

CACHE Hotline (312) 849-1132

CHICAGO AREA COMPUTER HOBBYIST EXCHANGE

VOL. VI, NO. 1

P.O. Box 52, South Holland, IL 60473

JANUARY 1981

VOLUNTEERS NEEDED FOR DBMS DEMOS

by Ben Bronson

VISICALC AT JANUARY MEETING

VISICALC has developed a tremendous reputation as a program useful to managers, investors, householders, students, scientists - all kinds of people. At the January meeting VISICALC will be demonstrated by George Schmidt, a scientist, and Jerry Horowitz, a broker, members of the TRS-80 SIG.

VISICALC functions as a seemingly magical scratchpad. The rows and columns can be defined as functions of other rows and columns as well as raw data input. One of the simplest functions would be to have the last row or column be a sum of all items.

The power of VISICALC comes from the ease with which entries can be defined as functions of other entries. Its utility comes from the speed with which all other entries are modified when a change is made. You might be working out a budget and want to see what would happen if sales really did pick up. It would take only a few key-strokes and all the items affected would be displayed.

George will demonstrate some of the basics of VISICALC before Jerry demonstrates some of its uses in dealing stocks, bonds and forecasting. Then George will discuss with those interested some of its possible scientific applications such as doing differential equations. Both of them will be glad to answer questions about the lots of other potential applications that may occur to you as you listen to them.

It's said that firms have bought many APPLES or TRS-80s just so that their managers could use VISICALC. I'm almost tempted to get one myself if I can't find a CP/M version.

-Chuck Douds

CACHE EDITOR STEPS DOWN

CACHE is looking for a new editor for its newsletter, beginning with next month's issue. No editorial experience or knowledge of microcomputers required; coaching will be provided as desired.

Contact Roy Lipscomb, 274-0531 anytime.

The February CACHE meeting will feature Data Base Management (and database management-like) systems. The center piece of the program will be demonstrations of several actual "DBM" systems going through their paces with real data. Volunteers are needed. If you have a DBMS-like system and at least 200 K of data stored under that system, and if you are willing to explain its virtues and vices, please get in touch with Chuck Douds or Ben Bronson. They will help with arrangements for media transfer, if needed, and for the security of programs and data; no copying will be allowed. Volunteers will receive copies of several public domain "DBM" systems as a reward for participating.

CACHE MEETING, JANUARY 21

Calendar

Note: Please do not arrive before 11:00 except to help clean up.

- 11:00 PET, LSI-11, NORTH STAR, TRS-80, 68XX APPLE, INTERACT, BALLY
- 12:00 SIG-BIZ, CPM/COMM, FORTH/LISP
- 1:00 MAIN MEETING: "VISICALC," presented by George Schmidt and Jerry Horwitz.
- 2:00 PASCAL, SIG-PUB (Public Computing)

Monday, February 2, 5:00 PM to 10:00 PM, at Doug Robson's: Newsletter paste-up, general discussion, and pizza eating. Contact Roy at 274-0531

To request changes in the calendar, contact Roy Lipscomb, 274-0531.

S I G S I G S I G S I G S I G S I G S I G S I G S I G

Language - B=BASIC, F=FORTRAN, E=PILOT, N=NEWDOS,
M=Machine/assembler, P=PASCAL, D=TRSDOS, T=Tape
I/O, W=wafer I/O.

SIG - TPS88

Media - D=Disk, T=Tape, W=wafer, L=Listing

Steve Gold	885-8651	President
Leah O' Connor	792-3253	Vice-Pres.
Mark C. Wehnhoefer	478-8623	Secretary
Cliff Barber	259-3812	Asst-Sec.

LAST LINE - This line must be used to end your data statements.

65000 DATA @,*

December meeting - Carey Tyler Schug distributed hardcopies of the software information exchange sheets to all ten participating members. He also wrote a BASIC program that displays the information which is stored in BASIC data statements. Carey's program is FREE upon request. Many thanks to him for the excellent work in so short a time!

