

WINNIPEG



Newsletter

November's Newsletter

The Winnipeg 99/4 User Group is a non-profit organization formed to meet the needs of Manitoba based Texas Instruments users. The content of this publication does not necessarily represent the view of the Winnipeg 99/4 User Group. This newsletter is one form of communication to keep Manitobans up on Texas Instruments Computers and its clones.

Next General Meeting - Date : December 5th, 1985
Time : 7:00 P.M.
Place: Winnipeg Centennial Library
2nd Floor, Assembly Room

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BBS #: (204)-889-1432 SYSOP: Charles Carlson
SETTINGS: 300/1200 baud, 7 bits, 1 stop bit, odd parity
HOURS: 7:00 p.m. to 8:00 a.m. 7 days/week.

Hank has submitted Maze Maker to our public domain library, so this program is available to all who are interested. The program requires a disk sytee, and a printer to run.

Hank designed his program to be used by children to create, save, change, and print mazes. You would think that making a maze is easy, right? Its not as easy as you may think! Hank's program, however, makes making mazes easy. Not only that his program makes it fun! I found making mazes to be stimulating, and enjoyed making several patterns. One maze I created was printed in last month's newsletter (I call it a serpent).

Creating a maze with Maze Maker involves a few key presses, and the simple task of dragging a cursor around the screen. In fact the title screen for this program was made using the program itself. Once you have created a maze you can then save it or have it printed. The printed maze is quite good as Hank used double sized graphics for a bigger picture. You may even have a descriptive name printed with the maze.

One fault I found with Maze Maker was with terminating the program. To terminate the program you must use the save option or press the CLEAR key (not a fault to some users). If you use the save option you must wait about a minute before being able to end the program.

All in all this program was well thought out and can be stimulating to use (even if you are not a child). Hank also has developed a second program to work with the mazes created from Maze Maker. He calls it Maze Walker. Maze Walker lets you walk a (joystick controlled) man through a maze to a goal square, keeping track of the number of steps that the man takes. Both programs rate highly in the quality department and Hank must be commended for his work. GOOD JOB, HANK!

BOOKS:

Purchase a book, about the TI, lately and feel good, bad, or indifferent about it. This space is available for your comments.

FREWARE

The following list of freeware sources was gleaned from the September issue of MICROpendium.

SOFTWARE UPDATES

MICROpendium is offering file updates for TI-Writer and Microsoft Multiplan. Also offered at no charge is Super Bugger and an Extended BASIC loader for TI-Forth.

The TI-Writer enhancements offer new printer defaults and true lowercase letters. Multiplan enhancements include an auto-repeating cursor that speeds up program operation. The Forth loader allows TI-Forth to be used with Extended BASIC rather than the Editor/Assembler. Super Bugger is an improved version of TI-Bugger.

TI-Writer and Multiplan updates all fit on a single-sided disk. Super Bugger will fit on a single-sided disk. The Forth loader requires a single-sided diskette. Order the Forth loader separately from the updates and SBUG. Send appropriate number of diskettes to Freeware, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

TI-Forth is also available. The cost is \$20 (US) and includes the 232-page manual, the system disk with screens, a demo disk, postage and packaging. Purchasers are asked to included two initialized single-sided diskettes. MICROpendium will supply a third disk containing the source code for TI-Forth at no extra charge.

To order, send check or money order and two diskettes to Forth, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

FREE ACCESS LIBRARY

Amnion Helpline is offering TI users its Free Access Library of public domain software. The library consists fo 104 diskettes filled with programs for the TI99/4A.

The library is operated as a non-profit entity by Dr. Guy-Stefan Romano, director of Amnion Helpline. The helpline is a free information service for TI users who have questions about products and other aspects of home computing.

Order forms for software volumes are available from the library. For more information, contact Amnion Helpline at (415)753-5581 from 9 a.m. to 4 p.m. (Pacific time) or write to 116 Carl St., San Fransico, CA 94117.

