

# PROFILES

The Magazine for Kaypro Users

July/August 1983

\$3.00

*Hiring a consultant*

*Keypad reconfiguration*

*Self-help books: any good?*

*Choosing a lang*

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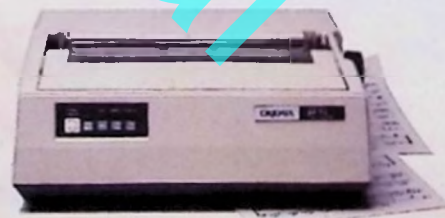
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# MICRO CORNUCOPIA

Micro Cornucopia is not just a magazine covering single-board based systems, it's really a 2-year-old users group for folks who just can't leave their single board systems alone. The systems we cover include the KayPro\*, the Big Board, the Xerox 820, and some new 16-bit boards like the Slicer.

We get inside single board systems to see what makes them tick (or not tick). When we get done we usually know how to make them tick faster and better.

For example, we detail how you can change your standard 2.5 MHz vanilla-flavored KayPro II into a 4 or 5 MHz screamer, yourself! You can even add a switch so you can select either 2.5 or 5 MHz in an instant. We also discuss adding hard disks to your II.

#### Regular Features Include:

The KayPro Column  
On Your Own Column  
C, PASCAL and FORTH Columns  
Technical Tips

#### Plus User Disks

As a user group, however, we're more than just a bi-monthly magazine. Many members send in major software programs. We assemble the best of these as User Disks and make them available to the whole group. Contributors receive their choice of disks in return for their submissions.

#### Plus KayPro ROMs

As we used KayPros here we found we couldn't leave well enough alone so we improved the character ROM (you know the lower case "g", "y", "f", and "q"! ). Plus we let the comma and semi-colon descend below the line so you could really see them.

We also changed the Monitor ROM so that we had a non-blinking block or underline cursor (much less irritating), and six retries on a disk read error. Then we put it all in a carefully selected fast part.

Ask for KayPro ROM information.

#### KayPro Schematic

This is a complete schematic of the KayPro, logically laid out on a single D-size sheet - no more searching to see where a signal goes or comes from. Even the unused gates are shown.

It's drawn in positive logic, lines are labeled, and we've tossed in hours and hours of careful checking for accuracy. Then we added a Theory of Operation that's keyed to the schematic.

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**MODEM7.COM:** Very popular MODEM7 configured for KayPro.

**MODEM7+.COM:** This is MODEM7 & **MODEMPAT** combined - you can communicate with anything!

**KMDM795.COM:** Super-version of MODEM7 set up for KayPro.

**TERM.MAC:** Commented disassembly of the TERM program you get with your KayPro so you can configure it for any interface.

**SQ/USQ.COM:** Programs to squeeze and unsqueeze files for faster transfer.

##### KayPro Disk K2 - Utilities

Really oodles of spiffy little (and big) programs to help you get full use of your KayPro. This 191K is a goldmine of problem solvers.

**ZESOURCE.COM:** A true Zilog format disassembler for 8080 and Z80 object (.COM) files. Now you can turn .COM files into .MAC files.

**UNERA.COM:** Simply enter 'UNERA' followed by the name of the file you just erased and presto, the erased file is back! A lifesaver.

**FINDBD54.COM:** Checks an entire disk, reports bad sectors, and then creates a special file containing those sectors. You save a bundle on disks.

**CAT2:** This is a group of programs which create and maintain a single directory of all the programs you have on all your disks. Even keeps track of which programs are backed up and which aren't.

**UNSPPOOL.COM:** Use your KayPro II and print files at the same time. Doesn't slow down system response!

Plus many more:  
**DUMPX, DU-77, COMPARE, SUPERSUB, FORMFEED, DIR-DUMP,...** and all have documentation on disk.

##### KayPro Disk K3 - Games

Note: this disk is sent in a plain, unmarked box to protect you and your KayPro from video game freaks.

**PACMAN.COM:** Despite the KayPro's lack of graphics, this one looks and plays amazingly like the real thing! Keep it hidden.

**ZCHESS.COM:** Chess with a 1-6 level look ahead.

**OTHELLO.COM:** You learn it in minutes, master it in years.

**BIO.COM:** Generates custom graphic biorhythm charts.

**MM.COM:** Master Mind.

**WUMPUS.COM:** The classic wumpus hunter's game. Plus many more!

##### KayPro Disk K4 - Adventure

This disk contains one 191K game, Adventure. **ADV.COM:** This is the latest, greatest, most cussed adventure ever devised by half-mortals. This is the 550-point version so the cave is greatly expanded and the creatures are much smarter.

##### KayPro Disk K5 - MX-80 Graphics

A complete MX-80 graphics package including example files.

##### KayPro Disk K6

##### Word Processing Utilities

A powerful line oriented text editor that looks like Unix's EX, plus a scad of text utilities written in C which handles pretty printing, shortening a file, multiple space output, add tabs, remove trailing whitespace, and more.

##### KayPro Disk K7

##### Small C Version 2 Compiler

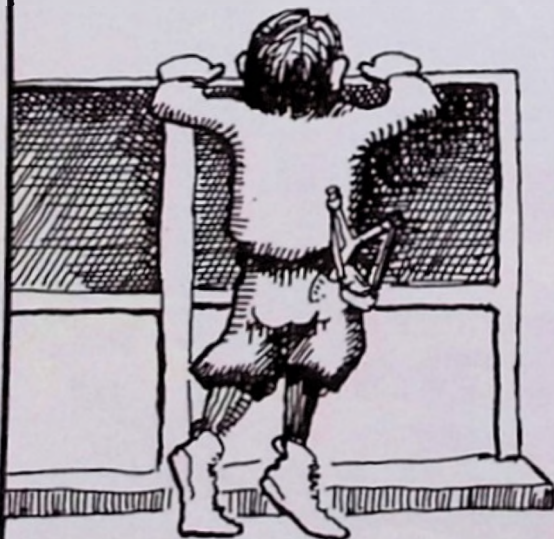
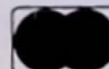
This is a greatly extended version of Ron Cain's original C compiler. Version 2 includes many more expressions, a substantially extended library, and much more. This disk contains the compiler, documentation, and library.

**KayPro Disk K8 - Small C Version 2 Source**  
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KayPro II Users Disks ... \$12.00 each ppd.

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# PRO-FILES

July / August 1983

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# Useful information

A brief rundown on our purpose and policies

**B**ecause this is a first issue, several important features (those that depend on reader participation) are missing from our lineup. We are hoping to add three regular sections—Letters (a sounding board for thoughts, opinions, and tips), Technical Q & A (answers to hardware and software questions that are beyond the scope of regular manuals), and Contributions (shortcuts, solutions, and suggestions that can be printed without the need for additional analysis by our staff). We are also actively seeking stories about interesting people with interesting applications for their computers. So if you've got an idea, a question, or a comment, please write to us. While we can't guarantee a response to every letter, we'll certainly try to make the magazine a product of your needs, not ours.

**R**eviews, editorial references, and advertisements should not be taken as an endorsement of any products not specifically manufactured by Non-Linear Systems, Kaypro's parent company. We are not

liable for any damages arising out of purchase or use of any of these products.

In the case of reviews, opinions expressed are those of individual members of our staff, and do not represent any form of corporate certification. They also do not necessarily reflect intensive technical analysis as would be provided by a laboratory or professional testing firm. Other editorial copy is provided for the interest of our readership only, and may derive from telephone interviews, press materials, or casual exposure.

Responsibility for products advertised lies with the advertisers. We will not knowingly publish false or misleading advertising, nor will we continue to publish fraudulent materials. Should there be any consumer complaints arising from goods or services purchased from our advertisers, we would appreciate written notification to that effect, to aid in our own screening process.

**S**ubscriptions to Pro/Files are available to everyone who purchases a Kaypro computer, or

who already owns one. The price of a half a dozen issues is included in the price of your computer.

But developing a mailing list is not as easy as it sounds—to date, we've had a dismal return rate on Kaypro warranty cards, our primary source. If you've actually sent in your card, and it was legible, expect to get the magazine every two months for the next year or so. If you've just purchased a Kaypro, send in that card—not only will it insure your subscription, it will also protect you should your computer malfunction.

Note that if you bought your machine more than ninety days ago, you're still entitled to receive Pro/Files, even if you haven't sent in your card. Just write to our Editorial Offices, and be certain to enclose the serial number of your machine and the date of purchase. We'll make sure you start receiving your subscription.

Finally, if you don't yet own a Kaypro and you'd like to get the magazine, the price is \$12.00 for six issues. Sorry, but if you decide to buy a Kaypro sometime later, there will be no refund.



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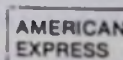
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# Rough seas out of port

Why another computer magazine?

by Ezra Shapiro



**B**ack last July, after years of drooling at personal computers, I decided that the time was right to take a deep breath and plunk down the money for a Kaypro II. Not only was the machine the first computer I had ever owned, it was the first Kaypro my dealer had ever sold. In retrospect, I guess the amazing success of Kaypro means that we were pioneers of a sort—but at the time, I suspect he and I were both wondering whether or not we were, in fact, absolute fools.

The next few weeks were an experience, to say the least. As a writer, I'd thought all I'd have to do was plug in the machine and start word processing. Wrong! I'd hit keys and lose entire paragraphs. I'd use those "powerful commands" and irretrievably mess up hours of work. I somehow figured out ways to cause the computer to generate error messages I've never seen again to this day. Was I frustrated? No, I was hysterical.

My dealer was no help at all—he told me to read the manuals. Right.

So, arming myself with a supply of liquid caffeine and salami sandwiches, I disappeared into the room where the

computer lurked. It was war—only one of us was going to come out of that room victorious, and it wasn't going to be the Kaypro.

Over the course of the next few months, I lived in that room. Every so often, I'd emerge, haggard, unshaven, my eyes red and glazed, muttering computer jargon under my breath. My wife thought I'd gone off the deep end. Occasionally, I'd wander off to a nearby bookstore to gaze uncomprehendingly at the racks of magazines and self-help books that seemed to hold out hope. Often, I'd buy one, only to discover no answers for my struggle with the Kaypro.

To make a long story short, I eventually won the battle. That computer now resides at my house a mile from the factory where it was born, where my co-workers at Non-Linear Systems regard it as an antique—after all, it was built centuries ago. And my wife and I

chuckle over our memories of those first agonizing months. But I remember, I remember.

Which is why this magazine exists.

The computer publishing industry is at least as overcrowded as the micro-computer manufacturing industry—why, then, did I want to get involved in the launch of yet another entry in an already confusing field? How could it possibly be any different?

Well, to begin with, the fact that Pro/Files is intended for the audience of Kaypro users frees the publication from the need to be general; it doesn't have to cover the peculiarities of every computer on the market, so it can devote its attention to machine-specific, actually useful information. Manuals and training sessions are, of necessity, aimed at the lowest common denominator. A magazine has a lot more latitude to ramble.

I've also noticed a major lack in a lot

*Ezra Shapiro is the editor and publisher of this magazine.*



of general interest computer publications of the sorts of articles I'd like to read myself. Not only are technical pieces either too broad or too full of jargon, the more casual self-help articles are often more confusing than they are applicable—they tend to create doubts and questions, rather than to solve problems. And it's all so serious—sure, computers are an important addition to modern living, but I'm getting tired of hearing the topic approached with an almost religious fervor; I'm a human being, after all, with interests outside the realm of hardware and software. I even (perish the thought) occasionally like to laugh at myself—and my computer.

This first issue is an attempt to structure a magazine for people who just happen to own computers. That's important—people first, computer owners second. Good writing, with a sense of humor as well as technical expertise, has been the top priority.

Planning a mix of articles for the Kaypro audience was a thorny problem. The bulk of the machines are sold to first-time owners with little or no previous computer experience, but, intelligent devils that they are, most of them become rather adept after a couple of months. The magazine's distribution system causes a dilemma—about half the run goes to experienced users, and the other half is packed with new computers as they're shipped. This issue takes a stab at providing novices with the tools to improve their capabilities, and more advanced users with content sophisticated enough to hold their interest.

If you see education as a voluntary act of self-torture on the part of the students, then launching a magazine is an educational experience.

Some of the biggest problems have come as a result of the decision to sell advertising space. The advertising in this magazine has two major goals; first, to let Kaypro users know about new products for their machines, and second, to try to finance a true quality publication.

The dynamics of maintaining a "clean" editorial policy while attempting to attract advertisers to an unknown product are complex. It's a

constant balancing act. So-and-so wants to buy an ad, but would feel a lot better about it if he knew his product were being mentioned editorially. His competitor has heard we're doing an article on thus-and-such subject, and would like to know what we're saying so he can quote us in the ad he's preparing—and what's more, would like his ad to appear on the page facing the article. A retailer who has sold umpteen Kaypros believes Kaypro owes him a return favor—a short article on his new item. And so it goes.

These are the simple cases. I've been polite but firm, and the few times it's been necessary, I've gotten angry. We do not sell editorial space, and that's that.

However, since one of the driving needs of most new owners is for product information, I know we're often going to look like we're compromising ourselves. Sigh.

Anyway, for better or for worse, here's the magazine. In spite of everything, we had a good time preparing it, and we hope you like Pro/Files.



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# The cottage computerist

Your Kaypro might give you your freedom  
—and then some

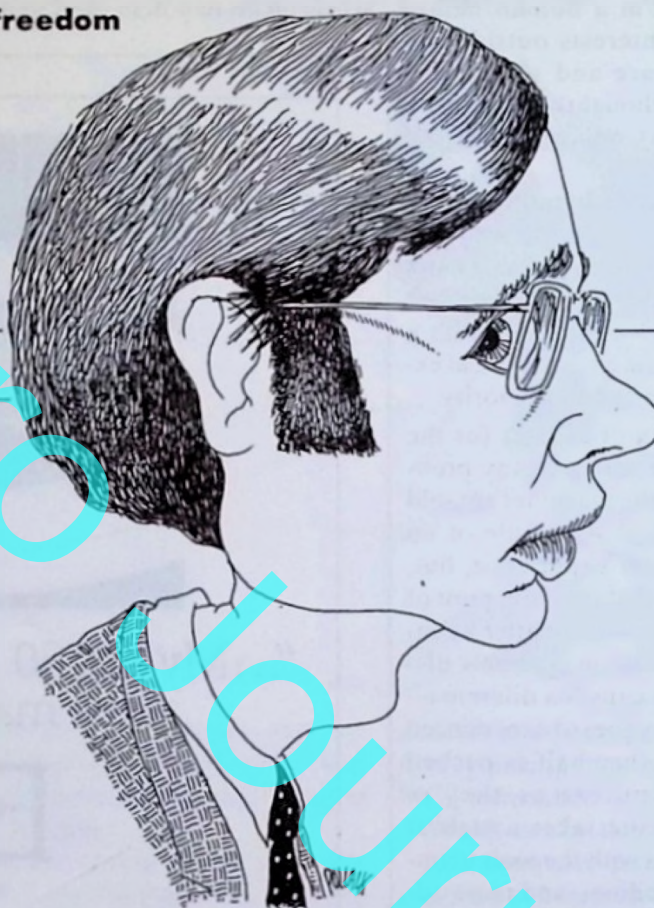
by David Thompson

Computers have done some very interesting things to us humans. They have stored us on punched tape, punched cards, magnetic tape, and hard disks. They have told us that we owe strange amounts for even stranger items. And, they have mushed us all together, sorted us, analyzed us, averaged us, and spit out a composite of us that bears no resemblance (fortunately) to any of us (After all, how many couples have 1.7 children and half a dog?).

Computers have made dehumanization a fine art. They have brought industrialization with its mind-numbing sameness to its ultimate end. It is more convenient, for instance, for computers to store and process numbers than names, so numbers we are.

Now, all of us numbers can go out and buy our own computers, so we can

*David Thompson, who has led careers as a reporter for the Oregon Journal, a self-employed photojournalist, technical writer and later a software/hardware engineer for Tektronix, is presently editor and publisher of Micro Cornucopia, The Single Board Systems Journal, a technical magazine for hardware and software designers who are creating and expanding single board Z80 systems (including the Kaypro).*



turn whole corporate conglomerates into numbers (tiny two-digit numbers even). What power! The very machines that took our names are giving many of us a chance for real independence. We've got a chance to get back much more than just our names. In fact, you've no doubt heard about this new revolution because the press discovered that some of us are doing our own high-technology trips in our own homes.

## PERSONAL EXPERIENCE

I am no longer working for a large electronics firm. So I'm not commuting on noxious freeways, nor am I

smiling lamely at bored security guards. I'm not even lining up in the institutional soup line. I'm staying at home, smiling (or not smiling) as I please, and raiding my own refrigerator. In fact, Sandy and I (and our two daughters) are now working together, producing our own products on our own personal computers (including a Kaypro II). Our home (business) is surrounded by juniper and pine trees, though we are only a mile from the city center (what there is of it).

Leaving the corporate environment hasn't isolated us, however. Our mail comes in by the box load, the UPS driver wanders in and out of the house  
(Continued)





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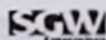
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## TAKE OFF

(Continued)

like a family member, and the phone usually announces sunrise. Even though we have just moved to Bend, Oregon, a small resort community tucked between the Cascades and the high desert (a lifelong dream), we feel that we are very much in the mainstream of the computer world—much more so, in fact, than when I was a software/hardware engineer.

## A LITTLE MEAT

So far this first column has been just an introduction. In future months, we'll not only be looking at the kinds of projects which are available to the cottage computerist but also the tools (languages, editors, utilities) and environments (hardware, operating systems) that make these projects possible (The Kaypro II, 4, and 10 are definitely usable environments, as you will see.).

Here's something you can get your teeth into between now and the next issue. The following are a few things that I've found particularly useful (My computer library numbers hundreds of volumes so I don't recommend books lightly.).