George Matyaszek demonstrated Microsoft's BASIC COMPILER. Four steps are required to compile a BASIC program: 1) Save BASIC program to disk in ASCII format; 2) Compile program; 3) Add BASIC library functions; 4) Save compiled program to disk. Depending on program size, this procedure will take 10-15 minutes.

All members are encouraged to join the software information exchange. Please adhere to the following data statement formats.

Compiled programs use more disk space (3 gran vs 1 gran), but the increase in execution time can be dramatic (27 sec. vs 3 min.). Note - The latest version of this compiler should reduce the disk space used. The above figures are based on a BASIC program which writes out the video using set statements. George also said a program to generate the first 10,000 prime numbers will run 1 1/2 hours faster.

PERSONAL INFO - @,name,address line 1, address line 2, address line 3, home telephone, work telephone, Radio Shack hardware (separated by semi-colons) and NON-R.S. hardware (separated by semi-colons).

500 DATA @,Mark Doe,1 W Lake,Chicago IL 60601,,
478-8623,,Level III;EI 32K,Cat Modem;I/c

However, several BASIC keywords will not compile: clear, new, cloud, auto, edit, merge, ilist, csave, renam, cont, com, save, delete and load. Steve Gold could not compile his three across label program because the print tab instructions would not work properly.

Notes: 1) The at sign (@) must be the first field. 2) Remember to separate multiple hardware entries with semi-colons. 3) Any unused field must be allowed for with a comma. Above example does not have a third line address or work telephone number. 4) Since these are data statements, DO NOT use commas within the text of city-state and zip. 5) Use line numbers starting at 500 or above to avoid any conflict with Carey's program and to allow for program expansion.

These programs were recommended by various members. NEWDISK from Mumford, PENTAD and FINDISK2 which are disk directory utility programs; BUSINESS PACKAGE from H + E Computronics which contains 100 math-related programs; and PACKER from Cottage Software which condenses or expands any or all parts of a BASIC program.

PROGRAM INFO - Number, program name, function, type, source, memory size, language, media and comments.

JANUARY MEETING - Jerry Horwitz will demonstrate Radio Shack's VISICALC.

510 DATA 140,Keyplus,U/I & shorthand graphics &
BASIC keywords,U,SJM (nc,16K,M,T,48K version also

- - - Mark C. Wehnhoefer

Notes: 1) One data statement is required for each program. 2) Use these abbreviations in the data statements:

From TCS Newsletter May 1980

Type - D=Data base, G=Game, B=Business,
E=Education, V=Video Graphics, O=Operating system,
U=Utility, A=Application, S=Sound, M=Magazine.

Here is a rumor that is possibly too dangerous NOT to spread around. In the 80-COMPUTER USERS OF HOUSTON newsletter, it says that a Model II's video can be literally damaged if you output to port 255 (FF in hex) a value less than 25. If your video goes blank suddenly, accompanied by a high-pitched whine, you have less than 7 seconds to turn the computer off.

****SIG BALLY****

A special thanks to all who participated in the festivities last meeting. Besides the goodies to eat we had six Ballys setup and running. In the midst of the game playing and eating, we did manage to hold a short meeting.

Skip Steffens has volunteered to setup a reference library. The library will contain documents pertaining to the hardware side of the Bally computer and possibly other data relating to add-on units, such as keyboards, modems, etc. Skip will have more information on the library in future meetings. He is presently weeding through material that has been contributed so far.

Bob Stoops informed me that he has about 50 programs in the software library to date. He has duplicated these programs on other cassettes which are available to our membership. A listing of the library contents is forthcoming.

We are in need of software/hardware review forms. We'd like to obtain an existing form that is simple to use and understand. The forms that I have seen look as complicated as my income tax forms.

