NOTES FOR CURSOR™
Programs for PET™ Computers
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A CURSORY GLANCE

We can say goodbye to an old friend: the 8K calculator keyboard Pet is being discontinued. Taking its place will be the Pet 8N, an 8K Pet with the new full-size keyboard, new ROMs, and a price tag of $795. (Actually $895, because the cassette is no longer built into the computer.) The Pet will soon have a plastic case. There are conflicting rumors: one is that only the 8K model will be plastic, the other that plastic will be used on all models. Early models will be hybrid, with metal for the CRT display, and plastic for the main case. I'm told that Commodore will save about $20 per unit due to the use of plastic rather than metal. The computer will also be lighter, and easier to carry around.

Guess what is happening to your ROM slots? Conflict, that's what! The excellent Programmer's Toolkit from Palo Alto ICs uses one of the "extra" ROM slots. (On the new Pet, there are three in addition to Basic.) Well, a funny thing happened on the way to the Toolkit. Seems that the Palo Alto IC people talked to folks at Commodore, and were assured that there were no immediate plans for location $B000. So, that is where the Toolkit lives. Enter the Commodore Word Processing System: it also needs a ROM. You guessed it: that ROM just happens to be addressed at $B000! Why? Well, it seems that Commodore "has plans" for both of the other ROM slots.

This sort of thing was bound to happen someday. A reasonable solution would be a standard way for ROMs to coexist at the same memory address. (Naturally, you shouldn't expect to use both sets of ROMs at the same time.) It's too bad that Commodore didn't design this capability into the new Pet, but they didn't. Two companies have announced products to solve the ROM conflict problem: Skyles Electric Works will have add-on boards available by late November, and Small System Services, Inc. is offering the "Spacemaker". They are also coming out with a "ROMDRIVER", which allows switching ROMs under software control.

INFORMATION SOURCES

The Computing Teacher is published by the Oregon Council for Computer Education, Department of Computer Science, University of Oregon, Eugene, Oregon 97403. It costs $8.00 for six issues, which recently have been about 60 pages each. The content is a bit uneven, and the magazine is certainly not what you would call "glossy". However, there are interesting articles by people who are using computers in the classroom.

6502 Assembly Language Programming by Lance Leventhal is now available. If you want to learn 6502 machine language programming, this book is the one that I would recommend. The book explains each 6502 instruction with diagrams that show what happens to each register, as well as data and program memory. Most people will find Chapter 4 ("Simple Programs") to be a good way to learn about the 6502. Each example includes a statement of the problem to be solved, an assembly language source program, and then the actual object code produced by the assembler. To buy this 550 page, $9.50 paperback, see your local dealer or write: Osborne McGraw-Hill, 630 Bancroft Way, Berkeley, California 94710.

The Pet Gazette (made famous by Len Lindsey) has been born again as a slick new magazine called COMPUTE. The first issue is out, and the magazine has potential. COMPUTE is aimed at 6502 based systems, including Pet, Atari, Apple, OSI, Kim, Aim, and Sym. There are special sections called "Gazettes" which have information specific to certain machines, such as the Pet. The subscription price is a reasonable $9.00 for six issues. See your dealer, or write: Box 5119, Greensboro, NC 27403. All Pet owners owe Len a big "Thank You" for his work in putting out the original Pet Gazette. We wish him well in his new role as Senior Contributing Editor of Compute.

CURSOR 14 HAS THESE PROGRAMS:	
COVER14	Chuck Cares developed this clever optical illusion. Watch carefully...
MATCH	How is your memory? Try and find the 32 pairs of symbols hidden on an 8 by 8 grid. (You'll have to concentrate!) By Julia Hallford.
SEARCH	Generate excellent word search puzzles. Uses the Pet printer. By Hal Carey.
BAT!	You are a bat that must eat insects to remain alive. Gravity and inertia make your task quite difficult, to say nothing about dirt bugs and lint. By C. T. Nadovich
MORSE!	Practice Morse code with this program by Norman Parron. (As you might guess, this program requires sound...)
COPS	It's Cops vs. the Crooks. A game of skill and courage on a 25 by 25 grid. Idea by Sheila Dolgowich.
COMING	Amaze your friends: turn your 97 pound Pet into a _____.

