

PEEK (65)

The Unofficial OSI Users Journal

1819 Bay Ridge Ave., Suite 220
Annapolis, MD 21403

Column One

Of course, It had to happen. We have been going along in a sort of love affair with our readers, both us and you so glad that we are here at all that precisely what we are doing and printing has been (mostly) accepted rather uncritically. Now, this month, we got our first letter that really hurts. An intelligent, thoughtful reader says what we printed last month made him ill. Another letter, just received, suggests that our delightful journal may not be worth the price we charge. Wow. Our reaction, after drying the tears, is determination that PEEK(65) will be more than worth the cost, every single month. You can help. As was suggested by a reader last month, if you read a question which you can answer, send the answer in. Let's keep PEEK(65) a wide open, useful information channel from OSier to OSier!

Software Consultants, of Memphis, has been kind enough to send us a copy of their Terminal Extensions Package. A month ago. I plead a heavy workload to apologize, not to them, but to you our readers, that I have not reviewed this excellent package to date. I intend to. I have decided that we will buy it, and offer it for sale. Just be patient, and we will have a full review next month, plus a price for PEEK(65) readers. The package offers some real conveniences, plus a couple of absolute necessities, like a very powerful number formatter which is better than a PRINT USING.

COPY OF LETTER SENT TO PAUL LEE,
LEVEL III COORDINATOR, OSI

I was given your name by Hal Davison in Sarasota Fla. He tells me that though new on the job, you are trying to help Level III customers with their problems. I have experienced the following problems with Level III:

Editor: Al Peabody
Tech Editor: Dick McGuire
Contributing Editor: Corky Kirk
OSIO Editor: Wallace Kendall

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1) I attempted to put on the Tech Note 13 fix for a client with a 74 M byte Level III system (Level 3.0). Per the Tech Note 13 instructions, we did precisely the following:

- a) changed the system at Cyl.0.
- b) changed 'SYSDIR' and 'BEEXEC*' in the "MASTER" SYSTEM (at Cyl.0)
- c) changed the system at Cyl.94 (slave system)
- d) changed the 'BEEXEC*' at Cyl.94 (eliminated statements 210--220)

The system is designed to boot up into the MASTER BEEXEC*, then RUN SYSDIR, and the operator chooses the master or slave system. If the slave system is chosen, the system then executes the slave BEEXEC*, which puts in a true rubout, and executes Level III program. Before making the above changes, i.e., when 61438 contains the cylinder number the system worked OK. After making the changes, the system boots OK, executes SYSDIR, but as soon as I type '2' (for the slave system), and give the password, the system hangs. No "DEV A NOT READY" message or anything. / By rebooting into the master system and POKEing 61438 with 94, I am able to run "BEEXEC*" in the slave system successfully. Can you tell me what is wrong?

2) I am having problems also with data destined for one file being overwritten on another file, where the second file is only opened by a user in another partition. This has occurred numerous times.

3) In another Level 3.0 system, on a 29 M byte disc, I have had instances where data destined for a file was not written onto the file, even though no error was reported back and the Index was properly updated. Symptoms of this problem are that an FDUMP shows data, then 3584 bytes of nulls, then data. The data did not seem to be anywhere (although it could have been written elsewhere on the file and we couldn't find it). This problem occurs with frightening consequences and irregularly enough to defy debugging. These problems are occurring in a Level III system with software that has never failed in this way on Level I floppies or hard disc. It is seriously jeopardizing our capability of maintaining the software integrity, as no warnings of the bad writes are given.

I would appreciate your help in these matters.

William Gibbs

TO OS-65U LEVEL III USERS AND READERS OF PEEK(65):

have you had these problems? Please help if you can. Call W.W. Gibbs, Shenandoah Microcomputer Services, Inc. (703) 886-4098.

CORKY'S CORNER

Well, this last two months have been a bummer...

Won't bore you with the gory details, but the new C3A just hasn't made it to the active 'on-line' status as yet. Had lots of problems trying to get it up and finally found (after three or four trips to the Doctor) that the motherboard was fractured plus three pins weren't soldered. This was in addition to finding three of the pins on the flat cable broken. Net result of all this was dumping ALL of my track 0 on all the discs I own...that included OS6502, OS65U and all the back-ups. Still haven't found anyone who has a copy of OS6502 that I can borrow to renew track 0. Any offers...please? Found some OS65D rev. 3 discs, but that

doesn't do me any good for the OS6502 rev1. Anyway, am having the new C3A configured for 3 terminals (one 300 band) (multi-user) and have great plans for the telephone answering board as well. Will keep you informed on the progress...

Was on a business trip throughout the USA and had a chance to do some more work on my Property Management program. It's really easy to see how stupid you can be when the airlines ply you with booze, and then see the mess that appears on the paper in the form of a 'program'. One thing for sure...drinkin' and programmin' just don't go together! Finally got my stuff together, and finished the first section and started on the second. Lo and behold, there were parts of #1 that could be used in #2. So I re-wrote the whole thing, really working over the 'gosubs' and learning what you can say and what you can't...like, when to use 'then' and how to use 'or' & 'and'. Now that the base is OK, the fun starts since the second section will change from random to sequential files. And if you don't think that's fun for a learner...wow....

have started back to re-read all the 7 issues of PEEK(65) to see if I have missed anything. Found a answer for a customer of mine regarding 'garbage collection', and expect to find more now that I have a little more time to read and try things. Keep your old issues of PEEK(65)...they're really valuable.

Am currently working on one of those TV modulators to see if I can get an old TV set back into a productive state. So far have experienced AWFUL resolution of the two sets that I hooked the thing on to. It was a problem trouble shooting the PC board in the first place (another guy built it--it didn't work, so he bought an OSI monitor) but found the xistor rotated one hole so it wasn't wired right. De-soldered it, turned it 120 degrees, and bingo, off and running on channel cathode of some tube I never heard of before (would you believe a 10JT8?)

