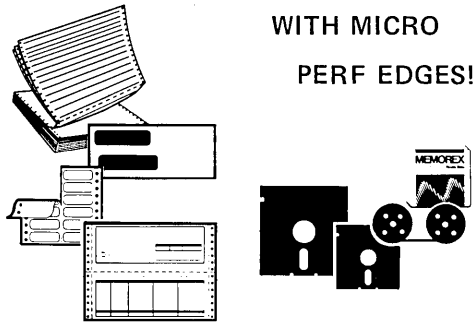

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Important Announcements

A Portable MD11

A new arrival in hardware is what should be called the MD11-P, a real MD11 built with the true sewing machine image of the MD3-P portable. A highly skilled man from the Bay Area named Bill Smith has been quietly making these machines from left-over MD3-Ps. We plan to run an article on him and his machine in the next issue.

Bootable ZCPR3 for Morrows

MOR has recently acquired a license to distribute the Morrow version of the bootable, self-installing ZCPR3 software package. This software is in development by Echelon Inc. of Los Altos, CA, and is the commercial (not public domain) version of ZCPR, which replaces the CP/M 2.2 system for the MD3. Read the introduction in the Editorial and Ted Silveira's article on page 34.

This Morrow ZCPR3 package will be available through MOR by mid-November for $59.95, which is about 30 percent below Echelon's retail price. The first edition of Morrow ZCPR3 is aimed at the MD3 with Rev. 2.0 PC board. Later editions will hopefully cover all MD2s and MD3s. No MD11 ZCPR3 versions will be available for some time to come. The current $59.95 package includes two double-sided floppies and the *ZCPR3 User's Guide*. The software includes ZRDOS, all the components needed for a working ZCPR3 system and a set of the most important ZCPR3 utilities.

MD3 add-on hard disk option: If you add a hard disk to your MD3, such as the Advanced Concepts half-height 10 MB disk, then you need a better operating system than CP/M 2.2. The ZCPR3 system is especially good for this purpose. If you order the MOR ZCPR3 package, you qualify for a very generous discount on the purchase of any Advanced Concepts hard disk.

Source code and extended toolset option: This consists of several more DS/DD floppies with utilities (the ZCPR3 toolset), the ZCPR3 BIOS source code and the 350-page book *ZCPR3, The Manual*, by Richard Conn.

A support network of experienced ZCPR users is already in place, including over 60 ZCPR bulletin boards (Z-Nodes) world-wide. For more information and prices, write MOR, Attn.: ZCPR3, P.O. Box 5487, Berkeley, CA 94705.

Selecting Educational Software

by Susan Parks

Five years ago there wasn't much educational software to choose from. In general, content was skimpy, poorly presented and equally poorly documented. It was not uncommon for "educational" software to have spelling errors as well as weak strategies for learning. A lot has changed since then.

Schools are now acquiring large numbers of microcomputers for teaching. For example, most of the 19 elementary schools in my school district now have computer labs in which students receive weekly instruction. Many of those schools, in addition to the few without labs, have microcomputers in classrooms, enabling daily use by students. My school alone has, within three years, gone from one computer to 21. And, as schools have acquired greater numbers of microcomputers, the need for additional software has increased, also.

Just as important to educational software's increased quality is the fact that those with responsibility for its purchase have greater experience with and knowledge of computers and software, resulting in increasingly higher demands and standards. No longer is the microcomputer relegated to simple drill and practice; instead there are expectations for and insistence upon a more sophisticated and higher level of performance from software. As a result, the educational software market has blossomed and become very competitive.

The changes in the educational software market have benefited everyone, not just schools and their students. Software available to institutions is also readily available to individuals. In fact, companies often state in their sales campaigns that "Your child can use the same software used in schools." However, that is only a benefit if the software is good to begin with. Because a piece of educational software generally costs from $35 to $50, it is important to make a good selection. Certainly don't buy something just because "the school" uses it.

There are hundreds of programs available for purchase, all out there competing for your dollar. While the axiom "You get what you pay for" is true to some degree, it does not always apply to educational software. The most expensive software is not necessarily the best software, and what is best for you or your child may not be the best for someone else. How do you determine what is a good value for your dollar? What is "good" software? Here are some tried and true guidelines for selecting educational software for yourself or for your child.

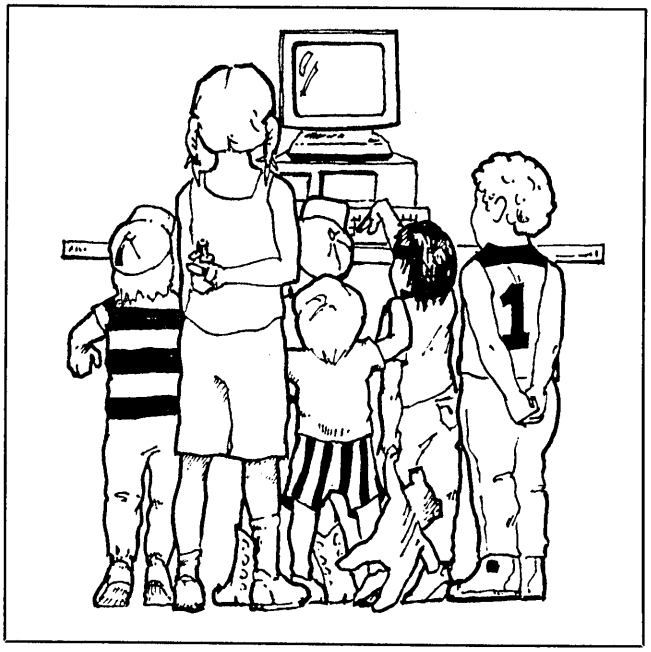
1. The Objective

First and foremost, determine what skill or knowledge you wish to gain. In education, this is called the objective. "The learner will...what?" Type 40 words per minute? Know all the multiplication facts with 100 percent accuracy? How about speed? Are you learning or practicing? What is the desired outcome? You should answer this question first whether the software is for your child or for you.

2. Ease and Independence of Use

One way to test software is to boot the program before reading the manual. See if the program can be used easily

***Susan Parks** is the principal of a "back-to-basics" elementary school in Simi Valley, CA, and a frequent contributor to MOR.*



without reading the manual. Although you may miss out on details or special features by doing this, you will have an idea if a child could use this program independently. Minimum assistance should be required once the learner has been taught the basics of using the program. The on-screen directions should be at a reading level appropriate to the content of the program; e.g., a first grade math program with complex directions is not appropriately constructed. Often, simple graphics and a consistent format within the program is all that is needed for it to be relatively self-explanatory.

3. Documentation

Documentation should be clearly and simply written. Good documentation shows what the screen will look like at the various menus and key points. It gives examples or tutorials when needed. If *you* cannot understand the directions, chances are that most young learners won't either. Look for a customer service or help number. Be wary if no assistance is offered.

4. Feedback to the User

High quality educational software incorporates encouraging, useful and instructive feedback. Feedback should be immediate, specific, and positive. The program should not permit a child to practice errors. In general, programs should not allow the user to go to the next item if the current item is incorrect. If this happens, there is usually little learning, just practice of mislearning.

Feedback should include a dignified error message, not "Hey, Dummy. You goofed." Early software did this far too often; authors probably thought it was funny. It is indeed clever to give a response, but that type of negative response is not particularly helpful or encouraging to any learner. Even "Oops! Try again," although not sophisticated feedback, would be more helpful.

In a social studies program in which a student was to name the state capital of Oregon and instead answered, "Sacramento," an appropriate response to that incorrect answer would be something like, "You named the capital of California; try again." This puts the "wrong" answer with the right information and encourages another try. If the student is really stuck after two or three tries, the software should give the answer in some helpful manner. Some software requires the learner to re-do the incorrect questions at a later time in the program. This helps hold the learner accountable for the newly learned information. Little learning takes place if the program just tells the learner he or she is wrong without telling why or helping to correct the mislearning.

There are exceptions to this generalization of feedback after each item. For drill and practice such as timed tests, the learner can go through all items as quickly as possible with feedback at the end. In this case, it is helpful to have a review of missed items, with the chance to correct them. Some programs with timed features do require correction on an as-you-go basis.

5. Diagnosis

Quality educational software also provides for diagnosis of the learner's skill level with regard to the difficulty of content, amount and speed. For example, a math program in addition should allow the user to select from a variety of parameters, including the number of problems to be tried, the level of difficulty, the range of content (facts with sums to five, facts with sums to 10, number families, regrouping or no regrouping, etc.). This allows a customized and tailored practice session. A program that simply practices addition problems selected randomly will give considerable practice, but on many items that the learner may not need to practice. In order to cinch learning, the learner needs to practice a skill over and over again. Typing programs tend to recognize this need clearly.

Many educational programs provide diagnosis along the way. The learner does not have to self-select. One method of doing this for the learner is in timing. Some programs, in particular typing and math drill programs, track the time between keystrokes. The computer either slows the rate or speeds it up, depending on the student response. Some programs diagnose by keeping track of incorrect responses and designing practice for those particular skills. Other

programs refer the learner to additional information for review. Many programs branch to a more difficult level upon successful completion of a lower level.

Our software collection at home has a notable example of poor design of diagnosis. It is a beginning French program. We thought it might be fun, because our daughter was completing her first full year of French. The content is about right, but it is too fast and there is no way to slow it down. It tells you that you are wrong before you have a chance to answer. You either do it at the program's speed or not at all. It was very discouraging, especially for a beginner. I suspect that by the time she is fast enough, the content will be too simple.

6. Provisions for Challenge

It is common to underestimate the ability of the learner with regard to software content. If you do this, the software will be outgrown and sit on a shelf for a long time to come. A notable example is with the use of learning tools. For example, there are many word processing programs now available that have been "designed for kids and non-professionals." They are very easy to learn but offer little room for growth. Pull down menus and only a few commands give one a quick start, but actually slow the learner down once he or she gets the idea of the entire thing. We found that out the hard way at school with our initial purchase of a well-known word processing program.

My son started using WordStar when he was in the third grade. He learned how to move the cursor and to delete letters (^G) in his first sitting. With each use he learned commands he needed to do more—open and close files, center text, adjust spacing, use the menus, justify, move the cursor by words, read files into other files, etc. Three years of use have given him the opportunity to grow and become more proficient. He produces a better product than he would have produced otherwise. He hasn't needed the full power of WordStar—few of us do—but he has a low tolerance for the word processing program used at school. It's just that he has outgrown it, as have many, many other students.

7. Having Fun

For an educational program to be worthwhile, it should be cheaper, better or more motivating than traditional methods of instruction. Drill and practice of math facts can be done on paper, but a computer can take away the "pain" of writing and add elements of fun. Be careful, however, that the fun doesn't take the place of real learning. Good graphics and clever text can't make up for poor content. There is a popular typing program out that advertises the fun in learning to type. The fun, however, causes the learner to disregard good form and fingering and go back to two-finger typing in order to shoot the creatures. On the other hand, there is a wonderful grammar program that is genuinely entertaining, and there is no way to cheat on the learning in this one. Levels of difficulty can be set so kids of all ages (including middle-aged kids) can enjoy it. My kids even look things up in grammar books to get a better score. Amazing! Now that is having fun.

8. Back-Up Policy

Simply stated, don't buy without a reasonable back-up policy. A back-up diskettte should be made available at a very reasonable price and within a reasonable amount of

Where to Get Educational Software

Here's a list of places I've discovered that you can order educational software for CP/M computers from:

Central Computer Products
330 Central Avenue
Fillmore, CA 93015
805/524-4189

Computer Discount of America
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West Milford Mall
West Milford, NJ 07480
800/526-5313

Diamond Software Supply
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Suite 123
Oakland, CA 94610
800/277-0545 (out-of-state calls only)
415/633-2588

Discount Software Corp.
10150 W. Jefferson Blvd.
Culver City, CA 90230
213/837-5141

Tri-Cities Computer Mart
3580 Bay Road
Saginaw, MI 48603
517/790-1360

Also, your local ComputerLand should have a catalog listing educational software they can order for you.

time. Computers themselves are relatively indestructible, but the software is vulnerable to sneezes, fingerprints, cookie crumbs, temper tantrums and gremlins. It seems that there is a higher incidence of gremlins when children regularly use software. This is not a problem at home; my kids are perfect, right? But we have had disk failures at school. The educational software market now offers only copy-protected programs, unlike the professional treatment one receives from companies that bundled software with the Morrows. Some come with a back-up included in the purchase price; some include a coupon good for an inexpensive back-up; others make available a back-up for a

modest fee upon sending in the original disk. Unfortunately, there are some companies that charge almost as much for the back-up as they charged initially for a not-inexpensive program. Our school no longer deals with these latter companies. We also prefer to have a back-up on hand, as it often takes weeks to secure a replacement. When that happens, learning of that skill on the computer comes to a halt until the disk arrives. If I am going to honor copyright laws and purchase copies for each machine, I expect to be treated just as honorably. You should, too.

9. Equipment Requirements

It is essential to be certain as to the system requirements. Yes, this is *obvious*, but it is easier than one thinks to get tripped up.

RAM: Early software usually required no more than 48K RAM. There is still quite a bit of 48K software available, although 64K is rapidly becoming the standard. However, 128K programs are starting to be seen in abundance. Be careful.

Peripherals: Software manufacturers are getting better at making this obvious to the buyer. For example, some software states that it is "printer optional." A very popular typing program is great without the printer, although the printer allows the user to print a record of achievement as well as typing samples. However, one software program purchased for school was labelled, "printer optional," and unfortunately, it had little worth without printing because creations could not be saved. The program worked without the printer, but had little value without it. Printer optional? Not really. Check also on joystick requirements. Sometimes the joystick really is optional, and just by use of the keys the program can be used well. This is the same as the problem with "printer optional." Make sure it really is an option.

Monitors: Until recently, most school computers were purchased with monochrome monitors. Available software was predominately for monochrome screens. About two years ago, software started being designed primarily for color monitors, although most programs could also be used on monochrome screens. However, some cannot be used successfully and are not clearly labelled as such. For example, a fine logic program was not labelled, "color monitor required." Only in the manual, after the seal was broken and the software not returnable, did it say that a color monitor would "improve" use of the program. It sure did improve it; in fact, it was essential. It was a good program, but in most of the games and exercises, color was one of the four attributes used to determine patterns, progression and discrimination. More recent packaging of this program clearly labels the need for a color monitor.

40- vs. 80-columns: Having learned micro-computing on a Morrow, it never occurred to me that 40- vs. 80-columns would be an issue in software selection. Many commonly available and widely sold programs are available separately in both versions. When purchasing our Apple IIes for school, we purchased 80-column cards at the same time. However, on our first major purchase of word processing software, we inadvertently ordered the 40-column version. With our Commodore 64s we don't worry about it because we use those machines in second grade and 40-column is just about right. There are some programs that have both versions on them, 80-column on one side and 40-column on the other side of the diskette. In fact, one excellent word processing program also has a 20-column version along with the 40-column version. It works particularly well with very young children. Just don't assume that because it is "made for your machine" that it will run on your machine.

10. Preview and Review

The only way to determine most of the above information is to preview a program. Although packaging now provides more information than before, it is usually

not adequate for decision-making. You wouldn't buy a car without a test drive, a washing machine without a review of its features or a textbook without reviewing its suitability. There is no reason that anyone should have to buy educational software sight unseen. The unsatisfactory French program mentioned earlier is an example. Unfortunately, we did not review the program in any manner ahead of time. It was a classic off-the-shelf purchase that was not a good investment.