ON CASSETTE

Robert D. Temple, 602 E. Franklin St., Kenton, OH 43326-2015, is offering several small programs in console BASIC. The programs are used in state lottery games to pick either 3, 4 or 6 numbers completely at random using the RANDOMIZE and RND command. Another program picks every possible combination of numbers in Lotto-type games. Send a cassette for the programs.

TRIVIA 99er

A game program, TRIVIA 99er, is being offered as Freeware. The game runs in XBASIC and can be played by 1-4 players or teams, and was written by Robert L. Wesler.

To receive the program, send an initialized disk, packaging and return postage, or \$5 for the disk, disk mailer and postage, to Robert L. Wesler, 4300 Frazier, Fort Worth, TX 76115.

TWO MUSIC DISKS

Bill Knecht of the Houston Users Group is offering two disks of music programs. All songs include graphics, some animated.

The programs are written in XBASIC and require memory expansion and two disks. For a copy of these, you may send two 5.25 disks and a prepaid mailer, OR a check for \$6 for both, to Bill Knecht, 815 Yorkshire, Pasadena, TX 77510.

TEXNET FREWARE

Texnet, the Texas Instruments electronic network operating on The Source, offers some 340 downloadable programs at no charge to Source subscribers. For more information, write Texnet at Soft Mail Inc., P.O. Box 745, Rockwall, TX 75087.

EDITORIAL COMMENTS:

Well it seems that old man winter hasn't found his way to Winnipeg yet! It's just as well, he usually stays around just a bit too long for my liking. Anyway, down to the important stuff. Welcome, Computer Warehouse, our first advertiser. Check out their full page ad. They may have some computer supplies that you need. Rick Lumsden, in this month's feature article, describes how you can use your spare TI computer as a home security system. New this month is a Curiosities and Passtimes section. This section offers a monthly brain twister (solvable with or without a computer) for your intellectual amusement. Paul Degner keeps us up to date on the ever changing world of the TI user. Reviews takes a look at Hank Derksen's Maze Maker program. As promised I have included a list of freeware addresses. For a summary of the feedback received from the questionnaire, passed out last meeting, read Reader's Response. See you all again next month.

If you have a review, user hints, or helpful programming tips, get them to me for the next newsletter. The deadline that I have set for submissions is one week before the date of the group's meeting. No matter how small you feel your contribution may be, it is quite possible others will benefit from it. Be an active member and participate! Thanks go to Rick Lumsden, and all who have submitted items for this issue of our newsletter.

MISCELLANEA:

Miscellaneous news and reminders. Out of the September Micropendium comes this interesting bit of information:

WHO'S NO.1?

There was an item that appeared in a number of newspapers last month [August] having to do with the most popular computers in the United States. Is the most popular computer the IBM-PC? The Apple II series? The Atari?

"No," to all three. The most popular computer, in terms of how many are in the hands of the purchaser, is the Commodore 64, followed by the TI99/4A. Well behind the TI are the PC, Apple, and Radio Shack computers.

Any suggestions for categories, and prizes for a 'User Written' software contest will be appreciated. Please submit your suggestion(s) to any of the members of the Executive.

Bill Quinn informs me that he is not able to act as the club representative in purchasing products from Unisource Electronics. Paul Degner suggests that it would probably be cheaper to order through NAG, the Florida based National Assistance Group. Contact Paul or Steve Zabarylo for more information.

Contact Steve Zabarylo (ph.-632-9936) if you are interested in joining the U.S. based National TI User's Assistance Group.

Charles Carlson's BBS, the 'SMORGAS BOARD' has new hours. The BBS is now operating from 7:00 p.m. to 8:00 a.m. nightly.

Remember to check out the swap and sell column. It will be printed every second month, alternately with the listing of the programs in the member written library. That's all for now.

READER RESPONSE:

Here is a summary of the response to the questionnaire I distributed at last month's meeting.

