



Atlanta
99/4A
Computer
Users
Group

CALL NEWSLETTER

VOLUME II NUMBER 6

JUNE

Atlanta, Georgia

1984 HOME COMPUTER FAIR

Presented by

ATLANTA 99 CUG-EAST SIDE Sub Group

Saturday, July 28, 1984 10 AM to 4 PM

At the QUALITY INN (I-85 at Chamblee-Tucker)

2820 Chamblee-Tucker Rd. (one exit south of I-285)

- Program Contest Awards -Tee Shirt Contest awards
- Lectures every half hour of interest to all
- Update of available equipment and software
- Vendors with TI compatible hardware and software
- Computer games with prizes for high scores every hour
- Door Prizes

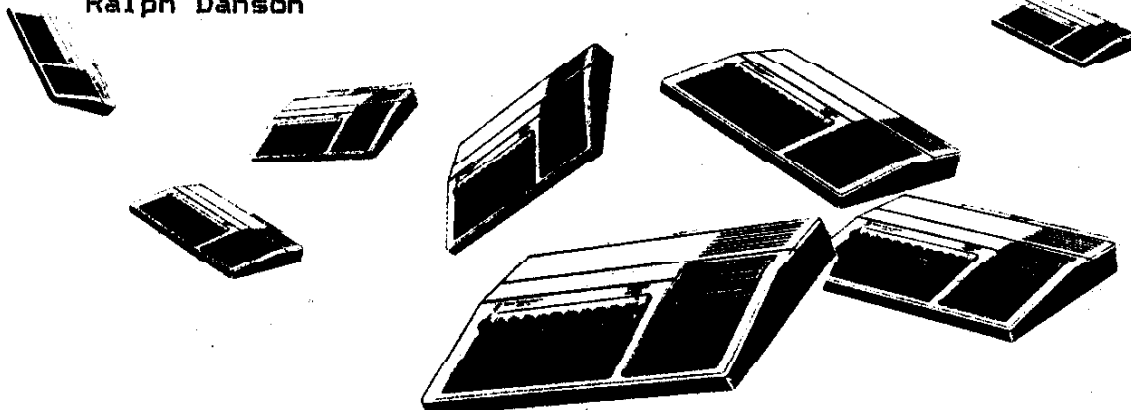
Admission: \$2 Adults, Children Under 12 \$1,
Children 6 and under FREE

PLEASE HELP

JUST GIVE US A CALL AND WE'LL GIVE YOU A JOB

For information or to help call 292-3427 or 296-9209

Ralph Danson



We received the following letter from the International Users' Group. The International Users' Group, unlike most users groups, is a privately owned organization which is operated as a business for profit. We have requested proof of the copyrights the International Users' Group claims to hold in trust. This letter is printed in this newsletter for the general information of those of you who are planning to submit programs to the International Users' Group and those of you who are have already submitted programs. We have violated no copyright laws. We would appreciate your support in our effort to make available the finest and most complete collection of software for the TI-99/4A computer. Please write to us expressing your opinion on this. Thank you.

May 8, 1984

Officers
Atlanta 99/4A Users Group
P.O. Box 19041
Atlanta, GA 30325

Dear Officers:

As you may be aware, the International 99/4 Users-Group has just recently settled a lawsuit with The 99/4A Program Exchange, Torrance, CA. This suit alleged that The 99/4A Program Exchange was violating federal copyright statutes and the Lanham Act as it relates to unfair competition. These charges stemmed from the publication of The 99/4A Program Exchange's Owner Written Software Catalog, which listed many of the programs in the IUG's Owner Written and Translated Software Catalog.

The International 99/4 Users-Group has certain inalienable rights which are protected by both federal copyright statutes and the Lanham Act relating to unfair competition. It is my personal feeling that the Atlanta Users Group has infringed on these rights with the issuance of their Software Library Catalog. Therefore, we feel action must be taken in an effort to protect our interests.

I have enclosed a copy of your Software Exchange Catalog and clearly marked programs which you have listed in direct violation of federal copyright statutes. The International 99/4 Users-Group therefore asks you to do the following:

1. Send a written explanation of when, where, and how this unauthorized copying occurs and who is responsible.
2. Advise who received this unauthorized copy of your Software Exchange Catalog. We will want names and addresses so that we may write them advising them of the copyright and trademark rights of IUG lest they be unclear to these people, and to ensure they do not inadvertently infringe. These people will not be added to any mail list or solicited by the IUG.
3. Write all people to whom you have sent these unauthorized copies explaining the error and apologize for it. Please forward me a copy of that letter.
4. Send a certified check payable to the International 99/4 Users-Group for any proceeds you have received from unauthorized sales of products the International 99/4 Users-Group lists in their current Software Exchange Catalog.
5. Agree never to copy the IUG Software Exchange Catalog, programs or program descriptions, or trademark without permission from the IUG.