**Your Fortune in the MicroComputer Business**, by Victor Wilde. Dumb name—sounds like one of those newspaper scams—but this two-volume set contains the best information on setting up your own computer business that I've seen (bar none). Covers the whole field from consulting to opening a computer store. It's really an enjoyable book to just sit down and read. Order from Wildfire Publishing Company PO Box 420, Carpinteria, CA 93013. \$26.95 for the set (plus tax in California).

**Inside CP/M, A Guide for Users and Programmers**, by David E Cortesi. I have a number of books on CP/M but

as far as I'm concerned, this is THE reference book on this popular operating system. It doesn't matter if you are a beginning user or an advanced hacker, you'll find the information you need in this 500+ page book (It is also very easy to read.). I heard so many exciting rumors about it before it was released that I ordered it before it was printed, and I wasn't disappointed. Should be available through any book or computer store.

You might also want to pick up a Pascal book for a taste of a hot upcoming programming language. **Introduction to Pascal** by Rodnay Zaks (ISBN # 0-89588-066-0) is one that's pretty easy to follow but I'm open to anyone's suggestion for a real winner in this area. Meanwhile you could also order a copy of **JRT Pascal**, version 3, finally available in a disk format that will run on the Kaypro, for \$29.95 and try out this very interesting language very cheaply. There is some controversy about Jim Tyson's (JRT) choice of extensions in his Pascal but there is no controversy about the price. Expect to wait 6 weeks or more for JRT Pascal; he's swamped.

## FINALLY

If your goal is independence, stay with us. With any luck this column will help you make the transition a successful one. If you are already independent, perhaps we can help you maintain your status. But either way, please feel free to communicate. Many times, one idea leads to many other ideas when shared with a group—one question generates many good answers. So put your ideas and questions down on a postcard, in a letter, or on disk, and send them in.

And, by all means, include your name. We've had a lifetime's share of numbers already.



# HOW TO CONTROL YOUR CP/M<sup>TM</sup> MICRO—AT ONLY \$3. PER COMMAND.

## A Remarkable Program For CP/M Users.

Of course, CP/M is a wonderful operating system. That's why so much serious business software has been created for it.

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**POWER!** is a super-power-packed, user-friendly program that lets you take immediate and complete control of CP/M. And at a cost of only \$3. per command, it's the software buy of the year.

## Over 55 Housekeeping Utilities.

**POWER!** is over 55 prompted, user-friendly CP/M utility programs all rolled into one 15k package. It takes care of all of these frustrations and more:

—**BDOS errors?** **POWER!** ends BDOS errors and gives you a way out.

—**Accidentally erased a file?** If you accidentally erase a program or disk file, **POWER!** restores the erased files.

—**Can't remember file names?** **POWER!** assigns a number to each file on your disk. So, to copy files from disk to disk, you don't have to fiddle with PIP anymore. You just pick the file from a numbered menu and **POWER!** copies it for you. No more typing errors! **POWER!** also marks original files and their copies for you; and you can compare files to find identical copies regardless of name.

—**Lose data on a glitched disk?** If a glitched disk makes it impossible to call up a long word processing text, **POWER!** can fix the glitch. This means you may have to retype only a couple of sentences instead of losing 20 pages of text.

—**Trouble with "bargain" disks?** **POWER!**'s disk testing function gathers any bad sectors of the disk into a special file so that CP/M thinks those parts of the disk are already used and never attempts to write to them. The rest of the disk is then safe to use.

—**CP/M scrolls too fast through text files?**

**POWER!** spools through files for you,

page by page, file by file, or line by line with instant halt by touching the space bar.

## —Need to reorganize files?

**POWER!** sorts and formats the directory in 4 different ways. And you can easily copy or move files from user area to user area. **POWER!** creates 32 user areas instead of CP/M's 16.

## —Need to change memory?

**POWER!** searches, displays and lets you change memory wherever you want. You can even automatically run software anywhere in memory. And you can inter-mix your search with as many wild card jokers as you need to find, for instance, all occurrences of "Sam Jones" and "Sid James" just by typing "S?J?J?". And **POWER!** also lets you read or write to any sector or track very simply.

—**Changing disks?** You can forget the ubiquitous Control C to change disks. **POWER!** can do it for you automatically.

And **POWER!** doesn't require a system disk in any drive, so Drive A is open for use, when **POWER!** is in control of CP/M.

—**Afraid of HEX numbers?** **POWER!** automatically converts Hex to Decimal, Binary or ASCII.

## Special Password Protection, Too.

**POWER!** now includes a special program that lets you lock sensitive files, so that only you can access them. Without the secret PASSWORD which you can create and change at will, no prying eyes will ever know your secret file even exists. A great way to protect financial or scientific data from unauthorized eyes. Just this single program alone would be worth the price of **POWER!**, but there are over 55 more just as valuable programs in this power-packed package.

At \$169., It's A Bargain.

Space doesn't permit describing all

the wonderful ways **POWER!** can put you in complete control of your CP/M micro. But see for yourself. There's a Money Back Guarantee. At the low price of \$169., each powerful command costs you less than \$3. A true bargain!

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Eventhough "InfoWorld", "Microsystems" and "Interface Age" call **POWER!** great, we have improved **POWER!**—including a completely rewritten 120-page easy-to-read documentation. (Previous purchasers of **POWER!** may exchange their original disk for an updated version with the new commands and a brand new manual—for only \$35.)

## Take The **POWER!** Trip Today!

**POWER!** will operate in any standard CP/M or MP/M system, including CP/M-86, IBM PC, Apple (Z80 card), Osborne, Kaypro, HP, TeleVideo, TRS-80 conversions, S100's including NorthStar, Vector, Morrow, CompuPro, etc. Up and running immediately, no configuration necessary—for hard disks and floppies.

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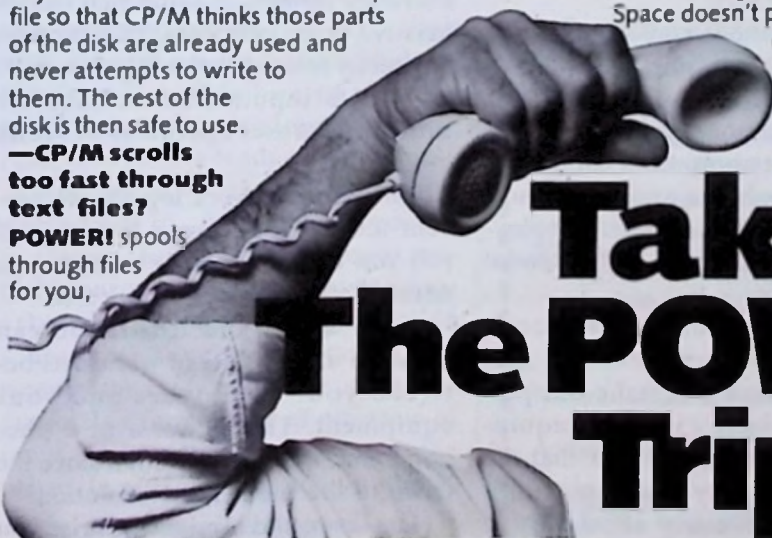
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Trip.



## InfoWorld

Software Report Card

## Power Version 2.55

	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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# Let the games begin

There's more than one way  
to ease office computerphobia

by Cliff Odendhal

*You are sitting in front of a personal computer and you have booted up a games disk.*

*Do you wish to play a game?*

Y

*You have several choices. Please indicate one.*

**ALIENS**

*Does your manager approve of your playing games in the office?*

N

*To hide the game from your manager when he walks by, type •#S\*.*

•#S\*

*Do you enjoy playing games?*

Y

*Do you find you have to improve accuracy to play them?*

Y

*Does playing games make you more comfortable with the computer?*

Y

*Would you like me to talk to your manager and help him understand the possible benefits of game playing?*

Y

*Type GO and I will run CONVINCE.MGR.*

GO

Dear Manager,

Time is money and work must be done. Games take up time and interfere with work.

You are perfectly justified in being appalled at the thought of your employees wasting valuable time blasting spaceships, avoiding rocks, or trying to get treasures out of a maze. I can understand how useless this must seem to you when you've made a sizable investment in a computer system you hope will accomplish more work, not entertain your staff.

But there's another side to this issue you may not have considered. Have you noticed a certain amount of fear and loathing among your employees when they first approach a computer? This is technophobia and, in its most extreme cases, it can prevent employees from developing the full potential of the computer.

This problem has many roots, among them the apprehension that somehow making a mistake can permanently damage expensive equipment and programs, the fear that the speed and efficiency of computerized systems may adversely affect human

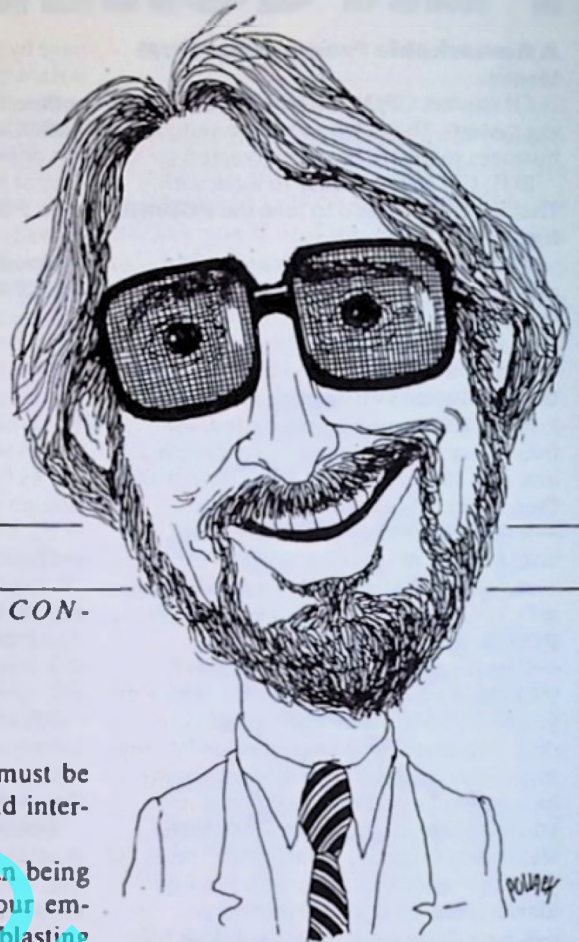
job security, and feelings of inferiority or stupidity because the inner workings of the machines are so hard to understand, etc.

As well, you may have encountered a strange laziness of input that causes massive operator errors. This laziness is directly related to the rote nature of most data input, which numbs the brain and causes operators to "zone out."

These factors work together to prevent the full use of your system, and rob you of many of the benefits you envisioned when you installed it.

Fear, anger, and frustration can build up until a state of war exists between your employees and your equipment. This is not a new phenomenon; we've lived with it since the dawn of the Industrial Revolution.

However, and it might surprise you





to hear this, your computer may have an answer.

Games.

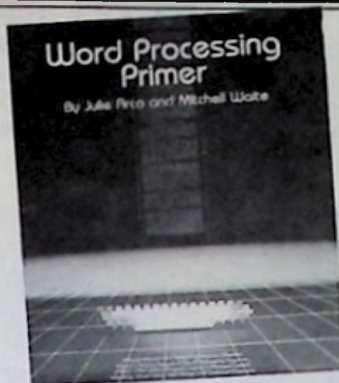
That's right. Games, being fun and interesting, can relax the operator and encourage him (or her) to enjoy using the computer. Suddenly the machine is a friend, a fellow player, a teammate instead of a taskmaster or a workmate. Direct positive feedback is occurring at all times, and most games communicate friendly, human prompts—as opposed to some business programs that are so cold they could be used to freeze meat. Whereas serious programs depend to a great extent on incomprehensible manuals, games, as a rule, use plain English menu prompts to get the player into the thick of competition as quickly as possible. This makes the operator feel competent and smart—self-esteem and confidence soar. A positive attitude is created within the situation, i.e., computer/human cooperation, that cannot help but spill over into work attitudes.

An individual who is adept with one aspect of a system is more likely to approach all other aspects and functions with the sense that he can accomplish what he sets out to do, since he already has a history of success. It is the new user who has had no experience with computers who is most likely to have the fear of failure so much in mind that failure is almost assured. And each failure leads to an increase in frustration which leads to failure which leads to . . . It's a vicious circle.

Games also demand extremely precise input in order to be played properly, which causes the operator to concentrate more than he might with some of the more mundane office programs. The importance of precision of input is immediately apparent to the player. In many application programs,

(Continued on page 57)

## Word processing systems demystified!



Here is the first book to focus primarily on inexpensive microcomputer-based text-editing products, giving you a thorough rundown on this powerful new way to electronically generate, correct, and manage all kinds of typewritten documents.

### WORD PROCESSING PRIMER

By Julie Arca and Mitchell Waite

Coverage includes getting started, controlling the appearance of your copy, selecting equipment and programs (with an invaluable mini-catalog comparison of capabilities, features, and prices to make it all easy), and much more. This up-to-date guide also includes valuable appendixes that provide a glossary of terms, symbol and character charts, and a program called FRED (FIRst EDitor) that you can easily type into any personal computer. 200 pp., illus., \$14.95

### WORD PROCESSING BUYER'S GUIDE

By Arthur Naiman

Whether you're a novice or an experienced computer user, here's the guide that will help you select the best word processing system for your needs. It shows exactly how word processors work—and how you can push them to their fullest capacity. The book surveys currently available microcomputers and their word processing software, letter-quality printers, storage systems, terminals, keyboards, and video monitors. 250 pp., illus., \$15.95

### MICROCOMPUTER BUYER'S GUIDE, 1983 Edition

By Tony Webster

If you're in the market for a microcomputer, but confused by the conflicting, technically worded information on manufacturers' spec sheets, press releases, and catalogs, turn to this must-have volume. Its straightforward, uniform descriptions cover over 180 micro systems, allowing you to comparison-shop with ease. It contains the latest information on major suppliers and peripheral devices such as printers, add-on terminals, and much more. 384 pp., 200 illus., \$19.95

### HOW TO BUY (AND SURVIVE!) YOUR FIRST COMPUTER

By Carolee Nance Kolve

Don't be "taken in" by the hard-sell efforts or technical jargon of salespeople and vendor representatives. The extensive worksheets and checklists in this logically organized guide help you to identify computer requirements, costs, and benefits before you set foot in a store. This easy-to-understand volume details everything you need to know before buying, how to select the right computer and vendor, and how to ensure successful installation. 256 pp., 20 illus., \$14.95

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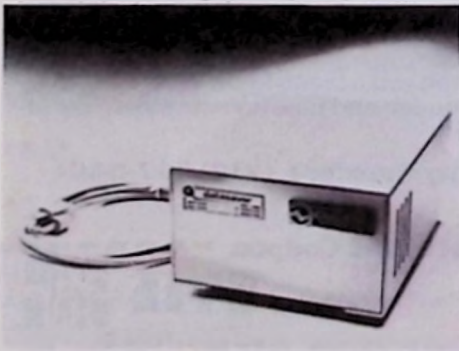


# New products

**A quick look at hardware developments for Kaypro computers**

**P**ower backup system. Designed to safeguard against unexpected power failures and brownouts, the Datasaver Power Backup unit is a battery-powered self-contained device compatible with all Kaypro computers.

Upon loss or interruption of power, the Datasaver switches to backup power within 1/100th of a second. A front panel indicator light and a buzzer alarm provide simultaneous instant alert when it goes into operation. The Kaypro will then run for fif-



teen to twenty minutes, affording the operator enough time to save data and shut down the computer correctly before any actual loss of AC power occurs.

The Datasaver's standard features include a rechargeable sealed battery, automatic battery charger, solid-state power inverter, AC line voltage monitor and cutout switch, visual and audi-

ble alarms, and a remote alarm signal for interrupt-driven computer applications.

There's a 90 watt model which will power the Kaypro II and a 200 watt model for the Kaypro 10. With the addition of an auxiliary 12-volt battery, users also can make their AC-powered systems completely portable.

Prices are \$395 for the 90 watt model and \$695 for the 200 watt model. Foreign power configurations are slightly higher.

Cuesta Systems, Inc., 3440 Roberto Court, San Luis Obispo, CA 93401.

**A**nti-glare screen. Screen Data Corporation's removable screen eliminates glare from overhead lighting, windows and other light sources, and fits easily over the Kaypro's video monitor.

The screen is a woven mesh of tough synthetic material mounted on a rectangular metal frame, sized to fit within the black bezel around the CRT and held in place with small strips of velcro. It will not interfere with closing the Kaypro for travel.

Characters appear on a sharp black background, which will help prevent the eye strain and fatigue that often accompany prolonged computer use.

It's available for \$34.95 with a 30-day trial guarantee from Capitol Sales

Company, 13740 Research Blvd., Austin, TX 78750. Or call their 24-hour toll free order line, 1-800-531-5255. In Texas, call 1-800-252-9146, extension 804.

**A**dd-on 8088 coprocessor board for the Kaypro II. Dramatic expansion of the Kaypro's capabilities is possible with the addition of the CO-POWER-88 plug-in board system—with no damage to existing hardware. The new board nestles conveniently behind the Kaypro's disk drives; it connects to the main board with a length of ribbon cable. Just lift out the Kaypro's Z-80 chip, insert CO-POWER-88's connector into the empty socket, replace the Z-80 in the new socket provided for it, attach two leads to the power supply, and you're ready to go.

CO-POWER-88 gives you the choice of running CP/M 2.2, as always, or of using either CP/M-86 or MSDOS as the operating system—allowing access to much of the software that utilizes those two operating systems (bear in mind the limitations of the Kaypro II's non-graphic video section). The basic CO-POWER-88 unit comes with 128K RAM, and an optional memory board can double the capacity to 256K.