MORE ABOUT THE PROGRAMS

MATCH... David Platton wrote this game which is based on an idea by Julia Hallford. An 8 by 8 grid is constructed covering 32 pairs of Pet graphic symbols. One to four people can play, with each being able to uncover two squares per turn. When you uncover both members of a pair in one move, those spots on the grid are cleared, thus making life quite a bit easier for you. The game ends when the board is cleared, or when someone resigns by pressing [R].

SEARCH... Hal Carey wrote this program to generate word search puzzles, which are then printed on the Pet printer. The words for the puzzle can come from one of two places: you may enter up to 25 words from the keyboard, or let it use the list of words from the DATA statements at lines 1410-1440. (The first word in the list is the subject of the word search, and the list must end with a null string. The variable MW in line 100 controls the maximum number of words. If you have more than 8K of memory, you may want to increase that limit.) It is interesting to watch the program try various possibilities as it tries to fit words together. Each time you run the program, you'll get a different puzzle, due to the random starting position used for the first word, as well as the overall logic of how words are fit together. In the case of a word which cannot be overlapped with another word in the list, the program temporarily puts that word aside, and continues fitting other words. After it has finished going through the entire list, it then attempts to use the words that previously wouldn't work. It keeps cycling through until such a time as it cannot fit any of the words left over into the puzzle. If you have put something like "zzz" into your word list, the program will probably discard it, (having given it the old college try).

BAT!... In the special universe of computer amusements, you'll find that such mundane things as zoological propriety are violated with abandon. BAT takes advantage of this "programmers' license" in order to bring you a delightful (although difficult and frustrating) exercise in flying. You control a "super bat", and face the challenge of eating enough insects to stay alive. Incidentally, sound is very important for this game: while you can play it without sound, it is much more fun with the sound effects. Life is far from simple for super bats: you have gravity to contend with, as well as your own inertia. Translated, that means that a super bat is a hell of a difficult little animal to fly. You control the beast by the standard convention of the numeric pad: [8] accelerates you up, [4] takes you to the left, and [6] to the right. (Editorial comment: Although there is a functioning [2] for "down", what with gravity always pulling you down, it's hard to imagine when you would care to use it.)

The plot thickens: our little super bat is very, very "bouncy". In fact, bats that survive longer than about 30 seconds learn to eat bugs while they bounce. They also learn the (varying) food value of different bugs. Please see the directions in the program, as we can't adequately represent the characters used for the bugs here. Don't give up too soon: once you get the knack of flying super bat people will have trouble prying you away from the keyboard.

MORSE!... Samuel Morse (to say nothing about the ARRL) would be proud: with this program, you can learn Morse code, or just brush up on your rusty" code. Naturally, the program requires that you have CB2 sound for your Pet. (CURSOR #3 has a diagram showing how to connect your Pet to an amplifier) MORSE! is designed to help you improve your skill in copying code, but not in sending it. In line 210, you can change the variables DI, which controls the length of a "dit", and the variable DA, which is the length of time between characters.

COPS... This is a two player game which uses a 25 by 25 gameboard to simulate the streets of New York (or is it London?). The rules are simple: the "crooks" drive an old 1953 Chevrolet, and have no respect for the traffic laws. Since their car is old, they can only move one square at a time. However, they are able to move in any direction, which helps them try to escape from the cops. The cops observe all traffic laws, which means they cannot turn left. But they drive shiny new patrol cars that go twice as fast as 1953 clunkers! The game is officially called "the hamstrung squad car", and was discussed in the Mathematical Games column of the February and March 1967 issues of Scientific American.

COMING... This little program reflects a bit of late night craziness. It does not pretend to be useful, but you may have some fun the next time that a friend tries to use your "very new" ROMs. Enjoy!

COMPUTER PROGRAMS AND YOUR ETHICS

As you know, our philosophy has been that good software that is reasonably priced will not be stolen or "ripped off" to any great extent. We have deliberately priced our product as low as possible, thinking that most people are honest, and will not make copies for their friends. We have gotten some really nice mail from people who appreciate our policy, and who are respecting our rights to not have our programs copied. To the majority of our subscribers we want to say "Thanks for your support!". We are sorry to say, however, that there is some pretty good evidence that a significant number of people are not being fair to us about copying our product.