We had been contacted by officers of the Atlanta Users Group regarding our Software library and have told them that any infringement on our copyrighted materials will be dealt with forthright. Apparently, you have ignored our warnings due to the fact that not only have you infringed upon program names and descriptions in the IUG's Software Catalog, but we also find that your program GM #215, Cacti Kill, was published in our July 1983 issue of Enthusiast '99.

I, as president of the International 99/4 Users-Group, will forego my rights of litigation as a matter of enforcing my company's rights if all of the above terms are met within 30 days of receipt of this letter.

Should you wish not to comply, I have informed our attorneys, Roper, Lief, Mains and Cobb, to file suitable litigation in federal court against the Atlanta Users Group on July 1, 1984.

Please understand this is not an idle threat and we are extremely sensitive to infringements upon our rights.

International
99/4
Users-Group



P.O. Box 67
Bethany, OK 73008
(405) 848-1023

Sincerely,

Charles La Fara
President
International 99/4 Users-Group

ATLANTA 99/4A COMPUTER USERS GROUP
P.O. BOX 19841
ATLANTA, GA. 30329

International 99/4 Users Company
P.O. Box 67
Bethany, Ok 73008

Dear MR. La Fara:

We received your letter dated May 8, 1984, and we appreciate your concern with our lack of knowledge concerning your lawsuits, and the copyright law. We are even less familiar with the Lanham Act.

However I am even more perplexed in regard to your several references to your trademake rights.

Therefore before we do anything else we request that you send us copies of the copyrights that you hold that you think we are infringing upon so that we may examine them. Once we have had that opportunity we will be glad to respond further to your letter.

Very truly yours,

Handwritten signature of Marshall Gordon

Marshall Gordon
President
A9CUG

CLUB OFFICERS
Marshall Gordon President
Gary Matthews Vice President
Elise Gordon Secretary/Treasurer
Paul Jennison Newsletter Chairman
Bill Kleinsorge Program Chairman
Bob Willis Library Chairman
We need one Education Chairman
We need one Recruitment Chairman
EAST SIDE CHAPTER (ESCUG)

Ralph Danson President
Bill Dickinson Vice President
Pat Hester Secretary/Treasurer
Robert Murphy Librarian
SOUTH SIDE CHAPTER

Billy Glass President
Dennis Hawkins Vice President
Bob Orr Secretary/Treasurer
Pete Couch Publicity
Mary Anne Maslanka Communications
Steve Bell Programs

CLUB SALES

Table listing club sales items and prices: Solid State Cartridges (Yahtzee \$13.50, Sneggit \$24.30, etc.), Disk Based Programs (Tombstone City \$15.25), Casette Software (Structural Engineering Lib. \$8.00), FORTH Language Package (members \$20.00), MICROSOFT MULTIPLAN (\$70.00), Books and Magazines (Using and Programming the TI \$8.00), Hardware (Peripheral Expansion Box \$100.00, Disk Controller Card and Disk Drive \$500.00).

MUSIC FOR THE TI99/4A

Why do we see so many programs for music on the 99/4A? While most TI owners don't know a Megabyte from Boolean Algebra, and wouldn't know a Munchman Mono if they stepped on one, everyone can enjoy a musical program. Music can be very effective for learning programming techniques because you can hear your results immediately, beginning with the first note, and while it is possible to program a song using only CALL SOUND statements, the bulkyness of the program encourages you to use arrays, subroutines, and data statements to simplify and condense the programs.

In addition to simple CALL SOUND statements, several program techniques can be used to enhance the musical sounds. These can be substituted into the program below to illustrate the different sounds. All of these techniques are found in music programs in the club library.

During the presentation of these techniques at the May Club meeting the question was raised concerning the pause before the last note of each melody. It was suggested that a very high note (22222) be programmed as the last note so we wouldn't hear the pause. This was done in line 210, and then I discovered that it isn't necessary to play that last note as long as it is in the data statement. Note that line 110 has only 13 steps while line 210 has 14 data values. Now the melody plays without a pause.

Now run this short program in basic or XB.

```
100 REM MARY HAD A LITTLE LAMB
110 FOR I=1 TO 13
120 READ M
130 REM SIMPLE MELODY
150 CALL SOUND(400,M,1)
200 NEXT I
210 DATA 659,587,523,587,659,659,
659,659,587,587,659,587,523,22222
```

Now use the edit features to try the following sounds.