Gotta go. T'was nice to be with you for a min or two. Hope someone out there will drop me a line re. OS6502 rev. 1. Try POB 396, Sierra Madre, CA 91024. es tnx.

Corky.

NJ PERSONAL COMPUTER SHOW & FLEAMARKET

The NJ PERSONAL COMPUTER SHOW & FLEAMARKET will be held on September 27 & 28th at the Holiday Inn (North) Convention Center at Newark International Airport (Exit 14 - NJ Turnpike). This exciting show will be a first for the Northern New Jersey area.

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AND VICE VERSA

NCC, CES, and FEET

by Jeff Beamsley, Tek-Aids Industries

There is a traditional spring rite of passage for many adults in the computer industry. It is appropriately called the National Computer Conference. The telltale signs show up in late May or Early June in Anaheim, Ca. every even year or some other major metropolitan area every odd year. Suddenly the room rates double and that car you reserved last month won't be available for a week. Throngs of bug-eyed professionals limp down the street with plastic sacks bulging with this years slick paper and give-aways. Towards the end of the week even the busboys have picked up the jargon.

A yearly pilgrimage to the site of NCC used to be sufficient to retain your computing credentials for another year. Recently, however, another test has been added for those who also claim interest in personal computing. This second monster is the Summer Consumer Electronics Show in Chicago. It is, if anything, larger and even more vulgar. Ohio Scientific had two substantially different displays at both shows and announced some significant new products. Both shows also hinted at some important trends for both the personal and business segments of the market.

NCC happens only once a year and this year it was mammoth. Some of the major trends at the show in larger machines included a number of color processors with numerous hard copy output devices. The most interesting was a computer controlled Xerox color copier that was able to immediately transfer a very high resolution three dimensional image from a mini based CRT to an 8 1/2 by 11 sheet of paper. The expected war of the dot matrix printers materialized with several very interesting Japanese models showing the most promise. There was also the hint of a similar significant price/performance improvement in the solid character "letter" quality printers from both domestic and Japanese sources. The major software trend in minis was the "co-generator". This is a program that writes programs via a series of screen construction exercises and some data base

definition. There has been some evidence of this type of software on the micro level with programs like PEARL and the CREATOR. Cogenerators are the next step in data base management systems and on the mini level they are becoming very powerful. On the microcomputer side Apple introduced the Apple III and put on quite a show. They had their own double decker bus to ferry foot weary show goers between exhibit halls and bought out Disneyland for one night for all NCC participants.

Ohio Scientific didn't make quite as large a splash, but there were several very interesting products on display in California. On the hardware side the new C3-D machine was running marvelously. This is the C3-OEM with one 8 inch Shugart Hard Disk in place of the A drive. Because of the limited space in the cabinet to mount this drive, the OSI controller card for the drive mounts in one slot of the backplane. This board plus the two normally required for hard disks effectively leaves no slots open for expansion because of the space required for the floppy disk controller card and cable. Look for small quantities in the fall. A network system was also up and running. From this author's experience, networking seems to be a solid alternative to some of the stability problems of the Level 3 time-shared system. The contractual arrangements to actually sell a network system are still unwieldy, but there is evidence that this will change as the factory gains more confidence in the network software.

In conjunction with the networked "office of the future" concept, there is a major rewrite of the current DMS packages underway. The existing stand alone packages will be integrated and should all operate on networked and Level 3 systems with no major rewrites. Though some of that software was on display at the NCC, it is not scheduled for completion until the fourth quarter. Because of the approaching availability of the 16 bit micros, this project is likely to be the last major application software package from Ohio Scientific. As far as the quality of the rewrite is concerned, at this point anything would be an improvement.

WP-2 has finally been shoehorned into OS-65U. Although we would have all preferred a more substantial rewrite, WP-2 with a "LOAD 48"-type interface is currently available. It will read and write OS-65U compatible files. It will run under Level 3, but it is currently not DMS compatible.

PASCAL was on display. Although the show version did not work, a subsequent demonstration was very impressive. Softech Microsystem has implemented and will support the complete UCSD package with PASCAL and FORTRAN on the Ohio Scientific disk-based machines. The package currently reads and writes in OS-65D format though it is not OS-65D compatible. It does not have any hard-disk drivers nor is it multi-user compatible. Even in that single-user floppy based mode, however, there are significant potential advantages to this package. Because of the Softech support, any standard 48K UCSD package will run on this machine. The potential of applications software portability between a number of different machines may be realized as a result of Softech's efforts. Though I can't vouch for the quality, there are already several business packages and a word processor available for UCSD PASCAL. For my money, I think this is only the beginning. Look for delivery in August of that package.

About the time I began to walk normally again and caught up on the backlogged work from my California vacation, CES hit town. The Summer Consumer Electronics Show has a distinctly different flavor from NCC. Anything and everything that can vaguely be classed electronic is on display at this show. This includes car electronics, home electronics, personal electronics, social electronics, and sexual electronics. The personal computer vendors were down on the lower level, back with the X-rated video cassette vendors. I am not quite sure why, but there was a lot of traffic in that area.

There were a number of very interesting products displayed at the CES. It seemed that every appliance from televisions to calculators was talking, recognizing voices, or playing silly tunes. Calculators in particular have definitely made the move into the area of computer

intelligence. Sharp, Panasonic, Craig, and Nixdorf each displayed a hand-held machine that had computer pretensions. The Nixdorf was interesting because of its ability to assume different functions depending on the CPU/ROM pack installed. The most interesting functional module for Nixdorf transformed the unit into an RS-232 terminal. Panasonic has taken the systems approach with TI type plug-in daisy chain accessories to expand the basic unit to include video interface, printer, additional memory, etc. The Panasonic machine is 6502 based to boot.