Of the 25 forms that were distributed 14 (56%) were returned to me. All who responded had at least a console and cassette and still use their system. Eight of the 14 had full systems, four of those having extra drives, and six have modems. Most (11) of the users have the speech synthesizer and the Extended Basic Module, while 8 have the E/A, and 4 each had TI-Writer, Multiplan, Mini-memory and Logo cartridges. Ten users have the RS232 interface and a printer. One user had a Thermal printer, one a 128K card, and one a Corcomp RS232 Box.

Most of the users (10) have owned their computer for longer than 2 years. Of the 14 that responded 3 said that they didn't program on their computer. Two said that they weren't interested in learning more about programming. Eleven program in Basic/XBasic, 4 in Forth, 3 in assembly and 2 in Logo. Of those interesting in learning more about programming 7 wanted to learn more Basic/XBasic, 6 Assembly, 6 Forth, and 3 want to learn more about Logo programming.

The most common use the TI is put to (from this query) is for playing games. The second most popular use was for word-processing and record-keeping. Other uses included some programming, music and budgetting.

Most expressed a desire to use their system to do more of what they have been doing. Some would like to use their system for spread-sheeting, data base management, maintaining a stock portfolio, operating a BBS, telecommunicating, graphics creation and printing, as well as learning to program.

The most common resource that members were willing to contribute was TIME. After time came the willingness to teach others and to contribute software and programs.

The most common want for members from the group was for information. Next came the need for programming help, the purchasing of hardware and software, and the exchange of programs.

Finally, 12 of the 14 who filled a questionnaire (86%) wished to have contact with other members in the group. Two did not indicate a wish to contact other members.

Overall, I was quite pleased with the information that this query brought. It seems that most members like what the club has been doing and feel that it is a good place to get information and programming help.

REVIEWS:

This column presents reviews of materials that may be of interest to the user. The views expressed are the opinions of the reviewers, exclusively.

HARDWARE:

Like to share your feelings about a piece of hardware that you own? Send your review to the newsletter editor before the next newsletter deadline.

SOFTWARE:

This review is of Hank Derksen's Maze Maker program. Hank Derksen is a member of the WPG 99/4A USER'S GROUP.

TI-DISK CAT

This program is 100 percent assembly language. Will catalog disks and more than 2,000 files. Outputs a double-column, alphabetized listing providing all critical information. Sorts in less than 45 seconds and loads in less than 7 seconds. Requires E/A, XB, MMH or TI-Writer, expansion memory, disk system, and printer. Send disk and return mailer to Mack McCormick, 215A Yorktown Dr., Ft. Lee, VA 23801.

DRAGON STORM OFFERED

Written in Extended BASIC, the object is to rescue a princess from an evil dragon. Requires joystick. Score based on obtaining a variety of items and success in rescuing the princess. For disk copy, mail disk and return mailer to: L.E. Benson, P.O. Box 283, Eden, NC 27288. For cassette copy, send cassette and mailer to Howard Unan, 3913 Sybil Rd., Randallstown, MD 21133. Include \$1 with each order for documentation. Author asks \$10 if pleased with program.

TRIVIA and GRAPHICS DEMO

Trivia and Graphics Demo are being offered by Danny Cox. Trivia allows up to four players and requires a disk system, Extended BASIC and a memory expansion. Users may create their own multiple choice questions. Scores and prompts are displayed continually.

Graphics Demo requires Extended BASIC and a disk system. The program features six graphics screens ranging from a snowman to a tiger.

Send a disk and return mailer for each program to Danny Cox, 1861 The Elms Ave., Memphis, TN 38127. Those who are pleased with the program may contribute \$5, according to the author. Users are encouraged to copy and distribute the programs.

FREE BULLETIN BOARD

The Techie Bulletin Board is being offered as freeware. The program requires four single-sided disks and includes documentation. Features include a message base, Sysop chat, check for mail, listing of users, expert mode and user verification of status. Planned improvements include true TE-II file transfers, two and three way conferencing, and 1200 baud compatibility.

Techie requires a disk system, Extended BASIC, expansion memory, RS232 card and 300 baud modem. Send four single-sided diskettes with return mailer to: Monty Schmidt, 525 Wingra St., Madison, WI 53714.