For low-low notes, change

```
130 REM LOW-LOW
150 CALL SOUND(400,440,30,440,30,N#2,
30,-4,1)
```

For a simple organ sound, change:

```
130 REM ORGAN
150 CALL SOUND(400,N,1,N#2,4)
```

For a better organ sound, change:

```
130 REM BETTER ORGAN
140 FOR V=5 TO 25 STEP 5
150 CALL SOUND(-400,N,V,N#2,V,N#7.5,
30,-4,V)
170 NEXT V
```

For a harpsicord sound, change:

```
130 REM HARPSICORD
140 FOR V=0 TO 30 STEP 7
150 CALL SOUND(-400,N,V,N#2,V)
170 NEXT V
```

For a tremola sound, change:

```
130 REM TREMOLA SOUND
140 FOR J=1 TO 8
150 CALL SOUND(-50,N,1)
160 CALL SOUND(-50,N#1.03,1)
170 NEXT J
```

You may want to SAVE each of these programs, then by changing the data in line 210 (see

appendix on page III-7 of Reference Guide) and adding more data in lines 220 etc., and by changing the 13 in line 110 to the number of notes you want to play, you can write your own songs. Remember to put one more note in your data than you have in line 110 so the computer won't pause. Have fun, and we'll see you at the next meeting.

Jim Hubbard

TRADING POST

FOR SALE: TI 99/4 COMPUTER, TI 99/4A COMPUTER (NEEDS NEW KEYBOARD), PERIPHERAL EXPANSION BOX, RS232 CARD, DISK CONTROLLER CARD, DISK DRIVE, DUAL CASSETTE CORDS, MISC. PROGRAM CARTRIDGES.

DUE TO MY CIRCUMSTANCES I CANNOT AFFORD TO SEPARATE THESE ITEMS. I'M ASKING \$1,000.00 FIRM. IF INTERESTED EITHER CALL OR WRITE: ROBERT NEWBERRY, 523 CASTLE RD. ADDISON, ILL. 60101 (312)629-4603 EVNG OR (312) 543-4344 DAYS.

FOR SALE: I HAVE A TI MINI-MEMORY IN ORIGINAL CARTON WITH INSTRUCTION BOOK AND A TI MICROSOFT MULTIPLAN PACKAGE BOTH UNUSED. I HAVE LOOKED THROUGH THEM BUT THEY HAVE NEVER BEEN INSERTED INTO CONSOLE.

IF ANY OF YOUR MEMBERS ARE INTERESTED IN ACQUIRING I WOULD CONSIDER MOST ANY REASONABLE OFFER IN CASH OR POSSIBLY TRADE FOR PROGRAMS, ETC I MIGHT BE INTERESTED IN. WRITE W. REID MCKEE, 1727 CHEROKEE DRIVE, LEBANON, TN. 37087

WANT TO BUY: I AM LOOKING FOR SOMEONE WHO IS SELLING SOME HARDWARE FOR THE TI 99/4A. I WOULD LIKE THEM TO BE USED, BUT IN GOOD CONDITION. I NEED A PHONE MODEM, PERIPHERAL EXPANSION SYSTEM, AND SOME SOFTWARE CARTRIDGES. WRITE CYNTHIA NUNLEY, 3795 SOUTH 2200 W, WEST VALLEY CITY, UT. 84119

WANT TO SELL, TRADE OR BUY??? SEND REQUEST TO TRADING POST, C/O A9CUG, P.O. BOX 19841, ATLANTA, GA. 30325.

DID YOU KNOW - That June is the 33rd anniversary of UNIVAC, which was the world's FIRST successful commercial computer?

INFORMATION PLEASE
(And Lots of It)

I thought I would share some general notes that have come to my attention over the last few weeks.

Ten-X out of Concord, Ca. advertises an expansion cable to move that big black P-box cable out of the way. The one person I am aware of that has it reports that it apparently has a great deal of interference because it is unshielded and that he cannot use it reliably when connected to his modem.

Morningstar, which has advertised a CP/M card since the August issue of the 99er Home Computer Magazine, has not shipped any of them out yet. When I contacted them, it was stated that they hoped to ship in another thirty days. I hope it does make it out of production stage because it does mean a lot to be able to say that our much maligned computer has CP/M capability. Any who do plan on purchasing it should realize the restrictions that are presently involved with the card.

The CP/M card is like a separate computer. It does not at the present time give you access to the capabilities of the 99/4A console such as speech, music, or graphics. It is true that there are thousands of CP/M programs out there but they are not written to run with the 99/4A Disk Operating System. The card was made to be Osborne 1 compatible. Looking in older computer magazines should turn up vendors who can provide CP/M programs formatted that way.

If you know someone with CP/M programs; they could send it to you over a modem since it would wind up formatted on your disk that way.

When Foundation was first coming out with their Memory Expansion cards (32 and 128 K), they were promising an assembler DSR utility to help take advantage of the bank switching necessities of the 128 K card. This would make the extra memory easier to actually use. This utility was first stated as being expected to be available during the summer of 83.