Some companies now allow schools a 30-day preview of software, although that courtesy is seldom extended to individuals. A major book store chain now has in-store machines and allows software demonstrations. Even a demonstration on a machine different from your own will provide a close approximation to the program you will get. Ask if there are machine-specific features. Certain education supply stores now sell software and will permit review of the manual included with the software. You can also send your questions to the company. My experiences with this approach have been positive on a personal basis. If they can't or won't answer the question, they won't get my business (or that of my school or of others to whom I might make recommendations).

When shopping, we usually want to bring something home at that time. That's natural. However, unless you have seen the software, are relying on a review by a reputable individual or publication, or have a friend with the software, the best advice is to take your time. That is, unless close to $50 doesn't put a dent in your budget at all. Then *you* can afford to be impulsive and frivolous.

The other issue is that without careful consideration and insistence upon the right to some sort of information or review before a purchase, individual consumers will continually be expected to make blind purchases. It may take time on your part, but chances are you will be able to find vendors or retail outlets that will treat your desire for information with respect. One education supply store near my community is very helpful. Although they are not the very lowest price in town (nor are they the highest), I make my purchases there because they will open a box, allow examination of the manual, and in the past have secured demonstration copies of software. It is worthwhile to shop there. Not buying one piece of educational software that goes unused will more than make up for the possibly higher price of a helpful store.

All in all, educational software is a vastly improved product. Even so, you should shop carefully. Know what you want and ask questions. Expect quality and service. Then, after finding the perfect program, sit back and enjoy learning!

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— — Morrow Owners' Review, April/May 1986

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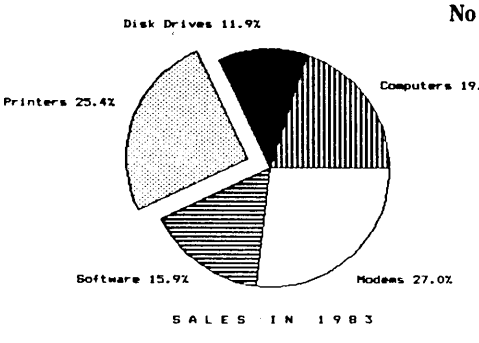
— — Profiles Magazine, 1985



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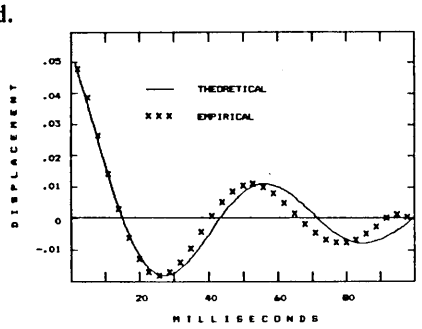

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Teaching a Course with PILOT

by Don Jenner

Although some have touted the use of PILOT for writing programmed instruction for very young children, I actually think that it works better for teaching university-level students. Because it lacks some of the fancier display capabilities that make educational software a treat for youngsters, PILOT is only marginally effective for that age group. But, on the other hand, if university-level students can't handle largely text-oriented instruction, then they ought to learn that skill; and if they can, they will, it seems, queue up for such instruction. More to the point, it is an excellent exercise for the teacher, writing out his course in a programmed way..

General Benefits

Now, not all things that go on in university-level teaching (the only kind I understand—high school students are largely a mystery to me; the change that comes over 18-year-olds in the summer after commencement and before matriculation is profound, and all to the good...) can be reduced to a programmed sequence. The best stuff, the genuinely university level material, involves a presentation by a scholar of his or her own latest insights into his or her own area of special interest. This is rarely reducible to programmed instruction.

Sadly, less of that kind of teaching seems possible these days. One's pupils aren't ready for it, by and large; it scares some of the mediocrities in the faculty (they collect in certain disciplines, varying slightly from school to school); and the advance of what may be called the "public high school model" of university administration (it came into higher education through the county/community colleges, which in their formative years got most of their faculty and administration from the public education system and tend still to be run by products of the normal school system) has resulted in administrative admiration for fixed curriculae, set syllabi and "skills" courses. That is, ideally, one's course description should look like a self-help book, and include a what-this-course-will-do-for-you section.

These skills courses are the bane of any scholar/teacher's existence; they demand the same effort as really fun courses, but they numb the mind. Fortunately, they lend themselves to automation, and PILOT is very nearly the perfect tool for automating them.

Pilot as an "Authoring" Language

Of course, a number of very sophisticated courseware "authoring" systems have been put on the market—mostly for Apple and IBM systems. They are remarkably sophisticated in their user interfaces; a teacher writing a course using such a system need never soil her or his hands with programming. With practice, one can manipulate

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Design & Implementation

The Morrow PILOT interpreter has some very nice features, which should, though, be used with some care, as they are not common PILOT features. The ability to chain to chunks of program in subsequent files makes it possible to develop the course in manageable files when editing; the ability to chain to CP/M .COM files makes it possible to develop relatively secure tests in compiled form, and run them from the PILOT program.

One main design consideration is the frame-by-frame character of programmed instruction. A frame, in this case, is a 24-line CRT display—what can be seen at one time on the usual computer or terminal screen. Normal text is not much of a problem here. All one needs to do is to break one's text into manageable chunks and leave room for a prompt at the bottom of the screen. Tabbing in once from the left and not running all the way over to the right makes for a nice-looking display. But this is simple stuff.

Exercises, where one has to show step-by-step development, are very different. Here is where the Morrow PILOT can shine in several ways. First, divide the screen in half—the upper half holds the problem and its developing solution, the lower half is where questions can be posed.

In my logic program, I use this technique extensively. I teach using truth-tree tests. In the first screen, I give the student a problem in ordinary language, and he or she answers questions as to whether the problem is really an argument and how it is symbolized. If he or she makes an error, the error message flashes and the question is asked again.

—*D.J.*

special screen and printer features in perfectly elegant ways.

Such authoring systems have two disadvantages, as I see it: First, they are highly machine-specific. What will work on one system hasn't a prayer of running on another system. By contrast, PILOT exists in one form or another for many different environments. The very nature of this simple, display-oriented language is such that modifying a PILOT-prepared programmed course of study for another environment will be largely a matter of global search-and-replace, modifying some commands. The bulk of the work, in short—the hard part of thinking out the course—is readily salvaged if a new environment is put in place.

Second, PILOT is simple enough as a programming language that any novice (like me) can get the results he or she wants by a couple of hours of manual reading.

For those of us with Morrow machines, there is yet a third advantage: Morrow gave us the tools for PILOT programming as part of our "bundle." We can develop the software to our taste, on our own, in our studies, then implement it (with suitable modifications) wherever we choose. [See sidebar: Design & Implementation.]

My Own Major PILOT Project

In my line (philosophy), the skills course that has to be taught, and which becomes exceedingly wearing, is "baby logic." This is a first course and may comprise some or all of the following topics: rudimentary syllogistic logic (including enthymemes and sorites); basic Boolean relations and sentential logic (Ps, Qs and so on); predicate logic (which can best be understood as a conflation of syllogistic and Boolean logics); informal logic (this has to do with content, not form—hence "informal"); and some of the philosophical reasons logic is of interest.

This course is *perfect* for programmed instruction. As a matter of fact, this course runs better as a programmed instruction course than as a *viva voce* course. Irving Copi, the author of the standard baby-logic textbook, actually reads his book to his classes (or so we are told); he might miss something or err, but his book is always right. While I question the perfection of his book, I do not doubt the basic sentiment. And I have been putting that into practice, reducing my logic course to a program. I find that I am getting a thorough review and a chance to rethink the course in a new light (useful—I was getting burned out on logic). I may even have a new device with which to capture the attention of a dean (not easy, and the attention span can be short...).

How to Go About It

Suppose you want to put together a course like this yourself. What's involved? First, you might put together a PILOT programming disk (or reserve a user area for it on your hard disk). On mine, I have the PILOT interpreter (Morrow, version 4.19), some utilities (ZX3, the very elegant directory and everything-else utility; NSWEEP; SmartKey; SuperSUB), VDO (the BBS-distributed editor [See sidebar: VDO.]) and a file of key definitions, and a submit file. This disk goes into the A drive.

In the B drive, I put the disk onto which I will actually write my course.

I write the course in two passes. The first pass involves the writing and thinking proper. For example, I usually begin by setting up my error and "correct" messages—generally I just copy them from the previous module, then modify them so the students will see

something different. (Naturally, as I go along, I may add to these for special cases.) Such messages, as initially written out, look like this:

```
*ERR1          ◄ Label, so PILOT can jump to the message
{              ◄ Left bracket turns on highlighting
NOPE!!!}       ◄ Right bracket turns it off
You goofed. You had better try it again.
WAIT:          ◄ Timed display
E:             ◄ Ends subroutine
```

Writing something like this is not unlike writing one's lecture notes. There is some reason to give attention to the formatting of the material as one goes along, perhaps. But this *could* be done later, so that it would be just as reasonable to simply write the course (or take lecture notes already "in the can") and pass them through something like PURETEXT (to eliminate the word processor peculiarities, like "soft" carriage returns). Then the formatting/editing process might be undertaken as part of the second pass.

On the second pass, I modify a frame like the one above, optimizing somewhat, and adding the PILOT commands as follows:

```
*ERR1
CLRS:          ◄ Clears the screen
LF: 5          ◄ Inserts some blank lines
T: {NOPE!!!}
T:
T: You goofed. You had better try it again.
WAIT:
E:
```

This produces a full screen with the error message; a "correct" screen is similar. These are typical utility screens, and one uses them at the end of each step in an exercise.

VDO

Writing a PILOT program, or script, or whatever one wants to call it, is a matter of having a good text editor. One is largely *writing*, after all. Good cursor control, full-screen addressing and speed are all that is wanted; printer formatting is not. WordStar in non-document mode, or NewWord, would do nicely.

But I confess I find VDO, the BBS-distributed core editor (i.e., it does not use the disk for virtual memory—it edits files only if they fit into core memory) is my present favorite for programming. It is compact, it is fast, it is full of solid features and it uses a command set almost identical to that of WordStar (unlike the later derivative, VDE, which has an extensive <ESC> command series and some unpleasant limitations as far as embedded control characters are concerned).

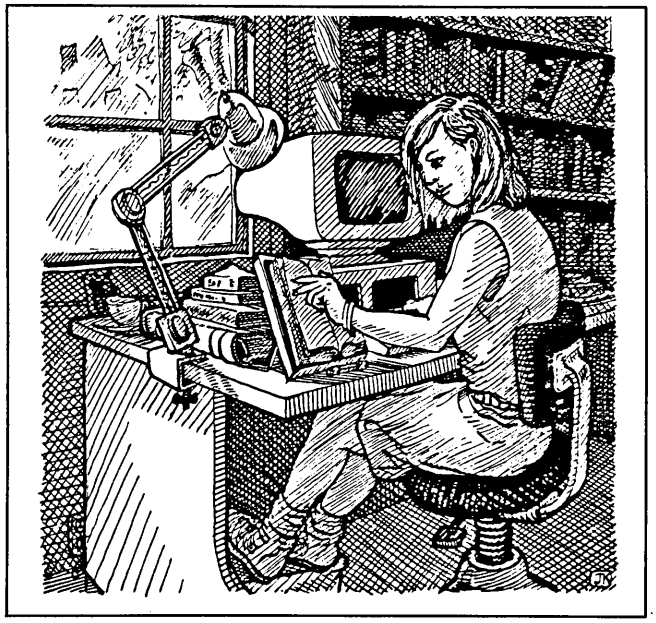
Using SmartKey definitions and a submit file make PILOT editing a piece of cake. I have used SmartKey to redefine my MDT20 function keys to fit the needs of VDO, most especially to use the cursor keys per spec. I have also programmed my numeric keypad, using "supershifted" numbers, to insert frequently used PILOT instructions.

The submit file loads Smartkey and the VDO.DEF file, logs onto drive B, loads VDO and the specified filename.PIL text, and leaves me ready to work. When I finish with the file, exiting from VDO with Control-KX, the submit file takes up again, erases the .BAK file from the B drive, logs onto A, removes SmartKey and clears the screen. In short, I am back to a neutral system—which is very comforting. (VDO does not recognize Control-H [ASCII backspace], so I have redefined that and the left arrow key as Control-S—sticky if not removed at the end of the editing session.)

When the questions are answered properly, the student is "rewarded" by getting a fresh screen, with the properly symbolized argument set out in the upper left quadrant. In the question space below the line, the next set of questions asks about the counter-argument; and as each question is properly answered, the correctly input data is displayed in the upper right quadrant. At the end of the exercise, the student has displayed the original argument in symbolic form, the counter-argument and truth-tree test, and his correctly answered questions, all at one time.

To do this, I have relied *heavily* on the absolute cursor positioning feature (PILOT command: CUR:) in Morrow PILOT. In doing so, I get optimal speed and somewhat less work in development (more thought, but less typing—this took time to get down pat). But I may have sacrificed easy portability; this cursor-positioning command is not common to all PILOT implementations. (Notably, I believe the Nevada/Utah PILOT implementation does not support this feature. However, Stock PILOT, another commercial product, does.) Another way—somewhat more tedious and not nearly so elegant or speedy—is to put up a fresh screen each time a new step is made, duplicating the previous screen and including the new step. More typing, in this case, might mean greater portability.

—D.J.



The other screens consist of two sorts: First, there are general information screens. These consist of a label, a clear-screen instruction, and some text, just short of a screen in length, making one (or, perhaps, a couple of related) point. They terminate with a BELL: instruction to beep at the student and a message, "NEXT FRAME?" to prompt the student to hit the carriage return when he or she has finished reading.

The challenge of this screen-type's creation is two-fold. First, information has to be broken up into manageable chunks, each presentable in a limited space—18-20 lines maximum (and that is pushing it). Second, one has to consider how often to repeat the information—in one or more different forms—to make sure the point sticks. One has to guess what things a student needs to see twice (which is a matter of remembering when, in the normal *viva voce* presentation, one has seen blank looks on the kids' faces) and then think of alternate displays. Commonly, if I have described something in text, I follow it with a tabular form of the same information. I may also make a copy of the table, setting it up as a subroutine with somewhat different display characteristics, and offer the option of referring to it during the related exercise.

The second kind of screen has to do with exercises. Some of these are simple. One uses the top 10 lines or so of the screen to show a problem, then inserts a line and a prompt for an answer. Such a screen might look like this:

```
*00424
CLRS:
T:
T: Symbolize the following sentence:
LF: 4
T: Cook is a liar and a gentleman; Perry is
   neither.
T: [A,B,C,D]
LF: 3
T: ----------------------------------------
LF: 2
TNR: ANS:
A:
M: A & B & -C & -D
UN: *ERR
JN: *00424          ◄ Notice, if they goof, they do it
                      over 'til they get it right!
UY: *CORRECT
*00425
```

This sort of screen does very well for quizzes and the like (but there, instead of showing a correct or error screen, I would just increment a counter and go to the next item). And it serves the same role as an in-class exercise. In the case of examples that show some special quirk of the subject, where a student is likely to screw up, I might write a special error message pointing out the likely problem before they give it a second whack.