There you have them! Check out MICROpendium for more details, and other offers.

TI HOME SECURITY

AUTHOR: RICK LUMSDEN

The program listed allows you to use your spare TI console as a burglar alarm with very little investment except for a bit of time.

The actual program is very simple and can be modified to suit your own particular needs. This particular version has a lot of statements that allow you to see what is going on in the program while running a demonstration. These, however, can be removed quite easily with no effect on the operation of the program. Just a few cautions though. Understand the program first before making any drastic changes. The other precaution is not to use your perimeter loop on the same joystick "direction" as the entry keyswitch (eg. If you use the UP position for the keyswitch do not use this direction for the perimeter loop even if it is on opposite joysticks). The program is set to use the UP position of joystick 2 for the entry keyswitch and the DOWN position of joystick 1 for the perimeter loop. Remember, this program will run as a stand-alone routine but is intended to be modified or totally rewritten by yourself to suit your particular job. The intention of this program was to be as simple as possible and not require any peripherals or modules. Most of us have a second console so here is a good use for it other than as a paper weight.

COMPONENTS

To set the alarm you will need the following:

1. TI console.
2. Normally open magnetic or pushbutton switches for each door on the perimeter loop. (Radio Shack #49-495 or #49-497) **NOTE:** With changes to the program (using the fire buttons and other joystick positions) you may add other protection loops but you must ensure that you have one switch per loop with the normally closed switches. Of the normally open switches you may use as many of them, on a loop, as you wish.
3. Entry keyswitch (Radio Shack #49-515) or a hidden SPST toggle switch.
4. An audio amplifier and speaker(s). (Your stereo amplifier will work just fine, but the alarm will only be sounded in your house.)
5. A cable to hook the audio-out port from the console to the amp. (If you have a monitor cable these will work fine. Some are available for the TI from Super Valu stores for \$10.95.)
6. Joystick connector (Radio Shack #276-1538).
7. Hook-up wire.

To run a simple demonstration of the program, you will need two joysticks and your TV or monitor.

RUNNING THE PROGRAM

First, you may want to set the delay variables in lines 150 and 160. Line 150 is the exit delay variable. This allows you time to leave the house after you turn on the keyswitch (arm the system). If you mount the keyswitch outdoors, then set this variable to 1.

The variable in line 160 sets the entry delay. This one allows you time to enter your home and disarm the system with the keyswitch before the alarm sounds. Remember to set this one on the fast side, because it also delays in the event of a break-in.

When you type RUN, the words "PLEASE REMOVE ALPHA LOCK" AND "PRESS 'C' TO CONTINUE" appear. Follow the instructions, and next comes "PERIMETER CHECK (Y/N)?". If you press "Y" the program jumps to line 700 and checks joystick 1 for any openings in the protection loop (ie. Not in the DOWN position). If an opening is found the program sounds a warning and tells you to check and remedy the situation. Do this by moving J1 to the down position and holding it there. Now push the "R" key and the program goes back to line 310 and sounds the DK chime.

The word "UNARMED" appears and tells you that the system is now ready for input from the keyswitch. When you turn the keyswitch on (by holding J2 in the UP position and J1 in the DOWN position) the program goes to the exit delay loop. This loop allows you to leave your home without triggering the system. Once this times out, the program begins looping and checking each of the joysticks for a change in state.

If J1 suddenly becomes open the program moves to the entry delay loop. This delay allows you to enter your home and disarm the system with the keyswitch, before the alarm is sounded. If the timer times out (eg. Break-in) the program now sounds the alarm. You can simulate this by letting J1 return to the center position. Even if you were to close the door now it is too late, the timer is running down, and the only way to stop it is to disarm the system.

FINAL COMMENTS

Any number of changes and additions can be made to the program, limited only by your imagination and your requirements. The intention of this routine was to give you an idea of what is possible, and also to be as simple possible. There are also heat detectors available that work on the normally open and normally closed switch principles, so a fire alarm can also be added.