Texas Instruments sold a program last year called "Extended Text to Speech". That program made the speech capabilities of the Terminal Emulator II available in Extended Basic if you also had Memory Expansion. That program will not work with Foundation's Memory cards. Thankfully that seems to be the only program discovered to date that is incompatible with their cards.

Last November I called Foundation. They said they were aware of the problem and were working on it.

At the present time the DSR utility has still not been completed and no 'fix' has been acknowledged to correct the 'Text-to-Speech' program incompatibility. During a recent call I asked the status of the 'utility' program. No indication was given as to when it might be available.

A Users' Group in New Jersey, so I have heard, has a couple of Cor Comp's Double Density Disk Controller Cards. I have not verified this, and if it is true, what they have may just be for testing and not ready for marketing. Locally, the best rumor that I hear is that the card will not be generally available for another thirty days.

As a proud and loyal user of the TI 99/4A, I can only hope (And I Do), that those making hardware for this computer will continue to produce.



There is a fellow in California named Guy-Stephan Romano, who from early 1983 till January 1984 wrote a regular column for the International Users' Group Magazine 'Enthusiast 99'. His regular feature was the Library Corner and his duties included organizing the I.U.G.'s program library listing as well as writing descriptions for the Library Catalog.

An organization that is known as IUG Library Services, a subsidiary of Amion Stoneware, has no connections or ties with the International Users Company, which they point out is a regular for profit company and not a Users Group working as a non-profit organization. The IUG Library Services severed all relations with that company as of January 15, 1984. (These statements are based on a letter received from Amion Stoneware Customer Services.)

The statements you just read lead up to this. Library Services state that they will henceforth be known as HELPLINE. This HELPLINE was established for the owners of 99/4 hardware to use to call for completely free information and technical support. This telephone line is manned by Mr. Romano on a volunteer basis Monday through Saturday, 9 A.M. to 3 P.M. Pacific time. He does this for no fees so as to not be obliged to anyone even Amion.

Remember, this is one telephone line manned by one man. This is not to be confused with a multi-line, organizational toll number such as T.I.CARES.

I spoke with Mr. Romano at some length and found the telephone number to be very worthwhile. He told me that several months ago some local department stores were handing his number out right and left giving the impression that he was a direct representative of Texas Instruments. I have sympathy for the time he must have had. The number is (415)-753-5581. All Users' Groups and serious computer users should keep this number handy.

Bob Orr is the SYSOP of a BBS system written by Brian Sanderson. The number is 768-0990.

Another new BBS: P.O. Box 1034, Freedom, Wis. 54136. Telephone number (414)-788-9730.

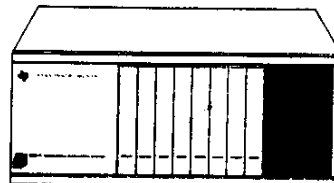
Rick Allen has a new BBS up. It is called TIBBS #4 and was written by Ralph Fowler. The telephone number is not included here because this system is intended for serious users and not meant to be another kiddie system. Rick Allen's intention is to get a good base of users established before the phone number turns up everywhere as all BBS systems eventually do. He hopes this will help keep the need down for tight restrictions on Logon procedures. The number can be obtained from Officers of the Atlanta Users Group.

In the next newsletter I hope to share some specifics of the information I learned from Romano's Helpline.

The next issue will contain a review of the ARCHIVA Database program sold by Amion Stoneware and written by Guy-Stephan Romano.

There will also be an article describing how one local member, Daryl Hirschler, has gleaned information from the RS232 Manual to experiment with and produce pieces of what makes up some of those T.I. run BBS's out there. This is all just fun bits of experimentation, but those pieces of programs will be reprinted here for others to learn from and have a go at.

Gary Matthews



Many unexplained computer problems can be traced to "power-line pollution." If you have ever been watching your TV and seen the picture shrink, become enlarged, then go back to normal size, you have witnessed the problem I am addressing. Many things can cause power-line pollution. Basically, these causes can be broken down into two categories: noise and voltage variations. Both can cause problems with your computer. Voltage can cause damage. You may wish to protect your equipment with devices you can buy. The cost will range from about \$25.00 to \$800.00+. Or you can invest a few dollars and some of your time and modify a power strip you may already have. **!!!!!! DO THIS AT YOUR OWN RISK AS NEITHER THE USERS GROUP NOR I WILL ACCEPT ANY RESPONSIBILITY FOR YOUR EQUIPMENT IF YOU MODIFY YOUR EQUIPMENT. !!!!!!**