Some exercises require step-by-step procedures. These are the most difficult part of the writing process, by far. One tends, after doing something a lot, to "short circuit" things—a capital *NO! NO!* in this sort of writing. Instead, one should prepare a series of screens, in which each stage of the problem is presented. At each stage, the student is offered some choice to make, based on the previous stages and what is now displayed. This is also where the tables one might have written before may be used again as reference—a student can be given the option of displaying that information, then the problem screen can be displayed again and the question posed.

Course Organization

There are different opinions on programmed instruction. Some folks prefer that the computer merely aid the instruction process; one suspects they are trying to save their jobs. Frankly, the ideal is to let the computer manage the whole business, so far as that is possible. There still needs to be a course instructor, to supervise, to help out where a student simply can't get what's going on, to show compassion where the computer can't and so on. A few peer teaching aides are also handy. But I suspect that in the case of skills courses, most of the course can be done on the machine, at the student's own pace and with minimal assistance, if the thing is written right.

My logic course consists of modules, each not exceeding about 30K. The basic module, called

CONTROL.PIL, has the basic copyright data and acknowledgments, a big, bold title screen ("BABY LOGIC" in ASCII graphics) and a menu of the actual course modules. There is an introduction (how to take the course) and a series of eight modules, each consisting of three files, each chaining to the next as the student goes along.

I have yet to write the examination programs. These cannot be written in PILOT, more's the pity. I mean, they *could* be written to run under PILOT, but they would be totally unsecured; and one ought not to tempt students that way. So they must be written in a "conventional" programming language that will create a .COM file. I expect that I shall write the exams in either Small-C or Turbo Pascal. In any event, this should not be a major problem, since it is not terribly difficult to write exams—especially if some sort of multiple-choice strategy is pursued. The computer can keep count of the student's score, write the student's ID and score to a file, and print out a copy for return with the program disk.

As I have designed the course, a student taking it must complete three of the skills modules with a 90 percent or better score (he or she may take the exams over and over again until perfect—this just means I have to write lots of exam variations) and then write a final essay. In principle, if the essay is decent, then I am sure the student understands what the skill is about, and he or she gets an A; if the essay is the pits, then they have at least mastered the skill and get something like an A- or B+. This keeps the students happy and involves no compromise of standards—mastery is the key, with understanding a desirable "plus," in a skills course.

The Bottom Line

A computer-managed approach like this makes life easier for the scholar/teacher (one can focus on courses where something interesting—to oneself, of course—is going on). It provides a very thorough rethinking of one's discipline's basic skills—*never* a bad thing. It gives insight into the teaching of such elementary things.

A computer-managed course is efficient use of a teacher's time, and that is bound to appeal to administrators; they also love things that smack of the innovative and promotable (so far as one can fathom what's in a dean's mind—never easy...).

Students, it appears, like the approach—although some are still scared of the machine.

Everyone wins, except for the obsolete types who haven't gotten around to using a computer yet—and MOR readers aren't in that category, clearly. ■

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Writing Your Own Educational Software

by Lynsee O. Cain

As a computer teacher for a private school in the heart of Silicon Valley, I have taught on various microcomputers, including my own MD3. Now, I am in the process of writing educational programs to go with a particular reading program for that program's author and my school. In doing this, I've learned a few tips, which I'd like to pass along.

Much of the educational software now in use has not been written well or aimed at the students that it is trying to teach. Many people think that an educational computer program has to be a game in order to appeal to students. These educational "games" are fine, and many subjects can be taught in this manner. However, an educational program can also instruct by way of question and answer, multiple choice, fill in the blank, etc. A program written in this way can be considered a thinking "game."

Here, then, are some guidelines for writing your own educational program:

1. Decide what computer language you want to use and make sure it can be used on other systems (unless you plan on only running it on MDs). C is a good language to use, and so are LOGO, PILOT and MBASIC, since most microcomputers in use today can run these languages.

2. Decide what subject you know well enough to teach to others.

3. Decide what age level you want to write the program for—or you can try to make the program flexible enough so that it can be used by all age groups. If the latter isn't possible, write one program for one group, and then adapt that same program for the next age level by making the questions harder.

4. Make the instructions as easy as possible for your targeted age group to understand, or specify at the beginning of the program that a parent or teacher must read and explain the instructions to the students beforehand.

5. Have some way of rewarding students with positive responses to correct answers and a final positive remark at the end of the program. Positive responses help students feel good about what they are learning, which helps them retain the information they've just learned better.

6. Scorekeeping can be included in the program, but it is not necessary.

7. Try to make the program error free, and incorporate have good error-handling in it. Children (and adults) can make mistakes when running programs; try to ensure that mistakes won't cause your program to crash.

8. Try to keep the program as much fun and as exciting as possible! If you had fun writing the program, then the student will probably have fun running it—and a fun program can make learning an enjoyable experience for both students and teachers/parents.

QWQTEST.LST on OCT86 FLOB #3 is an example of a program I wrote. It's called Quick Word Quiz and teaches 6- to 12-year-olds to spell common words.

Happy computing, and good luck creating your own educational software! It's fun!!!

Lynsee Cain has a degree in early childhood education, teaches computer classes and is the mother of two preschoolers.

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CP/M ALIVE!

by Ken Grymala

The Many Facets of PIP

In this column I will concentrate on several very useful parameters of PIP that many of you may not know about. Obviously, there must be enough CP/M users out there who are unaware of these features, since entrepreneurs are selling products that do what PIP already does.

PIP

The program gets its simple name from the initials of "Peripheral Interchange Program." It came with your copy of CP/M, and it is meant for sending or receiving data in a specific data format from one "peripheral" device, such as a disk drive, to or from another peripheral device, such as your terminal.

PIP has more than 22 "option parameters," which allow you to do a variety of things with PIP besides copy files from one disk to another. To use the option parameters, just include them inside brackets as shown in the following example:

```
A> PIP NEWCOPY.TXT = OLDCOPY.TXT [EV]
```

The "E" of the [EV] will "echo," or display, the text on the screen as it is copied from OLDCOPY.TXT to NEWCOPY.TXT. The "V" will verify that NEWCOPY.TXT is an exact duplicate of OLDCOPY.TXT.

Now that we know how to use option parameters Echo and Verify, let's look at some real interesting uses for PIP.

Send your questions and comments to Ken Grymala at P.O. Box 2540, Manassas, VA 22110.

Line Numbering

Do you ever wish you could automatically number the lines of your NewWord or WordStar files?

I do a lot of writing that must be seen simultaneously by many different editors. Generally, there is not time for one copy of the manuscript to be passed to all of the editors in sequence. Instead, each person gets a copy and makes comments.

If the copies are line numbered, the editors can reference all of their comments to the line numbers, such as by saying "emphasize the point of line 1063," rather than saying "emphasize the point of line five in the fourth paragraph on page 36."

To add line numbers, a colon and a space in the left margin of a text file, just use PIP's "N" option like this:

```
A> PIP NUM.DOC = MYFILE.DOC [N]
```

```
1: This paragraph is an example of what the N option
2: produces.  One note of caution—do not use the N
3: option with the V or E options—it will do strange
4: things to your new file.
```

A second line numbering option also exists. If you wish to use your word processor to write BASIC programs, use the non-document mode of NewWord or WordStar, but don't worry about the BASIC line numbers. When you have your program written, use the PIP "N2" option. This will add line numbers with leading zeros and without the colons shown above.

```
000001 This paragraph is an example of the PIP "N2"
000002 option.  (Remember, if you are writing MBASIC
000003 programs with a word processor and you make
000004 changes with the MBASIC editor, you must save
000005 the new BASIC program as an ASCII file by
000006 adding a comma and an A to the SAVE command.)
```

Uppercase/Lowercase

Have you ever wanted to turn a document into all uppercase letters or all lowercase letters? Well, if so, all you need do is use the "U" option to convert a regular document into all uppercase letters. Similarly, you can change a regular document into all lowercase by using the "L" option.

Combining, Word Processing and Uncombining Files

Most of my writing is broken into chapters or other sections that are generally 10 to 20 pages in length. I

usually work with each section separately because NewWord and Wordstar start to act sluggish with long files—especially files that are more than 25-30 pages long.

When I get done with a job, I usually have between 10 and 20 separate sections that I must either combine for my customers or that I just want to combine for printing and storage purposes. Periodically, I have to re-edit parts of these documents, and I need to work with only specific parts of a document and then re-insert the edited part.

Wordstar and NewWord will permit you to do this; however, I find it painfully slow, even with my MD11 and its hard disk. However, PIP works very well and very quickly for this purpose.

PIP allows you to combine and/or take apart documents, copy parts of documents from between selected words or phrases, and even add comments from the keyboard if you wish.

To simply combine documents into one large document, all you have to do is this:

```
A>PIP BOOK = INTRO,CHAP1,CHAP2,CHAP3,END
```

This would produce a file called BOOK from files called INTRO, CHAP1, CHAP2, CHAP3 and END.

Advanced Concepts "Mini Winnie"

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Xerox 820-I,II	✓	✓	✓		
Micro Mint SB-180	✓	✓	✓		
Gemini Zorba	✓	✓	✓		
Osborne	✓	✓	✓		
Sanyo MBC-1150/ 1160/1200	✓	✓	✓		
AVL Eagle (with mods)	✓	✓	✓		
Alspa II	✓	✓	✓	(You may delete $90	
Epson QX-10	✓	✓	✓	for external systems	
Morrow MD-2,3	✓	✓	✓	less P/S enclosure	
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If you wanted to add notes between files that you were combining, you could use PIP with the "CON:" command. You can also write directly to files using CON: with PIP instead of going into NewWord or WordStar. When CON: is used in place of a file name, the data that are copied by PIP are taken directly from the keyboard. That is, PIP can even be used as a rudimentary word processing program. For example:

```
A> PIP BIGFILE = LITTLE1, CON:
```

After LITTLE1 is copied into BIGFILE, the computer stops and waits for you to enter data from the keyboard that it will place in BIGFILE. You can continue to enter data until you press ^Z (Control-Z).

Suppose you wanted to work with just part of a long file or just part of a BASIC program? You can specify a starting phrase or word, and PIP will copy everything after that phrase or word. Or you can specify a beginning and an ending phase, and it will copy everything in between the two phrases. One note of caution, to use these options you must start from the PIP "*" prompt. Otherwise it gets confused between your desired phrases and other PIP options. For example:

```
A> PIP <CR>
  * SECTION = WHOLE[Sstart^ZQend.^Z]
```

To get to the "*" prompt, just press the return key after you type PIP. In the example above, a file called SECTION would be generated that contained all of the text between the words "start" and "end." of the file called WHOLE. "S" signifies the start of the new file to be created, "Q" the end, and the "^Z" is a special character used to show the computer that the end of string has been found. It is needed as shown in the example.

Conclusion

If you would like to learn more about the many additional features of PIP and other useful CP/M commands, I highly recommend two excellent books that can be read and understood by almost everyone.

For those of you with an MD1, MD2, MD3 or other computer running CP/M 2.2, you really should have a copy of *CP/M and the Personal Computer* by Dwyer and Critchfield. It is published by Addison-Wesley and sells for $19.95. If you have an MD5, MD11 or other computer running CP/M Plus, you should have a copy of *The CP/M Plus Handbook* by Alan R. Miller. It is published by SYBEX and sells for $15.95. ■

About Educational Software

by Susan Parks

Advertisements for educational software and computers pull on our parental heartstrings, often implying, if not outright stating, that a child must have a computer to be successful in school. Hardly. A computer will not turn a poor student into a great one. Don't misread me, however. Just as I wish every family read a daily newspaper, went to the library regularly and spent as much money on books as on junk food, I wish that every family owned a microcomputer. A child should have access to a microcomputer so she or he can move with ease into an increasingly technological world, but success in school does not depend upon owning a computer.

The microcomputer *can* enhance learning in a variety of ways. Microcomputers provide a means for active learning, compared to passive modes such as listening to lectures and presentations. The learner can be very actively involved in not only the learning, but in decisions regarding the speed and the level of difficulty of the content. Given good software, a computer can add interest and variety, provide individualized levels of instruction, give immediate feedback and promote thinking. Just as important, a computer can serve as a tool for learning with the use of word processing programs, spreadsheets, data bases, telecommunications and graphics.

Today's educational software is a far cry from that which we saw a few years ago. Then, microcomputers were little more than a fun way to practice workbook material. Much of today's software has the ability to challenge students, as well as to individualize instruction. It calls upon the student to analyze, synthesize and evaluate, not just learn facts and information.

There are different categories of educational software: drill and practice, tutorial, simulation, problem-solving and tools. Each has its own function and purpose. Understanding their differences and their purposes will enable you to make a more appropriate choice when purchasing educational software, whether for you or your child.

Drill and practice was the first type of educational software available. Generally, today's drill and practice software is quite sophisticated. Good drill and practice allows for precise selection of content, varying levels of difficulty, timed drills and recording of progress for each user (some track 30 names); further, it allows someone else (the teacher or parent) to review the record of progress. Drill and practice software is usually a timesaver for the supervising adult; it also allows an adult to learn without another individual monitoring instruction. It is efficient at giving feedback and providing sequential material.

The problem with drill and practice software is that it promotes the practice of skills in isolation from their application. It does not promote the learner's capacity for understanding or for developing flexibility in thinking. Memorizing multiplication facts, for example, does not guarantee an understanding of the process of multiplication or the ability to use that skill in a real-life situation.

***Susan Parks** is the principal of a "back-to-basics" elementary school in Simi Valley, CA, and a frequent contributor to MOR.*

Tutorials are similar to drill and practice in that they are relatively easy to use, are usually self-explanatory to the user and allow for independence in the rate of learning. Tutorials usually seek to provide knowledge, background and the introduction of a skill or body of knowledge. Typing programs are examples of tutorials. They can be used by anyone, including individuals who have never typed. Drill and practice, on the other hand, generally requires a previous skill, even if weak, to practice. Tutorials are available in just about every topic, including high school chemistry, geometry and SAT preparation.

One particularly effective tutorial in graphing takes the tedium away by providing coordinates for practice, allowing students to spend their time on graphing, charting and making decisions as to the most effective manner in which to display the particular data.

Simulations are a rapidly growing form of educational software. A favorite computer simulation used by fifth grade classes is a pioneer wagon train. Students work their way across the continental United States, making choices regarding selection of goods and materials to carry, routes to take, whether to risk a crossing or wait, and are, once in a while, dealt acts of fate beyond anyone's control. Simulations are interactive and allow for individuals or small groups to plan and execute their plans. They can be "played" over and over again so students can see the effects of different choices. Good simulation software has provisions for saving the progress so it may be used over extended periods of time. The original simulations were simply games, but there is a growing quantity and quality of simulation software available in academic areas.

Problem-solving software is a newer area of development. The programs are highly interactive and encourage thinking. In this software category, there is increased emphasis on logic, strategy formation, visualization of spatial relationships, recognizing patterns and testing hypotheses. Often there are not right or wrong answers, but simply the results of certain actions and reactions; just as there is sometimes no one skill that is being taught or practiced, but instead a set of conceptualizations worked with. One particularly exciting program involves re-creating an object using certain "equipment" and rotations of the object. This involves spatial relationships; and after several "operations" on the object, the user finds out if the object was re-created or not.