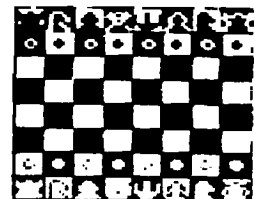
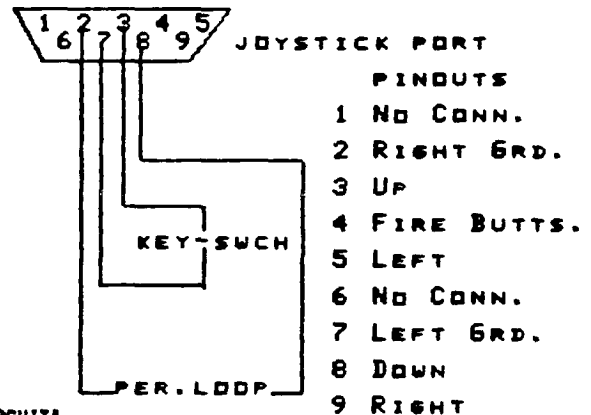
Try it out, and if you have any questions, see me at the next meeting or call me at 253-0794. If you have any ideas on how to improve the program I would be interested to hear from you also.

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100 REM BUGLAP ALARM PROGRAM
110 REM FOR THE TI HOME COMPUTER
120 REM A PUBLIC DOMAIN PROGRAM
130 REM WRITTEN BY R.A. LUMSDEN
140 REM 85/10
150 ENDE = 1000
160 EXDE = 1000
170 SWPD = 1
180 CALL CLEAR
190 PRINT "PLEASE REMOVE ALPHA LOCK"
200 PRINT
210 PRINT
220 PRINT "PRESS 'C' TO CONTINUE"
230 CALL KEY(1,N,M)
240 IF N=0 THEN 230
250 IF M<>67 THEN 230
260 CALL CLEAR
270 PRINT "PERIMETER CHECK(Y/N)?"
280 CALL KEY(1,L,T)
290 IF T=0 THEN 280
300 IF L=89 THEN 730
310 IF L<>78 THEN 280
320 CALL SOUND(1000,440,0,330,5)
330 CALL CLEAR
340 PRINT "UNARMED"
350 CALL JOYST(1,X,Y)
360 IF Y<0 THEN 350
370 IF Y(14) THEN 400
380 IF SWPD THEN 400
390 SWPD=SWPD+1
400 CALL JOYST(1,A,B)
410 IF B=4 THEN 350
420 CALL CLEAR
430 PRINT "ALARM TRIPPED"
440 PRINT
450 PRINT "ENTRY DELAY INITIATED"
460 FOR ENTPE=1 TO ENDEL
470 NEXT ENTPE
480 CALL JOYST(2,X,Y)
490 IF Y=0 THEN 330
500 FOR LOOP=1 TO 5
510 FOR SIREN=700 TO 900 STEP 10
520 CALL SOUND(-99,SIREN,0)
530 NEXT SIREN
540 FOR SIREN=900 TO 700 STEP -12
550 CALL SOUND(-99,SIREN,0)
560 NEXT SIREN
570 NEXT LOOP
580 CALL CLEAR
590 PRINT "ALERT !!!!!!"
600 PRINT
610 PRINT
620 PRINT "ALARM TRIPPED"
630 PRINT
640 PRINT "PLEASE RESET"
650 END
660 CALL CLEAR
670 PRINT "EXIT DELAY INITIATED"
680 FOR DELAY=1 TO EXDEL
690 NEXT DELAY
700 CALL CLEAR
710 PRINT "ARMED"
720 RETURN
730 CALL CLEAR
740 CALL JOYST(1,A,B)
750 IF B=4 THEN 320
760 CALL SOUND(1000,-2,0)
770 PRINT "BREAK IN PERIMETER CIRCUIT"
780 PRINT
790 PRINT "PLEASE CHECK"
800 PRINT
810 PRINT "PRESS 'R' TO RECHECK PERIMETER"
820 CALL KEY(3,V,S)
830 IF S=0 THEN 820
840 IF K=82 THEN 730
850 IF K<>82 THEN 820

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* END OF LISTING



The Winnipeg 99/4 Users Group

Quid pro Quo

By Paul Degner

Eee gad, November already! Time sure flies by when a person reaches the end of his teen years. It seems my time is getting more valuable by the second. In any case these are changing times so let us look at what is new in mail order land.