Gunther Dorth demonstrated his version of an ASCII keyboard and interface. His approach is unique in that it does not require modification of the cassette interface. He duplicated circuitry to simulate part of the cassette interface. His keyboard plugs directly into the cassette interface just as a tape recorder would. The heart of his unit is an AY5014 UART and a Cherry encoded keyboard. He did not have to modify any keys to make the erase function work by using this keyboard. Also, by using the AY5014 and the Cherry keyboard a 5-volt power supply is all that is required to operate the unit.

We will be looking forward to meeting the Astrovision rep at our next meeting. Rumors from Michigan say that Astrovision has been before the FCC and they may be

attempting to market the original add-on unit. Other news on the grapevine is that Astrovision will be demonstrating the add-on unit at the Las Vegas computer show in January.

Rex TV has opened a Bally service center in Homewood. Their address is: 18666 S. Dixie Highway and their Telephone No. is 799-7800.

Membership forms will be passed out at the next meeting. These forms will ask some questions as to your application of your arcade and what you would like to see happen at future meetings. Please return the forms through the mail so we won't take up meeting time.

Congratulations to Mike Masklowski for getting past the hardware problems of interfacing his Bally with a color monitor.

-----Hank Chiuppi

SIG NORTH STAR: MOVABLE DOS

North Star has released a user-relocatable BASIC and DOS. The new operating system, Version 5.2, can be run at any address. In fact, the standard factory double density disc boots up at 100 hex. If you would like a copy of the this new system disc bring a disc with you to the January meeting. We also have copies of the system software manual ("Addendum revision 2.1," dated July 1980) that explains these new marvels.

The operating system is still in 8080 code and so compatible with all current users hardware. Three new memory test have been added. These, however, are in Z80 code.

The master disc includes a mover program in BASIC, along with mirror-image files of DOS, BASIC, and all the utilities. The mover program compares the two versions for differences, and so finds which bytes to change in order to customize the program for your selected location.

I think you will find this a clever and useful implementation by North Star.

Doug Robson

**** SIG CP/M ****

Well, Happy New Year! Now that I've got that out of the way I'll move on to apologising (once again) for not getting articles in to Roy on time so's he can print 'em and you can read 'em. (No, I WASN'T drunk when I typed this, I was born this way).

Now that the preliminaries are out of the way, I'll make my big December announcement: CP/M Users' Group Volume 47 is out and available. That was new for December and if you were at the December meeting with Chuck Weingart and me then you already have a copy. For the benefit of those who missed it, volume 47 (like vol 46) is a utility disk -- including directory programs and lots more -- the star of vol 47 is MODEM7 which Ward no longer lays claim to (he would rather take the credit for the protocol than having people phoning him to ask about a modification he didn't write).

So, what's new for January? Well, Ward is currently (New Year's Eve) working on volumes 48 and 49: a Stage 2 Macro Assembler and a disk of new 'C' programs, respectively. I am working on volume 50 which, at the present time, may or may not be an Adventure disk featuring Ward's new assembly language adventure interpreter and adventure compiler (that means you can write and compile your own adventures, all you creative people!) Also featured MAY be Jeff Mills' Dungeons and Dragons program in MBASIC (D&D is a trademark of TSR Games, Lak Geneva, Wis.). If you have ever heard of D&D you know what it is (at least vaguely) and I don't have three pages of room in this newsletter, so I won't go into lengthy descriptions. Let's just say it's a swords and sorcery fantasy game.

Well, what will the future bring? If Roy and you are interested (he's your newsletter editor) maybe Ward &/or I will write up an article for the new adventure stuff I mentioned earlier. Happy CP/M'ing!

FLASH!!!

Talking to Digital Research, I found out their discount schedule. A discount of 25% applies to a purchase of 5 or more software items. A discount of 40% is offered for a purchase of 25 or more items--almost half off. To take advantage of this offer, I have agreed to head up a group purchase. Contact me at the next CACHE meeting, or leave a note on CBBS, OR CALL (815) 398-0579 DAYS.

Some of the products available are CP/M 1.4, CP/M 2.2, MP/M, CP/NET, MAC, SID, ZSID, and PL/I.