Though all of these machines have some rather severe limitations in capability and display due to their size, they represent a definite direction in the market and are sure to have application for the currently unexplored portable market. Imagine the convenience of having an intelligent RS-232 or modem-equipped terminal that fits in your shirt pocket. If you add the ability to do local calculations, remember and sort data, dump that data on command, and keep real time; you start to get an idea of where these large manufacturers perceive at least a part of the personal computer market going.

The video gamers were not nearly as strong this year as in previous ones. Those that remained had already expanded their line to include some sort of computer. Atari, Mattel, and APF all were showing machines. As far as quality of graphics and real time gaming is concerned, Mattel was far and away superior. Curiously Apple chose not to display at this year's CES. Generally their reason was reported to be their move away from the consumer market towards the small business market. Commodore was showing their CBM 80 column green phosphor machine, but they have not given up on the consumer market. In their back showroom, they were displaying a color high resolution version of the popular PET.

Ohio Scientific had a number of announcements and new products that are very definitely consumer oriented. Ohio Scientific announced joint marketing plans with both Montgomery Wards and Control Data Corp. to sell Ohio Scientific personal machines. Montgomery Wards will

be marketing the machines in their stores nation-wide. The stores will be staffed primarily by Ohio Scientific Distributors and Dealers, with a smaller number run directly by Montgomery Wards. The target is for 100 stores to be operational by this Christmas season. CDC on the other hand is planning a smaller number of direct stores to market both Ohio Scientific and its PLATO system. CDC stores will also serve as personal computer repair depots. Though there is considerable speculation concerning the motives for the CDC venture, CDC is certain to enhance the library of software currently available for the Ohio Scientific personal machines with some of the excellent material it has developed over the years for its PLATO system.

The C1P enjoyed a substantial revision and is now known as the C1P Series II. It has an improved display with a switchable 48x16 mode. Color is now an option as well as the compliment of interfaces currently available only for the C4P-C8P series.

The C4P series has a new machine that bridges the gap better between the business machines and the personal machines. It is called the C4P-DF. As the name implies it is a 48K (new static board) 2MHz. floppy based machine with dual 8" floppies. This is possible because the new Siemens single sided drives don't require a negative voltage for the read amplifiers. This machine also fills a gap for the Montgomery Wards and CDC stores, who in test market were unable to sell a machine in the personal line for small business use.

WP-2 is now available on 5" diskette with a nifty interface to the Centronics 737 printer. This dot matrix printer has correspondence quality print with a proportional spacing option. The print driver for the new WP-2 does a very nice job of creating a very low cost word processing system.

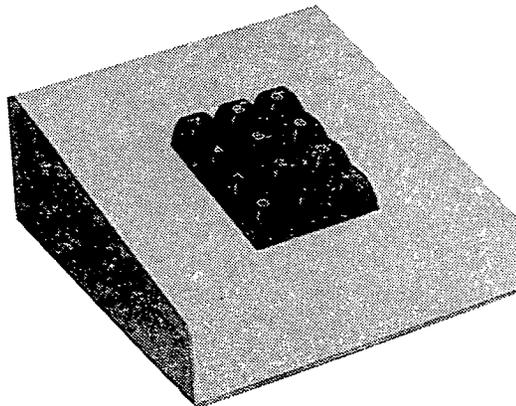
Plot BASIC, the Ohio Scientific graphics oriented modification to BASIC, was on display. It does go a long way towards satisfying the questions of how to take advantage of the speed and versatility available in Ohio Scientific color and graphics displays. It does not satisfy the desire for higher resolutions point

graphics or the need to be able to control background as well as foreground color, but it is definitely a welcome addition to the utilities available. The most interesting feature is the ability to define an area of the screen as a character and move that character nondestructively around the screen. This allows real-time animation on the Ohio Scientific machines with a minimum of effort. The rumor continues to persist that in the backrooms of Ohio Scientific someone is working on a high resolution pixel oriented graphics board, but I would not hold my breath waiting for its release.

Real-time voice recognition is still out of the financial reach of most hobbyists, but the technology is rapidly approaching where accurate voice recognition and recognizable computer speech will be available on small machines. There were several interesting displays of both Votrax speech and a special high technology speech recognition system on Ohio Scientific hardware.

The 1980 versions of CES and NCC broke attendance and exhibitor records. There certainly was no evidence of softness in the industry due to the poor economy. The Japanese are very strong in the peripheral market and are positioning themselves for a foray into the personal computer marketplace. Radio Shack has made a very intelligent move toward the "Viewdata-Teletext" marketplace that promises to finally open up the potential of a computer in every home. Ohio Scientific is launching the first major mass marketing effort with traditional home computers. CDC is somewhere in the background with a lot of cash. I'm back in the office wondering where half the summer went. And next year not only will the summer CES be back, but NCC will be in Chicago too. The NCC organizers are saying that the personal computer vendors will be allowed on the main floor next year. If the same thing happens at CES, I wonder where they are going to put the X-rated video cassette vendors. If they don't come along, how am I ever going to come up with a good excuse to get Marilyn Chambers' autograph again?

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SYSTEMS PROGRAMMING NOTE ON 65U STEPPING RATE

by Kenneth D. Holt
Virginia Computer Consultants

Technical Newsletter #20 gave information on how to modify the stepping rate time constant for 65U in order to prevent problems with mechanical resonance in newer drives. This fix, however, was of a "brute force" method. It consisted simply of poking \$2E77 (the time constant) with the desired new delay value. This worked, but rendered the system on the disk unuseable on other hardware using the older type of drive.

Technical Newsletter #23 came out with a more elegant fix which features an "adaptive" stepping rate. This fix is now also included in 65U 1.2 (the N MHz system). The newly added code switches the stepping rate from 5 to 9 or from 9 to 5 whenever a seek error occurs. This gives the advantage that the same disk can now be run on systems with either type of drive.

However, this is not working out very well, either. The problem is that not all of the new drives work reliably at a stepping rate of 5; some work at 3, others at 6, and still others at 8. In order to make these systems work on new equipment, the older technique (from Tech Note #20) has been widely used. Many dealers apparently are just POKE'ing 11895 (or \$2E77) with the appropriate value in BEEXEC*, or modifying the value permanently with the CHANGE program.