Tools for learning may be the most obvious, yet overlooked, area of educational software. These include word processing, spelling checker programs, spreadsheets, data bases and telecommunications programs. These are invaluable tools for a lifetime of learning. When parents get that first computer in the family, they often ask what software to purchase. First, they should get word processing software and, if they haven't already done so, invest in a printer. There are many fine word processing programs available. Spelling checker programs, however, are often eyed with suspicion; to some it seems "immoral" to allow students to use them. However, many spelling checker programs merely report that the word is not in the electronic dictionary; the *learner* must spell it! Spreadsheets can be used to keep track of information of many kinds; you'd be surprised at how useful a spreadsheet can be, even to elementary students. Data bases are beginning to be more widely available on diskette for home or classroom use. Students can learn to search the data bases for information. Not only is this a useful skill in itself, it is good preparation for telecommunicating and the ability to use sophisticated and extensive on-line data bases. Students who have had the opportunity between home and school to use these tools, make extensive use of them even while in elementary school. They are gaining skills that will grow and continue to serve them through college and into their adult lives.

The software is available, but you need to make good decisions in its purchase. Along with the excellent software is software that is inadequate and poorly executed. The trick is to find the worthwhile, while avoiding the traps and pitfalls of the worthless. Hey! That sounds like an idea for a computer simulation! ■

The Only Software an Academic Needs

by Don Jenner

What software can be used to manage an academic existence? As a college instructor, I have found that the software bundled with my MD2 (Rev. 1—a real antique!), along with a few additions from the public domain, provides everything needed to create a complete system of academic software tools.

Of course, the most obvious academic activity has to do with visible scholarship. This is not so important as it once was; there is an "official" shift favoring more teaching, with fewer points for scholarly work. Anyway, much of what *is* being published is really not worth the effort. But still, most folks in the academic milieu would like to believe that some of what they think merits sharing.

Morrow's selection of WordStar—and I suppose NewWord, too, although I have had trouble on the occasions I have used it (it would not install to run all of my printer's features, although WordStar 3.0 does this easily)—was a good one from an academic's point of view. It is usable as it is; and, with the addition of such utilities as FTNOTE and WINDEX, it outperforms any other competitors.

Writing, though, is not the real problem a microcomputer solves for an academic. It is the management of the miscellany attendant on teaching that is a real bother. One needs to have good records that will withstand a dean's hostile scrutiny when he's trying to get his girlfriend's grade raised. One needs to keep track of all the various questions one collects for tests. And so on....

For these purposes, it is hard to imagine anything better than Personal Pearl—supplied free with many configurations of the Morrow MD series. Personal Pearl is easy to learn and to use, it is very well documented (I think I've found some undocumented features, but no undocumented bugs) and it works consistently. It is at once more powerful and less "buggy" than dBASE II.

As an example of the kinds of things to which Personal Pearl lends itself in an academic system, I give my test-question data base. This is a relatively common academic record-keeping chore; most of us have collections of test questions, either in notebooks or in old tests, or perhaps in various word processing files. But the selection and ordering of test questions collected in this way is at best haphazard.

My Personal Pearl application stores all of my test questions in a relatively flat file. The basic data-entry form is two screens long. On the first screen, I enter various data about the question. (See Figure 1.)

On the second screen, I enter the question itself in eight 65-character lines. In addition, I accommodate multiple-choice responses in four 2x65-character lines, and a place for an answer or a brief remark as to the character of the answer expected (in the case of essays and short answers).

Putting the questions in the data base is only part of the solution to the problem of tests: One also needs to produce suitable reports. One can do this in one of several ways. It is possible to prepare a general output, make a disk file and call that into the word processor. But why bother? Personal Pearl's really superior report generator will do the job very nicely.

I have one report for each kind of test I give (logic

***Don Jenner** is a university teacher of philosophy in the Greater New York area and an avid computerist who occasionally consults on the use of microcomputers for small businesses and nonprofit organizations.*

problems, multiple choice, true/false, short answer and essay). All are printed out on my Gemini 10X printer, some in standard 10-pitch and others—organized as wide reports—in compressed, 15-pitch. For example, I print out my multiple-choice questions in such a wide report. The detail line includes a self-incrementing counter field that numbers each question and, on the left side, the question itself. To the right of the question the machine puts the optional answers. This might be used as is or with a machine-readable answer sheet.

I use a similar design for logic and short answer question papers, but leave the right side of the paper blank. This area is available for the student to work the logic problem or write his brief response to the question.

For essay questions and true/false questions, I use the standard size print; in the case of the true/false questions, the option can be circled on the right margin of the test sheet or a machine-readable answer sheet can be used.

Using this system is a joy. The hard part, of course, is entering the questions; but one does this, after the initial transfer of older material to the new system, a bit at a time. After that, the only consideration is occasionally reviewing the sections of the data base relevant to the courses one is teaching; one has to delete questions no longer appropriate to the way one understands a course's subject matter, etc.

Preparing tests is a piece of cake. One decides what the components of the test should be; commonly, in an examination accompanying a course of lectures, I'll ask a number of true/false and multiple choice questions—mostly on the texts considered and intended (like the medieval custom of boxing a child's ears after showing him something important) to set the matter firmly in the student's mind. In addition, I inevitably set an essay question (even in my logic classes—my students are required to think about the meaning of logic; and, occasionally, a sound understanding absent technical proficiency has seemed enough to pass an otherwise failing student). So I run the relevant Personal Pearl reports for these test forms.

From the Produce Reports menu, I use the range-selection feature to limit output to questions in the data base pertinent to the course—and perhaps to select a range of questions from within even that section of the data base. I can use the question-level field to limit the difficulty of the question. The question-type field is there merely to permit the selection of test questions matching the kind of test sheet being generated.

Having set up my printer for compressed type, if that is appropriate, I then simply print out the reports. I can, if needed, send the reports to disk files for consolidation, if that is wanted; but, generally, I just run off the reports, then print out a cover sheet with general instructions and send the whole mess over to the college duplication office.

Of course, there's more to managing one's teaching than making up tests; one needs to keep records of what one's students do. Again, Personal Pearl has all the capability to collect such information and output it in suitable ways. In fact, with Pearl one could conceivably create a reporting system suitable for interface with the college's records data base and simply upload it. But the reader will get the idea. Most of the records one needs to keep, which hitherto have required lots of paper and excessive amounts of file cabinet space, now can be archived on a box full of floppies. These records can be retrieved in just about any way one needs. In short, my MD2 is the best apple this teacher ever got. ■

```
Test Question Data Base          Rev. 9/1/85

Unique code

Course title

Level of question (coded for under-
classmen, upperclassmen, graduate)

Selection field for question type—coded
for true/false, multiple choice, etc.

Selection field for question focus—as,
e.g., text, general, etc.

Comments fields—for any special remarks
about the question.
```

Figure 1.

MOR Products

Original ***User's Manuals*** published by Morow.

Prod #	Description	Price
601	Correct-It User's Manual	8.00
602	CP/M 2.2 User's Guide (for MD2 & MD3)	12.00
603	CP/M Plus Guides (for hard disk MDs; 5 books)	35.00
604	MBASIC User's Guide	12.00
605	MD Companion Guide (for everyone who isn't compatible with CP/M)	12.00
606	MD User's Guide (for MD2 & MD3)	12.00
607	MD Hard Disk User's Guide	12.00
608	Morrow Software Sourcebook (1983 edition)	8.00
609	NewWord User's Guide	12.00
610	Pilot User's Guide	12.00
611	Smartkey User's Guide	8.00
612	SuperCalc User's Guide	12.00

Service Manuals to help repair or enhance your machine. These technical manuals are skillfully edited from internal Morrow data and were previously only available to Morrow dealers. (Even if you don't do the repair yourself, your repairman probably will need them.)

Prod #	Description	Price
700	Complete manual set (701-710)	80.00
701	Micro Decision Service Guide w/ schematics for Rev. 1.1 & 2.0 (for MD2 & MD3)	25.00
702	Diagnostic II User's Manual (disk sold separately)	25.00
703	Hard Disk MD Service Guide w/ schematics	25.00
704	SA 200 Shugart Mini Floppy Drive Preliminary OEM Manual (for SS drives)	15.00
705	SA 455/465 Shugart Mini Floppy Drive Service Guide w/ schematics (for DS drives)	15.00
706	MDT20 Terminal Reference Guide	10.00
707	MDT20 Service Manual	12.00
708	MDT50 Video Terminal Service Manual	10.00
709	MDT60 Video Terminal Service Manual w/ MT70 Video Terminal Supplement	15.00
710	David Block's original MD Q&A book	6.00

ZCPR3 is a Morrow-bootable CP/M 2.2 replacement by Echelon for the MD3. Complete with two disks and manual, the ZCPR3 kit provides an operating system superior to CP/M 3.0. (NOTE: If you order ZCPR3 through ***MOR,*** you qualify for a discount group purchase price of less than $500 for a 10-megabyte hard disk made by Advanced Concepts for the MD3.) The ***Diagnostic II Disk*** contains programs that diagnose various components of your Micro Decision for quick in-house performance checks. (NOTE: The User's Guide for this disk, Prod. #702, sells separately.)

Prod #	Description	Price
801	ZCPR3	59.50
802	Diagnostic II disk	37.50

ROM Upgrade Kits contain instructions, ROM chip and software--everything you need to bring your machine up to date. (Some software that won't run on older machines *will run* with an upgrade.)

Prod #	Description	Price
901	ROM Upgrade Kit for MD3	35.00
902	ROM Upgrade Kit for MD Hard Disks	45.00

Floppies of the Bimonth

With every issue of ***MOR***, we compile a number of floppies for Morrows that contain public domain programs, short articles and interesting tidbits. Each **Floppy of the Bimonth (FLOB)** costs $8.00 and can be ordered using the order form on page 26.

3501 FLOB/OCT86 Disk #1 contains articles written by Ted Silveira for *Computer Currents* during 1985.

Filename	Description
CPM-CC01.ART	Finding the Best P/DSoftware
CPM-CC02.ART	Communications Programs
CPM-CC03.ART	Find Your Way Around an RCP/M
CPM-CC05.ART	WordStar Utilities
CPM-CC06.ART	Keys and Outlines
CPM-CC07.ART	More Utilities for Writers
CPM-CC08.ART	WHERE ARE THEY NOW?
CPM-CC09.ART	Games? In CP/M?
CPM-CC10.ART	Something New for CP/M
CPM-CC11.ART	Tools for dBase II
CPM-CC12.ART	Communications Update
CPM-CC13.ART	Learning About CP/M
CPM-CC14.ART	One for Programmers
CPM-CC15.ART	Any Signs of Like?

3502 FLOB/OCT86 Disk #2 continues with Ted Silveira's articles from *Computer Currents* (Dec 1985-Jul 1986).

Filename	Description
CPM-CC16.ART	How Smart is SmartBrain
CPM-CC17.ART	Christmas Treats
CPM-CC18.ART	New Tricks for the Old Dog?
CPM-CC19.ART	All the New from C to Z
CPM-CC20.ART	ModemMail Does it All
CPM-CC21.ART	More on ModemMail
CPM-CC22.ART	Emulating CP/M
CPM-CC23.ART	Hard Disks for CP/M
CPM-CC24.ART	The Wonderful World of Z
CPM-CC25.ART	Z: the Saga Continues
CPM-CC26.ART	Living with Z
CPM-CC27.ART	Z: the Final Chapter
CPM-CC28.ART	What the Future Holds
CPM-CC29.ART	Living With a RAM Disk
CPM-CC30.ART	Letters and Dreams

3503 FLOB/OCT86 Disk #3 contains two educational programs for children.

Filename	Description
MATHPAK.LBR	A booklet by Art Kazmerczak with many MBASIC programs to teach children math.
QWQTEST.LST	An MBASIC program to teach spelling to children.

3504 FLOB/OCT86 Disk #4 contains programs for having fun and doing useful things in MBASIC.

Filename	Description
630CODES	Diablo 630 printer test routines
630PRTCL	Diablo 630 protocol ESC sequences
BUZZWORD	A three-word buzzword generator
DECITAB	Mimics WordStar's decimal tab function
DEFFN(A)	Variable number round off routine
DISKMENU	Shows programs, lets you select by number
FOURSQUR	Cryptographic transposition cipher prgrm
FREQCNT	Counts letter frequencies; cryptoanalysis
HOAX	Fake phone dialer,gets you into NORAD
INPUT	Professional-looking input routine
LOTTERY	Helps you decide entries. No guarantees!
ONETIME	Most popular one-time pads cipher prgm

3505 FLOB/OCT86 Disk #5 contains more fun and useful MBASIC routines and programs.

Filename	Description
PLAYFAIR	Playfair Square transposition cipher
PROMPTER	MAC/IBM-like effects w/o cursor control
ROMANUMS	Converts Arabic numerals into Roman numerals
SPEEDRD	A workable speed reading trainer
SPELLOUT	Converts Arabic numerals into English equivalents
SUBCIPHR	Substit. cipher; uses keyword-mix alphabet
TALGCKBK	The Absolute Last Great Checkbook prgrm

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FROM THE MAILBOX

by Bill Steele

A dearth of mail this month, probably the summer doldrums; then again, I may get a bunch of letters next week, so I'll repeat an admonition from last time: Our deadline is usually just a week or two after the previous issue comes out. Send in your questions as soon as they occur to you; and if you have answers, send them in *immediately*. And write directly to me at the address below, rather than c/o the MOR office.

Another admonition: Please supply as much detail as possible about your problem. Tell us exactly what you typed in, what appeared on the screen, what you did next, and so on. It may save a lot of back and forth.

For instance, **Thomas H. Shanks of Los Angeles, CA**, has a tale of woe that took two or three letters and phone calls to get straightened out. After exiting from NewWord on his MD5, he typed something other than "PARK"—he never has told me what—and thereafter he had "gibberish" appearing on his screen whenever he exited. Inquiry revealed that what was appearing on his screen was this:

```
A>submit profile
SUBMIt?
```

We're more on our own than ever, so if you know a solution to a problem, don't assume someone else will write in; there are not so many of us that you can count on that. Whether you have questions or answers, keep them coming: Bill Steele, P.O. Box 782, Ithaca, NY 14851, 607/273-2132; MCI: WSTEELE, 254-5833.

```
A>setdef  *.a:[order=(com  sub)]
SETDEf?
A>
```

None of this *did* anything, but he found it annoying. The commands, as many of you may recognize, are the initializing commands included in the PROFILE.SUB file. For owners who use just one program all the time, a dealer may set up the file so it recycles indefinitely, i.e., calls itself. That seems to be what was happening here, except that for some reason CP/M couldn't find SUBMIT.COM. Also, nobody's sure why CP/M responded with a small letter on the end of each command.

Anyway, I suggested to Mr. Shanks that he examine the PROFILE.SUB file with NW and perhaps change it. He decided to delete it, and presto, the stuff on the screen went away. (Hint: Rather than delete something that's causing you trouble, try changing its name or copying it off to somewhere else, so you can get it back if you want to.) He then decided to make up a PROFILE.SUB file that would automatically park after exiting from NW, but managed to enter the commands backwards, putting "PARK" first. The result was that every time he started the machine it immediately parked. He ended up reformatting the hard disk, which was a little drastic; you should be able to abort a submit sequence by typing Control-C as soon as the A> appears.

All this may seem really elementary to some of you; but if I've learned anything from doing this column, it is that many Morrowers are world-class novices when it comes to understanding the inner workings of their machines. It's really a compliment to George Morrow for creating a system that ordinary people could use. And so, one more admonition: Don't feel your question is too stupid to ask; it may be just the thing a lot of other people were having trouble with.