*(Continued on page 63)*



# BASIC VS. JRT PASCAL:

A NO-HOLDS-BARRED COMPARISON.

**EASE-OF-USE** By dividing programs into modules, JRT Pascal makes even very complex programs—of nearly any size—a breeze to manage. Pascal code is self-documenting; program sections are identified by meaningful names, not line numbers. Error messages are verbal, not number codes. JRT offers 12 data types (to Basic's 2 or 3), and it has both regular and hex numbers.

**POWER** For power—the ability to write better, clearer programs, faster—Pascal is the run-away winner. Example: JRT simplifies programming by accomplishing complicated operations (for Basic) with one command:

<b>Basic</b>	<b>JRT Pascal</b>
IF AS = "V" OR	IF A IN ['V'..'Z'] THEN...
AS = "W" OR	
AS = "X" OR	
AS = "Y" OR	
AS = "Z" THEN...	

**FLEXIBILITY** JRT's wide variety of data types reduces programming restrictions. And the data types are not all fixed in size. There are 3 looping statements (Basic has 1). With JRT, very large programs can be created and run, because program modules can be spread over many diskettes. Common modules can be used for several programs. Basic generally limits strings to 255 bytes; JRT strings go up to 64K.

**EFFICIENCY** Whereas Basic relies on a static, inefficient memory map to allocate storage, JRT's dynamic storage fills every available main storage area; there's no waste. With Basic, sub-routine modules must be linked together; with JRT, they can be linked—but don't have to be. JRT's more powerful commands run faster; typically, you'll write Pascal programs 3 to 10 times faster than in Basic. Exclusive: JRT lets you directly access the CP/M\* operating system for better total system control.

**NOW...** Consider our copy policy. (If you want to make copies, it's OK with us—so long as they're not for re-sale.) Check our astounding price: \$29.95!—and satisfaction is guaranteed—or your money back. Basic versus JRT Pascal: which comes out on top? Right! The coupon below is for your convenience. Or call. Today.

Here's the real shocker!		
Features	Basic	JRT Pascal
Structured programs	No	Yes
Separate compiled modules	"Chaining"	Structured procedures with auto-loading & purging
Arithmetic precision	Usually 6 or 7 digits	14 digits
Indexed files	No	Yes
Maximum string size	255 characters	64,000 characters
Loop statements	1	3
Data types	Usually 2 or 3	12
CASE statement	No	Yes
Introduced	1965	1980
Price	???	\$29.95!

Full support for indexed files

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Facilities for formatting printed reports

File variables & GET/PUT

Dynamic arrays

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More than 200 verbal error messages

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to 45 Camino Alto/K2 phone 415/388-0530  
Mill Valley, CA 94941

Yes!—I want to take you up on your amazing offer. Here's my \$29.95; please send me JRT Pascal. I understand that I must be completely satisfied, or I can return it within 30 days—with the sealed diskettes unopened—for a full refund.

I need the 5 1/4" diskettes for

☐ Apple CP/M ☐ Kaypro ☐ Superbrain  
☐ Heath, Hard Sector ☐ Northstar ☐ Televideo  
☐ Heath, Soft Sector ☐ Osborne ☐ Xerox 820

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diskette.

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(California residents add Sales Tax. Postage paid within North America; outside North America, please add \$15 for airmail, or \$5 for surface mail. Checks must be in U.S. funds and drawn on a U.S. bank.)

Card # \_\_\_\_\_ Exp. \_\_\_\_\_

Signature \_\_\_\_\_

A 60K CP/M system is required. \*CP/M is a Digital Research TM.







# READ- at your own risk

When and how to raid the bookstore  
with a minimum of confusion

by Marvin Grosswirth

**F**orecasters and futurists have been predicting for some time that the age of the computer will bring about the gradual demise of the traditional book.

In the meantime, however, the popularity of personal computers is responsible for the publication of hundreds of books that are supposed to make it possible for you to use your hardware and software more easily and more efficiently. Unfortunately, the desire to help is, all too often, stronger than the ability to fulfill it.

The publishing industry has latched on to the vast potential of the computer market with a vengeance. Simon and Schuster, for example, recently paid a computer magazine an advance of \$800,000 for a series of ten books on personal computing. Doubleday has paid an advance of \$1.3

million to Stewart Brand, famous for the *Whole Earth Catalogue*. (The title of his anticipated book is, not surprisingly, *The Whole Earth Software Catalogue*.)

Clearly, then, the publishing industry is cashing in on the computer industry. This bonanza is expected to come from people like us, who have recently acquired personal computers and some software to go with them and who are now trying to derive as much use, benefit, and pleasure from our machines as possible. The most important question to ask, therefore, when confronted with this tempting literary smorgasbord, is: do I really need this?

In some cases, the answer is an unequivocal yes. Before I bought my computer, I checked with several friends and acquaintances about their systems. I particularly wanted to know about the problems they were having. Invariably, those problems derived from difficulties in understanding the "documentation"—the instructions that come with computers and soft-

ware. The standard complaint has been, for some time, that such documentation was being written by engineers, to be used by programmers. And, to a great extent, that complaint has been justified. More and more manufacturers and software suppliers are dealing with the problem and more recent documentation shows considerable improvement. Thus, while documentation is still far from perfect, it is better than it was.

It should be remembered, too, that part of the problem in understanding documentation is that a new user is confronted with what is essentially a new way of speaking. If one assumes that computing is a whole new concept, a whole new way of doing work, then it is also understandable that it would have with it a set of words, jargon, language that is also all new. There is, for example, simply no other term from general usage that can substitute for "function keys." A "modem" is a device developed by and for the computer industry; there is

(Continued)

*Marvin Grosswirth is a New York-based author and journalist who writes frequently about computers and who reviews books for Personal Computing magazine.*



no old, comfortable word that can take its place. It stands to reason, therefore, that anyone confronting computer handbooks or manuals for the first time will experience some difficulty. This is often compounded by the fact that the people who write these instruction manuals are primarily interested in getting information across and have little or no regard for the English language in general. Incorrect spelling, bad grammar, and improper usage all proliferate throughout almost all computer literature.

In general, computer books fall, loosely, into three separate categories.

1. Many books are intended for people who do not yet own a computer and who are thinking of buying one for business, professional, or home use. On the assumption that you already own a computer, we will completely bypass this category.
2. The second category consists of books intended to supplement, augment, and clarify poor documentation that comes from the manufacturer of a computer or software. Sometimes, such books are both justified and necessary—but not always.
3. Many computer books are intended to help an experienced user explore and exploit the potentials of his or her system. The market for such books hinges on the ambitions and aspirations of the user to use a computer for bigger and better things. (The vice president of a bank once told me: "Everybody starts out as a musician, but eventually, we all want to be composers.")

Let's have a look at the real or imagined needs of books to augment the documentation that comes with your system or parts of it. To begin with, whether the documentation is

poor or of high quality is an extremely arbitrary judgment. If you find the material easy to deal with, then for you the documentation is more than adequate. If someone else finds the very same documentation just a cut or two above complete gibberish, then for that person the documentation is lousy.

Before rushing out to buy a book with a title like *SpreadWord Simplified*, give your own documentation a fair chance. "Walk" through it a couple of times and become familiar with it. Since most of the supplementary material available inevitably refers you to the user's manual anyway, you might as well get the most you can from that manual first. No one should expect to have total comprehension of a hardware or software manual on a single read through. Most manuals contain a good deal more information than you really need or want, at least for the moment. My recommendation is that you read the manual all the way through once. Then, go back over those areas that are of greatest interest to you and that you need to know immediately. The trick is to do this with the computer turned on. Some of the most complicated procedures seem to become miraculously clear when you can work them out one step at a time on your keyboard and watch the results on the screen.

Once you have learned to perform the functions that you need immediately, I would suggest that you learn the rest of what your system can do more or less at leisure. Pick up the manual occasionally for a little light reading. When you have a few minutes to spare, play with your machine and try out some of the other niceties of the system. For example, with my own word processor, I didn't learn how to underscore until two weeks after I began actually using my computer, because that was when the need to underscore first arose.

Working one's way gently through documentation in this manner is considerably less painful and much more

rewarding than attempting to plunge in and get it all at once.

After all is said and done, however, we must admit that sometimes documentation does consist almost entirely of jargon and gobbledegook, especially with respect to some of the more sophisticated operations. If that proves to be the case with your own documentation, consider buying one of the many "how to" books available. As is true of software and hardware, you should try before you buy. There are several tests to which a book can be subjected prior to purchase.

First, find a section in the book that deals with an area of operation that you are quite familiar with. See how the instructions and descriptions compare with the same or similar instructions and descriptions in the manual itself. You will almost immediately be able to tell whether the supplementary book is in fact clearer and better.

This test can be reinforced with yet another. Check an area that you could not understand in the instruction manual. If, in the book, everything suddenly becomes clear, then by all means, buy the book and take it home.

The second important category of computer books consists of those that make it possible to expand and enhance your computer system. No manual, however complete or simplified, can include all of the applications to which your computer can be put. This is also true, although to a somewhat lesser extent, of most sophisticated software. The purpose of any manual is to get you into the system and use it at its most basic level.

Once you have those basics down cold, why not consider developing some skills and uses that can help you get more productivity and even a little fun from your computer? With a good tutorial you can learn graphics, you can learn variations on the applications of an electronic spreadsheet or word processing software, you can become an expert on computer communications, and even, when you have

(Continued)



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

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Unfortunately, some of the supplementary publications are as bad as—and in some cases worse than—the original manuals. I have found a number of books to be extremely disappointing in that their contents did not live up to the promise of their titles. As with anything you purchase in connection with your computer system, you should check out the book before you pay out hard cash. Here are ten tips that can help you determine whether a particular book is the right one for you.

1. As with the purchase of new software, first determine what your needs are and then look for a book that fulfills the need. Temptations abound. Looking through a catalogue, a computer magazine, or the computer department of your favorite bookstore, you are almost certain to come across one or more titles that look interesting. It is difficult to resist the impulse to buy such a book. In fact, as long as you can afford it, there's no need to resist the impulse. But impulse buying is not the same as careful shopping. If you are having trouble with your documentation, then you need a book that will help you to understand it better. If you have gotten everything you can from your documentation, and now want to grow a little with your system, then you need a book that will take you beyond the basics.
2. Check the copyright date or the date of the last revision. Given the rapidity with which advances in personal computers are being made, a book more than two years old should be avoided, unless it's the only one available on the subject.
3. Regardless of the purpose behind your purchase, use your own intu-

ition as a good criterion. Leaf through the book, look at the style in which it is written, see whether it is compatible with your level and style of comprehension. (Warning: In some books you will have to do this with the early chapters. As the book becomes more complex, the material will be more difficult to understand by an outsider who simply plunges in.)

4. Check over the table of contents. Authors of computer books have developed what is almost a compulsion to devote portions of their work to the history of computers and to a discussion of how computers work. The importance of such information in your scheme of things can only be determined by you. Bear in mind, however, that the more pages that are devoted to history and technology, the fewer pages that are devoted to specific applications.
5. Look over the illustrations. Some books have pictures of pretty computers with attractive people operating them. Perhaps such illustrations are included to relieve some of the tedium of the book itself. In any case, they serve very little purpose in an advanced text but to use up pages. On the other hand, a book that is loaded with facsimiles of "screens" which show you what results you should have after you complete a certain operation is one to be greatly desired.
6. Check the index. A long and detailed index is a good indicator of a careful writer. A short index or no index at all, however, is not a reason by itself to reject a book.
7. Look for self-teaching aids. Many authors have very cleverly included variations of a technique called "programmed learning."

This consists, more or less, of a series of quizzes or exercises at the end of each chapter or section. As you progress through the book, the questions become more difficult and eventually evolve into real workaday problems. This is an excellent way of reinforcing what you learn as you read through the book.

8. Don't overlook a book's physical characteristics. In particular, make sure that the type is large enough to read comfortably, particularly at the distance that you are likely to have the book when you are using it in conjunction with your computer. This is especially important in books that reproduce programs or sections of programs. For some reason I have as yet been unable to determine, some of the most beautifully printed computer books seem to find it necessary to use only dot matrix printers when reproducing programs. If you have had any exposure to programming, then you know that one typographical error can louse up a whole afternoon's work. Make sure, therefore, that the programs appearing in a book are very clearly legible.
9. Also take a look at the way the book is made. Ostensibly, because this is a kind of manual for a computer or for a software package, it will be subject to considerable use and abuse. A book that is not well bound will have pages floating off your desk by the second or third reading—pages that you may never miss and therefore, you may never know why you can't get the damned thing to do what the book says it will do. Ideally, a book should have a good, sturdy binding and be capable of lying flat on a desk. Spiral or ring binders seem to work best.

*(Continued on page 47)*



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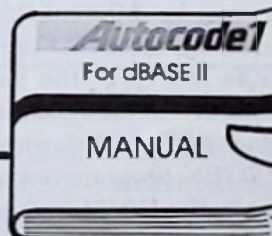
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# Reconfiguring your numeric keypad

**The Kaypro's calculator keypad can become  
a dynamite set of dedicated function keys  
—if you know a few little tricks**

by Ezra Shapiro

**T**he Kaypro keyboard has a lovely calculator-style numeric keypad that's wonderful for high-speed entry of statistical data. If the major portion of your work involves numerical computations, you're set.

However, if you do other things with the Kaypro, word-processing, say, and you're beginning to get tired of typing control-this and control-that, are you aware that this very same keypad might hold the, um, key to your salvation?

That's right. Those fourteen keys are *programmable*—you can change them easily to more convenient symbols, with the help of a utility program called CONFIG that's provided on your CP/M disk. It's a simple operation, but you'll have to immerse yourself in a bit of jargon before you can do it.

First, a brief explanation of how the keyboard works. Each key sends a unique code to the computer, where it is translated into a recognizable symbol before you (or your program) can see it. The 5 key on the keypad does

not generate the same code as the 5 key in the typewriter section. (You can prove this to yourself. Hold down the shift key and type a typewriter-5; you get a percent sign. Do the same with a keypad-5; aha!—another five, something must be different.)

The translation table that the computer uses to interpret the keypad codes is contained in the *system tracks* that you place on each disk when you use the SYSGEN program (on earlier Kaypros) or "write CP/M to the disk" (as explained by the current Kaypro COPY program).

CONFIG merely modifies the list of definitions for the keypad codes that's contained in the system tracks on a particular disk. Thus, you can set up different keypad definitions for different disks—a word processing keypad, a database management keypad, a programming keypad... whatever you want. These definitions are stored by the computer as *hexadecimal* numbers (in slang, *hex* or *hex codes*).

The hexadecimal number system uses sixteen digits, as opposed to the

ten we're familiar with in our common decimal notation. 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 retain the same values, but hex goes on from there: A = 10, B = 11, C = 12, D = 13, E = 14, and F = 15. In decimal, the number 10 would equal zero ones and one ten; in hex, the same two digits would mean zero ones and one sixteen. There are fully 256 two-digit numbers possible in hex, from 00 to FF—far more than the 100 available in decimal, 00 to 99. All the symbols the computer gets from the keyboard—upper- and lower-case letters, numbers, punctuation marks, and commands like "carriage return" and "backspace"—are contained within the first 128 places in the hexadecimal table we've provided.

Look at the table; you'll notice that all the recognizable characters appear in the last six columns. The first two columns contain cryptic abbreviations for computer functions. Some of these are more or less obvious; BS means backspace, HT means horizontal tab, LF means linefeed, CR means carriage return, ESC indicates the



The hexadecimal translation table. Numbers along the top edge represent the first digit of a two-digit hex number, numbers along the left edge represent the second digit.

	0	1
0	^P	
1	^A	^Q
2	^B	^R
3	^C	^S
4	^D	^T
5	^E	^U
6	^F	^V
7	^G	^W
8	^H	^X
9	^I	^Y
A	^J	^Z
B	^K	
C	^L	
D	^M	
E	^N	
F	^O	

	0	1	2	3	4	5	6	7
0	NUL	DLE	SP	0	@	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	\$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
A	LF	SUB	*	:	J	Z	j	z
B	VT	ESC	+	;	K	[	k	{
C	FF	FS	,	<	L	\	l	
D	CR	GS	-	=	M	]	m	}
E	SO	RS	.	>	N	^	n	~
F	SI	US	/	?	O	_	o	DEL

ESCAPE key, and so on. The other functions have their uses, too, but they're not really necessary for our purposes here.

Notice how the capital and lower-case letters appear in exactly the same pattern two rows apart. This is not coincidence, in fact, it's a rule: holding down the shift key subtracts hex 20 from the value of any lower-case character, yielding the value of the appropriate uppercase character. This rule only holds true for letters, but it never

varies—use of the shift key moves you two columns to the left.

The CONTROL key also acts as a shift key of sorts; holding CONTROL down moves you another four columns to the left. Try another experiment; type CONTROL-M. You'll get a carriage return.

This brings us to our second table, a listing of the first two columns as CONTROL functions.

You now have all the basic knowledge necessary to convert your keypad

The first two columns of the hex table as control characters.

(Continued)



## KEYPAD (Continued)

to explicit single-character function keys.

Place a disk that contains the CONFIG program in the A: drive and the disk on which you'd like the new definitions in B:. When you bring up CONFIG (just enter CONFIG followed by a carriage return after the A> prompt), select option 4 (numerical keypad definitions) from the main menu, and option 2 (change the numerical keypad settings) from the secondary menu.