This practice works fine for the equipment for which it was "tuned", but here is the catch: to flip between the old rate of \$09 and the new rate of \$05, the code just took the current rate and EOR'ed it with \$0C. This will turn a \$05 to a \$09 and vice versa. The \$0C is just a mask value for the EOR instruction. Now, if the rate were poked with, say \$04, the EOR will flip it to \$08 rather than \$09. This makes the disk unuseable for any system other than one which uses \$04 and \$08. An "\$08" system is likely to be pretty rare. What's more, both rates are too fast for an old disk drive.

The solution is to not only set the rate for the new system, but also to change the mask so that the system will at least run on all old systems (at a rate of 9). The mask value will vary depending on the desired rate for the new equipment. The following tables are guidelines on how to configure your system disk for stepping rates of X and 9. The cleanest method of installing this fix is by using the CHANGE utility. Specific CHANGE program parameters are given to locate the rate and mask for both 65U 1.1 and 1.2 systems. Note that the mask must be changed in two places.

ED's note: Our C-3 works best at 5 ms on all programs except disk copiers, which work best at 7 ms. We therefore have made the change to a 9ms/5ms screen, but at the beginning of disk copy programs we insert A=PEEK11895:POKE11895,7 and just before the exit we insert POKE11895,A

STEPPING RATE MASK

| | |
|------|------------------------------|
| \$02 | \$0B |
| \$03 | \$0A |
| \$04 | \$0D |
| \$05 | \$0C |
| \$06 | \$0F |
| \$07 | \$0E |
| \$08 | \$01 |
| \$09 | \$00 (disable adaptive rate) |
| \$0A | \$03 |
| \$0B | \$02 |
| \$0C | \$05 |

Parameters for CHANGE Program

| RATE | | MASK | | | |
|----------------|------|----------------|------|----------------|------|
| 1.1 & 1.2 | | 1.1 | | 1.2 | |
| Offset Address | | Offset Address | | Offset Address | |
| 0C00 | 2E77 | 0C00 | 31E3 | 0C00 | 31DA |
| | | -2AFD | 31E3 | -2AFD | 31EA |

DEFEATING THE OSD-OSU SCREEN

POSITION LOCATION 22

by

Jim Sanders

The example program below is not only fun to play with, it illustrates the manipulations of the cursor position register in location 22. When the value in this location reaches the screen width, a 'RETURN' is transmitted by the system. Due to a minor oversight the system does not decrement this counter when the 'BACKSPACE' or cursor addressing is used. If this character is used, location 22 may be adjusted by the user.

'OH!', you say...that's why the display gets messed up in my LIFE game while I am running the cursor around!...Yep.

This example presents a twirling baton on crt's with a non-destructive backspace, such as Hazeltines and Act-5 types. It looks best with an 'underline' cursor but the white blob type can be used with fair results.

The data statement alternates backspaces (ASCII 8) with minus (45), slash (47), exclamation point (33), backslash (92), and space (32). Going forward the space character is the last one used, clearing the trail. Backing up (controlled by the W loop) leaves a path to be eaten on the next trip.

The poke to 22 prevents the auto-return from messing up the line. Note also the format in the NEXT statements. This was mentioned in the last OSI dealer newsletter. Play around with various functions for delay on line 110. You can easily see the relative speed of BASIC functions this way. Try an exponent.

```
10 DATA 8,92,8,33,8,47,8,45,8,32,8 : REM CHARACTERS IN TWIRLIE
20 FOR I=0 TO 10: READ V(I): NEXT I : REM LOAD LIST FOR PRINTING
30 PRINT:PRINT:PRINT:PRINT:PRINT : REM MAKE SOME ROOM
35 FOR P = 1 TO 100 : REM RUN ALL DAY
40 FOR W = 1 TO 2 : REM FORWARD THEN BACKWARDS
50 HA=1: HB=10: HC=1: X=32 : REM LOOP PARAMETERS FOR FORWARD
60 IF W=2 THEN HA=9:HB=0:HC=-1:X=3 : REM SWITCH FOR BACKWARD
70 FOR A=1TO78: PRINT CHR$(X); : REM 78 CHARACTER LINE
80 FOR B=1 TO 3 : REM SPIN 3 TIMES BEFORE MOVING ON
90 FOR H= HA TO HB STEP HC : REM PRINT ONE ROTATION
100 PRINT CHR$( V(H) ); : REM USING THE V-LIST CHARACTERS
110 DUMMY=SQR(4) : REM PLAY WITH THIS FOR DELAY
120 NEXT H,B : REM OSI REVEALED A TRICK
130 POKE 22,0 : REM KEY TO PREVENTION OF AUTO-RET
140 NEXT A,W,P : REM FINISH UP THE LOOPS
```

U2

by Greg Stevenson

Isn't it fantastic! Last year there were few, if any, OSI-related publications outside of the factory journal and technical letters. Now, in less than a year, PEEK(65) has started filling in the wide communication gap for OSI users of all types. The rapid growth of PEEK(65), both in size and circulation, is a good indication of how important such communication is to OSI users. But as any enterprise grows, it usually needs to organize and specialize in order to more effectively meet the needs of those whom it serves. "Tech Notes" is one example of a specialized column to meet the needs of hardware-oriented users of OSI equipment. This issue introduces another specialized column, "U -2," which will serve the users of all levels of the OS-65U operating system.

The purpose of "U2" is threefold: 1) to aid in correcting the problems in the 65U system that the factory cannot or will not correct; 2) to disseminate information about 65U as it now exists so that users may utilize their machines more effectively; and 3) to provide a forum for users to exchange ideas, comments, etc., with the goal of developing a version of 65U that is without a doubt the finest operating system working on the best hardware in the industry. With this in mind, please write, whether the focus is problems, suggestions, questions, helpful hints, or whatever. "U2" will be the organ of communication between 65U users.