Another hard disk misunderstanding reported by **"Al" in San Rafael, CA**, (I threw out the envelope before I realized he hadn't signed his last name) who found that he couldn't run Correct-It from the R prompt of NW. His MD11 would reply that it couldn't find a program by that name. Similarly, he installed the program Punctuation and Style in User 0, but when he exits from NW and calls P&S to check a text file, it says it can't find the file. Turns out the programs and files were in different user areas. On a hard disk, user areas are as distant from one another as separate floppies; a program in one area dosn't know anything about files in another unless you tell it where to look. The solution is to preface each program or file name with the area prefix, e.g., at the R prompt type "A0:Correct A3:filename." Better yet, just do everything in one user area; there's no real reason to use more than one area unless you have more than one user, or want to play games with

several files with the same name.

Things that seem obvious to some of us aren't to others. **Joe Gottlieb of W. Palm Beach, FL**, wrote for instructions on how to use NULU, the public domain library utility. There is no .DOC file on the MOR FLOB that contains NULU, probably because we thought it was self-explanatory, but I remember having a little trouble with it myself at first. What's tricky is that it gives you a specific prompt, like "Open a library," but you can enter any command at that prompt, after which the next prompt will echo the command you just entered. You can get the menu of commands from any prompt by typing "-m" (all commands are preceded by a hyphen, at least in my version). To find out what the commands do, take a disk with some expendable files on it and experiment. Meanwhile, how about someone who really knows about this program writing us a .DOC file?

Jon Lyon of Fresno, CA, has an MD2 which has been giving "Disk drive error, drive not ready, R, A, I" messages on drive A. "To kick start the drive I have resorted to opening the door, pulling the disk out an inch or so and pushing it back in and closing the door, after which it does operate for a while... Do I need to have it professionally serviced or what?" Yes. But the kick start trick might be useful to someone out there.

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Gary Andersen of Tampa, FL, would like to convert an MD11 to an MD16 or MD34. He can purchase the larger capacity hard disks, but wants to know where he can get software to format them. He's also looking for a user's manual on SuperSort, having had no luck with the company.

The summer doldrums are getting to me, too. I have misplaced the name of a phone caller who asked if there is any way to modify a hard disk machine so it will bank switch more than 128K of memory.

Brian Leyton responds to Frank Sokar's request that he has MEX.COM configured for both the AUX port and the Printer/Modem port. "The only (small) problem with this version of the MEX overlay is that it doesn't support auto baud rate setting from the phone library (you have to use the SET command to change from the default of 1200 baud)." Our tentative plan is to get a copy of the overlays from Brian and put it on the December FLOB. Also, Brian says, "I have both an MD3 and an MD11, which I have 'networked' together to share my one and only MT70 terminal. The MD11 is the primary machine, and I have the MD3's terminal port hooked to the Printer/Modem port of the MD11. I use MEX (running at 9600 baud) to log into the MD3, and it works as if the terminal was hooked directly into the MD3. I haven't found much use for this setup yet except for software (such as UNIFORM) which I only have an MD3 version of." I think this answers some earlier questions about networking.

James E. Bottom of Salem, OR, writes, "Pardon my ignorance [don't worry, you have lots of company] but I keep seeing references to terminals for the MD2 and MD3 and can't sort them out. Does the MDT20 = the ADM-20 = the MT20 or what? And, I seem to have an ADM-31 as standard equipment with my MD2. Where does that fit in?" Well, I *think* it goes like this: There have been four Morrow terminals, all made by someone else with a Morrow nameplate. The MDT20 was actually a Lear-Siegler ADM-20. The MDT50 was either a Liberty Electronics Freedom 50 or Freedom 100, and the MDT60 and MT70 were Zenith terminals modified with some new chips. Everything but the 70 has an "MDT" designation, but we tend to use "MT" and "MDT" interchangeably. What you have may be an ADM-31, but it could be an MDT50. WordStar is usually installed for the MDT50 by installing for an ADM-31, so the WordStar sign-on will say you have an ADM-31; at least that's what it did on mine, until I switched to NewWord. Of course, some dealers sold Morrow computers with non-Morrow terminals, either because they were out of stock or had better deals from their suppliers. Which brings us to the final point: You can use any terminal with any MD, as long as you set up the baud rates, etc., correctly and install the software for the terminal. ■

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Should You Let Your Child Use a Computer?

by Bruce Gowens

Remember when hand calculators came out, and there was a fuss about kids using them for homework? How is Johnny going to learn how to do arithmetic if the calculator supplies the answers?

So what happened? Teachers required more long division to be done in the classroom and staged more frequent classroom tests, homework had to show the process as well as the final answer, and SAT scores for long division went up. That last was a surprise, but it shouldn't have been. When Joanie checked her homework with the calculator, she knew she had to find out why she had the wrong answer in order to get a passing grade. Sure, a lot more perfect homework papers were passed in, but it was because Joanie and Johnny had to find their own mistakes (the real learning experience) and could discover an error without waiting for the teacher.

Meanwhile, adults who had done long division all their lives promptly bought calculators and just as promptly forgot how to divide.

What was also eventually realized was that you need to know the principles of arithmetic in order to use a calculator. What divides into what to give the correct answer, for example, and recognizing when you have a wrong answer simply because it is off scale. Long before calculators, there was a similar flap about allowing children to typewrite their homework. "This," said the conservatives, "will mean the death of handwriting skills. We will produce a world of illiterates completely unable to function in the business world."

And they were right even as they were wrong. For handwriting standards did deteriorate—but it didn't matter. The business world abandoned handwriting in favor of the typewriter. Even personal letters became acceptable when typewritten (and, given the state of handwriting, were often preferable).

And instead of being illiterate, the comparative ease of typing meant more literature and letters were produced (as well as memos). Typing became a useful skill even if Johnny wasn't going to be a secretary.

There was a similar flap over the fountain pen, and if we could go back in time we would probably find that conservatives opposed the use of papyrus because the young would lose the skill of baking clay tablets.

"But computers," you say, "are different. Word processors make free-form writing so easy that kids will never learn how to outline or organize their thoughts. They have spelling checkers so children won't have to learn spelling, and they even have grammar and punctuation checkers so that children will never learn the parts of speech or the rules of punctuation."

Let's take a look at each of these arguments and see if we can figure out what the real effects of letting your children use the computer might be. Will skills not be learned or not be needed in their future—or will children actually learn these skills better?

Word processing does permit the constant polishing of a theme, paper or report. It makes it easier for children to just start writing without pre-planning what they are going to say.

Continued

***Bruce Gowens** has worked with young childern in an enrichment program and taught photography to adults with, he claims, moderately raving success. He is currently teaching his cat to design Personal Pearl data bases.*

But, GIGO (garbage in, garbage out); and the papers are not going to be any better than if a pencil was used with the same lack of foresight.

But how do children learn to pre-plan? Even without a computer they will do the exact same thing. If done with a pencil, there's all those sheets of paper, all that work they have done, and a great reluctance to rip it up and start over. With a computer, it's easy to change and improve things. The very flexibility of word processing means that children can polish just as adults do and means that children can experiment with the form and structure. Result? Learning what works better, by actually doing it. Next time around there will be a better sense of organization and flow because it wasn't too hard to straighten out the mess, yet it wasn't too time consuming to do it better.

"Well," you say, "maybe they will pick up a little bit that way, but you seem to be saying that children will teach themselves organization." Not at all. Teachers and parents will still be there teaching and guiding. It is not just that learning is easier, but the ability to easily change things means that children will be able to try out different

organizations of the material and hone their critical skills as they compare the results.

Learning to use the computer and word processing software itself are lessons in organization that children won't even be aware of. The relationship of CP/M to programs and the internal menus and sub-menus of programs such as WordStar present a hierarchical structure similar to outlines taught in class. "Ah ha!" you exclaim. "Now what about outlining! They won't learn how to do that by fiddling around with what they've already written!" Of course not. Just as before, some teacher will get in front of the blackboard and give them the whole rigmarole. Except the kids will pick it up faster. The structural concept they didn't know they were learning from the program hierarchy is the same; all they have to do is put the Roman numerals and so forth in front of each level of the program tree. If they have problems with the concept, just ask them to make an outline of something they already know, like WordStar (on the computer, of course).

Suddenly you might find them pre-outlining *everything*. Why? Because almost any kid is lazy when it comes to homework, and word processing programs make it easier than ever to use an outline. Once they have an outline on the screen, they can insert the text directly into the outline. They can skip around as they write the text, inserting thoughts and wording in the proper places as they come to mind. At the end, they simply scan the outline for places where they didn't fill in the text to see if they are done, and then delete the lines of the outline.

"Wait a minute," you say. "I'm using a word processor, and I don't do it that way." If you don't, it is probably because you didn't learn to write on a computer, and ingrained habits take too much effort to lose (adults are also lazy when it comes to homework). Children, however, are not burdened with your preconceptions and will tend to find the quickest or best way to use a new tool (sometimes only as long as they think of it as a toy). In fact, though, you probably *are* using it that way, but in a less formal manner. You are more likely than a child to have some kind of structural plan or outline in mind as you start to write, even if it is just starting and ending points. And as you go, you are likely to put in little notes to yourself as thoughts occur to you. If you stick them in the order you expect to use them and then write around them, you are doing the same thing.

"That's a nice theory, but what if a child doesn't start using outlines naturally?" It doesn't matter. Outlines are not a skill in themselves, they are a technique for organizing thought. The outline form is merely a tool used to recognize levels of importance and subordinate thoughts from major thoughts. As long as children learn to structure thought, it does not matter if it is done by formal outline, by making a mental list or by moving things around with a word processor. "Well, maybe, but what about spelling? Johnny has enough trouble spelling right now without having the computer do it for him." Rather than present a series of arguments, as I did above, I'm going to tell you a

true story about myself.

Throughout grade school I usually got a D in spelling, most usually it was a D minus. And the only way I even got that was by cramming my short-term memory just before tests. I used to think that I had problems memorizing, yet I seldom forgot details of something I've read. The difference is that, for me, I had no mnemonic "hooks," such as pronunciation, to hang the spelling of a word onto, and I read words as "blocks," not as sets of letters.

Even as an adult, I have always been a terrible speller—until recently. So, needless to say, a spelling checker was high priority when I went shopping for a computer.

But I said I have always been a terrible speller *until recently*. What caused things to change? Correct-It.

Think of what happens when you use Correct-It. When the program shows the text on the screen and stops at each "bad" word, you have to enter the correct spelling. When you have misspelled the same word more than once, Correct-It will stop each time and force you to re-enter the correct spelling. Now, that's a spelling drill! The misspelled word will usually be used frequently in a short span of text and less frequently throughout the rest of the manuscript. This is concentrated drill, with refreshers after a number of other words have been corrected.

Using Correct-It is a lot less fun than the actual writing. When your spelling is bad, it becomes a major chore and creates a real incentive to improve. Previously, due to my "block" method of reading, I couldn't even see misspelled words. Now I'm examining the details of each word as I type and review, and errors get corrected before I run Correct-It.

I've been fascinated by the proportion of "bad" words to the number of different words as displayed by Correct-It. When I got my Morrow, I'd have about 15 percent "bad" words—now it's more like 3 percent, with most of them simple typos.

I did not mean this article to become "true confessions," so I'll sum up. The enforced drill as misspelled words are corrected, plus the desire to avoid the chore of correcting a lot of them, actually teaches spelling. Given that Joanie has homework writing that she *has* to do, learning how to spell becomes the course of least resistance.

And there is one more side benefit. A poor speller will tend to avoid using the words that he or she finds difficult. With the possibility of privately and easily checking the spelling, there is a greater likelihood that the child's vocabulary will stretch through use. As for grammar checkers, they will affect children's learning of grammar similarly to the hand calculator's effect on the learning of long division. Children cannot learn what is wrong unless it is pointed out to them. Grammatical errors found by the program and then corrected by the child will provide instant drill while the child is writing rather than later when the paper is graded. The learning experience is thus more a part of the process than a commentary made later. Most grammar checkers also look for trite words and expressions. Students usually do not have the experience to distinguish between a common form of expression and the truly overworked phrase.

Generally, good writing style is dependent on how much a student has been *exposed* to good writing style, and no computer writing aid is going to substitute for reading. All it can do is help point out errors during practice.

The overall sense of what is correct in grammar is, despite centuries of pedagogues, more important than the names of the parts of speech or a diagram of a sentence. The language and its structure came first; the diagrams are a way of understanding and analyzing what is already there. If the structure is understood, even intuitively, the diagrams make sense, and we are simply naming what is known. Many teachers might wish it were the other way around and attempt to make the living language fit their diagrams; but unless the language first makes sense, the diagrams are of little use.

One thing a grammar checker will do is point out the difference between spoken and written English. The partial sentences and other liberties taken when there are facial expressions, gestures and other non-verbal communication will just not make sense on the written page (or screen).

As to punctuation checkers, pretty much the same applies. The program cannot write for the student, it can only find fault. It is up to the student to know, or learn, how to correct the faults.

The only objection that I can imagine that would have some validity is that the student could become dependent on the programs. As I pointed out when describing my experience with Correct-It, I believe the "persistence" and consistency of these writing aids have exactly the opposite effect. The only problem might be if the student came to believe that the programs were the ultimate authority and *always* right. We know, of course, that programs are written by people and people are always fallible. And I am sure that any teacher will be quick to take issue with the "perfection" of a program.

One more item I'll mention in passing: Using a word processor is a natural introduction to the useful skill of typing.

Now you might ask, "How do I get my kid to learn how to use a word processor?"

There are really only two ways to make a child do anything. Force is one. The other is to make them want to do it. Force worked to make Mozart a child prodigy and a great composer, but it made him a poor excuse for a

rounded adult. And force creates rebellion more often than genius.

For a child to want to do something, it must seem interesting, "fun" (and a lot of things kids do for fun would be work to an adult), role playing or a combination of these. Since daddy or mommy uses the computer, what is more natural than the young child wanting to? If using the computer is a privilege, the child will be more likely to want to use it. Of course, sitting down and saying, "Here's how you have to do it," isn't likely to make it interesting to the child. Instead, suggest that he or she might want to write something "just like mommy"; and on a "yes," boot WordStar and let the kid play (exiting the room doesn't hurt). After a while you should hear a voice asking "How do I...?" Show the answer and go away again. This way the child feels neither snowed nor forced, and will learn because that's exactly what children do best. And, of course, it doesn't matter what the child produces. At this point, the process is more important than the product.

This technique can easily and painlessly introduce a young child to the computer and word processing, and it is a natural step from playing around with a game machine. Older children who actually have homework will be more attracted to the idea that the computer will make doing it easier and faster. After all, isn't that why you use it? ■

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The Wonderful World of ZCPR3

by Ted Silveira

If you've spent any time browsing through bulletin boards or catalogs of public domain CP/M software, you've run across ZCPR, especially its latest incarnation, ZCPR3. But if you asked someone what ZCPR3 was, you probably got a blank look or an enthusiastic rush of words trailing off into "You really have to see it...."

ZCPR3 is tough to describe because it's not a program but an operating environment supported by over 70 utility programs. I realize that "operating environment" doesn't tell you much either, so let me try an analogy. ZCPR3 affects your whole computer the way a key definition program like SmartKey affects your word processing program—it makes many things easier and makes other things possible that weren't possible before.