Jim Mills

This is the text of a letter I received recently:

Digital Research has recently become aware of the large numbers of CP/M and MP/M users and interest groups. We are interested in establishing a working relationship with our users. If you know of other special interest groups or other user groups involved with any Digital Research software, would you please let us know their addresses so we may contact them?

Digital Research would like to establish a directory of CP/M or MP/M user groups by region. We would also like information regarding program libraries, meeting schedules, and a copy of your group newsletter. We in turn would keep you informed of the latest Digital Research developments, and send a copy of our quarterly newsletter. In addition Digital Research could provide quantity discounts to organizations interested in Digital Research software. Thank you for your continuing interest in Digital Research and its products. Curt Geske, Marketing Representative

Any comments should be directed to:
Digital Research PO Box 579 Pacific
Grove, CA 93950
Business phone: (408) 649-3896
Tech Hotline: (408) 375-6262

Jim Mills

SIG PASCAL

During 1980, the PASCAL SIG was privileged to hear excellent presentations by Al Kapusta on hashing, George Kohler on data bases, Steve Castle on Pascal operating system and Paul Krystosek on encryption techniques. Some of the issues raised at our meetings concerned future releases of Pascal, Pascal standardization, Pascal intrinsic routines to handle basic functions, teleprocessing between Pascal machines, and a shared program library. The SIG has also been able to help new Pascal users to come up to speed.

At the January meeting we will have a presentation of Pascal pointers. All CACHE members are welcome to attend.

--Steve Castle

SIG APPLE CAUTION

Users of MUFFIN who try to copy protected programs from DOS 3.2.1 to DOS 3.3 may destroy the source in 3.2.1.

--Russ Stevens

THE PRESIDENT'S CORNER

A new year is here and so is the new slate of officers for CACHE. If you check the staff box you will find several new names, and a reshuffling of many that are familiar to you. These officers have taken in hand the task of maintaining CACHE as a meeting place for people to exchange ideas and information concerning our favorite "hobby." More help is needed to make Cache a more varied, interesting, and fun place to visit, for new comers as well as "old timers." You might like to work at the registration desk or would you rather be a SIG leader? If greeting people or leading a group is not your pleasure, how about writing or editing an article for the newsletter, working with the Treasurer, or helping the "clean up" crew straighten up after a meeting. We plan to start classes for new members and computer novices. Would you be able to help with this? Do you have an idea for something that you can do to make CACHE more interesting or helpful to others? If you do I would like to hear about it. With your help we are looking forward to an eventful year.

Sincerely

Doug Robson

A Beginner's Special Interest Group

Shortly following the CACHE December main meeting I was approached by several members who have already expressed interest in putting together a SIG that would devote all of its effort toward the beginning computer hobbyist. I'm overwhelmed by this positive response and have decided to have an informal first meeting prior to the CACHE main meeting in January. Prior to this first meeting I'll try to get some of my ideas down on paper concerning subject matter, format of the program etc., but I would like to depend on the participants most of all as to what they feel would be most important to them. Please be prepared to offer a few suggestions, they will be appreciated. Looking forward to seeing you then. (11:00am-1:00pm, during the SIG time slot).... Robert Starinsky.....

(From TCS Newsletter, via Northern Bytes.)

EXTEND THE LIFE OF YOUR PRINT RIBBON

To get extra life out of printer ribbons, give them a good soaking shot of WD-40 and let them sit overnight. Don't try to use it too soon after the treatment or it will print dark and light areas. The reader who gave us this one printed it on a Centronics 779 with a ribbon on its 3rd round of WD-40 and it looked great.