Briefs:

- Finally a product being produced here in Canada! Maximeo, a powerful static ram module, was developed by Guy Gournay. We heard about this product some time ago in one of the Ottawa Newsletters and now we have proof that it exists. Looking like a widget, it contains 48K RAM and 8K ROM and is said to work either on the 99/4 or the 99/4A home computer and have the following capabilities: expands the memory of the computer to 96K RAM, dump a module to disk and have the option to run it, works from the GROM port, contains a improved editor/assembler, and can catalog the disk-based cartridge programs. This 'widget' goes for the price of \$199 cdn. Contact Guy Gournay - 933 Delorimier - Longueuil - P.Q. - Canada - J4K 3M8.

- Feeling depressed that no computer stores in town support the TI? A compromise can be made with MICROpendium! A monthly magazine dedicated to us orphans containing the latest reports on software and hardware being developed for the 4A as well as freeware and helpful user notes. All this for a minimal yearly cost of \$18.50 US. Contact MICROpendium - P.O. Box 1343 - Round Rock - Texas - 78680.

- Computer Shopper reports the Myarc RS232 Card has a error in its PIO port. Connection between the PIO port and one of those crazy printers such as either the Okidata or the Smith-Corona with that special cable containing a transistor to pull-up the handshake will not work. Randy Holcomb is busy working on a fix so it should be forth coming shortly. Not only the RS232 card is having problems but now their pride and joy, the 128K card, is turning up with bad banks of RAM as well as extreme sensitivity of any movement within a five block radius of the card. It seems you just can't win with todays technology!

- The following two articles are a reprint from 'The Smart Programmer' which some of members might be interested in reading.

Over the past few months we have received some questions regarding the Power Up routine and its sequence of events.

The Power Up routine resides in console ROM and console GROM chip 0, with the majority of it in GROM. Listed below is the sequence of events, as we know it, that take place from the moment power is applied to the console.

1. When power is first applied to the 9900 microprocessor it executes a level 0 interrupt which is a reset. When this happens it knows to grab its workspace pointer from address 00000 and its program counter or instruction pointer from address 00002. In the 99/4A these addresses are burned into console ROM. Once it has these addresses it begins to execute the code that is pointed to by address 00002.
2. The code pointed to by address 00002 loads R13 with 09800, the GROM read address, R14 with 00100, the status flag and R15 with 0BC02, the VDP write address.
3. The balance of the Power Up routine is in GROM chip 0. First it clears out the sound list indicator at 083CE and then it turns off the Speech Synthesizer, if you have one, and turns off the sound generators.
4. Next it initializes the Data and Subroutine SPL stacks in Scratch Pad RAM.
5. Then it loads the VDP registers with default values stored in a GROM table.
6. Most of the Scratch Pad RAM is then cleared out by writing zeroes to it.
7. The keyboard interrupts are then disabled and the cassette audio gate is turned on, this allows you to hear the cassette through your monitor speaker.
8. Next the VDP and external interrupts are enabled.
9. The cassette motors are then enabled, this sets up the remote jack so the motors can run.
10. Next it generates a BEEP sound by CALLing the TONI routine in GROM chip 0.
11. And then it determines the size of VDP RAM, 4K or 16K, and sets bit 0 in VDP register 1 to 1 for 16K. I guess that TI thought they might produce a 4K console at one point in time.
12. The first 4K of VDP RAM is then cleared out and the default color and character tables are moved from GROM to VDP RAM.
13. Next the keyboards are initialized by scanning them. ie: CALL KEY(5.. , CALL KEY(4.. , CALL KEY(3.. etc.
14. Then it moves the data for the Title Screen into the screen image table. At this point the screen can not be seen because it is turned off. Bit 1 in VDP register 1 is set to zero.
15. The ROMs(DSR) and GROMs are then searched for power up headers and if they have one they are executed.
16. After the search and execution of power up headers is complete the Title Screen is displayed by writing a 1 to bit 1 of VDP register 1. This is the first time that you are able to see the Title Screen.
17. Next it initializes the Random Number Generator and then awaits for you to 'PRESS ANY KEY'. After you press a key it generates another BEEP sound.
18. And then it searches through the cartridge ROM and GROM for application programs and builds a list of their names. ie: Editor/Assembler, Extended Basic, Basic etc. Note: some consoles, V2.0 (C) 1983, do not search ROM only GROM.
19. At this point the screen is once again turned off, VDP register 1, bit 1 is set to zero and then it sets up the menu screen with the application programs it found.
20. After the menu is set up it turns on the screen by writing a 1 to bit 1 of VDP register 1, and waits for you to make a selection.
21. If you make an illegal selection it generates a HONK sound, otherwise it sets up the starting address for the application program you selected and branches to it.