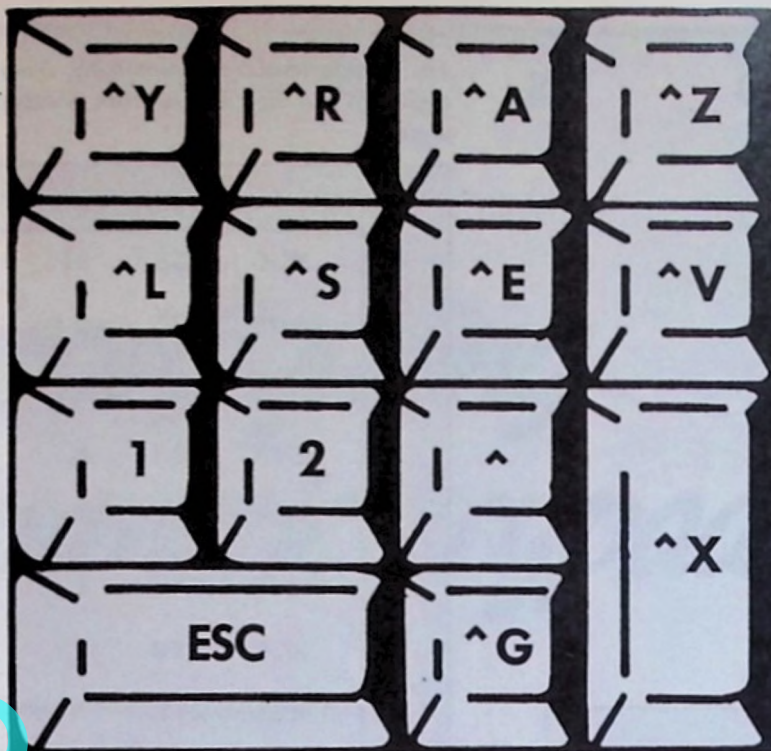
You'll see a diagram of the keypad. Shown beneath each number is its hex equivalent (see our diagram above). Follow the instructions to the right of the diagram, and enter new hex values for any key you wish to change.

If you want to use control symbols as they're employed by a program, follow our second table. Don't be concerned if our first table seems to indicate a contradictory meaning for the symbol; remember that this is a table of translations from key to hex to symbol. What the actual symbols *do* depends on yet another translation process, contained within any given program. The same symbol may command the computer to do entirely different things in different applications programs.

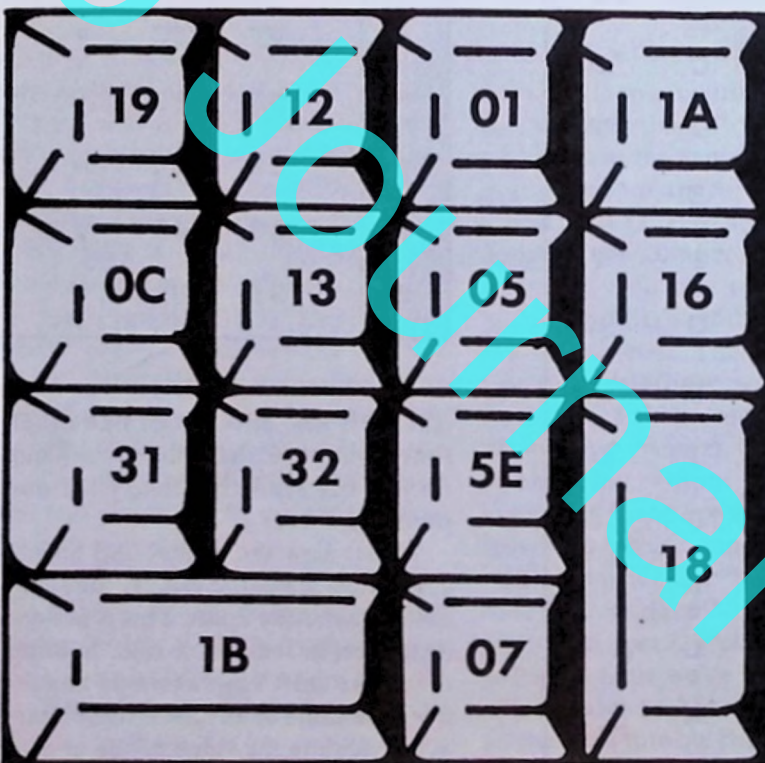
We've prepared a couple of examples, reconfigured keypads for both Perfect Writer and WordStar, to show you how you can set up the keypad to handle frequently used commands. You might want to rearrange the keys, or incorporate different ones . . . go to it. This is for *your* convenience.

When you've changed all the keys you want to change, follow instructions to exit the program. Place the reconfigured disk in the A: drive, push the reset button on the back of the computer, and your new keypad is up and running.

If you change A: disks and wish to return to the original keypad definitions, you'll have to hit the reset button again, likewise if you move from an unaltered disk to a modified one and wish to use the new definitions.



A sample Perfect Writer keypad. This one is provided by Kevin Karth of Portland, Oregon, but feel free to come up with your own variation.



The Perfect Writer keypad in hex.

(Continued)



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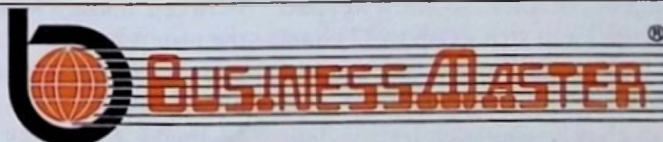
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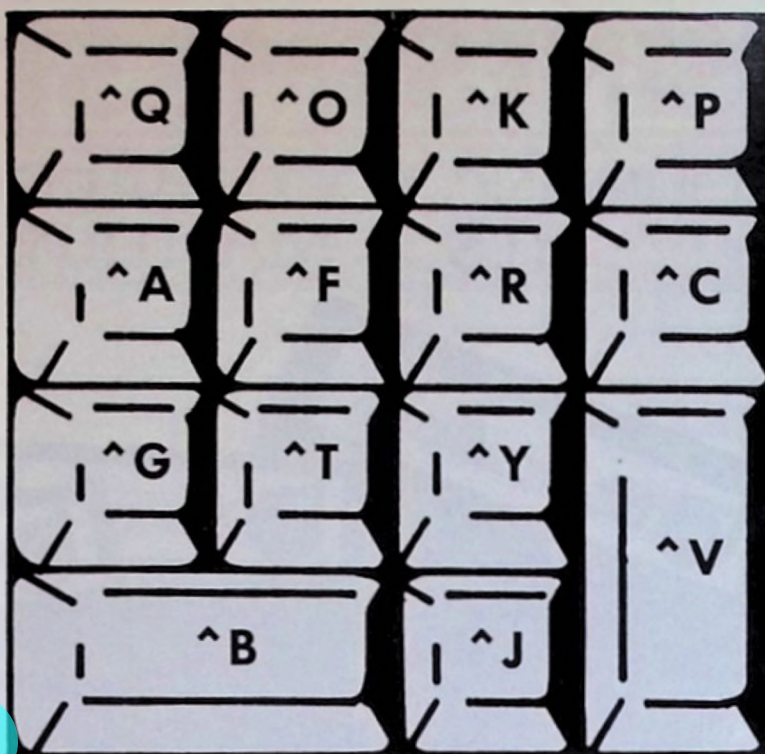
## KEYPAD

(Continued)

This is because the computer reads the system tracks into memory from the first disk that's placed in A: after the machine is turned on; in order to erase that memory image you have to "cold boot" the machine, either by turning it off and on again or by using the reset button.

You can set up as many keypads as you like (Be careful not to confuse yourself!), one per disk. But because of the memory situation outlined above, you won't be able to switch back and forth once you're into a program.

Note: if you have reasons to want to change the definitions of the cursor movement keys, another menu selection of CONFIG will do that for you. The procedure is exactly the same.



A Wordstar keypad. Same idea.

## Doing it in style—commercial programs

If single-character function keys are too limited for you, there are a number of programs on the market that enable you to program more complex operations. The programs range in price from about \$30 to \$60, and depending on your needs, may well be worth the price.

Perhaps the best-known of these is **Smartkey**, from FBN/Heritage Software, Inc., which will allow any key on the Kaypro keyboard to represent character strings of theoretically infinite length (anything from "?" to "PIP B: = A: \*.\*" to the entire first chapter of *Crime and Punishment*). This is particularly useful for programmers who can attach a favorite subroutine to a single key, but applications in everyday practice include every situation in which a command or a phrase will be needed repeatedly. The program is interactive, that is, you can change key definitions whenever you wish. Once you've loaded it, the program remains resident in memory even when you're running another program. Thus you can change keys at will, without having to interrupt what you're doing. From Heritage Software

Inc., 2130 S. Vermont Ave., Los Angeles, CA 90007.

A second program, from Steve McMahon, is so new it doesn't have a name as of our deadline. The program is limited to redefining the numeric keypad and the cursor keys, but it accepts strings up to fifteen characters in length. And it uses the keypad hyphen key as a "supershift" to give you two sets of definitions for the other seventeen keys. You can construct a more than adequate command set out of the thirty-four positions; if you wish, you can have both a numeric keypad and a set of function keys simultaneously. It isn't interactive, though; you'll have to wait until you exit from your application program to load new definitions. Steve McMahon, 2208 Grove, Apt. 7, Berkeley, CA 94704.

**K-Key**, from Perfectly Usable Computer Kits, is a somewhat more sophisticated program that includes key redefinition among its features. It changes system tracks to allow keypad keys to represent strings up to 32 characters, but you're limited to a total of 124 characters total for the keypad. It will also change single-character defi-

nitions for up to 32 keys on the main keyboard. It's essentially a souped-up CONFIG; if you wish to change definitions, you'll have to leave not only the applications program, but the disk itself. **K-Key** actually has more functions than keypad manipulation—it can define serial port parameters, turn off the key click, enable auto-loading of programs on boots, automatically shut off both drives and screen after a preset interval, and so on. **PUCK**, 526 E. Smith St., Suite 294, Kent, WA 98031.

**PluPerfect Writer**, a program that patches both the CP/M system tracks and Perfect Writer to provide a series of enhancements for that word processing program, also provides limited keypad redefinition. While running the word processor, the operator has a choice of a standard numeric keypad or a special keypad that can be programmed to accept PW commands of two-stroke length, and can toggle between them. Outside the program, the user is back to normal, i.e., the keypad can accept only single-stroke definitions. PluPerfect Systems, Box 1494, Idyllwild, CA 92349.

—E.S.



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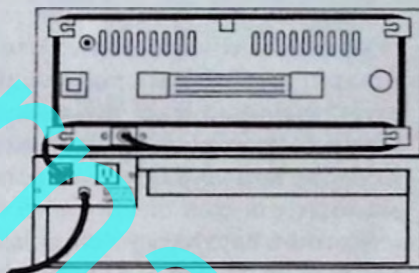
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# Calling for help

When all else fails,  
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by Alan Simpson

**S**oftware dealers often promise amazing results at the touch of a button, with commands written in plain English. Entering "PRINT 2 + 2" may be simple, but telling your computer to create an accounting, inventory and payroll system specifically designed for your business isn't.

Let's say you're interested in developing relatively complex uses for your computer—fast—and you don't have the time to learn programming, or you don't want to be bothered with it. Or perhaps commercial software products you own or have seen don't seem to be capable of doing the job. You may be in need of a qualified software designer.

For most people, picking up the phone and calling a consultant is the

most difficult step. The term "consultant" is intimidating and sounds expensive. However, a computer consultant is no different from a plumber or gardener who comes to your house and provides a service for a fee. Believe it or not, many computer consultants charge less per hour than plumbers.

People often fear software consultants, a disease I call consultant phobia. They feel uncomfortable because they've read all the ads that tell them programming is simple; any of my programming students can tell you that's a false impression. It may be easy once you've mastered the skill, but it can be anything from extremely boring to painfully frustrating to learn, especially if you have another career or are running a business. It's ironic that only my clients who are absolute beginners are embarrassed to admit they need help. The experienced software development firms don't flinch at hiring me. They know it's cheaper than retraining their own staff in a new area.

Some new clients are also afraid that consultants will cost too much. While it's easy for most of us to esti-

mate how long it will take a plumber to fix a faucet, most computer users can't gauge the time it will take for a consultant to install a new program. Furthermore, people still see computers as enormously expensive and difficult to use. That's not really true these days. Microcomputers are relatively easy to use, and current sophisticated programming languages often make custom software development a breeze.

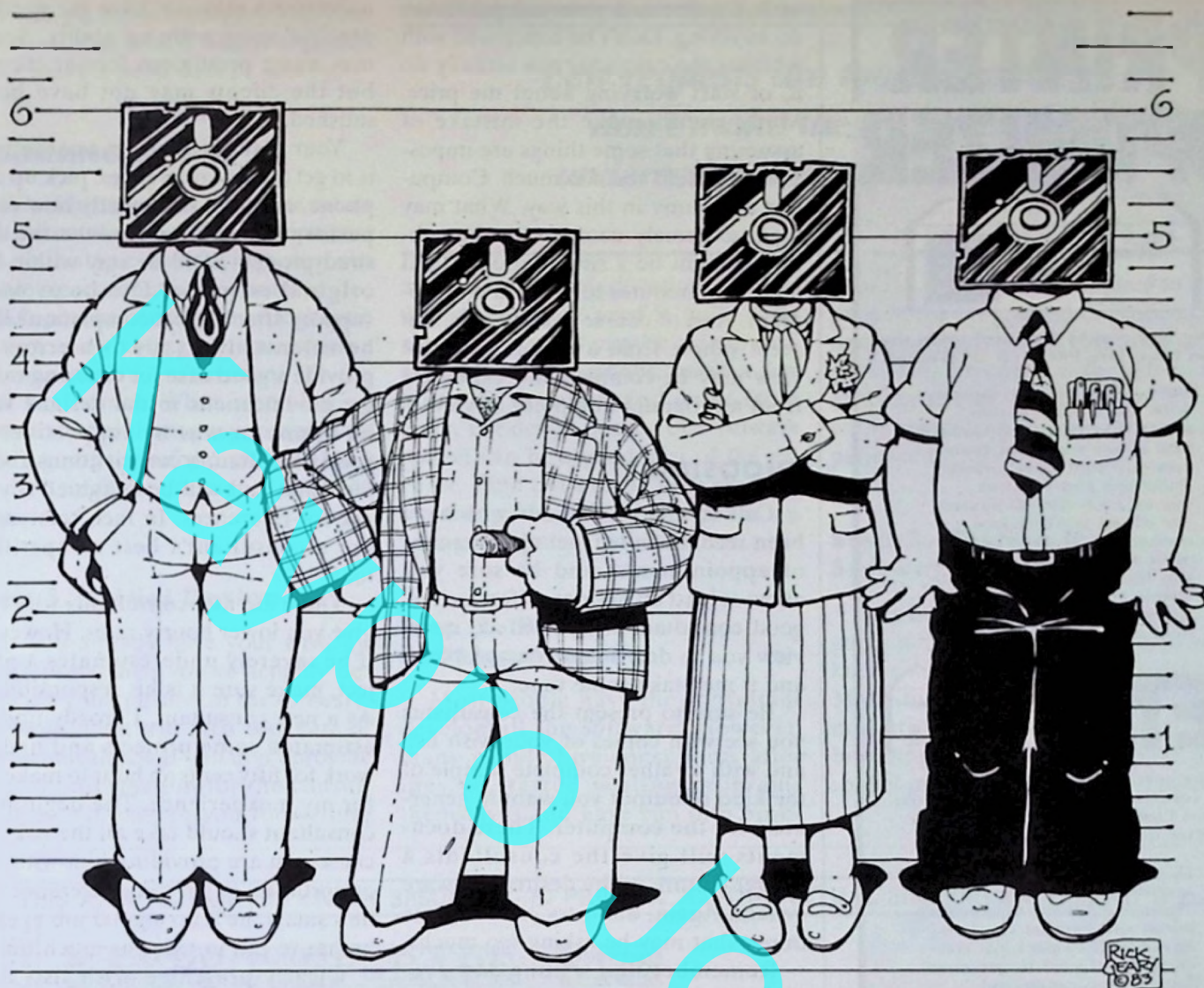
For example, the "half-dayer" contract (as it is called in the industry) is common. A professional consultant with experience and a library of pre-canned routines can often put together a custom software system in half a day. My own record short-term consulting contract lasted only 20 minutes, when I modified a mailing list system to handle 4-up labels rather than single width. The bill? Ten dollars.

## FINDING A CONSULTANT

There are many ways to find consultants—check out all your options. The yellow pages and other advertising media are obvious methods; however, there are more ways to

*Alan Simpson, M.A., is a free-lance consultant in San Diego specializing in custom microcomputer software development. His clients have ranged from independent businessmen to large government contracting firms. Alan also teaches programming courses at UCSD extension and at San Diego State University, as well as privately in several San Diego firms.*





find independent consultants who specialize in microcomputers.

1. Local computer users' groups. Most consultants keep in touch with local computer clubs. They often head special interest groups, publish or advertise in the club newsletters, or stay in touch with computer groups' presidents or editorial staffs. Groups can often be located by checking with local computer retailers or looking through the "Computers" column in the classified section of the most major Sunday newspaper in the area.
2. University programs. Many freelance consultants teach part-time at colleges and universities as a means of gaining exposure and

credibility. Check the teacher descriptions in your college catalog and call the university for phone numbers or further information. Don't be intimidated by the fact that they teach at a university part-time; remember, consultants have to eat too.

3. Computer dealers. Most consultants make acquaintances with salespeople at appropriate computer shops and leave cards. It's an obvious way to drum up business.
4. Professional contacts. Talk to people in your line of work who own computers; you might be surprised at how many of them have been down this path before you.

Get as many leads as possible before you start shopping around. A consultant who knows that you have a few more calls to make prior to setting up an interview will be more responsive to your needs. And most consultants enjoy competing for contracts.

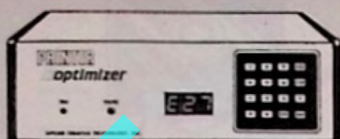
### GETTING STARTED

Whenever potential clients nervously call me on the phone, I first ask if they have anything down on paper. The answer is usually no. Instead, they prefer to give me verbal thumbnail sketches, and then ask me exactly what the costs would be. It is impossible for a consultant to give even a rough estimate based on such results.