Adding PHANTOM to S100 Boards By Chuck Weingart

The PHANTOM signal, pin 67 on the S100 bus, is used to provide a form of memory management. When PHANTOM is high, all memory boards respond normally, but when low, the boards will not output anything. Thus, it acts as an extra address line. The PHANTOM signal is normally output by boards with EPROMs on them, such as disk controllers, and then only when the EPROM is selected. That way, it is possible to have a 1K "hole" in a 64K system, instead of having to disable an 8K or 16K board entirely. However, some boards with EPROMs do not generate the signal. It can be added easily if there is an unused section of a 74367 or 74368 on the board. Find one of these chips with pins 13, 14, and 15 unused (such as IC 46 on the Cromemco 4FDC). Connect a jumper between pin 20 of the EPROM and the unused pin 15. Connect a jumper between the pin 13 and S100 pin 67. Finally, connect a jumper between pins 8 and 14 of the 74367, or pins 14 and 16 of the 74368. That's all!

Getting a Second Phone Line

Did you ever wish you had two phone numbers? Especially those of you with auto-answer modems? Well, Illinois Bell has a service called "Family Plan" which may answer your needs.

With the Family Plan, you get two numbers, with the first hunting to the second if you wish. You also get two phones, either of which may be used with either number, and either may be set up to ring on either number. If you are talking on one line, and the other phone rings, you may put the first call on hold and answer the second number (but you cannot dial out on the second number). I have both phones ringing on the first number and use the second number for my modem, or for calling out when I want to keep my line free for an incoming call.

If you have "Call-Pak Unlimited" service, the Family Plan costs almost twice as much as a single line, so you only gain convenience. If you have a line where all calls are metered, this service costs little more than an ordinary extension, when I first got it in, about \$1.50 more per month, tho I think the premium is slightly more now. In suburban areas with a local free calling area, the cost is slightly higher.

With the Family Plan, you get 1 or 2 directory listings, and one bill with one pool of units for both numbers.

It seems that Illinois Bell does not like this service; you cannot order it by walking into a phone office, and when you call in, not all of the service representatives can place your order. When you call, the representative may offer to have someone call you back, but don't let them do that, they will not be prompt, and you can play telephone tag for days. You (by regulation) may insist on waiting for someone who can take your order, and this did not take me long.

All of the above is based upon when I got my service, almost 2 years ago, tho I have talked to people who have gotten it more recently.

--Carey Tyler Schug

The Official Computer Game Players Cheater's Guide

by Tom Sethre

(THE OFFICIAL COMPUTER GAME PLAYER CHEATER'S GUIDE by Tom Sethre appears courtesy of THE APPLE-DILLO, RIVER CITY APPLE CORPS newsletter Austin, Texas)

Are you tired of being humiliated and insulted by BREAKOUT? Do the Klingons consistently blast you out of the galaxy? Have you never gotten past the first level of SUPER DUNGEON? Are you convinced that Scott Adams' Adventures have no solution? Have you been lost for months in the HI-RES ADVENTURE forest?

When faced with these kinds of situations, there's only one sensible approach:

C H E A T !!

That's right, say it out loud. There's nothing to be ashamed of. Good, honest cheating is as American as Mississippi river boat gambling. And it is always fashionable in an election year!

There are innumerable benefits to be realized when cheating with computer games. First off, there's the restoring of your self respect. No machine is going to master you as long as you can cheat it blind! (That's the nobility of the human spirit that makes us superior to any machine.) Far better than the animalistic response of 'killing' the program, cheating calls forth our most creative, cunning characteristics.

Incidental to this fulfilling expression of the human essence, you can also learn a hell of a lot about programming by taking apart someone else's.

Where do we begin? How about getting a little revenge on probably the first game you ran on your Apple: BREAKOUT. If you've had your machine for some time, you probably have the version that not only ends with an embarrassing number of bricks on the screen, but insults your performance as well.

Fortunately, this program is written in BASIC to serve as a lo-res graphics tutor. List the program and study its construction. Before long you can locate the line that prints your score and the number of balls left. You now know the name of the variable that represents the number of balls. Locate the line that initializes it to five at the start of each game, and change it to give you ten balls, or twenty, or fifty (keeping self-respect in mind, of course).