With the above in mind, this month's "U2" will discuss the opening and closing of files under 65U. The expression "opening a file," is rather misleading. The file, itself, is never touched in either the opening or closing of a field. What is actually opened is a channel, a special 8-byte buffer set aside in 65U to hold all of the file's parameters (e.g., type, starting address, size, and the device it resides on). The buffers are located in a single 65-byte block starting at 9906

(\$26B2). When a file is opened, using one of the following formats:

1) OPEN "filename", "password", channel#

2) OPEN "filename", channel#

65U takes the file specifications, loads in the current device's directory, locates the file specified, and, if it exists, checks the access rights* of the file against the password or a lack thereof. If enough information has been provided to allow access to the file, 65U fills the channel buffer specified (1-8) with the file information contained in the directory, as follows:

- 0 the file type
(3 + DATA; 7 = BASIC; 11 = OTHER)
- 1-3 the file's address (low, medium, high)
- 4-6 the file's size (low, med., hi)
- 7 the device on which the file is located (0-3 represents A thru D, respectively; 128(\$80) = DEV"E")

65U now has all the information needed to use this file in a program without having to look it up in the directory each time and without the program having to re-specify the file's name and password with each INPUT, PRINT, FIND, or INDEX command. A channel number is all that is needed.

When closing a file (actually a channel), 65U simply writes a 255(\$FF) into the file type byte for that channel. All other bytes are left alone.

Besides the obvious time savings that opening a file might provide in programming, there are other handy uses for the OPEN command. Some of the 65U utilities, such as FDUMP and COPYFI, use a

*At the present time, 65U does not differentiate between file types (e.g., DATA, BASIC, OTHER); thus, you can OPEN, LOAD, SAVE and RUN a file of any type designation. Be careful, however, because trying to RUN a data file that actually contains data and not a basic program may lock up your system or worse.

lengthy and slow BASIC routine to locate a file and its parameters. A quicker way is to OPEN and CLOSE the file in order to get its size and length, as required by these programs. (NOTE: Use FLAG 9 with the line 50,000 trap for error recovery in case of the file not being found or an incorrect password.) The following formulas will give the address and size for a file in any given channel:

$$SA = (CH-1)*8 + 9906$$

Where CH is the channel # and SA is the starting address of the channel.

$$\frac{AD + PEEK(SA+1)*256 + PEEK(SA+2)*256^2 + PEEK(SA+3)*256^3}{256}$$

Where AD is the file's relative address from the base track of the system.

$$SZ = \frac{PEEK(SA+4)*256 + PEEK(SA+5)*256^2 + PEEK(SA+6)*256^3}{256}$$

Where SZ is the file's size.

Locating files this way is over a hundred times faster than the method currently used by the 65U utilities and the 50,000 trap proves a more flexible error recovery than "FILE NOT FOUND."

A second use of these channel buffers is to limit the range of seeking with the FIND command to the end of data rather than the end of the entire file. This is especially useful when there is an extremely large data file, only a small portion of which contains data at the present time. Since the FIND command goes by the size indicated in the channel buffer, one may round the current end of data value up to the next highest multiple of 256 and break it into HIGH, MEDIUM, and LOW values, using the inverse of the formula shown above. These values may then be POKEd into the three bytes that make up file size for the channel desired.

cont

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A third use for these buffers lies in the fact that very rarely are all eight buffers used simultaneously. In virtually all programs, never more than four files are opened. Since 65U never touches a channel buffer unless a file is opened under that channel, these unused buffers make a great place to stuff information for use later on in a program or to pass vaues from program to program. The only caution is that you leave the file closed (type = 255). The other seven bytes in each unused channel may be freely used as holes.

This concludes this month's discussion. Next month some useful PEEKS and POKES FOR LEVEL 3 users will be discussed. Please send in ideas for future columns.

ERROR!!! ERROR!!! ERROR!!!

There is an error in the JUMP INDIRECT instruction of ALL 6500 family CPU chips, no matter who they were made by. This fatal error occurs only when the low byte of the indirect pointer location happens to be \$FF, as in JMP (\$03FF). Normally, the processor should fetch the low order address byte from location \$03FF, increment the program counter to \$0400 and then fetch the high-order address byte. Instead, the high-order byte of the program counter never gets incremented and so the high-order address byte gets loaded from \$0300 instead of \$0400. For this reason, your program should NEVER include an instruction of the type JMP (\$xxFF).

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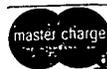
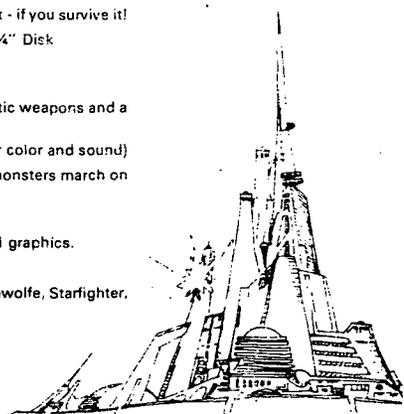
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LETTERS

ED:

You've heard this before but once again won't hurt. The OSI Operating Systems leave an awful lot to be desired. If they would only put together one operating system that would use all of the good features of their many operating systems or, better yet, have an operating system that could convert a 6502 Microsoft Basic Program to Z80 or 8080 so it would run on standard CP/M in a 48K machine - they would have something ultra super.

Wayne R. Cole
Towson, MD

Wayne:

If 2 OSI'ers would get together, they probably could convert OSI basic to CP/M Basic by converting to ASCII and transmitting ASCII Basic files from a 65U machine to a CP/M machine, since both programs use Microsoft Basic. Then you would have your 65U programs running on the slower Z80 chip under slower CP/M, but why?

AL

ED:

I just ran across an interesting idea concerning DMS files. In many files I need to keep header info such as totals, number of items, access sequence numbers, date of last update, etc.... Since there is no room left in the header area to stuff this into I either put in record No. 1 or (heaven forbid) open another file and put it there. Putting the data in record 1 causes problems when using the report writers because the first record must be skipped.