The core of ZCPR3 is an enhancement of your normal CP/M 2.2 operating system (ZCPR3 isn't for CP/M Plus). When you add ZCPR3, you get an operating system that is compatible with CP/M programs (with a very few exceptions) but is more powerful and more flexible than CP/M ever was.

The CP/M operating system is divided into three parts: the CCP (console command processor), BDOS (basic disk operating system) and BIOS (basic input/output system). The CCP interprets all the commands you enter at the A> and also contains CP/M's built-in commands DIR, REN, ERA, TYPE, SAVE and USER. The BDOS provides basic program services—opening and closing files, reading from and writing to the disk—so that programs you run don't have to bother with the mechanics of these things themselves. Both the CCP and the BDOS are licensed from Digital Research, makers of CP/M, and are the same on all CP/M 2.2 computers (with the exception of a few oddball systems).

The BIOS, on the other hand, is customized for (i.e., written specifically for) a particular computer (a Kaypro 2X, a Morrow MD3, etc.) and is provided by the computer manufacturer rather than by Digital Research—that's why it's sometimes called the CBIOS (for custom BIOS). The BIOS translates the general functions handled by the BDOS (disk access, file handling, etc.) into detailed instructions to the specific computer hardware (select drive A, move the head to track 2, read 16 sectors, etc.). It does the nitty-gritty work of controlling your computer.

In its simplest form, ZCPR3 replaces CP/M's normal CCP, while the BDOS and BIOS remain the same. (ZCPR3 gets its name from the fact that it's written in Z80 assembly language—Z80 Command Processor Replacement, version 3.) Because ZCPR3 is written in very efficient Z80 code, it crams extra features into the space occupied by the normal CCP.

To really show its stuff, though, ZCPR3 needs some extra space for buffer storage and extra functions. A standard

---

*Ted Silveira is a freelance writer and contributing editor to several computer-oriented publications. He appreciates suggestions or feedback and can be reached through the KAY*FOG RBBS 415/285-2687 and CompuServe (72135,1447) or by mail to 2756 Mattison Lane, Santa Cruz, CA 95065.*

CP/M operating system uses about 9K out of your total 64K of RAM (random access memory), leaving about 55K for programs to run in. A thorough ZCPR3 installation typically uses an extra 2-4K, depending on the number of enhancements you choose, so it leaves about 51-53K free for programs. But some people have all-out installations that leave even less. Most CP/M programs will run comfortably with 48K free, and some, like WordStar and dBase II, with less. A few programs, such as large MBasic programs, may require more.

What Do You Get From ZCPR3?

If you're going to give up part of your valuable 64K of RAM to ZCPR3, you ought to get something in return. And so you do. In fact, it would take me half a dozen articles to cover all the features of ZCPR3, so what follows is a brief overview, at best.

The Built-in Commands. Even the most minimal ZCPR3 installation enhances the CCP's built-in commands. For example, the ERA command echoes the names of files it has erased and can be set to require verification before any erasure. The TYPE command will pause after every 22 lines, instead of scrolling continuously. And if you try to rename a file with the name of an already existing file, the REN command will ask if you want to delete the old file.

You also get some new commands. LIST, for example, sends a file to the printer, ECHO sends a message to the screen, and GO reruns the last command or program you executed.

The Minimal Extras. The enhancements possible with ZCPR3 go far beyond the CCP commands, though. With little or no loss in memory space, you can get the following features:

Search Paths. With ZCPR3, you can set a search path that your computer will follow when trying to execute a command. My two-floppy system is set to search drive A for a program if it can't be found on the current drive, so if I'm on drive B and want to run WordStar, I can just give the command "WS" without worrying about whether WordStar is located on drive B or drive A. If you have a hard disk, the search path really comes into its own. You could, for example, have the system first look for a program in the current drive and user area, then in user area 0 of the current drive, then in user area 15 of the current drive, then in user area 0 of drive A, and finally in user area 15 of drive A. And you can change the search path while you're working so that you can use one path when you do word processing and another when you do spreadsheets.

Multiple Command Buffer. With ZCPR3, you can have a 200 character buffer to hold commands. With such a buffer, you can enter a string of commands (separated by semicolons) at the A> and have ZCPR3 run the commands off one after the other—an instant batch file. On my system, for example, the command "SK WS1;WS B:LETTERS;TW B:LETTERS" will run SmartKey and load the key definition file WS1.DEF; then start up WordStar and open the file B:LETTERS; and finally, when I exit WordStar, run a spelling check on B:LETTERS using The Word Plus.

Named Directories. Instead of drive and user areas like A0 and B14, you can give your directories names such as WORDSTAR or DBASE. Then instead of seeing an A> or A0>, you'll see WORDSTAR> (or whatever you've chosen). And to move to the dBase II section of your hard disk, you'll just enter "DBASE:" at the prompt. Named directories aren't important on floppy disks, but they help tremendously on a hard disk.

Other ZCPR3 Buffers. ZCPR3 also can have other buffers that allow its utilities to get information about the operating environment (including terminals and printers), pass messages to each other, and, in the case of special "shell" programs, reload themselves after executing another program.

The total overhead for all these ZCPR3 buffers is 1K, and it's well worth the space, as they add many of the features that make ZCPR3 such a nice environment to work in.

The Outer Limits. If you want to go full-dress, you can set aside extra buffer space—2K, 4K, 6K or more—for "dynamically loadable packages," program-like segments of code that can be loaded into memory to provide extra functions. Once loaded, these packages stay resident until you remove them or cold boot (reset). You can also change the packages, loading a new set of features whenever you like. These packages come in three types:

Flow Command Packages. A flow command package (FCP) contains logic commands (such as IF, IF ERROR, IF EXIST, and ELSE) that can control the flow of command execution. For example, you can create a command like "IF EXIST B:SURVIVAL.DOC; ERA A:SURVIVAL.DOC; ELSE; PIP B:=A:SURVIVAL.DOC; ERA A:SURVIVAL.DOC; FI." This command will first check to see if SURVIVAL.DOC exists on drive B. If so, the command will erase SURVIVAL.DOC from drive A. If SURVIVAL.DOC doesn't exist on B, the command will copy it from A to B and then erase it from A. (The FI command signals the end of the logical branching.)

You're not likely to use flow commands directly, but they're invaluable in batch files, menus and other automated operations.

Resident Command Packages. A resident command package (RCP) can contain enhanced versions of CCP commands, but its real value is in new commands. These include GET (to load a program into memory without

running it) and PEEK (to examine the contents of memory). The most useful RCP commands are CP, a built-in file copy command, and POKE, which lets you patch any part of memory, including a currently loaded program. You can combine POKE with the GET and GO commands to actually patch programs like WordStar on the fly.

Input/Output Packages. The input/output packages (IOP) contain various input/output device drivers. At the moment, IOPs are mostly do-it-yourself projects, but there are three commercial IOPs available from Echelon, Inc., of Los Altos. These are PKEY, a simple key definition program; RECORDER, which saves everything crossing your screen into a disk file; and BPRINTER, a print spooler.

ZCPR3 and the Public Domain

Because ZCPR3 is available through bulletin boards and user groups, there's a certain amount of confusion about its status. ZCPR3 is not in the public domain and never has been. It is a copyrighted product released free for non-commercial use to individuals. It is also available for a reasonable sum (considering what you're getting and the cost of downloading the *megabytes* that make up the ZCPR3 system) from Echelon, Inc., of Los Altos, the official distributor of ZCPR3. [MOR recently signed a contract with Echelon to distribute a special Morrow version at a discount. See pages 4 and 23 —Ed.]

There's More

I've given you only the merest glance at ZCPR3. In articles on OCT86 FLOBs 1 and 2, I give you a better look at ZCPR3's real power by covering menus, aliases, smart batch files, on-the-fly patching and other wonders. Don't miss them. ■

Information on ZCPR3 and Accompanying Programs:

Echelon, Inc.
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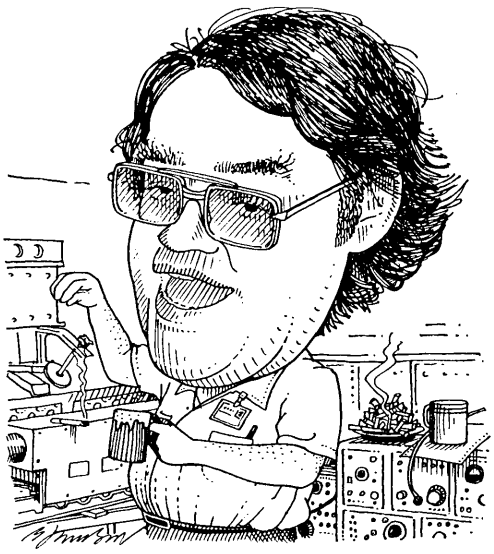

TOOLS FOR TYROS

by Mike Allen

I find that I lied a little in my last column. Hard drive MDs have three, not two, serial ports. I found this out after studying the schematics in the service manual that MOR is selling. I must admit that I have succumbed and ordered an MD5 from Silicon Valley Surplus. I hope that having both an MD3 and an MD5 will help me answer questions about both a little more easily. Please bear with me, however, since it will take me a while to get familiar with the MD5. I can't wait until it gets here.

Speaking of the *MOR Service Manuals*, I recommend that if you don't have access to one, you order those that pertain to your machine. With Morrow now out of business, you will find few people who will even look at sick MDs or MDT terminals. If you can bring a service manual with you when you take your MD to the vet, the odds are much better that he or she will at least undertake diagnosis. The troubleshooting guides aren't really much good unless the shop has a supply of motherboards, disk drives, cables and power supplies, since all the end actions are to replace those items! A *good* service person can find a bad chip easily with the schematics supplied, and in the floppy MDs all the chips except for the ROM are common. The hard drive MDs seem to be a different story. They use several unusual chips that might be difficult to find. As an interesting side note, some of the schematics for the MDT-60/70 terminals show HeathKit part numbers (e.g., 444-100)—a possible source for parts. I also suggest that you write down the name, address and phone number of Silicon Valley Surplus in the service manual, since they seem to be the best source for spare parts for Morrows. Spending a few bucks on the manuals now may save you some heartburn later. If the price is a little too steep for you, maybe you can convince your local users' group to buy a set for their library.

Enough drivel. Let's take a look at CP/M. When you got your copy of CP/M, you not only got the operating system, but also a bunch of utilities. With CP/M 2.2 (MD1, 2 or 3) you got ASM, DDT, LOAD, PIP, ED, SYSGEN, SUBMIT, XSUB, DUMP, MOVCPM and STAT. Let's take a quick look at these utilities one at a time.

ASM: This is an assembler. In the early days, when you wanted to write a program you figured it out on paper and then entered a bunch of numbers directly into the memory and hoped that it worked. Somewhere along the line someone got fed up with this process and decided that the way to go was to be able to write programs in a pseudo-English that some other program could translate into the numbers that the computer could understand. So what you do now is write your program using your word processor, save it to a disk and then have ASM assemble that program into the numbers that the machine wants. Well, not quite. What ASM does is create a disk file in a format that Intel used years ago when the primary storage medium was punched paper tape. To turn this archaic file into something the MD can run you need...

LOAD: All this does is change those paper tape format files into machine-executable code.

DUMP: This does the reverse of load except that it sends the result to the console. Kind of a dumb program except that the source file (DUMP.ASM) is also included so you can get an idea of what an assembly language program looks like.

DDT: Dynamic Debugging Tool. A useful program that allows you to find out what is happening in another program. You can step through a program one instruction at a time, see what the CPU is doing and all sorts of neat things. Primarily used by programmers. Not the sort of thing one covers in a beginners' column.

ED: A really bad text editor. You don't even want to mess with it. Years ago it was about the only thing around so you didn't have much choice. You all should have either WordStar or NewWord, so don't bother with ED.

SYSGEN: An important program. What this program does is put CP/M on your disk. Any disk in the A drive *must* have a copy of CP/M on it. Since SYSGENing a disk does not reduce the available space for files, there is really no reason not to SYSGEN all your disks when you format them.

Continued

Send your questions and comments to Mike Allen, c/o MOR, P.O. Box 5487, Berkeley, CA 94705, or c/o Westinghouse, 7121 Standard Drive, MS 6080B, Hanover, MD 21076.

MOVCPM: When memory was expensive, few systems had a full 64K of memory. In those days, CP/M was distributed for a 20K system. As you increased your memory, you also had to let CP/M know that it now had more memory to deal with. Also, since CP/M resides in the top of memory, you had to move CP/M! Of course, we all have the full memory so we don't need to move CP/M. Almost true. There are situations where it is necessary to set some memory aside that CP/M doesn't know about. A couple of obvious situations are modifications to CP/M itself (e.g., ZCPR3) or the installation of a hard drive. In these cases you might use MOVCPM to create a smaller version of CP/M that only knows about 60K, for instance. Then there would be 4K at the top of memory for other uses.

SUBMIT & XSUB: These are a handy pair of programs. You can create a file with your word processor and then run SUBMIT on that file. What it does is fool the computer into thinking that the file is a series of commands that you are typing from the console. Useful if you have a series of programs that you normally run one after another. For instance, one almost always runs LOAD after running ASM. You could have a submit file that looked like this:

```
ASM $1.BBZ
LOAD $1
ERA $1.HEX
```

The $1 means use the first name following the submit file name. You can use $2, $3 and so forth for the second and third, etc. The submit file must be named SOMETHING.SUB. So the above file might be called ASM.SUB. To run the file you would type:

```
A>SUBMIT ASM JUNQUE
```

Correction

In the article "Exploring the ROM in Your Morrow" in MOR Vol. 3, #3, the line on page 32, eighth paragraph, should have read:

> To address the ROM, the Z80 first outputs any value to port address F6 hex (F6h).

We apologize for any confusion this may have caused.

This would assemble a file called JUNQUE.ASM, load the file and then erase the file JUNQUE.HEX, which is created by ASM.

SUBMIT has the limitation that it will only simulate the console for command line inputs; that is, commands that would normally be entered from the CP/M prompt. If you make the first line in your submit file

```
XSUB
```

then submit file lines can also be inputs to the called programs. Many, many interesting possibilities.

PIP: Probably the most widely used single program in the CP/M world. PIP stands for Peripheral Interface Program. Most of us are probably only aware of its ability to copy a program from one disk to another (e.g., PIP B:=A:JUNQUE.SUB), but it is much more versatile than just file copying. You can send the output of any peripheral to the input of any other and sometimes add bells and whistles. A few examples:

```
A>PIP 1ST:=CON:
```

This sends the keyboard to the printer (get out by typing ^Z).

```
A>PIP 1ST:=JUNQUE.TXT
```

Sends the file JUNQUE.TXT to the printer.

```
A>PIP PRN:=JUNQUE.TXT
```

Same as above *except* expands the tabs, paginates the file and inserts line numbers.

```
A>PIP JUNQUE.TXT=RDR:
```

Sends the data that come in the second serial port (Rev. 2 if the printer is on the parallel port) to the file JUNQUE.TXT. The incoming data must end with a ^Z to close the file.

```
A>PIP C:JUNQUE.NEW=A:JUNK1.OLD,B:JUNK2.OLD
```

Copies file JUNK1.OLD from drive A and file JUNK2.OLD from drive B into file JUNQUE.NEW on drive C.

There are many different ways of using PIP and many options. The section on PIP in the *CP/M 2.2 User Reference Manual* is one of the few sections in that book that is easily useful. Take a look.