The following information is taken from various sources primarily, from the December 1983 issue of BYTE magazine. I recommend that you subscribe to this magazine for articles of this type. First, let us discuss noise. Generally, there are two kinds. One is caused by motors, switches and other mechanical sources. This type of interference is of low frequency and is erratic in frequency and duration. These disturbances are called EMI. The other main kind of noise are radio frequency radiations created by electronic circuits as in radios, TV sets, computers and some types of electric lights. These disturbances are called RFI. These two kinds of interference are removed with RFI/EMI Filters. They pass the normal power line frequency (60 Hz.) while attenuating the higher frequencies. Radio Shack sells one for about \$12.00 Catalog Number 273-100. It should be installed between the power source and the piece of equipment it is to protect. (See fig. 1b)

Voltage variations are either under voltage or over voltage. Normal voltage is around 110 volts. The power supplies change this to the necessary voltages required by your computer. These may be 1.5v, 3v, 5v, 12v, 15v, 24v, 90v or almost any voltage required by the particular computer involved. The important thing to see here is that the input voltage affects the output of the power supply involved. If

the voltage drops 20% the internal voltages may not be sufficient to run the various circuits. The incoming power may fall below 90 volts during a "brown out". To overcome this problem, a UPS unit with an internal battery may be the answer. Guardian and others put out several types but one should be prepared to spend \$350.00 to \$800.00 for one.

Over voltage is by far the most damaging to your computer. Voltage spikes may go as high as 6000 volts. This rate is about 50 times higher than normal. As you can see, if the power supply produces 5v for the circuits, a 50 times increase will be about 250 volts. The components can not survive this jolt. Such damage can be expensive. Installing Metal Oxide Varistor (MOV) Transient Suppressors can help protect your equipment -- IF PROPERLY INSTALLED. These can be purchased already installed in power strips costing from \$25.00 to \$100.00 or you can install them yourself. They cost about \$1.75 to \$4.00 each and you will need three. Radio Shack Catalog No. 276-570 is the same as General Electric V130LA10A also RCA SKS2. These will short 38 joules and clamp 340V at 50A within 35ns. IT has a peak rating of 4500A. The GE V130LA20A, V130PA20A and RCA SKS3 will handle about twice the surge. They should be placed across line-neutral, line-ground and across neutral-ground (See fig 1a.) As they are used they are destroyed so they should be replaced if you suspect they were needed (such as during a lot of lightning.) Be sure to place them between the circuit protector and the sockets. If they short out then the circuit protector will trip. If they are installed before the circuit protector the next surge may come through and damage your equipment. I always turn off my power strip when I am not using my computer so there will not be any need for protection.

Unless you have important applications you should not need the most expensive protective devices. The minimum protection is surge or spike protection which is less expensive and will remove the most damaging elements of power-line pollution. The choice and the equipment is yours.
Frank Warinner

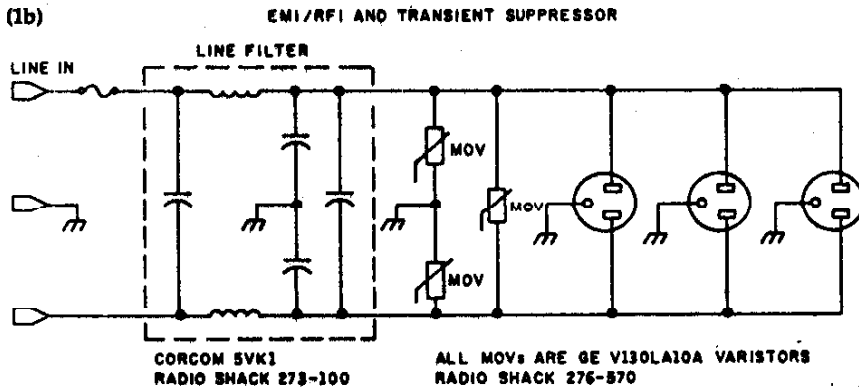


Figure 1b: For added protection against low-energy electromagnetic and radio-frequency interference, the Corcom 5VK1 line filter (Radio Shack 273-100) can be installed in the circuit.

(1a)

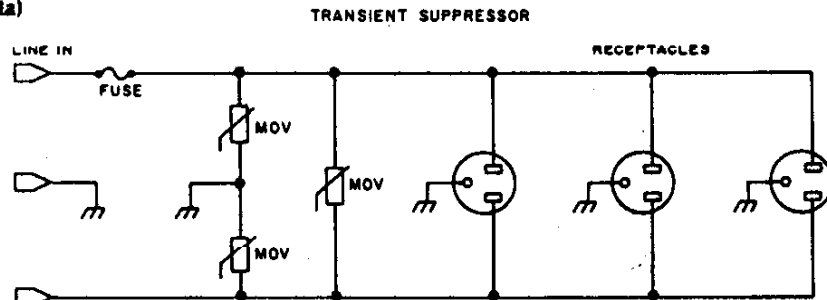


Figure 1a: The Radio Shack four-outlet power strip can be easily modified to protect equipment from high-energy power-line transients. Three General Electric V130LA10A metal-oxide varistors (MOVs—Radio Shack number 276-570) are connected between the hot, neutral, and ground wires of the power line.