The best thing to do prior to contacting any consultants is to create a  
(Continued)



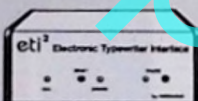
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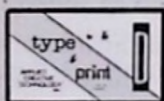
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wish list. Pretend your computer can do anything. Don't be concerned with whether the computer can actually do it, or start worrying about the price. Many clients make the mistake of assuming that some things are impossible or would cost too much. Computers are funny in this way. What may seem extremely complex to the neophyte might be a simple routine that takes two minutes to write into a program. And of course some things that seem simple from a manual point of view may be complex and expensive from a programming point of view.

## CHOOSING

Call several consultants who have been recommended; set up a number of appointments—and be sure you allow at least an hour or so for each. A good consultant will, in effect, interview you to determine your problem, and it may take some time.

Be sure to present the consultants you see with copies of your wish list, and with a rather complete sample of the kind of output you want to generate with the computer. These documents will give the consultants a clearer picture of the desired software system. Again, don't try to anticipate things that may be asking too much.

Remember that writing down requests is not a commitment. A good consultant will give an estimate and then point out those routines that are too costly. And note: if a commercial program of which you are unaware will satisfy your needs, a professional will tell you about it. There's no need to reinvent the wheel.

Getting a number of free estimates can help you reach a final decision. Most consultants are willing to sit down and chat about possible contracts without charging you. It can't hurt; in fact, you may learn a few things.

The title "consultant" doesn't guarantee that someone is the best person to do your custom work. You've got to hire someone you can trust, and all consultants have their flags to wave. Those who claim twenty years experience on mainframe computers may have had little to do with microcomputers. Others who teach part-time at

universities may not have the needed practical programming ability. Some may name prestigious former clients, but the clients may not have been satisfied.

Your best bet in hiring a consultant is to get a list of references, pick up the phone, and find out exactly how each performed. Did he produce the desired product? Did he stay within his original estimate? Did he provide support after project completion? Did he voluntarily fix his own errors or provide a good case for charging extra for modifications to the design? Was he uppity or was he supportive? A good consultant is conscientious about his work, and will be delighted if you ask for references. In fact, references are a consultant's best competitive tool.

There are new consultants who can give you lower hourly rates. However, if he severely underestimates a project, make sure it is his responsibility. As a new consultant, I grossly underestimated some projects and had to work for fifty cents an hour to make up for my inexperience. The beginning consultant should take all the risk because you are providing him with the opportunity to get some references. If he's smart, he'll do a good job even if he has to put in twice as much time.

Clearly-presented wish lists and documents assure fairer consultant bids. Nebulous requests often produce overpriced estimates because the consultant has little to go on. An experienced consultant will only charge a set contract price if he has something concisely explained on paper. Hourly rates won't help you determine total project cost. If all your potential consultants tell you they can't give you a fixed price, your wish list needs more specific facts.

Always discuss any marketing rights before the total fee is decided. If you think your software project could be used by others in your business or profession, you may have a valuable asset. Be absolutely clear on your rights if you plan on selling it. If you don't plan on marketing, tell the consultant he can have complete marketing rights as part of his payment. The consultant may then be willing to work for a lower fee because you are



providing him with insights into your business from which he could potentially make a good deal of money.

## PLANNING AHEAD

When hiring a consultant, be aware that the software development process has four steps: design, figuring out what the computer is going to do; development, writing the programs; testing and debugging; and writing documentation, instructions for the user's reference. When interviewing potential consultants, try to agree on who is going to perform what. There is no need for the consultant to do all the steps.

### Step 1. Initial Design.

If you already have your wish list and reports, then you've actually designed a good portion of the software. The consultant will then take care of the technicalities. If you don't provide enough information for the consultant, he will charge you for writing

more complete specifications. Unless the program you need is quite complex, however, he may be able to simply ask a few questions, make a few notes on the spot, and work from there. The design portion of a software project can be a good part of the expense. Find out exactly how much, if anything, the consultant plans on billing for design.

### Step 2. Program Development

Most people have the consultant develop all the software. However, many people hire consultants after they've started writing programs themselves and have run into prob-

lems. If this situation applies to you, present the program to the consultant, and ask what it would cost to fill in the gaps. This process has the advantage of using less of the consultant's time, while providing an educational experience for the client.

### Step 3. Testing the Software

It is better to have someone who is going to be using the software, or who knows the business, test the software. Make the consultant's job limited to making the software run without bombing out, and use in-house personnel to find the little bugs. The con-

(Continued on page 60)

*Few requests are too outlandish;  
don't make the mistake of  
underestimating the computer.*

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Includes Payroll	YES	NO	YES	YES	YES
Fully-Integrated	YES	YES	YES	YES	YES
Ready-to-Run	YES	YES	YES	YES	YES
Audio Cassette Tape Start-up & Training Aid	YES	NO	NO	NO	NO
System "Road Map" Guide	YES	NO	NO	NO	NO
Free Users' Newsletter	YES	NO	NO	NO	NO
Source Code Included At No Extra Charge	YES	NO	YES	NO	NO
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—Luke Crawford  
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3. Chart of Accounts with prior year comparisons
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7. Balance Sheet with prior year comparison
8. Income Statement
9. Income Statement with prior year comparison
10. Departmental Income Statement(s)
11. Departmental Income Statement(s) with prior year comparison
12. Detail report for individual accounts
13. Trial Balance Statement

##### Accounts Receivable

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2. Invoices (with or without pre-printed forms)
3. Statements (with or without pre-printed forms)
4. Summary Aging Report
5. Detailed Aging Report
6. Itemized Monthly Transactions
7. Detailed Cust. Activity Report
8. Summary Cust. Account Report

##### Accounts Payable

1. Daily Voucher Report
2. Daily Credit Report
3. Checks with Detailed stubs
4. Check Register
5. General Ledger Transfer Report
6. Cash Requirements Report
7. Transaction Register
8. Open Voucher Report
9. Aged Payables Report
10. Detailed Vendor Activity Report
11. Summary Vendor Account Report

##### Payroll

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3. Payroll checks with stubs
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Acct'g Module	Master File Capacity	Transaction Capacities per month (approximate)		
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GL	400 Accounts	1,000	3,500	7,000
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AP	400 Vendors	800	3,500	7,000
PR	400 Employees	—	—	—

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# They don't show the paperwork on TV

A real-life Rockford gets an assist from an electronic sidekick

by Charlotte Lowrie

Clark and Associates, a small private investigation agency, has all the makings of a classic television private eye series. The location itself is made for TV. Situated in the heart of downtown Houston, the offices are on the fourth floor of the old Cotton Exchange building, a luxurious marble and brass-appointed landmark that speaks of quiet elegance and glamour. Inside, the thick pile carpeting and rich mahogany furniture muffle the activity of Joe Clark, licensed private investigator, and his staff—Gary Clark, his son and partner, Patrick Rogers, Rosco Robinson, Kay Garrett—and a Kaypro II.

Clark himself, tall and trim with sandy blond hair, a graying beard, and alert eyes, has an appealing blend of down-home Texas confidence and street savvy that translate into a Willie

Nelson charisma. He seems equally at home leaning back comfortably in a well-padded office chair recounting tales of former days as a Texas trooper, or directing an investigation to locate an unknown witness to an early morning car collision.

But that's where the likeness between television and reality ends, according to Clark. If one wants to draw parallels between televised heroes and the real thing, Clark says the most fitting model in 85 out of 100 cases is Jim Rockford of the series, "The Rockford Files."

"Except for the shooting and fighting, Rockford is very typical," Clark says. "A sleazy kind of guy who lives with his alcoholic old daddy and who works for clients who never pay their bills. Rockford works the nightclub circuit, and when you do that you are not in your best decision-making mode all the time.

"He's single, which is also typical because most private investigators are either not mentally stable enough to get married or they're not reliable

enough to stay married."

Clark's tongue-in-cheek characterization aside, he maintains that the remaining 15 percent of the nation's private investigators are neither as rich nor as glamorous as "Magnum, P.I.," but are, rather, simply very good at uncovering people and things; such things as missing persons, witnesses, kidnapped children, heirs to multimillion dollar estates, and the activities of estranged spouses.

Nor is the art of sleuthing mysterious, sneaky, or secretive. "What we do is something anybody can do," Clark says. "Generally if you were looking for your long-lost cousin, you could find him just as easily as we could. But if you're earning \$1500 a month and your job requires you to be at work eight hours a day, five days a week, when do you have time to search through the records? And the time we spend searching through the records might take us thirty minutes, but it will take you three weeks. Official records are what we live by and

(Continued)

*Charlotte K. Lowrie, a freelance writer based in Dallas, specializes in writing for the data processing industry. She currently edits a monthly trade magazine for mainframe computer users.*







you have to learn how they work."

There is also no such thing as "having no leads." According to Clark, "Everything begins somewhere."

"All you have to do is find the right string, then keep pulling that string until you bring up the prize on the

In a nutshell, the tools of the trade are experience, persistence and, in Joe Clark's case, his Kaypro II.

For Clark, both the experience and philosophy necessary to build a successful investigation agency came from his days as a Texas Department

pride," Clark explained. "so you must respect people for what they are rather than dwelling on what they're not—and if you do, people will respect you."

If being a patrolman was the best job Joe Clark ever had, being a patrol sergeant was the worst. The promotion, however, proved to be both a bane and a boon.

Among his responsibilities as patrol sergeant was the investigation of complaints made by the public against his patrolmen. "If a highway patrolman is out in the middle of nowhere and stops you on the side of the road, and later you complain that he was rude to you, well, it gets to be a swearing match," Clark says. "You are saying he was rude and he is saying he wasn't. Well, it was my job to make a report—on which a decision would be based—regarding whether the patrolman was to be penalized or exonerated.

"I needed some means of finding out whether the complaint was true or not. It was a matter of dragging witnesses out of the woodpile, finding somebody who might have seen or heard the incident," he explains. And although Clark did not enjoy inves-

***"Most private investigators are not mentally stable enough to get married or they're not reliable enough to stay married."***

other end," he says. And these "simple" methods work whether Clark is looking for the natural mother of a 25-year-old adopted daughter, or locating a wife who went to a local honky-tonk, picked out a new boyfriend, took him and the two children, her husband's Rolls Royce, a half-million dollars in silver and gold, and skipped town.

While investigation methodology may harbor no deep, dark secrets, it does help to know what you're doing.

of Public Safety highway patrolman. Clark remembers those six years of patrolling Texas highways and back roads as "the best job I ever had.

"I never hit anyone, I never got in a fight, and I never had to pull my gun or shoot anyone," he recalls. And he attributes this record to his philosophy first as a patrolman, and later as a private businessman. "It's my philosophy to remember that every individual, regardless of his state in life, has his own

# KAYPRO

## "KONFUSION?"

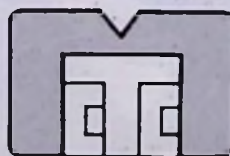
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tigating his patrol staff, it was this sort of experience that gave him the background he would need as a private investigator. As it turned out, Clark's final break with the Department of Public Safety came as a result of his involvement in local politics, one of the "thou shalt nots" of the DPS.

Following a short stint with the constable's office, Clark set out to open his agency. He chose a building occupied almost exclusively by attorneys, took the elevator to the twenty-fifth floor and started down the stairs, knocking on doors on the way down. By the time he reached the eleventh floor, Clark had more business than he could handle.

"Of course, I was working too cheap, and I was working for lawyers who didn't pay their bills well," he said, "but I doubled my income the first month and never looked back."

Clark continued through the peaks and valleys of business cycles, always looking for ways to increase efficiency and volume and playing off his natural entrepreneurial spirit. Thus, when neighbors in his office building bought a Radio Shack TRS-80, Clark's interest was insatiable.

"That computer was magnificent," Clark remembers. "They had an entire room devoted to it, and remember, at that time it was a pretty fantastic thing for a businessman to have his own computer. But I knew from that moment forward, my destiny was decided. I would have a computer, it was just a matter of getting to that point."

Clark was quick to see the applications a computer would have in his business. In addition to easing such standard chores as accounting and bookkeeping, the computer could revolutionize the reporting process, the vital link in a private investigator's business, and the part of investigating that few relish.

"Working investigators enjoy investigating," Clark comments. "They like hanging around the bars, flirting with the women, following somebody around—the exciting part, that's fun. But when we get back to the office to sit down and say we talked to Sara Jane and Mary Lou and Nick the bartender, well, that's a bore."

But whether it's boring or not, re-

porting is the product that private investigators sell. "The physical act of investigating is the easiest part, but there are two difficult parts surrounding it. One is sales—getting the business in the front door, and the other is reporting—getting the business out the back door and getting the money in.

"Now if I send a person out to gather information and he messes it up, I can just send another person. And I can do this over and over if I have to. But if I send a big-time attorney a report that is erroneous, or

full of misspelled words, or sloppy-looking, I can't undo that," he continues. "That is permanent, total damage. I may have lost a customer irretrievably. So reporting is everything—it's the finished product."

Despite the potential of the computer, the market was young and undeveloped at that time. Clark had started with an IBM Selectric typewriter, later moving to a \$5,000 IBM Memory 100. The Memory 100 was "invaluable," but it lacked the flexibility Clark wanted.

(Continued)



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He continued his research as the micro market expanded. About the time Clark had decided to buy a \$7,000 Apple office set-up, he noticed an ad for the Kaypro II. With a price tag of \$1795, he quickly shifted gears.

ter bug, Clark set up his new Kaypro with high expectations. "I anticipated it would do miraculous things—things which didn't come to pass. But at the same time, I was expecting more than anyone had a right to expect," he ex-

*He took the elevator to the 25th floor and started down the stairs, knocking on doors on the way down. By the time he reached the 11th floor, Clark had more business than he could handle.*

"The price not only changed my mind," Clark says, "it revolutionized the whole idea. Suddenly I went from \$7000 to \$3000, and what's more, in this business portability is important." Clark had earlier ruled out the Osborne because the screen size was "too small for my weak eyes and the 50-character width was technological idiocy to me."

Having been bitten by the compu-

plains. "I anticipated being able to do all my word processing, all my book-keeping plus a lot of data sorting on the Kaypro."

With computers, as with investigation, however, everything begins somewhere. And in the beginning Clark remembers spending long days and weekends, "every spare hour," learning CP/M and trying to do different things with the Kaypro.


One of the first steps, on a recommendation from his dealer, was to join a local Kaypro users' group to share frustrations, ideas, and solutions with fellow novices. Although Clark now attends the group with fewer questions about the system, he still finds the support valuable.

"There are many people in my users' group who are using MicroPro software instead of the Perfect software, as I am, and there are other people using their Kaypros for business purposes, so I can call them up and exchange ideas," Clark says.

Early on, however, Clark's difficulties centered around the original software shipped with the hardware. While the system was "easy enough to learn to use," Clark says, "it was hopelessly inadequate and I never did get it to configure with my printer even after I took it back to the dealer."

In the interim before Perfect Writer became available for the Kaypro, Clark switched to MicroPro software, beginning with Wordstar and later expanding it to include Spellstar, Mailmerge, Supersort, and Infostar.

As a result of some previous ex-



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


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posure to Wordstar, Clark was able to move quickly into word processing. Within weeks, he noted improved efficiency and productivity in both critical areas; getting the business in the front door, and subsequently getting the paperwork out the back door.

"Now we use the word processor constantly; we create files with it, generate reports, send out letters, do personalized direct mail advertising, and virtually do our own typesetting with it," says Clark. "If I tried to do the same thing with a typewriter, the cost in employee time would be prohibitive."

The Kaypro II also gives Clark a professional edge. He estimates that there are approximately 100 licensed investigating companies in Houston. "I know of maybe six that have word processing machines and those are used strictly for typing," he says.

By contrast, Clark has automated his subpoena service. Rather than having to start from the beginning with each new document, Clark uses a simple merge-print program. When an attorney calls requesting a subpoena, Clark calls up the program and the computer automatically asks him to fill in the blanks—case number, style of case, court, person subpoenaed, address, place and time to appear, etc.

Although Clark originally anticipated using the Kaypro for data and file sorting, he is still looking for a way to make those functions practical and efficient. "Currently, files are stored by client name," notes Clark, "but in the future we'd like to have the ability to research files by some other criteria; to research, for instance, the file of all white males over 21 years and under 35. But this kind of sorting is just not practical with limited storage."

Further, the functions are more work than expected. "It is much more of a chore than I anticipated it being," Clark said. "I thought that once I entered the data into the computer, I'd be able to call it up in almost any form that I wanted. That is not practical for many reasons, not the least of which is that the storage is too limited."

While Clark has considered a hard disk expansion, his visions of data sorting and cross-referencing go far

beyond a simple 10 or 20 megabyte upgrade. He also envisions the day when data entry will be as simple as passing a light pen over a telephone directory to enter a massive data base for subsequent criss-crossing and

having a \$100 million data base system of cross-referenced public information, Clark's initial foray into computerization has paid big dividends. In addition to clerical savings, the Kaypro II has "at least tripled our

---

*"I anticipated it would do miraculous things—which didn't come to pass. But at the same time, I was expecting more than anyone had a right to expect."*

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cross-referencing with related public-access information.

Until then, however, Clark would like to add more Kaypro computers and good communications hardware to his office so that when an investigator is sent out of town on assignment, he could take along a Kaypro and transfer back the information via modem. And telecommunications facilities would give Clark access to both local and nationwide data bases.

Even with a grand vision of one day

capacity as well as having become indispensable."

Joe Clark leans back in his chair reflectively. "What would I do with a typewriter?" He smiles. "It would cripple me. In fact, I don't allow things to go out of the office—with the exception of perhaps an envelope—that have been typed on a typewriter because there's too much possibility of error.