If you look at how a DMS file is set up you will find that there is usually a small space left after the last record. This space starts at INDEX <CH> = EL (CH) * NR (CH) + BODF(CH). You are free to hide whatever data you want in this area in either sequential or fixed field format. The data is invisible to normal DMS programs but can be easily accessed by setting the index as above and INPUT%CH,T\$.

If more room is required for data than DMS left, the file space can be enlarged in two ways:

1)CREATE a file the required number of bytes larger than the original and transfer the file using COPYFI.

2)Go into the DMS Master file create program and modify the statement that calculates the overall file length.

William Brown
Cornelius, OR

ED:

Perhaps some other reader can help me with an unusual bug in my CIP.

Since I added the 610 board, I occasionally load programs that run 10 to 12K and in one spot near the end of the program a glitch occurs on input statement. Example:

```
8320 INPUT "WANT MORE BALONEY";Q$
8340 IF LEFT $(Q$,1)= "Y" THEN 8380
8350 More stuff
8380 More stuff
```

In the above example, line 8340 returns a function call error if Q\$ is stored as "ES".

I can get around this problem in two ways:
1. Shorten the program to 9K or less by taking lines out of another part. 2. Making line 8320 gosub 9000.

(For example) and adding 9000 INPUT "WANT MORE BALONEY"; Q\$ 9010 RETURN. return.

Does this look like a problem with the RAM in say the \$2000 to \$2FFF location? If so, how can I spot the faulty chip? This is not just a problem with strings. I have had the same problem with an input of 100 from the keyboard being read as zero.

An ideas?

Gary Wolf, Clifton NJ

ED:

I recently purchased a 610 expander board and after examining the schematic, have some answers for J. Hadfield (May issue).

What is on the board is a hardwired interval timer. OSI feeds the CPU clock (02) into a chain of -10 counters and brings the outputs up to pc pads, which can be jumpered to one or more inputs of the 6820 (PIA) - specifically CA1, CA2, CB1, or CB2. The PIA can be programmed to pass these signals to its outputs IRQA or IRQB (which OSI tied together) and these may be jumpered to either NMI or IRQ. The 6820 data sheets give more info, but essentially the only programming (via software) that you can do relates to how to present the hardwired interval interrupts to the system. The PIA is at \$C000-3, the 6850 ACIA is at \$C010-1, and referencing \$C020 will reset the dividers and start counting again.

While looking at the BASIC-in-ROM garbage collector I found a routine that may be useful to some readers. It moves a block of storage from one location to another, moving bytes from right to left. To use it, put the last byte address + 1 of the source at \$A617, and the first byte address of the source at \$AA1B, then call \$A1D6.

Now for a question of my own. I would like to build a board for my C1 that produces the OSI '16PIN I/O BUS'. From examining the schematics, the following appear to be true:

- 1) Port addresses range from \$C790 to \$C7NF where N is any even digit (more sloppy address decoding).
- 2) VMA is really 02.
- 3) A₀ & A₁ come directly from the internal bus and so are continuously active.
- 4) LA₂ & LA₃ are gated by \$C7N and are low when no access is being made.
- 3) & 4) imply that bus addresses 0-3 can only be used for input since there is no way to inform the I/O device that it has been selected. Any comments from users who have played with this bus?

Can it be, that with the introduction of this bus, that OSI is finally allowing a wider range of OEM equipment on their machines?

Mike Carroll Tulsa, OK

ED:

I have a "goodie" you might care to pass along. I've had my LP with disk for close to two years & it wasn't 'til a few weeks ago when I got it to really start behaving. I had error #9, and other problems at home & no hint of failure when I took it to the dealer (H/B, Charlottesville--Good Boys). Well, it came down to a few volts floating around-- I had wired our 80+ year-old farm house so I called the power company to check my work--no extra voltage between neutral & ground. I was testing with my vom when it became apparent what the problem was. The Mitsuba TV/Monitor was putting out 2 to 3 volts & was sitting on top of the disk drive. Well, it's a few feet away & on a shelf now & all's well. I think the 2114 failures & the two latch failures I've had might have been due to the same problem. In the meantime I'm waiting for my voice to change because I've logged many hours very close to the set in question. Those plastic case monitors need a sticker or label.

John P. Calabria
Bridgewater, VA

ED:

I have a tidbit and a query. The tidbit: Notice there are two different characters for "space" on the graphics chip, \$20=30 and \$60=96. This can make for some interesting effects in games. While a given area of the screen just looks "clear", the screen memory for that area can be registering a pattern composed of the 2 different numbers that represent the "space" character. The query: Location \$FFE2=65506 apparently is a machine model signature byte. It contains a zero for C1 machines and a one for my C2-4P. What does it contain for other machines?

Edward Carlson
Okemos, MI

ED:

I have enjoyed my CIP for about a year and I would like to know a couple of things.

1) Where is the routine that inserts a line in a program. In the November 1979 Issue of Micro, Mr. Murphy tells us that it is located at \$A24D. I believe that this is a misprint and that this location is part of the error message routine.

2) Has anyone purchased the Expansion Board for the CIP from Grafix? If so, would he like to tell us about it?

3) Does anyone out there know of an assembler for the CIP that doesn't take up as much memory as the one OSI sells for \$40.

Also, here is a nifty way to call machine language routines without tying up the USR function. First load your machine language program in, then warm start your machine. Next type in POKE 538, 34:POKE 539, 2. For the program below, whenever you want to call the machine language routine, simply insert a ?CHR\$(7) anywhere you want to in the BASIC program or if you want to use it in the immediate mode type CONTROL-G. This is great for screen clears, etc.

```
$0222 C9 07    CMP#$07
;Is the character the bell character?
```

```
0224  F0 04    BNE $04
;yes, branch to routine
```

```
0226  20 2D BF  JSR $BF2D
; no, print character
```

```
022A      60  RTS
; return to BASIC
```

```
022B--machine language program
goes here
```

As many CMP's and BEQ's as you want can be used. Just be sure to end the machine language program with a RTS.