WHAT IS A COMPUTER?

Is it a high-tech adding machine? A game-playing gadget for kids? A mindless idiot-box? An intelligent machine? A warm-hearted friend? A coldly calculating enemy? A compliant slave? Or a demanding task-master?

The answer to each of the questions above is a resounding Yes, No and Maybe! For a computer can be any of those, and more besides, depending on how they are used and your individual outlook. Examples: A computer is certainly a high-tech adding machine, in that it can do all an old-fashioned adding machine ever could, and far more as well, all faster and more efficiently. A game machine? Sure - just look at all the game disks and cartridges that are on the market for the many kinds of computers. But while you're at it, look also at all the business, educational and self-improvement material available, in an ever-growing torrent. A mindless idiot-box and an intelligent machine at the same time? Sure - for a computer has some of the trappings of intelligence, as it can recognize the occurrence of certain events and take action on them. But only if it "knows" what to expect and how to react when and if that event happens. So, it can be a demanding task-master, in requiring precise instructions on everything. If it doesn't get those precise instructions, it won't respond as expected and might go into the infamous "lockup". But then it is also a slave that doesn't demand raises, overtime, time off with pay, seniority or promotions, doesn't question "why?", and is very seldom "out sick" from partying the night before. Friend or enemy? In the recent movie "War Games", the young hacker obviously got a lot of enjoyment from his computer, but came to let it rule his entire life, and (in the movie) almost destroyed the entire world. This illustrates something prevalent in every aspect of life - the need for a bit of moderation. And, by the way, computers are NOT going to take over the world. Remember that it takes a human to tell any computer precisely what to expect and what to do. For example, when there is an error in your charge card bill, there is only a microscopic chance that it is truly a computer error (even then, probably a power or component failure), but a very great chance that some human made a mistake while programming or entering data somewhere along the line. All of which affects how you feel about a computer.

As for intelligence - It don't got none! Sure, as mentioned before, it can recognize and act on events, and there are programs which can even "learn" from some events (If stove=hot then "don't touch again"). But real intelligence - what scientists call "intuitive reasoning" as compared to "logical reasoning" just isn't there. Chess programs are a great example - sure they can beat the socks off most of us, but I have heard of only one case where a computer could beat a chess Grand Master, and that while he was playing 25 simultaneous games at the time! The answer lies in a computer's reasoning process - it might take several hours to evaluate several million possible moves and responses, most of which would be totally useless for the particular situation. A good human chess player would, at most, consider only a few hundred and take only a few minutes in doing so. This is because the human player would immediately "intuitively" recognize some moves as illegal, many as useless, and from past experience know that certain ones would be less useful than others, so he wouldn't bother trying to analyze his opponent's response to them. This just goes to show you that people really are smarter than computers, and in some cases, even faster. All of which leads to the observation that a computer can, indeed, be a warm-hearted friend, but can also be a coldly calculating enemy if used incorrectly or without restraints. What's YOUR opinion of the situation?

K. Bitzer

MICRO 99 IS ON LINE

A NEW TI BASED BULLETIN BOARD, OPERATED BY ROBERT ORR OF MICRO PLUS, IS AVAILABLE FOR TI (AND NON-TI) COMPUTERS.

THE NUMBER, IN ATLANTA, IS (404) 768-0990. IT IS UP TWENTY-FOUR HOURS A DAY, EVERY DAY. THE B.B.S. IS A SERVICE FOR COMPUTER USERS, HAVING INFORMATION ON COMPUTERS, REPLACEMENTS FOR THE TI HARDWARE, NEW SOFTWARE, EVENTS AND CLUB ACTIVITIES AND MUCH MORE.

THE SYSTEM IS A SOUTHSIDE SOFTWARE PRODUCT, WRITTEN BY BRIAND SANDERSON, AND IS RUN ON A TI WITH THREE 5 1/3" HEIGHT DISK DRIVES - MOUNTED IN THE P. BOX- THESE 1/3 HEIGHT DRIVES ARE NOT ON THE MARKET YET AND ARE BEING EVALUATED BY BOB FOR POSSIBLE USE WITH THE NEW SYSTEMS FROM MICRO PLUS.