STAT: The best way to explain STAT is to give you

the answers to that STAT project I gave you two issues ago:

```
STAT

A: R/W, Space: 95K
B: R/O, Space: 15K
```

This told you whether the disk was read-only (R/O) or read-write (R/W) and how much space was left.

```
STAT A:

Bytes Remaining On A: 95K
```

Basically the same thing but just for the requested disk and does not report the write status.

```
STAT *.*
```

Four columns of output. The first is the number of records. CP/M works in records of 128 bytes. This tells how many of those 128-byte records are actually in the disk file. The second column is the number of K-bytes that are used by the file on the disk. Most CP/M machines no longer store data on disks in 128-byte chunks—too wasteful. The single-sided MDs (MD1 and MD2) use 1K blocks. The MD3 and the floppy on the hard drive MDs use 2K, and the hard disks themselves use 4K. The whys and wherefores are later subjects. Anyway, a file that has nine records on an MD3 is 1.25K, but uses 2K of disk space. The third column is number of extents. Future column meat. The fourth column is access. R/O for read-only and R/W for read-write. This is followed by the drive letter and the file name. If the name is enclosed in parentheses, it means the file is a system file and does not show up on the DIR command output. Finally, it tells you how much disk space is left.

```
STAT *.* $S
```

Same as before except for an extra column: Size. For most files, size should be the same as Recs. If it is not, it probably means that the file is a random-access data file, although I have seen this occur for some crudely copy-protected programs. Again, meat for a later column.

```
STAT DSK:
```

This tells you all about your disk drives. The total number of 128-byte records that can be stored on each, the total capacity of the drives, how many entries can be in the directory, how many of them are checked. (This is how CP/M knows that you've changed a disk.) Records/Extent will remain mysterious for the moment. Next is how many 128-byte records make a block. A block is that minimum size chunk that CP/M will use for storage on a disk. For an MD3, the block is 2K, so records/block is 16. Sectors/track is a little tricky. The MD3, for instance, really only has five sectors on each track, each one 1K. However, CP/M thinks in 128-byte records, so it thinks there are 40 sectors on a track. The final entry is the number of tracks that are reserved to hold CP/M itself. The machine has to get CP/M from somewhere, and this is where somewhere is.

```
STAT DEV:

CON: is TTY
RDR: is TTY
PUN: is TTY
LST: is TTY
```

Well, this doesn't mean anything! Some versions of CP/M allow a *logical* device to be assigned to a *physical* device. This output tells us that *all* of our logical devices (CONsole, ReaDeR, PUNch and LiST) are connected to a TeleTYpe. Wrongo. Morrow chose not to implement the IOBYTE, which is the gizzy that makes the assignments.

```
STAT VAL:
```

This is kind of a crude help menu for STAT. It shows you how to make a disk read-only temporarily (STAT A:=R/O), how to make a file read-write or read-only or visible or invisible to the DIR command, how to get the disk or user status and, if we had an IOBYTE, how to assign physical devices to logical devices.

Well, that does it for this bimonth. Next issue we'll investigate CP/M a little more deeply and find out about those magic words CCP, BDOS and BIOS. ■

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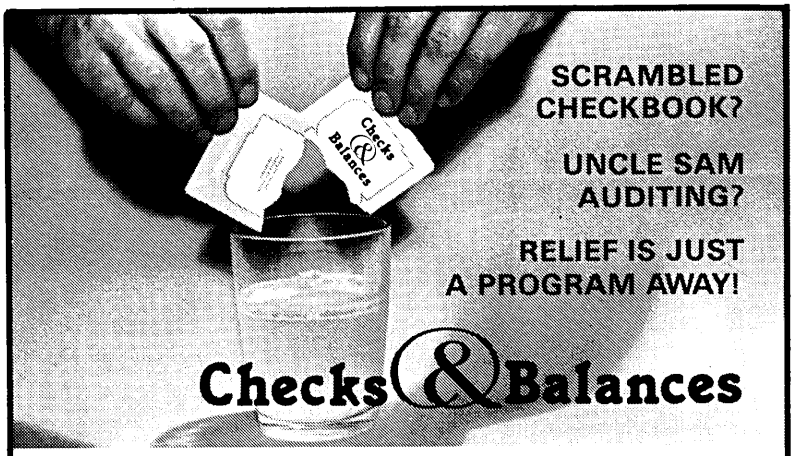

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More Repair Shops

Since our last issue, we've received some additions to our list of shops in the U.S. that repair Micro Decisions. They are:

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AZMUG Non-Profit Service
by arrangement
via experienced college technician
602/622-0170

Micro Computer Maintenance
3640 S. Randolph Way
Tucson, AZ 85713
602/623-4528

North American Digital
3512 E. Grant Road
Tucson, AZ 85716
602/323-7897

Connecticut

Advanced Micro Service
253 Prospect Street
Naugatuck, CT 06770
203/723-7803

Illinois

Just Computers, Inc.
2777 Finley Road
Unit 19
Downers Grove, IL 60515
312/629-2220

Maryland

Micro Repair Services
600 Reisterstown Road
Baltimore, MD 21208
301/653-1902

Microsystems Repair
2903 Reyshire Road
Baltimore, MD 21229
301/525-2097
301/646-5564

Remember, if you know of a shop that repairs Micro Decisions that we haven't already listed, pass the information along to us so that we can share it with other Morrow owners.

REVIEWS

SOFTWARE REVIEW

PROGRAM: **Language Tutor**

VERSION TESTED: 1.03, with comments on Vers. 2.0

MANUFACTURER: Telion Software
P.O. Box 1464
La Mirada, CA 90637
213/547-9673

AUTHOR: Alan W. Gomes

DISK SPACE: 32K + files created

PRICE: $49.95 + $3.00 postage/handling

by Bill Steele

Language Tutor is a program that allows you to create files of English words or phrases and their foreign language equivalents (or vice versa, if you like) and then tests you by displaying the first entry and asking you for the second. That description is a little misleading, as is the name of the program, because Language Tutor is really a flashcard program that can be used for lots of things besides studying a language. You could enter spelling words or math problems, for example. Author Alan W. Gomes seems well aware of this and includes a file of state capitals on the distribution disk.

It's one of those programs you can run without reading the manual. A menu allows you to enter new vocabulary, display and edit an existing file, test yourself on a file in consecutive or random order, retest on missed words, or send missed words to a special file. The last two are especially valuable features. The one thing not entirely clear from the on-screen instructions is that you can select words for testing from a point in the middle of the file, by entering a record number at which to start. This allows you, for instance, to test only on more recent words. When you start up, the program tells you the number of records already in the file. You could note that number, add some words to the list and then test yourself only on the words you've just entered. Records are numbered in the order they are entered; you can find out exactly what number goes with what record by going into the editing mode.

As noted, you're not limited to entering single words; you can type in whole phrases or sentences, up to a string of 127 characters. I prefer the phrase approach in studying a language (although it makes for more "mistakes" in using this program, since there is often more than one way to translate the same phrase). You might also enter an infinitive as the prompt, with its conjugation as the response. Along with each word or phrase and its translation, you may enter what the program calls an "association," or mnemonic. For instance, to help remember that *Pâcques* is French for Easter, I entered "Pack the eggs." These associations aren't displayed during testing, but thinking them up helps you remember the material; and you can review them in the edit mode. (It would be a nice option if you could call up the association—only if you wanted it—before entering your answer.)

You're allowed to open any file for editing, to add, change or delete entries. In this mode you may also search for any string in the file, including partial strings, which allows you to use the file as a sort of dictionary. File size is limited only by disk size, and you may have any number of different files. Unfortunately, they are not ordinary text files, so you can't edit or print them with your word processor. Mr. Gomes tells me that he will add a printout feature. His plan is to set it up so that you can either print an entire file or tag individual words to be printed.

When testing, Language Tutor displays the first word or phrase you entered and asks you to type in the second. Like most other computer matching programs, it is intolerant of minor errors: Failing to capitalize a word or leaving off a question mark will give you an error message. When you miss, you can try again or ask the program to display the answer; if you ask for the answer displayed, Language Tutor insists that you once more type in the correct answer yourself before it continues, for further reinforcement.

If you make a mistake, the screen usually displays a mild insult, chosen at random from a fairly small assortment. This is cute the first few times, but eventually gets distracting. Perhaps that qualifies as a motivation to get the right answers and not have to read the insults. When you get something right, you get a compliment; and I must admit that sometimes made me feel good—it sort of

Continued on p. 44

***Bill Steele** is a freelance writer, specializing in science, medicine and technology. He also writes the Mailbox column for MOR.*

Where do you find someone who can test three different touchtyping-instruction programs as a novice? The obvious problem is that after having tried one program, the reviewer would then have some familiarity with typing and would not be able to review the second program as a true beginner. And by the time he or she got around to reviewing the third program, he or she would probably be a pretty decent typist. So what to do?

Enter Yvonne Burmann, the CompuSkills Coordinator of the Work Resources Centre in Canberra, Australia. The Work Resources Centre is a nonprofit community organization designed to train long-term unemployed and disadvantaged people in word processing and related office skills. Having a pool of beginning typists to draw upon to test the three programs, Ms. Burmann seemed the perfect reviewer. Each program, she reports, was tested by at least one person with academic qualifications and one person from the ranks of the long-term unemployed.

Here, then, are her findings:

SOFTWARE REVIEW

PROGRAM: **Hyper Typer**

VERSION TESTED: 1.1

MANUFACTURER: Digital Marketing
1136 Saranap Avenue
Suite P
Walnut Creek, CA 94595
415/947-1000

DISK SPACE: 64K

PRICE: $19.95

by Yvonne Burmann

Hyper Typer came as simply a disk in a mini-floppy disk mailer—no book of instructions, no explanation, nothing! It's possible that there is more to Hyper Typer than we received, but without any such supporting material we cannot comment on how useful Hyper Typer is for a complete beginner. For example, no explanation of correct finger placement was included within the software.

Straightforward set-up instructions, however, were included on the disk, and so it was a simple matter to calibrate the timing.

The opening menu has five options (apart from Quit). These are: Learn New Keys, Practice Paragraph, General Practice, Number Keypad Practice, and End of Line Key (either as Space or Return).

Both of the first two choices, Learn New Keys and Practice Paragraph, have a further 12 options, with the lessons related to each other. It's possible, therefore, to spend some time on the home keys in lesson 1 and then, for variety, choose the practice paragraph for the same keys.

Errors are shown with a caret. At the end of each lesson (approximately two lines of type) a score is shown on the screen that includes the number of errors made, accuracy as a percentage, and the number of words per minute. The option is then given to repeat the same lesson or return to the main menu

To learn, a person needs to repeat the same lesson many, many times. However, people appreciated being able to make their own selection and move on at their own pace.

The third option in the opening menu, General Practice, contains a series of four practice lines that incorporate a variety of letters, numbers and symbols. Once again, as each is completed, the option is given to repeat the lesson or return to the main menu. If one returns to the main menu and again chooses General Practice, a new lesson is brought to the screen.

Similarly with the fourth option, Numeric Keypad Practice. Seven numerals are arranged in three columns on four lines, and a new lesson is brought to the screen each time Numeric Keypad Practice is chosen.

Option 5, End of Line Key, was a mystery. Each time Option 5 was chosen, the word at the end of the line on the menu would change from <RETURN> to <SPACE> or from <SPACE> to <RETURN>, but that was all that happened. Perhaps if an instruction book exists, it would have an explanation about the correct use of Option 5. *[Editor's Note: Digital Marketing reports that this option is "for selecting either computer or typewriter mode" and that a 14-page manual explaining this and other facets of the program usually accompanies all copies of Hyper Typer.]*

Although people enjoyed using Hyper Typer, especially once they got into the swing of a particular lesson, progress was slow with this particular typing program. After 10 hours over a period of three weeks, one person had only achieved a speed of 10 words per minute and the other 15 words per minute. Both progressed speedily as soon as they switched over to Touch 'n' Go, though. ■

***Yvonne Burmann** has been CompuSkills Coordinator for the last two years. She is New Zealand born, has a B.A. and B.Ed., and has been involved in teaching and community group work for the past 20 years.*

SOFTWARE REVIEW

PROGRAM: **Type-Riter**

MANUFACTURER: Orange Microware
4418 East Chapman
Suite 311
Orange, CA 92669

DISK SPACE: 100K

PRICE: ?

Two copies of the same program were sent, one suitable for a Morrow MD2 and the other for a Morrow MD3.

They came in a book cover of molded plastic that opens and snaps shut easily and looks reasonably durable. (Considering some of the packaging we've had to contend with around here, this is a point we now notice!)

The cover blurb described Type-Riter as a touch-typing instruction program suitable for individual or classroom use, which takes beginners step-by-step from the basics of good technique through drills for developing speed and accuracy and which also allows more advanced typists to improve their skills through timed and scored practice.

Progress can be monitored by the students, or the teacher can monitor a group of students. Timed test results are stored on the program disk by date and are easily retrieved by using a special password.

A users' manual and a sheet of paper with CP/M users' instructions for using Type-Riter came as part of the package. These were easily followed. There was also a note that those who need additional help feel free to call Orange Microware.

The main menu had three choices—Basic Typing Techniques, Beginning Practice Drills and Advanced Timed Tests. Within the technique menu there were a further six choices (apart from return to main menu): home keys and the alphabet, punctuation, numbers, shift keys, uppercase/shifted keys, and overall technique.

We found the Basic Typing Techniques section a little tedious. With a monochrome screen, it was difficult to read the illustration of the keyboard layout and find the carets indicating the letters being referred to. This problem could be overcome with a color monitor or if each lesson's letters were highlighted. The tedium could be overcome by providing a paper chart of the finger positions, such as that which comes with Type Quick. However, Type-Riter's lessons were thorough, with information not only about which finger should be placed on which key, but also on how to curve the finger and how the rest of the hand and arm should be placed in relation to that finger.

There are 55 brief lessons in all, including six on keying techniques, such as the number of spaces to be left after a punctuation mark. Lessons in each section must be followed in consecutive order—it is not possible to go directly to the 23rd lesson, for instance, nor to press <ESC> once you have the particular piece of information you wanted. It would be a good idea to have your own drawn plan of keyboard layout and a diagram of which finger to use for which key to refer to after having gone through the technique lessons.

The Beginning Practice menu has five choices (apart from returning to the main menu): home row practice, harder home row, home row and QWERTY row practice, simple words, and harder word groups.

There is a random exercise generator that apparently creates 64,000 lesson variations for Type-Riter. As one short row of exercises is completed, the next appears on the screen. This continues until a series of 25 lessons is completed. It is, however, possible to escape at any time. Until the section is completed, there is no indication of an error having been made (apart from the actual incorrect letter on the screen); but at the end of a series of lessons there is a score of the total number of errors made and an invitation to try the lesson again. The program suggests that for more than eight errors, a person should try again. If a person chooses not to repeat a lesson, even if the score is disastrous, a note of encouragement appears on the screen to "Keep Up the Good Work!"

Typing times are not taken until the advanced lesson menu is chosen. Here there are 10 choices, ranging from letter patterns and simple words to sentences with advanced punctuation. Friendly commendations are given at the end of the test if a student has done well; and for a student who fools around, the screen flashes the admonition to "Be Serious" and the test has to be begun again.