Better yet, go back to the line that served the ball. It sets the ball in motion at a given x-coordinate, with a given negative velocity. Simply change the x location of the serve to be behind the bricks, and the velocity to be positive (toward the back wall), and we have a whole new game: BREAKIN!! Let the computer do the work of eliminating most of the bricks before the ball can reach your paddle. After all, didn't we get a computer to relieve us of just such boring, repetitive tasks?

The technique we just used may be applied to all games written in BASIC: locate a familiar print statement to learn the names of the key variables.

You needn't understand any of the workings of the program to use this method. Consider the following situation:

You've just warped the Enterprise to a new sector while desperately searching for your last base. Much to your dismay, there are seven heavily armed Klingons waiting in ambush. One by one they begin to sadistically take shots at you. Your shields are already critically low, and you know that if more than two of them zap you, you will lose your command and be dishonorably discharged, to say nothing of being blown to bits.

Control-C to the rescue! Halt that onslaught and type in a new value for the variable that represents your shields (might as well bump up the energy level and number of torpedoes while you're at it). Now type in CONT to continue, and before one more phasor is phased, you are safe.

This technique may also be applied to the set-up portion of SUPER DUNGEON, where your initial strength and constitution are assigned, and money for purchasing supplies is handed out. Give yourself a more reasonable chance of surviving those first difficult levels.

All well and good, you say, but what about those twisted, sadistic individuals who write games in machine language? How can one possibly get anywhere with the products of such sick minds?

Don't give up hope. I have just the tool for you ... very useful for revealing the inner workings of such programs.

Although a game may be written in 6502 machine language, it still must communicate with you in English. To do this, character strings are stored within the program for use by output routines. They are often recognizable by the fact that they disassemble into garbage. If all these character strings could be examined, we might learn a great deal about a program. For example, if we knew what words an adventure game could recognize ... get the idea?

By the way, this is not the path for the faint of heart. Some of these games are capable of dealing with language you would expect from a true soldier of fortune, four letters at a time!

In order to locate and interpret character strings as quickly as possible, I've devised a little machine language routine. This program starts working just above the display memory (\$800), and outputs memory, byte by byte, to the screen. Hitting any key halts the process, and hitting any key again will continue it. Only RESET stops it (it's crude, but effective).

The first program to fall prey to this form of cheating didn't put up much of a fight. It was one of Scott Adams' Adventures, and he very conveniently keeps his programs' vocabularies all together in nice neat tables.

More than character strings may be revealed by this process. I found that large portions of the working areas within SARGON II (before the game is run) hold traces of the assembly process that built the program. Of particular interest was a nearly intact set of equate statements.

Both the source and object code of this memory display routine are provided here. It is BSAVED at \$300, length \$45. To use the program from BASIC, either BRUN it directly from disk, or BLOAD it and CALL 768.

Finally, for those of you who have been wandering lost in the HI-RES ADVENTURE forest for the past month, here's a hint: all the descriptions of rooms and situations are contained in a Text file. Use the memory display routine to find the name of this file (as well as the program's vocabulary), and then write a program to display the file's contents on the screen.

Have at it, folks! Don't ever let it be said that a machine got the best of you.

(and here's Tom's program)

ORG	\$300		
OBJ	\$300		
ADRL	EQU	\$A0	
ADRH	EQU	\$A1	STY
MASK	EQU	\$C0	BNE
TIME	EQU	\$10	LDY
COUT	EQU	\$FDED	INY
PRADR	EQU	\$FD96	STY
PRCR	EQU	\$FD9E	ADRH
WAIT	EQU	\$FCA8	BIT
KBD	EQU	\$C000	BPL
KBDSTB	EQU	\$C010	BIT
			JSR
			LDX
			LDY
			JSR
			PRADR
			JSR
			PRCR
			JSR
			PRCR
PRINT	LDY	#\$00	BIT
	LDA	(ADRL),Y	KBD
	ORA	#MASK	BPL
	JSR	COUT	BIT
	LDA	#TIME	CLC
	JSR	WAIT	BCC
	LDY	ADRL	PRINT
	INY		NOP

C.A.C.H.E. Officers and Staff

All phone numbers are (312) unless otherwise indicated.