CALL (404) 768-0990 AND EXPLORE THE WORLD OF TELECOMPUTING AND KEEP IN TOUCH.

```

100 CALL INIT
110 FOR A=1 TO 255 :: CALL LOAD(-31332,-A):: NEXT A
120 FOR A=1 TO 255 :: CALL LOAD(-31332,A):: NEXT A
130 FOR A=1 TO 255 :: CALL LOAD(-31332,A):: NEXT A
140 FOR A=1 TO 255 :: CALL LOAD(-31332,-A):: NEXT A
150 FOR @=1 TO 5
160 FOR A=1 TO 255 STEP 4 :: CALL LOAD(-31332,-A):: NEXT A
170 NEXT @
180 CALL SOUND(100,110,0)
190 FOR @=1 TO 5
200 FOR A=255 TO 1 STEP -5 :: CALL LOAD(-31332,A):: NEXT A
210 NEXT @
220 CALL Z

```



This article is designed to help beginning programmers to become familiar with the keyboard. These helpful ideas come from sources all over. Most of them are from people that find out on their own or from friends. The most used function I have found is the editing mode instead of typing [edit] and line number after just type line no. then hit fctn down arrow key. The line will then appear ready for editing. Also you do not have to go to the end of the line to enter correction as you do with the edit mode, you can just hit Enter. You can continue to list the program by scrolling with the Function arrow key down or up. With the Edit mode you can only go down. Another useful key is the redo key. This thing does miracles. It repeats last correct command again. Got a slow ex.basic game? Try entering CALL INIT :: CALL LOAD(-31878,0). This will speed up execution of the program. To further add time and work in ex. basic programming try using a NUM command. This will give your new line no. and a space with the number beginning at 100, going to 110. To change this enter NUM 10,1 or type any number you wish. Well, I hope you can use this info to help your programming.

Tinker ,SSUG (S.P.Bell)

FORTH ARRAYS

by J. W. Vincent

While FORTH opens many new and exciting capabilities for us on the 99/4, many of the "common" features of BASIC have no direct equivalent in FORTH. To further our understanding of FORTH, let's develop some techniques to support one of these useful functions, the subscripted variable.

In BASIC both string and numeric subscripted variables are supported. Since FORTH is also "missing" generalized support for string operations (a possible future topic) we will concentrate on numeric and character arrays.

The simplest of arrays is a one dimensional character array or string.

```
0 VARIABLE name n-2 ALLOT ( reserves 'n' bytes at addr 'name' )
name k 1 - + C@          ( fetches byte 'k' from array 'name' )
name k 1 - + C!          ( stores byte 'k' to array 'name' )
```

Similarly a word (16 bit numeric value) list can be handled by:

```
0 VARIABLE name n-1 2 $ ALLOT ( reserves n words at addr 'name' )
name k 1 - 2 $ + @ ( fetches k th word of array )
name k 1 - 2 $ + ! ( stores k th word of array )
```

Two dimensional arrays are slightly more complex. Since computer memory is one dimensional (sequential addressing) in nature, we must simulate the second dimension by multiplying the number of complete rows by the array width and adding it to the column location in the current row. This gives us a one dimensional offset for addressing the appropriate memory location. Thus space for an 11 by 11 word array can be reserved and accessed by:

```
11 11 0 VARIABLE name $ 1 - 2 $ ALLOT ( reserve space )
name x y 1 - 11 $ + 1 - 2 $ @ ( fetch value )
name x y 1 - 11 $ + 1 - 2 $ ! ( store value )
```

Ugh! That's revolting. Imagine how confusing handling several arrays this way would be. Let's use one of FORTH's more powerful features to both simplify and generalize the creation and use of two dimensional arrays.

If you have done anything with FORTH, you know that defining new words in the language is the primary function in programming. An additional powerful function is the ability to create new defining words. In other words, FORTH allows us to create words which control how other words compile and operate. To illustrate, the following word defines how two dimensional character arrays will be created and used.

```
: C_ARRAY <BUILDS DUP C, $ ALLOT
DOES> ROT 1 - OVER C@ + + ;
```

Now to create an array of x columns by y rows we simply code:

```
y x C_ARRAY name
```

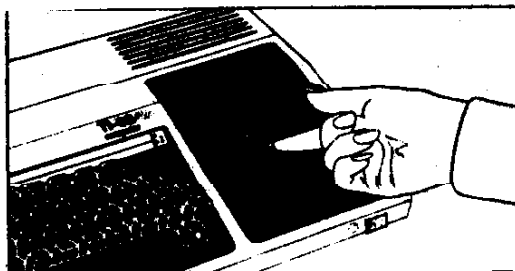
To fetch and store a character from some arbitrary row (r) and column (c):

```
r c name C@
r c name C!
```

Similarly for word length two dimensional arrays the defining word, array definition and store/fetch operations are:

```
:W_ARRAY <BUILDS DUP , 2 $ $ ALLOT
DOES> ROT 2 - OVER @2 $ $ + + ; x W_ARRAY name ( define array )
r c name @ ( fetch from array row column )
r c name ! ( store to array row column )
```

Now you can define many different arrays within a program and reference them easily. Next time we'll diagram the stack operations of these array words and discuss further enhancements to FORTH ARRAYS ... till then Enjoy!