"I guess it's true—you can never go home again."

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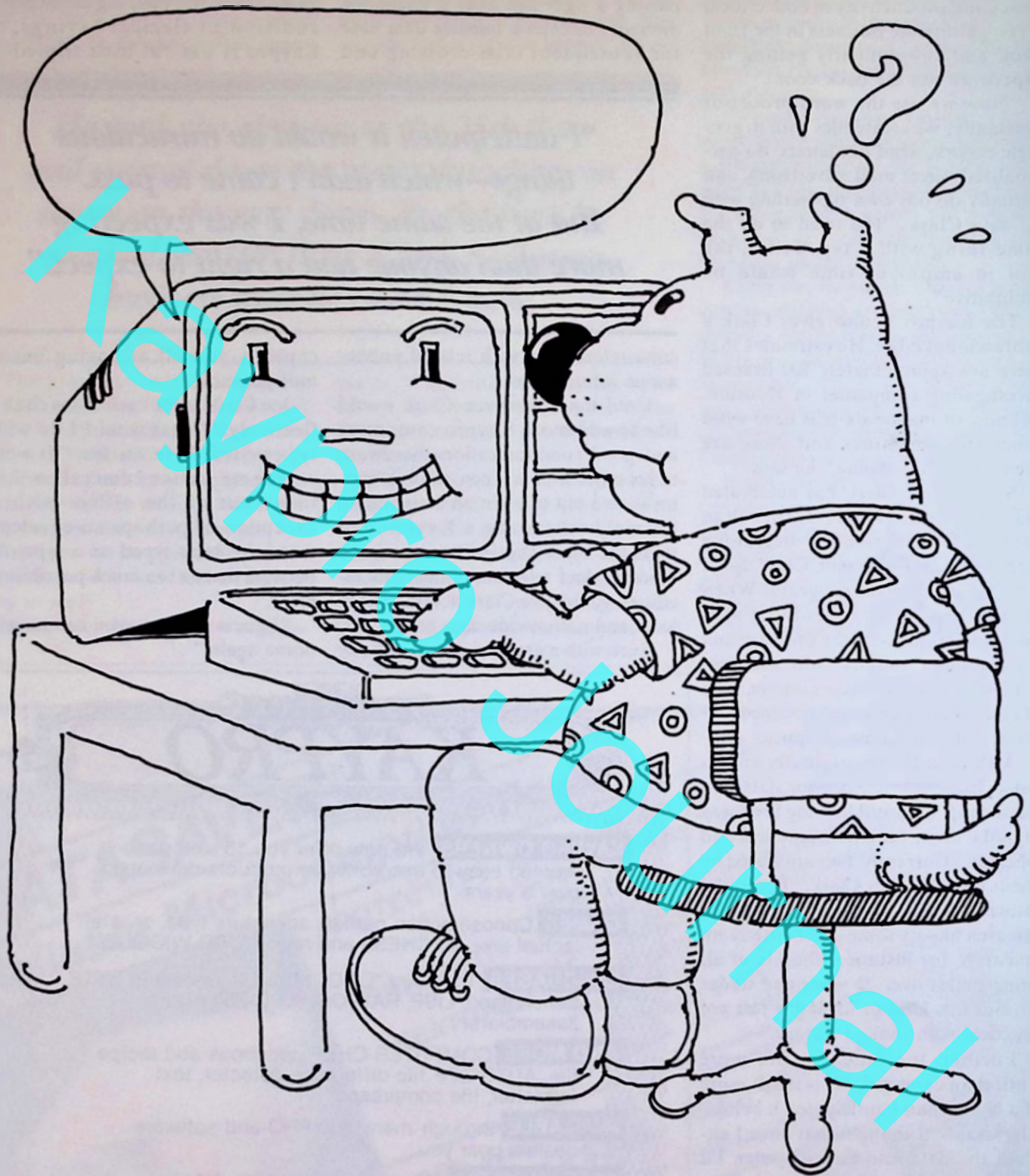


ILLUSTRATION BY KIMBLE PENDLETON MEAD



# What do you say to a computer?

Part one of a series on  
choosing a programming language

**T**here are basically two types of computer operators in the world today, computer users and computer programmers. A computer user is an individual who purchases a computer and uses the programs that come with it, or perhaps buys additional programs to suit his or her needs. The programmer is the individual who creates such programs.

There are so many "packaged" computer programs floating about these days that there is no need for most of us to become programmers. Yet many people would like to gain programming skills. Why? For one, when a computer user needs a program to perform a specific task, he often needs to shop around a great deal to find an appropriate program. In some cases, the packaged program does exactly what the user wants. In others, it's pretty close, but not quite. Quite frequently, the user just has to make do.

When a programmer needs a program to do a specific task, he just creates it and makes sure it does exactly what he wants it to do.

Some individuals want to learn to

program as a career, others as an adjunct to present careers. And still others are just plain curious about how a small machine with a TV and a typewriter attached can do all the things it does.

Computer programming is not a particularly easy skill to master. Contrary to popular myth, however, this is not because the computer is terribly complex, nor does programming require any knowledge of mathematics.

Learning to program is difficult because computers are too simple. Or, more exactly, too simple-minded, if you will excuse the anthropomorphism. Explaining a fairly simple concept to a computer is not unlike trying to teach plane geometry to a 3-year-old. It is possible, but it takes a lot of explaining and a good deal of patience. As far as math is concerned, it takes no more mathematical skill to create a program to manage a mailing list than it does to fill a shoe box with 5 X 7 index cards with names and addresses on them.

The major obstacle in learning to program is that it is a task unlike most of the other tasks that make up our

daily lives. As adults, we "learn to learn" by applying new information to knowledge we already possess, by building upon our current expertise.

This is not the case with programming. We must start from scratch, from "day one." There is no fund of knowledge of our own to build upon, as the logic of computers is not much like the "logic" of life. To us, words and phrases have "meaning." We can spot an address or a zip code on a mailing label simply by its context. To computers, all such things are utterly meaningless. To learn to program, we must unlearn all the meanings we have acquired over the years, as the computer has no capability to understand such definitions. We must learn to view names, addresses, zip codes, part numbers, account numbers—virtually everything in life—as meaningless groups of letters and numbers, in order to tell the computer how to manage such information. And we must learn new ways of handling such information so we can provide appropriate instructions to the rather mindless computer.

(Continued)



## LANGUAGES

(Continued)

What is the motivation for learning to program? Usually, the desire to solve a specific problem is not sufficient. It's easier to buy a program that's close enough, or to hire a consultant.

Instead, most accomplished programmers are individuals who originally wanted to learn purely for the sake of developing the skill. Typically, they are individuals who developed a fascination, indeed an addiction, to programming early in the game. Such addicts are often called "hackers" or even the more dubious title, "nerds." These are the people who spend long hours of spare time at computer terminals thinking up ideas, and ways of programming those ideas into computers, for the sheer joy of watching computers respond. During this time, most of their friends are at the beach, eating a decent meal, or getting a good night's sleep. At some point, the hacker begins getting some real mas-

tery over the computer, which earns him the title "whiz" from colleagues. The whiz still pounds away at the keyboard in his spare time. The more conservative title, "programmer" comes about when one starts doing these things for a living. By that time, programming for fun often ceases abruptly.

What makes programming fun? What are the rewards that the accomplished programmer can expect to gain from his skill? Some are obvious. It pays well, and there is sufficient demand that one hardly ever worries about employment, or even self-employment as a consultant. Another is that the programmer has mastery over the computer, rather than vice versa. The frustrations experienced by the beginning or even casual computer user are but unpleasant memories to a fluent programmer. A good programmer can make a computer do virtually anything (well, almost anything).

At a more subtle level, there are other satisfactions that programmers derive from their hard-earned abilities. Frederick P. Brooks, Jr. discusses these nicely in his book, *The Mythical Man-Month*.

First is the creative aspect of programming, the sheer joy of making things. Just as the child delights in coloring a picture, the adult enjoys building things, particularly of his own design.

Second is the joy of making things that are useful to people. Creating a program to perform a task might be fun in and of itself, but there is an added element of pleasure in watching somebody else obtain real benefits from that creation.

Third is the fascination of putting together lots of tiny interlocking little pieces of logic, and seeing them played out in harmony by the computer in a way that somehow goes beyond the sum of its parts. The programmed

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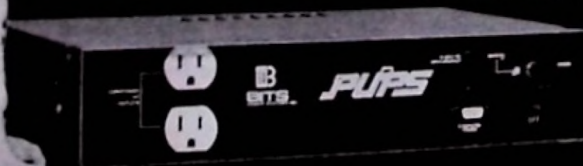
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computer "behaves" in a way it never behaved before.

Fourth is the joy of learning. No two programming tasks are ever exactly alike, and each new task provides new challenges and new lessons to learn.

Finally, there is the delight of working in such a tractable medium. The

And then there's the most unpleasant task of getting the bugs out.

Designing and pursuing grand schemes is fun; fishing out and fixing the little flaws is miserable, painstaking labor. And as testing and debugging proceeds, tinier and more complex bugs emerge—the worst sometimes indicating a flaw in the

---

*Programming languages only have  
one tense, second-person present  
(you, the computer, must . . .).*

---

programmer works from pure "thought-stuff." He gets an idea in his head, and brings it to life on the computer. Like the novelist who gets an idea for a good story, and sets about to writing a novel which will be enjoyed (he hopes) by others, the programmer gets his idea and writes his novel in a language that the computer can understand. The programmer has the additional joy of watching his "novel" actually *do* something, be it simply manage a volume of information, draw pictures on a CRT or printer, or move mechanical arms about to perform some task. And the programmer's creation is easy to polish, rework, and improve upon, so that the program itself can be constantly evolving into something better.

All is not fun and joy however, not even for the most seasoned programmer. For one, the programmer must perform perfectly. The slightest misspelling of a word in the programmer's novel can make the whole thing fail. The computer is quick to find fault and is quite unforgiving. Next, there are always deadlines, financial restraints, and managerial problems. The end goal of most projects is a practical, rather than an aesthetic, product. The realities of the programming environment can create pressures that quickly diminish the joy.

original grand scheme itself. And there are the woes inherent in working in such a rapidly expanding field. Halfway through a project, a new development may make the product obsolete before its birth. This is not uncommon in computer science.

For the person with the curiosity, drive, stamina, and appreciation for this sort of "technical creativity," the decision to stick with it usually wins out. And the first step is to learn a language. A programming language, to be exact.

## PROGRAMMING LANGUAGES

Learning a programming language is not as time-consuming as learning a foreign language. Most spoken languages have tenses (past, present, future), persons (first, second, third), and a huge vocabulary. Programming languages only have one tense, second-person present (you, the computer, must . . .). No pluperfect preterite or the like in programming languages, and there are only between 50 and 100 words in the entire vocabulary, most in plain English. But, like the foreign language, learning to express one's ideas fluently, without hesitation or covert translation, takes time.

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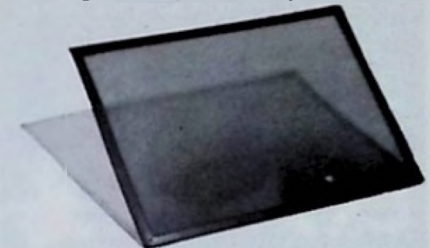
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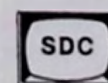
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## LANGUAGES

(Continued)

At last count, there were some 112 official programming languages to choose from. Each has its own unique vocabulary, its own unique features and applications. In this series of articles, several of the most common programming languages will be discussed and compared.

## LANGUAGE LEVELS

It is difficult to categorize programming languages, but there is an informal method floating about the field which attempts to classify languages by "level." Generally speaking, a programming language's level is determined by how easy it is for a person to use. A high-level language is easier to use than a low-level language. Paradoxically, the lowest level languages require the greatest skill and expertise to master.

The reasons for this system of classification depend on a brief understanding of computer theory. At the most elemental level, computers "see" data as a stream of electronic impulses, much like Morse code. There are only two "words" in this code, a pulse or the absence of a pulse. In common notation, this is represented

as either a one or a zero. A program could theoretically be written for a computer (and in the earliest days of the science, this is how it was done) that was nothing but ones and zeros. This would be equivalent to the absolute lowest level programming language. Computers are engineered to recognize patterns; as one moves up the scale from low to high level, the patterns represented by each word grow more and more complex.

To use a helpful analogy here, let's look at an automotive assembly line. The entire function of the line could be expressed as one command, "make cars." That would be a high level command. It could be broken down into smaller units, such as "make engines," "paint bodies," "weld frames," and so on. But we are still very far away from listing every action that goes into the process; such a list would include things like all the muscle movements of every worker in the plant and the exact location of every part to be used at every instant. This would be the low-level description.

It is in the nature of the simple-mindedness of computers that they require a program to tell them every step

(Continued on page 54)

If one were to take a shot at actually creating a table of high-level and low-level software, the resulting table might come out looking something like this...

### HIGHEST LEVEL

Applications Software

*Word processing, spread sheets, accounting packages.*

Data Base Management

*Perfect Filer, dBASE II, InfoStar, DB Master, Selector V, and the like.*

Interpretive Languages

*BASIC, LOGO, dBASE II*

Compilable Languages

*COBOL, FORTRAN, Pascal, CB-80, FORTH, C, PL/I, LISP*

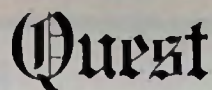
Systems Level Software

*Assembly Language, Machine Language*

### LOWEST LEVEL

Note: To further confuse the issue, certain languages, notably BASIC and FORTH, are available in both interpretive and compilable configurations, depending on the distributor. The comments on speed of the languages, though, are still valid.





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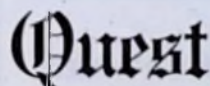
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# How to start a users group

Help may be just around the corner

**U**ser's groups are non-profit membership organizations comprised of people interested in exchanging information about computers. A certain proportion of their activities are purely social, but a major component of most groups' functions are educational in nature.

## WHAT'S IN IT FOR YOU?

If you're a new computer owner, a users' group is the ideal place for you to learn about your machine, and about the applications that matter to you. Chances are you'll meet someone who is using his computer to perform tasks similar to those you have in mind, and who'll be willing to show you the ropes. Your dealer may not know the more intricate ins and outs of specific applications as well as another user. Either one-on-one coaching or group training sessions may provide you with the insights you need for a running start.

As you develop into a more advanced computer user, the chance to bounce your ideas off experienced users may prove invaluable. And outside speakers and regular newsletters

can be a precious source of tips and useful information.

If you're still in the process of making those critical decisions about hardware and software, there's no better place to go for unbiased opinions.

## HOW TO GET STARTED

Ask around. Talk to your dealer to find out if he knows about a group. Check with local computer clubs to find out if there's a Kaypro special interest group (SIG) functioning as part of a larger organization. Or see if there's a group already in existence in your area; we've included a listing of users' groups at the back of this magazine.

If there's no group in your area, starting a group is usually as easy as placing an ad in the computer column in your local Sunday newspaper classifieds. List a time, a meeting place, and a phone number for further information. You'll probably be amazed at the response.

You might also do well to let the Kaypro dealers in your region know about your plans for a group. They'll let their customers know, and many re-

tailers will volunteer to provide various forms of assistance—meeting space, speakers, technical advice, newsletter printing, etc.

We've found that dealers and customers have closely related goals that strengthen groups measurably when they work together. However, we recommend that dealers not attempt to dominate local groups or view them as captive audiences for marketing schemes, and we recommend that groups avoid anyone who tries to exploit their good will. Friendly cooperation at all levels will eventually lead to larger membership for groups, more sales for dealers, and increased services for owners—and everyone will profit, one way or another.

## ONWARD AND UPWARD

Keeping a group going will depend on the individual members. The amount of time and initiative necessary to maintain a group can be surprising; don't underestimate the amount of work required. Try to involve as many people as you can in actual operations—that way you may avoid having all the work fall on one



or two active members—the most common pitfall of new groups. A good committee structure seems essential; some suggestions for working teams are Newsletter, Finances, Meetings and Speakers, Training and Education, Manufacturer Liaison, Software Development, etc.

An alternative approach being tried in a number of locations may solve a major headache. Newsletters are one of the most effective methods of maintaining a group, yet they involve the most work. A number of the Kaypro users' groups that are currently in operation have indicated a willingness to open pages of their newsletters to new groups or subchapters in their region. That way, their newsletters would be used as the publication for a number of local clubs, saving the newer and smaller groups the effort and expense of starting a new periodical.

One of the key things to remember as you get into developing a users' group is to keep sight of your goals; don't let organizational megalomania distort your perception of the group. Increasing membership is not an end unto itself, particularly if it defeats the

original aim of sociable information exchange. If all your group ever does is pull a dozen people together once a month to eat some pizza, drink some beer, and gossip about computers, what's wrong with that?

#### READ

(Continued from page 20)

10. If you are looking for a book to answer a specific need, try to find one that is machine- or software-specific. For example, if you want to learn more about your electronic spreadsheet, it is better to buy a book that has been written specifically about your particular electronic spreadsheet than one that deals with this type of software on a general basis.

It could happen that you will find a computer book that is fun to read, that has respect for the English language, and that has a little style. Should that

happen, I would be grateful if you would call it to my attention. To someone who is not specifically interested in the subject matter, most computer books are boring. An almost complete absence of anything even remotely resembling literary style is, as it happens, something of a boon. I once described a book as being written in the style of the old Dick and Jane readers that were used in first and second grade. While such a style may seem something of an insult to the reader's intelligence, it nevertheless goes a long way in making a reasonably complicated subject understandable.

Finally, before rushing out to buy any computer book in order to find a solution to a problem that you can't seem to cope with, remember the watchword of almost every computer and software dealer in America: RT\*M. The letters stand for read the manual; the asterisk represents an expletive that has been deleted for this family publication. Feel free to insert whichever you feel appropriate as dictated by circumstances, geography, or other influences.