Dru Cabler, Hammond, LA

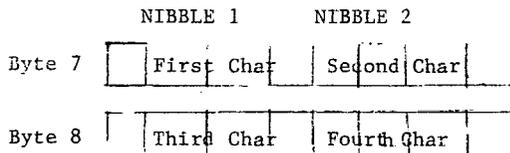
ED:

I usually don't write but after reading Kendall's July column and the letter from Sam Martin of Garland, TX I was sick. I hope you can find better information or else you might reduce the size of your paper and also its cost. To help those who would like to know what the file header in 65U contains read on....

Bytes 1 thru 6 -- ASCII name: If less than 6 characters it is filled with spaces:

| Byte | ASCII | Hex |
|------|-------|-----|
| 1 | P | 50 |
| 2 | A | 41 |
| 3 | C | 43 |
| 4 | K | 4B |
| 5 | | 20 |
| 6 | | 20 |

BYTES 7 & 8 -- Pass Word: Must be four characters if no password needed then contains 00 HEX.



First & 3rd characters ASCII decimal value. If less than 65D or greater than 80D converts to an FH or 15D. If between 65 and 80 then is value -65.

If less than 78 or greater than 93 it is an FH or 15D, if between 78 and 93 then value -78.

| ASCII | DEC | HEX | 1st & 3rd HEX Value | 2nd/4th HEX Value |
|-------|-----|-----|------------------------|----------------------|
| Null | 0 | 0 | F | F |
| " | 0 | 0 | F | F |
| " | 0 | 0 | F | F |
| " | 0 | 0 | F | F |
| ? | 63 | 3F | F | F |
| C | 64 | 40 | F | F |
| A | 65 | 41 | 0 | F |
| B | 66 | 42 | 1 | F |
| C | 67 | 43 | 2 | F |
| D | 68 | 44 | 3 | F |
| E | 69 | 45 | 4 | F |
| F | 70 | 46 | 5 | F |
| G | 71 | 47 | 6 | F |
| H | 72 | 48 | 7 | F |
| I | 73 | 49 | 8 | F |
| J | 74 | 4A | 9 | F |

| | | | | |
|-----|-----|----|---|---|
| K | 75 | 4B | A | F |
| L | 76 | 4C | B | F |
| M | 77 | 4D | C | F |
| N | 78 | 4E | D | 0 |
| O | 79 | 4F | E | 1 |
| P | 80 | 50 | F | 2 |
| Q | 81 | 51 | F | 3 |
| R | 82 | 52 | F | 4 |
| S | A3 | 53 | F | 5 |
| T | 84 | 54 | F | 6 |
| U | 85 | 55 | F | 7 |
| V | 86 | 56 | F | 8 |
| W | 87 | 57 | F | 9 |
| X | 88 | 58 | F | A |
| Y | 89 | 59 | F | B |
| Z | 90 | 5A | F | C |
| [| 91 | 5B | F | D |
| / | 92 | 5C | F | E |
|] | 93 | 5D | F | F |
| ^ | 94 | 5E | F | F |
| , | , | , | F | F |
| , | , | , | F | F |
| , | , | , | F | F |
| , | , | , | F | F |
| , | , | , | F | F |
| , | , | , | F | F |
| DEL | 127 | 7F | F | F |

FOR A7\$ ≠ y

| FILE TYPE/ ACCESS RIGHTS | DATA | BASIC | OTHER |
|-----------------------------|------|-------|-------|
| NONE | 80 | 84 | 88 |
| READ | 81 | 85 | 89 |
| WRITE | 82 | 86 | 8A |
| R/W | 83 | 87 | 8B |

Bytes 10, 11, 12:

10 Disk starting address low
 11 Disk starting address mid
 12 Disk starting address hi

Bytes 13, 14, 15

13 Length in blocks low
 14 Length in blocks mid
 15 Length in blocks hi
 (A block is 256 bytes)

EXAMPLES:

| | | |
|------|--------|--------|
| | Byte 7 | Byte 8 |
| PASS | FF | F5 |
| ANAN | 00 | 00 |
| FOUR | 51 | F4 |

The above is for 65U V1.1 and may have some changes since then.

Byte 9 -- ACCESS RIGHTS. In the first version of 65U I have A7\$ is used and its function is unknown. I did not check to see if it is still used.

FOR A7\$ = y

| FILE TYPE/ ACCESS RIGHTS | DATA | BASIC | OTHER |
|-----------------------------|------|-------|-------|
| NONE | 00 | 04 | 08 |
| READ | 01 | 05 | 09 |
| WRITE | 02 | 06 | 0A |
| R/W | 03 | 07 | 0B |

VALUES SHOWN IN HEX

If I want to access a protected file and don't know the password I change the access rights to 03 or 07, depending on the type of file. Also the delete routine places a decimal one in place of the first character of the file name in the directory then packer deletes the file. Also on V1.1 the header is also placed at the beginning of the file as well as in the directory. I don't think it does on later versions.

Kurt Barber, Lafayette, CO

Kurt:

I decided to print the Martin letter not because of the technical quality of the information, but rather as a consciousness-raiser, for those who thought their files were safe because of password protection.

A1

ED:

In a previous issue, a reader complained that OSI's BASIC random number generator has a cycle of only 1861. This is due to the unfortunate choice of a seed value. You can "reseed" the generator and get different, longer sequences by one of two methods. The first is to use a negative argument for the RAN function such as: X=RAN(-23)

The number returned in X is not useful but further calls to RAN with a positive argument will start a new sequence.

The second reseeding method is to poke new data into any of the locations 212, 213, 214 or 215. This is where BASIC stores its seed value. On a cold start, the same seed is always placed here.