A_GPL_ROUTINE
 BY JOHN PHILLIPS - VIDEO MAGIC

```

DEF GPL
REF VMBM
#####
* The following program demonstrates *
* the method for calling a GPL routine *
* without using the @GPLLNK utility in *
* the EDITOR/ASSEMBLER. The word at *
* @XML must contain a GROM address which *
* contains >0F, followed by >F0. The *
* address is different for different *
* GROM releases. In the example, the *
* first part of the code scans through *
* GROM memory until it finds the >0FF0. *
* When it does, it stores that value *
* makes the program MACHINE DEPENDENT: *
* it will run on any version of /4As. *
* The GPLLNK is called by a BL, not a *
* BLWP. *
#####
MYWS EQU >8300      SET MY WORKSPACE IN PAD
GRMWA EQU >9C02      GROM WRITE ADDRESS REGISTER
GRMRD EQU >9800      GROM READ DATA REGISTER
XML   DATA 0        1 WORD FOR XML BRANCH ADDRESS TO BE FOUND
EVEN

#####
* START SCANNING FOR A >0FF0 IN GROM FOR XML RETURN *
* THIS FIRST PIECE OF CODE MUST BE EXECUTED BEFORE *
* ANY CALLS TO @GPLLNK CAN BE MADE. YOU ONLY HAVE TO *
* EXECUTE THIS TOP CODE, ONCE! *
#####
GPL   LWPI MYWS      LOAD MY WORKSPACE
      LI R3,>0300     START SCANNING ABOUT >300 GROM
*
LOOP  LIM1 0         DISABLE INTERRUPTS
      MOVB R3,@GRMWA SET HIGH BYTE
      SWPB R3
      MOVB R3,@GRMWA SET LO BYTE
      SWPB R3        RESTORE
*
      CLR R4         CLEAR REGISTER
      MOVB @GRMRD,R4 GET DATA FROM GROM
      CI R4,>0F00    >0F?
      JNE INCR      NO, SO TRY NEXT BYTE
      MOVB @GRMRD,R4 GOT THE >0F, SO NEED THE >F0
      CI R4,>F000    >F0?
      JNE INCR      NO, SO TRY NEXT BYTE
      JMP GOTIT     FOUND RETURN ADDRESS
*
INCR  INC R3        TRY NEXT SET OF BYTES
      JMP LOOP
*
GOTIT MOV R3,@XML   SET XML ADDRESS
      LIM1 2        ENABLE INTERRUPTS AGAIN
    
```

```

#####
* PROGRAM TO TEST GPLLNK SUBROUTINE*
* NOW ALL YOU EXTENDED BASIC MUTS *
* CAN HAVE A GPLLNK OF YOUR VERY *
* OWN! *
#####
YDRPGM CLR R8      ZERO OUT R8
      MOVB R8,@>837C CLEAR STATUS BYTE
      BL @GPLLNK    CALL ROUTINE
      DATA >36     BAD SOUND ROUTINE
*
      LI R0,>FFFF   DELAY
DLY   DEC R0
      JNE DLY
      JMP YDRPGM   KEEP BUMPING!
#####
* THIS IS THE SUBROUTINE CODE TO *
* REPLACE GPLLNK. REGISTERS 0 AND 1 *
* OF YOUR CALLING WORKSPACE ARE *
* ALTERED. SO IS >8300 CPU RAM. *
#####
    
```

```

GPLLNK LIM1 0
      MOVB @>8373,R1  FETCH GPL SUBSTACK POINTER
      SRL R1,8       MAKE IT A WORD
      AI R1,>8302    ASS PAD OFFSET
      MOV @XML,R1    PUT XML INSTRUCTIONS ADDRESS ON STACK
      SWPB R1        HIGH BYTE CONTAINS OFFSET INTO PAD
      MOVB R1,@>8373 UPDATE GPL SUBSTACK POINTER
      MOV #R11+,R0  GETCH GPL ROUTINE ADDRESS
      MOVB R0,@GRMWA SET UP GPL PROGRAM COUNTER
      SWPB R0        SENDING HIGH BYTE FIRST
      MOVB R0,@GRMWA FOLLOWED BY LOW BYTE
      LI R0,RTN     GET DESIRED RETURN ADDRESS
      MOV R0,@>8300 PUT RETURN ADDRESS IN XML TABLE
* NOTE: THIS ADDRESS MUST ALWAYS BE >8300!!
      LWPI >83E0    LOAD GPL WORKSPACE
      B @>006A     BRANCH TO GPL CODE
RTN   LIM1 2
      LWPI MYWS     RESTORE MY WORKSPACE
      RT           RETURN TO MAIN PROGRAM
*
      END
    
```

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