Type-Riter is the program in which least progress was made. The typing practice lessons are long in a way that becomes frustrating for students, especially if they're making a number of errors. They can, of course, escape at any time, and they also have the option to repeat lessons if they wish; but, nevertheless, there was an element of frustration with the length of the lessons when taken from beginning to end.

One student only had the opportunity to spend a total of four hours learning with Type-Riter, and he felt that he did not make any progress at all. Another spent one hour per day for a period of three weeks, and she reached a speed of 17 words per minute on the advanced lesson menu of easy sentences. She has now chosen to continue learning with Touch 'n' Go instead. ■

Editor's Note: From all appearances, Orange Microware has gone out of business, and Type-Riter is no longer available. However, we have been unable to totally confirm or deny this.

SOFTWARE REVIEW

PROGRAM: **Touch 'n' Go**

VERSION TESTED: 1.0

MANUFACTURER: Software Research Technologies
3757 Wilshire Boulevard
Suite 211
Los Angeles, CA 90010
213/384-5430

DISK SPACE: 92K

PRICE: $29.00

Touch 'n' Go is another program that is easy to install. Instructions on how to begin are given on the disk jacket, and on-screen instructions then take over. These instructions are very simple, and no difficulty occurred in setting the timing or running the program.

Although people found Touch 'n' Go easy to load, there was more difficulty in getting out of the program. Instead of being able to quit directly, the Escape key needs to be pressed several times before the CP/M command mode is reached. This, however, could be considered an advantage by those who wish to continue using Touch 'n' Go from a previous menu level and who can easily return there by using the Escape key.

Thirteen lessons in the use of a numeric keyboard are included, as well as 61 lessons for letters. Although the lessons are for the QWERTY keyboard, the finger placements for the bottom line differ slightly from those of other typing programs.

For example, the first finger of the right hand is used for the letter "B" in the Touch 'n' Go lessons, instead of the more usual first finger of the left hand. The first finger of the left hand is used for the letters "V" and "C," and the other letters are also one finger further left.

I suggest that a quick reference chart for finger placement would be useful, in addition to the finger placement information in the software. This is true for all of the typing programs reviewed, and it is something that could perhaps be incorporated onto the jacket design.

The lessons for Touch 'n' Go begin with the left hand, first single letters and then combinations of letters. This can cause tiredness in the hand after the approximately 20 minutes of the first lesson. Other programs that integrate use of the right and left hands, by first teaching the home keys, we found preferable.

However, it cannot be denied that Touch 'n' Go was the program with which we had the most success. The claim is made on the jacket cover that, with a little concentrated effort, you can achieve mastery in just 24 hours. By the end of the course, according to the jacket, you should reach a typing speed of 40 words per minute, an alphabetic accuracy of 95 percent and a numeric accuracy of 100 percent.

We had two people testing Touch 'n' Go, one who achieved 35 wpm in 24 hours over a period of one month, and the other who achieved 40 wpm (95 percent accuracy) in 15 days, spending approximately 45 minutes on Touch 'n' Go each day.

Any lesson can be selected for entry from the menu, and it is therefore not necessary to follow the lessons in consecutive order, should you wish to go back and review any. The lessons themselves cannot be cheated on. The speed and accuracy rate for each exercise must be achieved before it is possible to more on to the next exercise.

As the lessons become more complicated, they are divided into components; and it is necessary to complete all parts of the lesson, a time-consuming process. If the lesson is interrupted, it must be begun again from the beginning. This was a frustration, and people soon learned not to interrupt someone who was in the advanced stages of Touch 'n' Go!

Twenty-one years were apparently spent on the development of this course. Stan Harcourt, a typing and commerce teacher, wanted to make learning quicker, easier and more interesting; and it appears that he has been successful. Touch 'n' Go is the program that we would prefer to use with our CP/M machines because of the results we achieved with it. ■

Language *from p. 41*

reinforced my own sense of accomplishment. Mr. Gomes informs me that the version now on the market gives you the option of toggling the comments off or on, with off as the default. At the end of a testing session you're given the number of right answers and a percentage, along with another comment appropriate to your score. As previously noted, you may then retest on missed words, which I strongly recommend as a way of reinforcing your learning.

I had been thinking of writing something like this for myself, but I expect the time it would have taken me would have been worth more than the price of this program. Also, this program has a few features I hadn't thought of (and probably wouldn't have been smart enough to program). It makes you work harder than most programs of this sort, and that's probably good. My complaints are minor, and more in the nature of suggestions for improvement. Mr. Gomes has already taken me up on a couple of them, just as he did when I reviewed his Free Filer (MOR Vol. 2, #5). It's nice to deal with a company that is so responsive to the public.

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SOFTWARE REVIEW

PROGRAM: **Write-Hand-Man**

VERSION TESTED: 2.1

MANUFACTURER: Poor Person Software
3721 Starr King Circle
Palo Alto, CA 94306
415/493-3735

AUTHOR: Alan Bomberger

DISK SPACE: 6, 8 or 10K for the program
Mimimum of 2K for each module
3, 5 OR 6.2K free RAM needed

PRICE: $49.95

by Bruce Gowens

When SideKick (the memory resident desktop utility from Borland International) swept the MS-DOS world, nobody expected that the same thing could be done in CP/M. The problem was simple—64K wasn't enough to hold all those functions plus the main program you would be running at the same time. Now Poor Person Software has shown that there is another way to do it.

Write-Hand-Man (which I'll call WHM from now on) occupies 3 to 6.2K of memory and calls each function by loading a file from disk. (Not exactly like SideKick, but the net effect is the same.) It does this from anywhere within the program you are currently using. The WHM functions occupy a small window in the upper left corner of the screen, so it is possible to see some of the program you are working with at the same time.

For example, if you were typing a letter and received a call from a friend who needed to get a phone number, two keystrokes would call up your WHM phone book and two more would take you to the needed phone book page. Then imagine that the caller tells you something you have to make a note of. A keystroke takes you back to the WHM menu and another calls the notepad, and you type in the note. What you've learned from the caller means you had better call someone else and tell them the news, so in a few keystrokes you are back in the phone book again and the computer dials the number for you. That conversation results in a date for next week, so you call up the calendar and enter that. When the phone call is ended, <ESC> <ESC> restores the correspondence you were writing to the screen—exactly as and where you left it.

I must hasten to add that you may not be able to actually do all these things on your machine—so read on.

WHM comes with 10 runnable modules, three configurations of WHM (fitting different memory limitations), installation programs for WHM, TERMCOMM.MAC (source code for setting up the automatic dialing feature) and .MAC (macro assembler source code) files for the modules.

The Modules

The modules are:

ASCII: Shows the hex value and character from 00 to 7F, 32 characters at a time, cycling through as you hit a key. Occupies 2K of disk space.

CALCULAT: A calculator with the functions add, subtract, multiply, divide, clear, memory (save and recall—the memory is not lost when you go back to your main program, but it is when you recall it), change sign and "cut." Cut permits transferring the result into the main program you are using. You can control the precision of the result. Occupies 2K of disk space.

CALENDAR: A two-week "appointment book." At the end of each week, a keystroke turns week two into week one. Occupies 8K of disk space.

DIR: A disk directory. You can specify the drive, but the list is not alphabetized and file size is not shown. Occupies 2K of disk space.

HEX: Like CALCULAT, except works for integers only (no decimal parts) in either base 10 (decimal) or base 16 (hex). A keystroke converts decimal to hex or back. Handy for programmers. Occupies 2K of disk space.

KEYS: A set of eight "macros" (i.e., key redefinition utilities, with the same uses as SmartKey). Limited in size, but easy to use "on the fly." It is difficult to find a control key that doesn't interfere with the WordStar commands, however. (Note: WHM and SmartKey do *not* conflict and both can be used at the same time!) Occupies 4K of disk space.

NOTEPAD: A "scratch pad" to make notes on. The notes can be edited using commands similar, but not identical, to WordStar's. The <DEL> or Rub Out key works like Control-G in WordStar, while Control-G does nothing; and Backspace works like <DEL> in WordStar. The Control-E/D/X/S diamond moves the cursor as in WordStar, but Control-F pages forward through the pad, Control-B pages back and Control-A just sits there. You can cut notes into the program you are using, as well as print them. Occupies 6K of disk space.

PHONEBOO & BIGPHONE: Similar to NOTEPAD in the way they work, except the pages are

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Bruce Gowens lives in Oakland, CA, with a small cat, a large ego and a normal-sized MD3.

designated by the letters of the alphabet. The difference between these phone books is size. If you can get TERMCOMM.MAC working (see below) and have a modem hooked up, you can dial with one keystroke from the phone book. PHONEBOO occupies 8K of disk space, while BIGPHONE occupies 22K.

SWAP: Allows you to run a second program from anywhere within a first program. An example might be to put aside your spreadsheet in order to run your word processor. When the word processor is done, the spreadsheet is restored to exactly where you left off. The manual has some serious warnings about using this utility, since CP/M was not designed for multi-tasking. Swapping disks when programs are SWAPped, for example, could lose your files. Also, you need enough extra free space on your disk to hold the first program, since WHM sends the machine's memory (the first program and its workspace) to temporary disk storage. Occupies 2K+ of disk space.

VIEW: Permits a 32-character, 8-line "peek" at another file on the disk. The file will either be "wrapped" at the WHM window lines or truncated at the first 32 characters of each line, due to the window size. You can cut small sections of the viewed file into the notebook or the program you are working with. Occupies 2K of disk space.

WHM's Configurations

The three configurations of the WHM program are:

WHM.COM: The smallest configuration (3K of RAM used), for when your main program is occupying almost all the RAM you have. This does not completely restore the screen. In WordStar, for example, you might do a Control-R and then a Control-C to fill in the hole WHM.COM left.

WHMT.COM: This version is bigger (5K of RAM used) and restores the screen. This is the version I used to test WHM.

WHMF.COM: Similar to WHMT.COM but bigger (6.2K of RAM used), and the manual is not clear why it is necessary. Poor Person Software says that it is needed with the SWAP module for complete screen restoration.

The file *TERMCOMM.MAC* communicates with a Hayes-compatible modem to permit dialing from the phone book. This is *not* ready to run but is in assembly language. To use it, you must first modify two subroutines and then assemble it with M80 from Microsoft or RMAC from Digital Research.

The list of modules gives a good indication of the broad usefulness of WHM, but some practical limitations do exist.

On a floppy-only system, especially one with single-sided drives, the program disks tend to fill up with all kinds of useful utilities that you don't want to do without. That means that you might be forced to limit the number of modules on any one program disk—the entire set can use 38 to 62K of disk space. But the lack of one of the modules on a disk will not do any damage when using WHM; it just means that the missing ones are not available.

On a hard disk system, there would be plenty of disk space, but there might be occasional problems going across user areas unless your operating system has been modified to handle search paths.

Some software will just not leave enough space for WHM in RAM. An example would be Personal Pearl when the input form is large. At other times, the existence of WHM in memory might cut down the working room in RAM enough to cause a little awkwardness, such as when compiling with Turbo Pascal. In general, I consider RAM limitations a minor drawback, inherent to CP/M, and not worth worrying about.

WHM does have one serious defect: the manual. It was obviously written by a programmer—and an assembly language programmer at that.

Too much attention is paid to the internal workings of the program in a manner that does not make clear to the user exactly why the point is important or useful. Assembly language information and modifications are interspersed with the step-by-step how to do it, and can easily scare away someone who hasn't actually tried the program. Needed are: more examples; more step-by-step instructions; more sub-heads so that necessary information stands out; more indents, bold face and other typographical techniques to separate thought from thought; an index, even though the manual is small; and better separation of the tutorial and programming sections. The saving grace is that a little testing of the program helps clarify the manual. Too bad; it's supposed to be the other way around.

If, however, you are an assembly language programmer, you'll love it—especially since instructions are given to enable you to write your own modules. This is an excellent idea, and I hope to see new modules appearing on the RCP/M systems as well as in upgrades by Poor Person Software. WHM is copyrighted and *not* in the public domain. But the license agreement states: "The buyer has the right to sell any products that require Write-Hand-Man (desk accessory applications) but may not distribute Write-Hand-Man itself." This is an intelligent and friendly attitude, and I hope it is good business for Poor Person Software.

Usually, people make the mistake of not reading the manual first. With WHM, reading it first might be a mistake; it can scare you away. But by playing with the program with the manual on your lap, it becomes easy enough to learn. The modules work well, the program is swift despite its disk accesses, and it can make your computer act almost as good as you dreamed it would when you bought it. Recommended. ■

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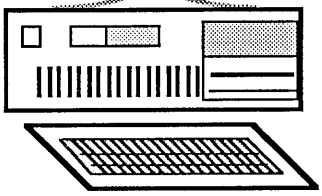

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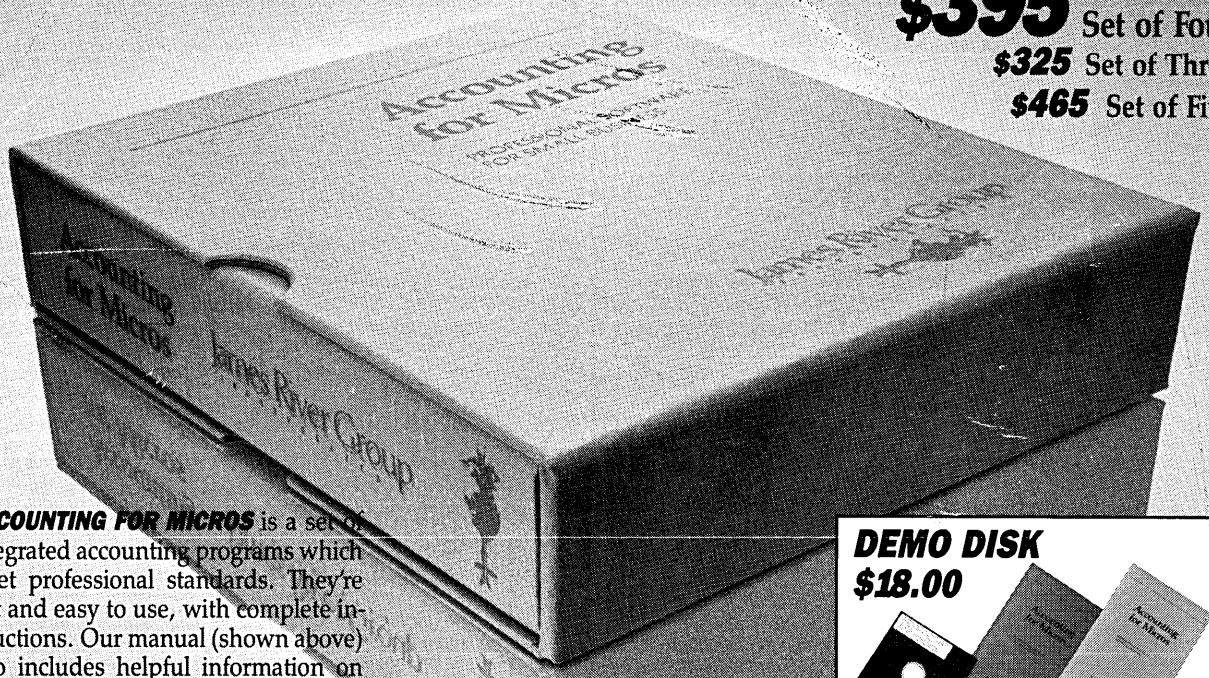

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