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# Two from the Toolworks

A couple of thoroughly fun programs from the all-time low-budget champ

**T**he Software Toolworks has been producing low-priced user-friendly programs with both disarming charm and professional integrity since 1979, ranging from games and novelties to serious utilities and programming language implementations. To quote from the introduction of their catalog:

"Although we are in business, we remain first and foremost computer hobbyists. Therefore, we continue to make these programs available at the kind of prices we would like to pay ourselves.

"But despite the low prices, this software is solid. We use it ourselves, and sell only programs that meet our personal standards of excellence."

In this issue, we've selected two of the Toolworks' lighter offerings to review, but we have no doubt that we'll be dipping into their library again from time to time.

No, these programs aren't flawless, but price alone makes them outstanding values and lessens the sting of the few bugs we've found.

**Computer Chef and Word Wiggle**, each \$29.95 from The Software Toolworks, 15233 Ventura Blvd., Suite 1118, Sherman Oaks, CA 91403.

Need some new ideas to add to your cooking repertoire? Or do you cringe

when you look at that messy pile of recipes in your kitchen drawer? If so, you may want to try the **Computer Chef**, a cookbook and recipe file program from the Toolworks.

**Computer Chef** has a ready supply of 65 different recipes including main dishes, desserts, and appetizers. Simply enter a title, an ingredient, or a keyword and **Computer Chef** will display a variety of recipes from which to choose.

The documentation describes the recipes, compiled by three working mothers, as "partly Californian." Indeed! Type in the keyword "brunch" and check out what you get—recipes for strawberry pizza, tofu quiche, granola bars, and pineapple/zucchini bread. Brunch??? Whatever happened to Eggs Benedict? Oh well.

If, by some chance, these selections aren't your style (tofu quiche isn't exactly a staple of the American diet) **Computer Chef** *does* offer other delicious choices. There are old-fashioned favorites like baked turkey, crescent rolls, and vegetable beef soup. Intriguing ethnic dishes such as Hungarian stuffed cabbage leaves, Mandarin chicken, and Dutch Indonesian sate are also on the menu.

But the recipes that come with the program are only a small part of the story.

One of the best features of **Compu-**

**ter Chef** is its ability to instantly scale recipes up or down to serve a desired number of people, or to cope with obscure quantities of ingredients. Need to make enough soup for a troop of Cub Scouts? A recipe calls for six eggs and you've only got four? Voila! (A word of caution: the **Computer Chef** only changes the ingredient amounts and doesn't alter the cooking directions. In most instances, it's no problem. However, in a recipe we tried to scale down at random, the Chef said to use three sheets of fillo dough in the same 9-inch pie plate it had originally said would require six—which would make for a pretty thin crust.)

The **Computer Chef** can also find creative uses for leftovers. If you have some yogurt that needs to be used today or be tossed, type in "yogurt" and **Computer Chef** will suggest concocting double fudge brownies or tofu quiche (again!), which both have yogurt as an ingredient.

Complete recipe, keyword and measurement abbreviation lists come with the instructions. Other enticing keywords to try are "spicy," "vegetarian," and "sinfully rich." You can add or delete recipes from any of these keyword categories.

Finally, the program will allow you to store *your own recipes*. Use your word processor to create recipe files,

(Continued)



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## if you use **CP/M** then you need **DISK FIX!**

DISK FIX is a disk editor which can display, edit or copy any sector of a CP/M floppy and/or hard disk. The DISK FIX utility can be used to recover files from disks with damaged directories, to reconstruct files with bad sectors, to restore erased files and to do general disk editing.

DISK FIX automatically configures to floppy and hard disks, just insert the program disk and it is ready to run. A single CPU license is available for \$150.

## **PROGRAM MAP** for Microsoft **BASIC**

PROGRAM MAP produces alphabetical lists of a program's variables, commands & functions, line numbers referenced and constants. It is fast and easy to use and runs directly under CP/M.

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## TOOLWORKS (Continued)

following the instructions in the manual, and you've got your own computerized cookbook. True, you could use a database management program for the same task, but the keyword search and the rescaling functions would call for some pretty obnoxious programming. Everything in Computer Chef can be customized to your needs, either internally or by use of a word processor.

And if you don't want to lug your Kaypro into the kitchen, generating hard copies of recipes is a snap. To print, turn on your printer, display the recipe, hit the print command and type "LST:" when asked for a filename.

Talk about menu-driven!

Games are to personal computing what peanut butter and jelly are to toast. Word Wiggle is a one-player game which successfully blends pure fun with active thought.

The rules are simple and straightforward; the object is to find as many words as possible contained in a "magic square" of randomly-selected letters. Words must use contiguous letters; the player can move vertically, horizontally, or diagonally, but jumps or pure anagrams are not allowed. You compete against the computer and the clock in searching for words. Only after time expires does the computer list its own words and check yours against its 40,000 word dictionary.

The game is constructed to allow anyone to play. Variables—time, grid dimensions (3x3, 4x4, or 5x5), skill level, and letter selection—can all be changed to suit the individual player. Score is based on a word's length and displayed by the computer in terms of Mine (the computer's) and Yours (the player's). A running tally can be kept through multiple games.

One of the friendlier aspects of this

game is the designation of the human player as the final authority. The computer automatically questions words which don't appear in its dictionary, but when challenging a word it relies on its opponent to answer honestly whether or not the word is valid. One may in turn challenge the computer and delete dubious words from its score.

Skill levels are well arranged and sufficiently difficult at the higher end to satisfy the most ardent word-game fanatic. The computer won't find any words at level 0, but humans are no match for it at level 10. Lower skill levels are perfect as vocabulary-building exercises for children; writers and crossword puzzle addicts will find level 6 a good place to start.

The documentation is excellent. It's easily understandable, quite thorough, and includes a one-page summary of commands. There are detailed instructions on configuring the program to different terminals as well as on how to make changes in the initial settings of the game variables. A demo mode is supplied for quick dramatization of how the game operates. The documentation is almost unnecessary, though; a clear initial menu provides all but the most confused players with all the information needed to set up the game and begin to play.

The only negative aspect of the game is an annoying tendency for the game to read the disk while the player attempts to enter a word. The message \*DISK\* flashes, the computer beeps, and one must wait before continuing to type—a major irritation in a game based on a time limit.

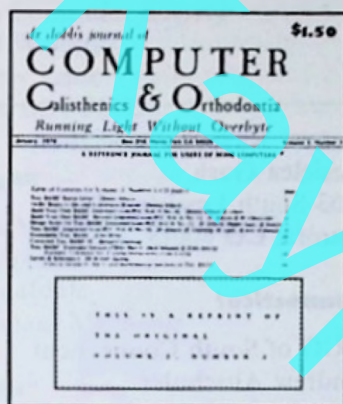
All in all, a delightful addition to the arsenal of CP/M games. In a world where blasting invaders from the skies is the norm, Word Wiggle is a refreshing and thought-provoking alternative.



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# Users' groups

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Kaypro users' groups have no official relationship with Non-Linear Systems, manufacturers of the Kaypro line of portable computers. Therefore, we can take no responsibility for the accuracy of the information in the list below, nor for the activities of the groups themselves.

## National

Kaypro Users' Group  
P.O. Box 100  
Malverne, NY 11565

## Alaska

ANKOR  
Loren Marshall  
1705 Bartlett Dr.  
Anchorage, AK 99507

## California

SKUG  
Marty Meyer  
7001 Brookcrest Way  
Citrus Heights, CA 95610  
KUG—North San Gabriel Valley  
Dr. Robert Wolf  
1416 N. Indian Hill Blvd.  
Claremont, CA 91711

LA-KUG  
Jim or Emma Swanner  
c/o Wordmovers  
15818 Hawthorne Blvd.  
Lawndale, CA 90260

UCLA/USC KUG  
Richard Baum  
Political Science Dept., UCLA  
Los Angeles, CA 90024

BAK-UP  
Blake Hannaford  
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Oakland, CA 94620

Kaypro Special Interest Group  
(KSIG)  
Chapter of the San Diego Computer Society  
Neal & Shirley Kendall  
c/o Kendall Business Services  
P.O. Box 28571  
San Diego, CA 92128

Kaypro Users' Group  
Dale Salem/Jerry Grant  
1930-361 Encinitas Road  
San Marcos, CA 92069

North Bay KUG  
Jim Snyder  
1266 Kerney St.  
Santa Rosa, CA 95401

KUG—San Fernando Valley  
Robert Williams  
c/o Unicom Inc.  
18639 Ventura Blvd.  
Tarzana, CA 91356

TUG—Tehachapi Users' Group  
Tony Giau  
21176 Old Town Rd.  
Tehachapi, CA 93561

KUG—South San Gabriel Valley  
Kenneth Carrasco  
P.O. Box 9253  
Whittier, CA 90608

## Colorado

Aspen KUG  
Don Voltmer  
117 S. Spring St.  
Aspen, CO 81611

Denver Kaypro Association  
Rosielea Gash  
2153 South Lewiston St.  
Aurora, CO 80013

## Connecticut

KUG of South Connecticut  
Andrew Altschuler  
340 McKinley Ave.  
New Haven, CT 06515

## D.C.

Capitol KUG  
Doug Rickman  
9174 Broken Oak Pl.  
Burke, VA 22015

## Florida

KAPPA  
Bob Spencer  
P.O. Box 1563  
Gulf Breeze, FL 32561

## Hawaii

HPCUG  
Dr. Hector Robertin  
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Honolulu, Hawaii 96813

## Illinois

KOOC—Kaypro Operators of Chicago  
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Central Illinois KUG  
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Springfield, IL 62705



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Boston Computer Society  
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## **Nevada**

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1350 Davidson Way  
Reno, NV 89509

## **New Jersey**

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George Frankle, President  
6 Bonnie Brae Path  
Atlantic Highlands, NJ 08857

## **New York**

Kaypro SIG  
New York Amateur Computer Club  
P.O. Box 106  
Church St. Station  
New York, NY 10008  
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90 Jericho Turnpike  
Mineola, NY 11501

## **North Carolina**

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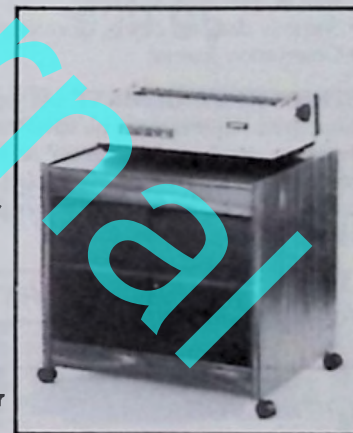
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Puget Sound KUG  
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Renton, WA 98056

KSIG, Chapter of SMUG—Spokane  
Microcomputer Users Group  
Don McGilvray  
North 904 Dyer Rd.  
Spokane, WA 99206

TACKPUG  
David Parent  
c/o Pierce County Alliance  
1201 S. 11th  
Tacoma, WA 98405

### Wisconsin

Milwaukee Area KUG  
Neil Mason, chairperson  
2406 Springdale Rd., Apt. 101  
Waukesha, WI 53186

### LANGUAGES

(Continued from page 45)

to be taken. Languages have been devised to group steps into single words that the language program then translates into the correct sequence of ones and zeros for the computer. Higher level languages group greater numbers of steps into each word.

Unfortunately, high-level languages use commands that represent procedures that will work in the widest variety of circumstances, and are not necessarily the fastest and most streamlined for any particular application. A low-level language is usually more direct, because its words represent simpler procedures.

At the highest level, we have applications software. These are not programming languages in the strictest sense of the word, since they are programs that programmers have already created to perform specific tasks. Word processing systems help with writing, spreadsheets help with rows and columns of numbers, accounting packages aid in bookkeeping. Database management systems tend to be a little more flexible than applications packages, but require a bit more skill to use. The purpose of database management systems is to provide the user considerable flexibility with a minimum of programming skill. A database management system can be used to manage custom-designed mailing systems, bookkeeping systems, inventory systems, and other general data processing tasks.

On the next level down, we find interpretive languages, programming languages that were originally designed to help beginning computer science students learn to program. Commands are very much like English, only the language software itself must read through the program each time the user wants to run it, and interpret the program for the computer—



hence the designation "interpretive." It is possible to avoid this constant re-reading of the program text by using a "compilable" language, one that compiles the program into blocks of machine language for the computer. A standard applications program would be an example of a program that has been compiled. These compilable languages were designed to simplify programming in general in relation to the lower-level assembly and machine languages.

Interpretive languages, which analyze programs one line at a time and report errors at the moment they appear, are considered to be better teaching languages than compiled languages, which require that the programmer wait until the entire program is translated into machine code before he can learn that he's done something wrong.

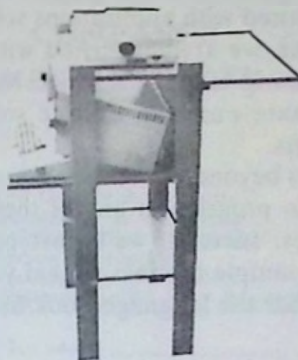
Assembly language, which represents the lowest level language in practical use, was developed to simplify machine language programming.

Ease of use is not the only factor related to a given language's level. Flexibility is also directly related. For example, one can do bookkeeping with an accounting package, and that's about it. With a database management system, one can create a custom software system to manage anything from recipes and checkbooks to gradebooks and attendance records in a school. Interpretive languages can do anything that a database management system can do, and even more, including complex mathematical tasks. Interpretive languages do have their limitations though, and are generally not used for large or sophisticated applications. For these, we use the compilable languages, which have very few limitations, and give the programmer a great deal of creative flexibility. Indeed, one can create a word processing system, database management system, an interpretive language, or even another compilable language with a compiler. At the lowest level, the only restrictions are the computer's own capabilities.

Efficiency is also somewhat related to a software system's level. In general, the higher you go, the slower you go.

(Continued)

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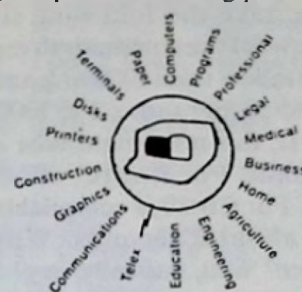
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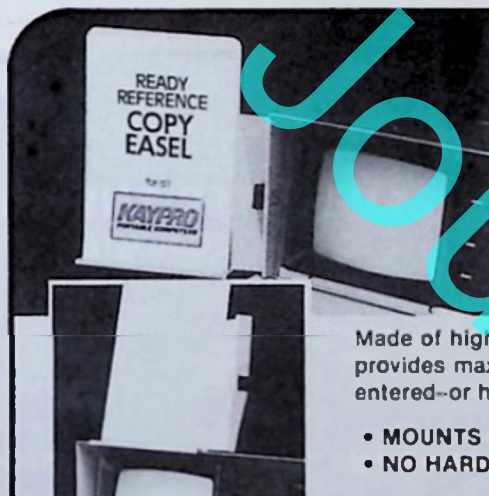
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## LANGUAGES

(Continued)

Not for all tasks, but in general. For instance, take the following simple task: We want the computer to create a list of numbers from 1000 to 1, and sort them into proper order, 1 to 1000. For dBASE II, this task might take about 185 seconds. For BASIC, about 190 seconds. For CB-80, a compilable language, about 2 seconds. Why the difference? Well, basically, in order to make a software package easier to use for a human, more of the workload must be placed on the computer. With a database management system or interpretive language, the computer must perform thousands of unrelated tasks which are required to make the system easier to work with. A compilable language is not particularly easy to write, but when it comes time to perform the actual task, the computer need not perform the thousands of side tasks included in the broader commands of the interpretive language, so it can do the job at hand

without distraction.

Generally speaking, the best way to master the art of programming is from the top down. Since the higher-level software systems are easier to use, it makes sense to start at the top. In this series of articles, however, we are not concerned with applications software. Rather, we are concerned with programming languages which allow us to create our own unique software systems.

It is beyond our scope to teach you how to program in any of these languages. Instead, we'll just provide some sample routines so that you can see what the languages look like.

## PROGRAMMING IN BASIC

BASIC was designed to be a teaching language for beginning students in computer science. In fact, the name BASIC is actually an acronym for "Beginners All Symbolic Instruction Code." As a teaching language, BASIC was pretty well designed. Why? For one, its commands are English-like, and its rules of grammar or syntax are fairly liberal. Also, being

interpretive, it provides instant feedback to the programmer as to his performance. Feedback is essential to learning (though not always pleasant). BASIC resembles the more sophisticated languages in many ways, so once an individual has mastered it, the transition to a more sophisticated language is not too difficult.

Through the years, BASIC has become more than a teaching language. Some individuals have used BASIC to develop the actual software to be used in work environments, and a handful of companies actually market software packages written in BASIC. This is a somewhat risky endeavor though, since BASIC does have some restrictions, and does not get the job done very quickly.

A BASIC program written to count from 1 to 100, and display the numbers on the screen as it is counting, would look like this:

```
10 REM ** Program to count to 100
20 FOR X=1 TO 100
30   PRINT X
40 NEXT X
```

(Continued on page 58)

# Advanced Advanced Advanced Advanced Advanced Advanced

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## COMMENT

(Continued from page 13)

an error in data entry can go unnoticed for some time; in a game, incorrect input results in either an immediate error message and/or a warning beep, or worse, a lower score. An involved player quickly learns to play the game properly, and this awareness for the need for accuracy in input will carry over into his dealing with other programs.

Finally, how much of every business day is actually consumed in conversation that has nothing to do with work flow? Good managers have always recognized the need for natural human intercourse as a necessary evil—a relaxed sociable atmosphere is a more productive environment than a gloomy sweat shop. Would it be so bad if some of the time now spent in idle chatter were spent learning to enjoy the computer?