Doug Robson	463-1833	President
Chuck Douds	441-6046	Vice President
Leah O'Connor	792-3253	Secretary
Chuck Weingart	342-9447	Treasurer
Ben Bronson	955-3285	Director
Steve Castle	825-4899	Director
Tim Clark	963-4593	Director
Dave Handwerk		Director
Paul Krystosek	627-2275	Director
Joe Kusner	526-2086	Director
Roy Lipscomb	274-0531	Director
Bill Precht	620-5599	Director
Bob Starinski	472-3382	Editor

SIGS (SPECIAL INTEREST GROUPS)

Ernie Kent	348-1635	SIG Coord.
Carmi Weinzweig	677-6930	SIG Coord.
Harlan Felt	447-6267	Apple
Les Multack	998-0119	Business
Jay Dresser	549-8080	COM1
(Communications)		
Jim Mills	(815) 378-0577	CP/M
Richard Kurtz	852-5772	Digital Group
Joe Kusner	526-2086	Forth/Lisp
Bob Kaplow	577-8837	Hll/LS111
Jean Barber	945-4171	Interact
Roy Lipscomb	274-0531	Newsletter
Doug Robson	463-1833	Northstar
Phil Rozansky	251-6339	Software - swapping between unlike systems
Michael Shartiag	676-2160	PET
Geoff Lowe	328-4351	PLAN
(Non-Basic Programming Languages)		
Russell Stevens	725-0648	PASCAL
Tom DiGate	799-1485	SOL
Steve Gold	885-8651	TRS-80

Software libraries are handled individually by the appropriate SIG.

SIG LEADERS: Stop by the sign up desk to pick up new SIG member sign-ups before you leave E-A-C-H CACHE meeting.

This issue of the CACHE Register was produced courtesy of the following:

TYPING: Jim Kennedy, Roy Lipscomb, Doug Robson

PASTE-UP: Jim Kennedy, Roy Lipscomb, Doug Robson

CONTRIBUTORS: Ben Bronson, Steve Castle, Hank Chiuppi, Chuck Douds, Jim Mills, Doug Robson, Carey Tyler Schug, Russ Stevens, Mark Wehmhoefer, Chuck Weingart

Z8000

The System X8000 MICRO-MINI™ based on the 16-bit Zilog Z8000 processor is available for immediate delivery.

FEATURES (partial list)

- Zilog Z8000 CPU
- Intel Multibus compatible
- Unique memory management system allows up to 16 megabytes of memory
- Optional 9511 arithmetic processor
- 8-level vectored + non-maskable interrupts
- Two programmable timers
- On-board monitor ROM option
- Full "Multimaster" capabilities allow multiple processors and/or DMA devices on the same bus
- Flexible and/or hard disk controller
- Powerful disk-based operating system
- Memory boards: 16K, 32K, 48K, 64K, 96K, 128K
- 15-slot backplane
- Heavy-duty switching power supply
- Industrial quality throughout

Prices start from \$998.



COMPUTEX
MICROCOMPUTER SYSTEMS

Advanced Systems Specialists

(312) 684-3183

CLASSIFIED

FOR SALE. Radio Shack TRS-80 Model I, Level II, 15K, cassette recorder, video monitor, dust covers, manuals, and about 17 tapes with 30+ programs. George Schmidt, 312-859-0696.

HELP WANTED. Part-time help to read manuals and get general accounting package up and running. Includes minor debugging. Hardware is TRS-80 Model I, Level II, with 5 1/4" drives and Tally printer. Jerry Horwitz, work 782-5300.