E.M.
Saginaw, MI

ED:

Here are the fixes for the DMS Nucleus programs INSERT and REMOVE. In using these programs to insert a record or delete and repack records in a file, sometimes the processed data would be found to be missing characters starting at the last field in the record. This problem would not occur every time but often enough that the results of running these could not be assumed. After making the changes listed below in the programs (Dec. 79), these problems have not occurred again. Basically the changes cause the records to be indexed by each field and not once at the beginning of the record as the old coding did. Line 485 is included because some versions are correct while others are not. This is the correct coding:

```
485 TT=TT+FL(TF):IFINDEX(K1)≠BODFTHENTF=
TF+K1:GOTOA1
```

Changes to INSERT

```
605 X1=BODF+((RC-RP)*RL)
606 FORX=1TOTF:INDEX(1)=X1+FP(X):INPUTZ1,
D$(X):NEXT
610 X1=BODF+((RR-RP)*RL)
611 FORX=1TOTF:INDEX(1)=X1+FP(X):PRINTZ1,
RIGHT$(S1$+D$(X),FL(X)):NEXT
615 RP=RP+1:IF RP=C GOTO 605
```

Changes to REMOVE

```
670 B=K0: X1=BODF+(RE*RL)
671 FOR X=K1TO TF:INDEX(1)=X1+FP(X):
INPUTZ1, D$(X)
700 X1=BODF+(WR*RL)
701 FORX=K1TOTF:INDEX(1)=X1+FP(X)
:PRINTZK1,RIGHT$(S1$+D$(X),FL(X)):NEXT
710 RE=RE+K1: WR=WR+K GOTO A1
```

Radford Compton
Manassas, VA

ED:

Presently I have a somewhat similar system to that described in the letter of Mr. R. D. Bracey (C24P-MF, 32K ram and an H-14 line printer). Having considered the problem he outlined, (viz., how does one switch the number of characters printed per line during, or just prior to program execution), I wrote this simple program to illustrate how readily such switching may be accomplished, employing the H-14 printer (see the attached run and listing). Note that any of the H-14 software selectable features can be sent to the printer via the CHR\$(decimal ASCII value) command of MICROSOFT BASIC. The only constraints are that:

- 1) the CHR\$(value) command must be immediately preceded by the PRINT Command;
- 2) multiple printer control sequences must have the ';' field control separator between each CHR\$(value), in order that the H-14 recognize such strings as commands rather than as text;
- 3) the SAVE monitor feature must be enabled at some point prior to sending the command string to the printer.

W.G. Hughes, London, CANADA

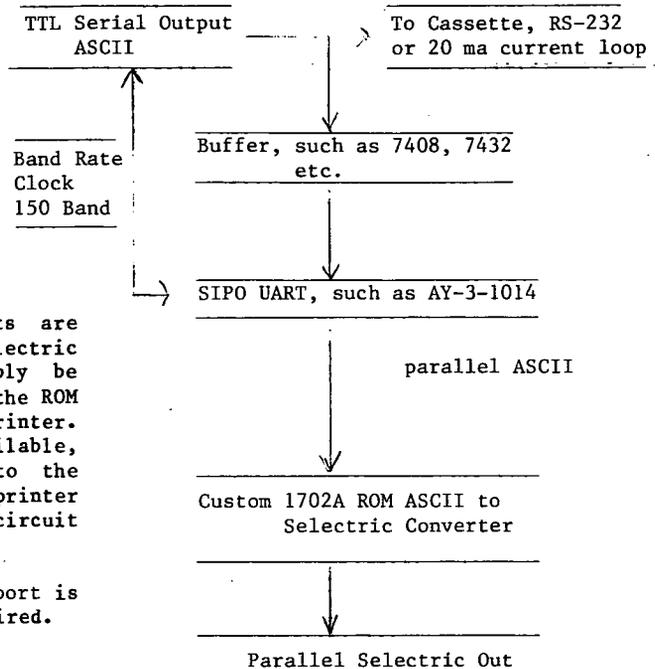
ED:

In response to the question about using a C2 (or C3) as a terminal into an RS232 modem, a software consultant named Kevin Christian, 1229 E. Kettle Place, Littleton, Colo. (303) 795-8483 has this software available.

Tom Stover, Gering, NB

ED:

In response to Robert Groome's letter wanting to know how to interface an IBM Selectric, may I suggest the following.....



Certain timing control TTL circuits are needed, of course. For serial Selectric output, the logic flow must simply be rearranged such that the output of the ROM is serialized before going to the printer. If a parallel ASCII port is available, that could be used as the input to the ROM. In any case, the speed of the printer will be a major factor in the circuit design.

The advantage of using an existing port is that no additional software is required.

Bruce Showalter, Abilene, TX

ED:

In the April issue, there is a letter from Gary Sitton in which he mentions that the FRE function frequently hangs up. I am using a C1 P, and I too have noticed this problem. It seems to happen, mostly when string arrays are in use; I have never noticed the problem when I am doing nothing but numerical work. There is a fix.

As one of the early lines of the program, enter `10 DEF FNF(X) =(256*PEEK(130)+PEEK(129)) - (256*PEEK(128) + PEEK(127))` and instead of using "FRE(0)" to find the remaining memory, use "FNF(0)". The answers are identical, except that FNF(0) never hangs up the machine. The function just computes the space unused between the top of numerical variable storage and the bottom of the string storage.

I was helped in finding this fix by the partial memory map of OSI Basic-in-ROM published by S.R. Murphy on page 18:9 of MICRO, November 1979, as well as the memory map sent out by the Progressive Computing people of Canada.

John P. Sohl, Canoga Park, CA

ED:

I have a C2-8P and would like to interface a NEC Spinwriter without expanding to a Disk OS. Do any of your readers have software driver for such a printer? What additional hardware and information will I need to make such a hookup? What interfaces RS232C, etc., is recommended?

Wallace Bates, Arlington Heights, IL



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