Of course, work time in an office is precious and should not be taken up with games. But let's be honest—the games will be played, whether you encourage them or not.

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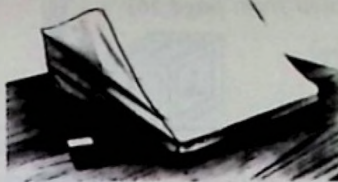
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*Do you wish to play a game?*

Y

*Which game do you wish to play?*

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## LANGUAGES

(Continued from page 56)

This program simply states "For all values of X between 1 and 100 (inclusive), print the value of X, increment X by one, and move on to the next X."

This program is written in basic BASIC, that is, BASIC as defined by the American National Standards Institute (ANSI). There are countless

However, they want the mailing system to be easy to use so that computer novices can use it too. In this case, they create a "menu-driven" mailing system which provides the user with menus of options, so that the end user (the person who has to manage the actual mailings) can get the job done by

*At last count, there were some  
112 languages to choose among.  
Each has its own unique vocabulary,  
its own unique features.*

versions of BASIC, each with its particular twists, embellishments, and sometimes, weaknesses. For CP/M-based microcomputers (such as the Kaypro), MBASIC by Microsoft represents the ANSI standard BASIC.

simply selecting options from menus which are automatically displayed on the screen.

Here's a short dBASE II program that counts from 1 to 100, and displays the numbers on the screen as it is counting:

## USING dBASE II

One of the easiest to use, and highest-level software development systems available today, is Ashton Tate's dBASE II. It is unique in that it doubles as a database management system or a fairly sophisticated interpretive programming language. Writing programs with dBASE II is not easy for the novice, but it is a good starting point because it is comparatively easy to use. dBASE II programs are called "command files," and are created either with dBASE II's built-in line editor or with any standard word processing system. The purpose of allowing the option to create command files in dBASE is to provide the user enough flexibility to create programs which go beyond the "built in" capabilities of dBASE. A programmer can also create a custom software system that is easier to use than dBASE itself using dBASE command files. For example, a given company may want to put a fairly complex mailing system on their computer.

```
** Program to count from 1 to 100.
STORE 1 TO COUNTER
** Start loop.
DO WHILE COUNTER < 101
?COUNTER
STORE COUNTER + 1
TO COUNTER
ENDDO
```

A computer always reads a program like a human reads a printed page. It starts at the top, reads from left to right, then goes to the next line, reads from left to right, and so on, until there are no more lines to read. One difference, however, is that a program may contain a loop, in which case particular lines may be read over and over again until a certain condition is satisfied.

In the dBASE command file above, the computer "reads" and "does" each line in the following fashion:

The first line, preceded by asterisks, is ignored by the computer. This is only a comment, a note for reference.



Comments are useful when future changes to the program must be made.

The second line stores the value '1' to a variable called 'COUNTER.' Essentially, a variable is a tiny portion of the computer's memory that can be used to indicate any value the operator wishes. Its uses are similar to the uses of x and y in simple algebra. The only real difference in computing is that variables are often given longer names than the single letters used in math.

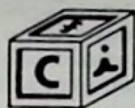
Next, there is another comment (again preceded by asterisks) which is again just a reminder to the programmer.

Then a loop is started with the command "DO WHILE COUNTER < 101." This means "read the lines between here and the ENDDO command over and over again, until the value of the variable COUNTER is greater than 100 (or, while it is less than 101, same thing logically speaking)". Well, COUNTER = 1 (since we just stored 1 to COUNTER), so dBASE reads the command "? COUNTER" which means "display the value of the variable COUNTER on the screen" and puts a 1 on the screen. Next we STORE COUNTER + 1 TO COUNTER. Since COUNTER = 1, AND  $1 + 1 = 2$ , COUNTER now equals 2. Then dBASE reads the ENDDO command, which tells dBASE to jump back up to the DO WHILE command. COUNTER is still less than 101, so we ? COUNTER (which is 2), STORE COUNTER + 1 TO COUNTER, and COUNTER becomes 3. We continue the loop, display "3" on the screen, and so forth, until the value of COUNTER is up to 101.

At that point, the statement "DO WHILE COUNTER < 101" is no longer true, so dBASE jumps past the ENDDO, where there are no more lines to read, and the program stops running.

Now this is not a particularly useful program, but again, the goal is to just

(Continued on page 62)



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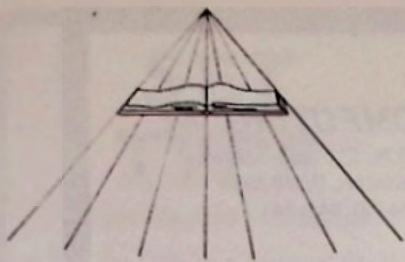
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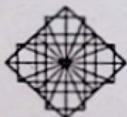
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## CONSULTANTS

(Continued from page 31)

sultant's time is too expensive for the latter endeavor.

### Step 4. Documentation

Documentation can be anything from simple instructions to a complete user's manual. Whatever documentation you need should be discussed at the outset. In some cases, the user is the best one to write most of the operating instructions. User documentation doesn't have to be the last step in the process. For large software systems designed for a business that I know little about, I often try to get the client to write the user's manual first. They can then create the exact product they want and I can follow their instructions to write the software. Both parties should confirm who's going to do what.

## ERRORS

The trickiest snag when contracting for custom software is the thin line between correcting bugs in software and making changes to the original wish list. A good consultant won't charge for correcting his own mistakes, but will charge for changes to the original design. For this reason, the description of what the final product is supposed to do must be clearly stated. When a discrepancy arises, the only arbiter can be that original specification. Make sure it says what you want.

## A NOTE ON SPEED

Most computer users don't worry about how fast their program runs until they get the final product and find that it runs too slowly. The programming language chosen to develop a program will affect the speed. For instance, a program written in a fast-running language can do 10 times as much work in a day as a slower one.

There are three types of programming languages; interpretive, such as BASIC; data base management, like Dbase II; and compilable, including CB80, Pascal and PL/I. BASIC and

Dbase II run at a slow speed and are suitable for small projects to be used in-house. BASIC is preferred for those projects involving a great deal of math, such as engineering, statistics, or complex business mathematics. Data base systems are better for jobs involving little math like general bookkeeping and mailing lists. For large applications or for those which need maximum performance, use a compilable language. Any marketable software should also be written in a compilable language.

Choosing a language is like buying plumbing pipes. Copper pipes (compilable languages) might cost a little more, but they perform better. Most consultants are fluent in several languages and can give you cost vs. performance estimates. Be sure to discuss this question while you're still interviewing, not after the fact when it will be too late.

## FINAL THOUGHTS

Hiring a software consultant may seem more complicated than hiring a plumber, but it's actually just business as usual. The whole process can be summarized as follows: 1. Get down on paper what it is you want the computer to do. 2. Make contacts with several consultants and get estimates before you make a commitment. 3. Decide who is going to do what in the overall project. 4. Decide with the consultant which language it makes sense to use for your new software.

Handle your consultant as you'd handle any other service business, and you'll probably get yourself a good deal—and a piece of software that will pay for itself many times over in the long run. A "naked" computer (one with a "generic" software package, like the Kaypro) can do a great deal for you, but a computer programmed to do exactly what you need can do even more.

Make your wish list and run it by a few consultants. They might turn out to know the magic words that can make your wishes come true.



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## LANGUAGES

(Continued from page 59)

provide a feel for the language. dBASE is certainly capable of doing far more than counting to one hundred.

While dBASE II provides some flexibility in programming, it has two distinct disadvantages. One, it is very slow at these things. Two, it does not help the programmer to learn more sophisticated languages. For most people, this is probably okay, but for the individual wishing to make a career out of programming, or even just wanting to gain complete mastery over the computer, the best "learning" language is probably good old BASIC.

The above example does *not* take into account dBASE II's incredible flexibility as a database manager, the job for which it was designed. If your goal is to produce a program that stores and manipulates data that can be entered as the equivalent of a box of file cards, dBASE II is an excellent choice. It is often ignored in discussions of programming, but because it is a language in its own right, it deserves to be considered here. And it is this aspect of programmability that makes it such a powerful database manager.

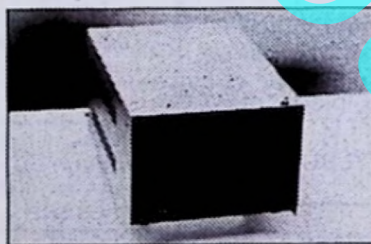
## SUMMARY

If your aim is unrestricted programming capability, Ashton Tate's program, dBASE II, is preferred over other software products only when certain conditions are met: 1.) The task to be performed is not too complex and does not require particularly high performance. 2.) The user has little interest in learning to program. 3.) There is no complex mathematics involved.

BASIC is preferred when: 1.) There is a need for substantial mathematical manipulations. 2.) The programmer wishes to learn a language which will aid him in fully mastering the potential of computers.

**NEXT ISSUE:** Structured languages.

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## PRODUCTS

(Continued from page 14)

When running CP/M 2.2, the new memory can be used as a disk emulator, that is, you can treat the additional RAM as if it were a third disk drive. The beauty of RAM disk emulation is simple—the mechanical difficulties of disk use and the relative slowness of disk access time disappear. Load programs and files into RAM from A: and B: drives, manipulate data in memory, and dump finished output onto a floppy disk. Database sorting, for example, will take place in a fraction of the time to which you're accustomed. The 256K version will also provide huge swap files for programs like Perfect Writer and the various electronic spreadsheets, allowing for the creation of object files of positively monstrous size.

CO-POWER-88 can be purchased with CP/M-86 (at present, you'd have to buy MSDOS elsewhere). CP/M-86 is stored as a system file on a normal Kaypro CP/M 2.2 disk, and can be accessed with a single command. CP/M 2.2 and CP/M-86 files are compatible, and can live happily on the same disk.

Note that you'll be faced with the same old problem of disk formats: the new hardware is limited to using software that can be read by the Kaypro's disk controller. However, there are a number of commercially available programs that will enable the Kaypro to read just about any format. Also, if you buy your software from a Kaypro dealer who carries 8088-based computers, there should be little trouble downloading CP/M-86 programs to Kaypro format. (It's a tougher proposition with MSDOS, which isn't compatible.)

The manufacturer claims full compatibility with the IBM PC in the immediate future, and will keep you posted.

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CO-POWER-88 with 128K, \$499.95; 128K add-on RAM, \$349.95; CO-POWER-88 with 256K and CP/M-86, \$999.95. Texas residents add 5%

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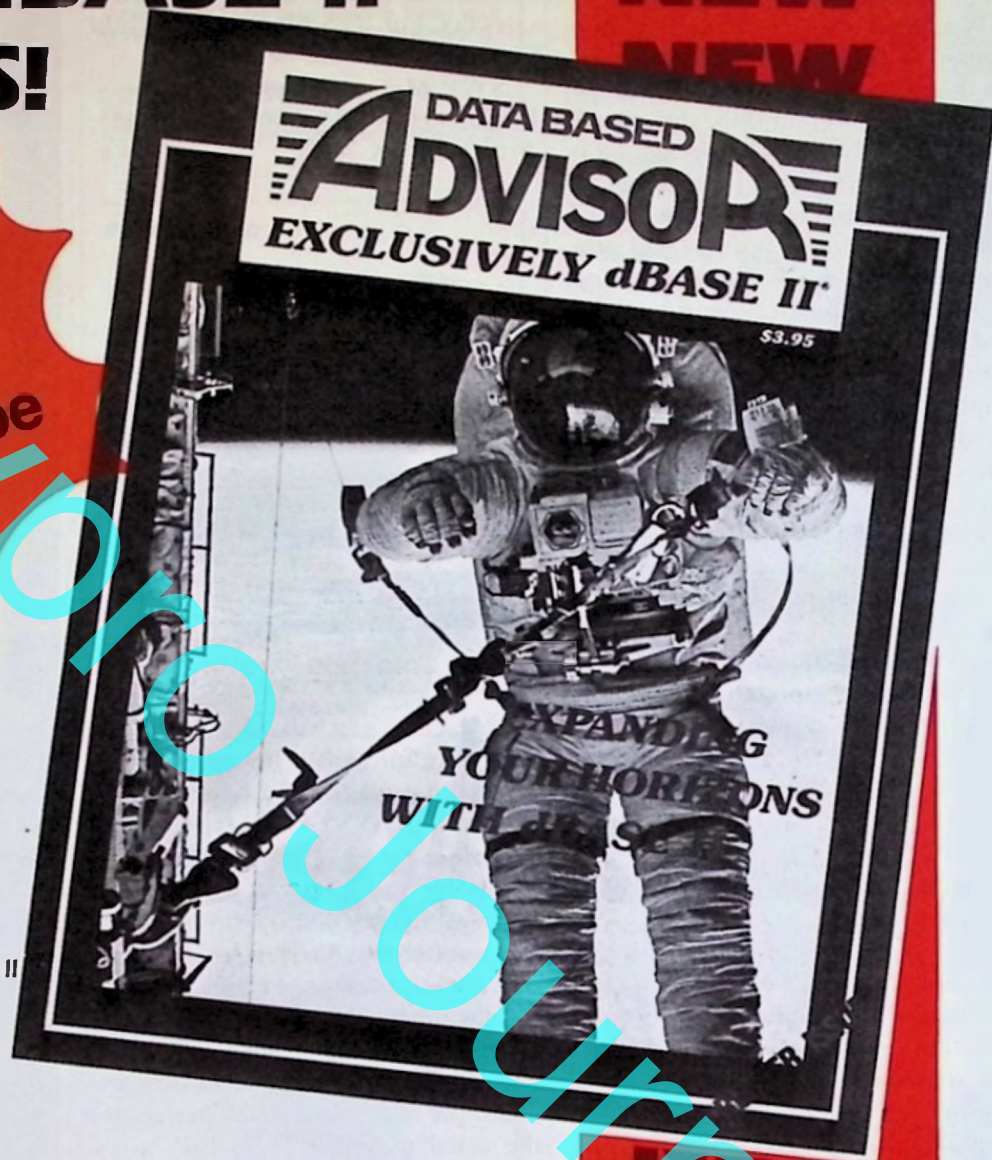
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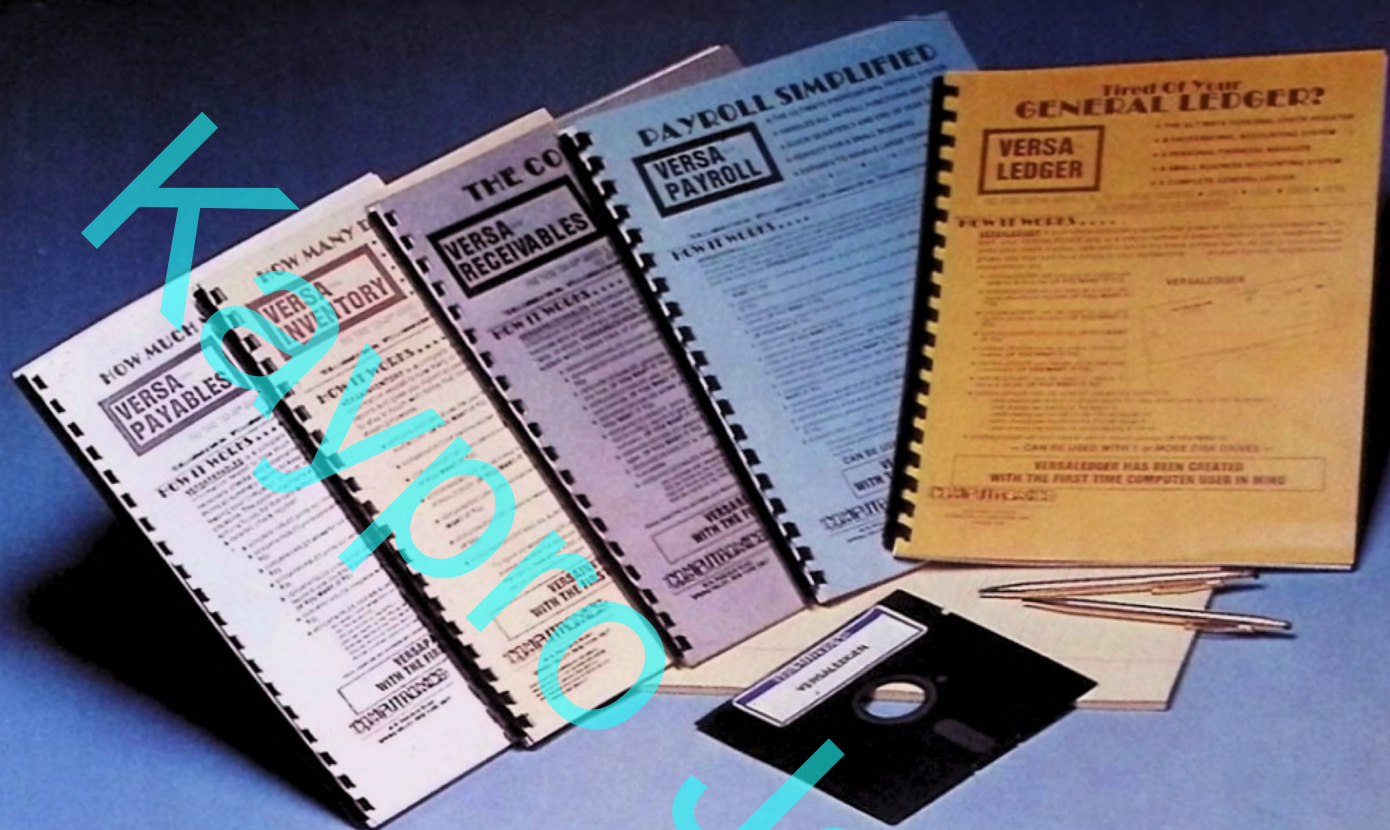
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