I'd like to explain some background that may help you understand our concerns about software theft. First of all, we are not a volunteer club. We purchase programs submitted to us by subscribers, and we also write programs ourselves. Work submitted to us is often extensively edited, and sometimes completely rewritten. We have a modest office, and of course some Pet computers and peripherals used to produce the magazine. There is a significant amount of clerical work to produce and ship each issue, to fulfill back issue orders, and to maintain the mailing list. (You wouldn't believe how often people move!) What I am saying is that the people who produce CURSOR expect to be paid for their work, just as you are paid for your job. (Which is not a suprise, I hope.) Volume is very important to us: it costs a great deal to produce the first tape each month. It is only when our subscription base is quite high that we realize any profit at all.

A special problem is that there are a few user groups who are "sharing" commercial software. Please realize that there are also many Pet user groups that are very careful to avoid "swapping" commercial software. Computers are fun, and user groups are valuable to Pet owners as a way to share information and software written by the members. Please raise the issue of protecting commercial software at the next meeting of your user group.

So what does this all mean? The personal computer user - you - should realize that software is a product that costs money to produce, and that when you make a copy for a friend, you are hurting yourself and other users, as well as the vendor. In the case of CURSOR, we publish source code that you are able to study and modify. One option, (which we don't especially like), is to use one of several protection schemes so that it is not possible to copy or even look at our programs. We hope that we don't have to do that, as we think that it would make CURSOR less attractive to many of our users. From time to time we wonder whether the ripoff factor is so great that we are just stupid to continue producing a consumer product. (Software sold to corporations is much less vulnerable, as it is sold or leased under a license agreement, and the majority of firms are not willing to risk a lawsuit just to save a few dollars.) I would appreciate two things: first, please drop me a postcard (unsigned if you like) telling me your opinions on software ripoff, especially how much you think CURSOR is illegally copied. Second, please tell a friend or two about us. Word-of-mouth advertising is remarkably effective, especially from a satisfied user.

ABOUT THAT "AT SIGN" BUG IN THE 2040 DISK OPERATING SYSTEM

In Cursor 13 we briefly mentioned that it isn't a good idea to use the at sign "@" as a way to replace files on the 2040 disk. The bug is especially insidious because of the way it affects your files. Let's say that there is a program on the disk called "BLAT6", which you have just finished editing. Since you want to replace the old copy, you might type:

```
SAVE "@1:BLAT6",8
```

Your file will be saved, and will in fact replace the previous version. So what is the big deal? Simple: now and then, some other file on the disk will be damaged by this operation! Not the one you just saved, but some other file. (That's what makes it so dangerous: there is no immediate evidence that anything has gone wrong.) Since a portion of any diskette is usually empty (in fact, I'd bet that most people work with disks that are half empty), the damage may occur to a block that is not part of one of your files.

The solution is not elegant, but it works: NEVER EVER USE THE "AT SIGN" TO REPLACE FILES. Instead, go to the extra trouble to scratch the old copy, and then save the new copy as though it were a brand new file.

To the best of our knowledge, Commodore knows about this bug, but has not made the information available. Will it ever be fixed? That is an interesting question. When you realize that the 2040 is being sold to lots of people, and that it still does not support easy-to-use random access files (where you open a file, and tell the system "give me the 45th record"), then one does begin to wonder. When you realize that the 2040 doesn't communicate errors to the user at the console other than by turning on an easy-to-ignore red LED (for 50 cents they could have put a small audible noisemaker in it, just to warn you of errors, since the Pet itself doesn't know), then you realize that the "at sign" bug may never be fixed.

There is a much more important issue: Commodore is not providing the level of support that a serious computer system requires. IBM, Data General, and DEC don't fix all of their software and hardware errors either. But all reputable computer manufacturers have an ongoing sytem of communicating known bugs and system problems to their users. I fully understand that in a low-margin environment like the personal computer market, such a service would require that users pay for it somehow, either through higher prices, or by a special fee. I would gladly pay Commodore to find out about engineering changes as they occur, as well as learning about software problems as they are discovered. As Pets (or "CBMs") enter the mainstream of computer applications, it will be essential that we get a significantly higher level of support from the computer manufacturers. (Rumor has it that Apple is already light years ahead in this department.)