FOR SALE. Computer paper, Super Buy! 9 1/2 x 11 unruled, 24 lb., off-white continuous feed, bursts to 8 1/2 x 11. 2500 sheets per box. \$12.50/box (\$11.50/box, 100 and over). Will be \$15.95 & \$14.50 starting Feb. 1. Tom Howard, 860-5670.

EXCHANGE. CUTS user wants to exchange programs with other CUTS users. Robert W. Kelley, 5806 MT Terminal Dr., Waco, TX 76710.

FOR SALE. CHERRY PRO keyboard housing, good condition, \$18.00 or best offer. Matt, 824-0997.

CACHE MEETING
 JANUARY 21, 1981
 1:00 P.M.

VISICALC is a program that creates dynamic reports: change an entry on the screen, and all dependent entries are immediately and automatically recomputed and retabulated. This tool has proved itself powerful for feasibility studies and for exploring alternate futures.

Our speakers this month are George Schmidt and Jerry Horwitz, who will discuss their use of VISICALC in scientific and stock market applications.

MEETING LOCATION
 =====

```

* * * * *
* * * * *
* *
* *      DeVry Technical Institute
* *      3300 N. Campbell
* *      Chicago
* *
* * * * *
* * * * *
  
```

(Campbell is 2500 west.)

PURPOSE

CACHE is a not-for-profit organization dedicated to investigating the roles and uses of microcomputers in the hobbyist field.

MEMBERSHIP

Membership in CACHE is open to all. Dues: \$10 annually, \$5 for a grade/high school, entitles you to receipt of the "CACHE REGISTER" participation in the SIGs (Special Interest Groups). Membership may be obtained at any CACHE meeting, or via CACHE, Box 52, South Holland, Il. 60473.

SUBSCRIPTION CODE

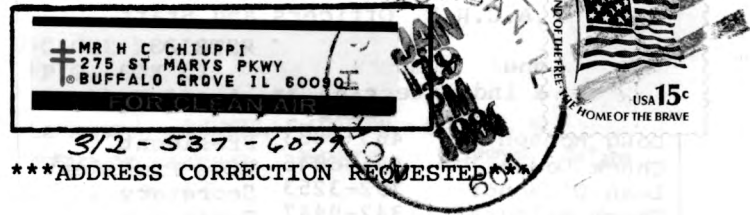
Members will find the expiration date (YYMM) of their subscription above their name on the mailing label. PLEASE renew early to save CACHE the time and cost of mailing a renewal notice. If you renew early we just tack 12 months to your current expiration.

COMPUTERIZED
 BULLETIN BOARD

Ward Christensen and Randy Sues offer their dial-in CBBS system to all. Access via 110, 300, 450, or 600 baud ASCII terminal at (312) 545-8086. Press return several times for CBBS to detect your terminal speed.

MEETING TIMES

As a rule, meetings are held on the third Sunday of the month. (No meetings in July.)



FIRST CLASS

*Bob Fabris
 3626 Morrie Dr
 San Jose, Calif.*

95127

HOTLINE

Meeting info recording available at (312) 849-1132. You may leave a short message.

AD POLICY

Personal want ads in the free to members and non-profit groups on a space available basis. Commercial ad rates for camera-ready copy are as follows:

TYPE	COPY DIMENSION (IN.)	COST
Full Page	8.25 x 11.75	\$50
Half page	8.25 x 5.75	\$30
or	4. x 11.75	
1/4 page	8.75 x 2.5	\$15
or	4. x 5.75	
Want ads	1.25 x 4.25	\$ 4
	(up to 8 lines)	

COPYRIGHT

Unless otherwise stated in an individual article, permission is granted to reprint articles for non-commercial use providing credit is given to the author and the CACHE REGISTER.

DEADLINE

Newsletter pasteup of final material is Monday, 13 days before the CACHE meeting. Mailbox material accepted 21 days before the meeting. Ready-to-print material is greatly appreciated, and should be typed 4.25" wide. Send material to the editor, Roy Lipscomb, 1433 W. Thome, Chicago, Ill. 60660.