Is there anyway to use CALL LOAD without having Memory Expansion?

Up until now the answer was NO. The first thing CALL LOAD does is to check to see if CALL INIT has been executed, and if it has not it returns with a syntax error. When CALL INIT is executed it places the value >AASE at >2006 in Low Memory Expansion. When the CHECK INIT routine is called it checks for >AASE at >2006 and if it's not there it returns an error. The way around this is to modify Extended Basic with GRAM KRACKER to bypass this test and just execute the CALL LOAD. This can be accomplished by changing the 6F Opcode at 6006/600A to >C044 in Extended Basic from: 06 01 EF which is CALL CHECK INIT to: 05 00 47 which BRANCH TO >C047, the address of the next instruction. The CALL LOAD routine does not need Memory Expansion when you are poking values into Scratch Pad RAM so I don't know why TI locked it out if it isn't there. Maybe they just didn't want us to get in trouble with trying to load an Assembly Program into a non-Memory Expansion System.

- Some of the members might be wanting to expand their current system so I decided to bring you the latest quotes on prices for various peripherals taken from the October issue of Computer Shopper.

Half-height 5 1/4 double-sided double-density Canon MDD211 disk drive going for \$69.95 US or two for \$129.95 US. Add \$3 US for UPS. Contact B.E. Micro - P.O. Box 288298 - Dallas - Texas - 75228 - (214)271-5546.

TI daisy chain memory expansion unit, #6714, going for \$59.50 US. 75 key mechanical keyboard, #6643M, containing 21 user-defined keys, all keys SPST, and uses a 21 pin ribbon contact for \$9.95 US. Add \$3 US for UPS. Charge only. Contact American Design Components - 62 Joseph St. - Moonachie - New Jersey - 07074 - (201)939-2716.

Half-height 5 1/4 double-sided double-density Panasonic JAS51-2 disk drive going for \$84.95 US. Add \$10 US for UPS. Contact Emerald Components International - P.O. Box 1441 - Eugene - Oregon - 97446.

Half-height 5 1/4 double-sided double-density Qumetral 141 L1 disk drive going for \$69.95 US or two for \$129.95 US. Add \$3.50 US for UPS. Contact Lolar Electronics Corp. - 13933 N. Central Expressway Suite 212 - Dallas - Texas - 75242 - (214)234-8850.

The following is a reprint of the article 'Coping with Static Electricity' by Dara Pearlman appearing in the January 1984 issue of Popular Computing.

If you operate a computer, static electricity is your enemy. It can make your equipment function erratically, delete data from memory, and necessitate costly repairs.

If you frequently receive shocks when you touch door knobs or other metal objects around your house, static electricity may wreak havoc with your personal computer. Other less overt signs of static include strange program bugs that never seem to repeat themselves, your display screen's going blank inexplicably, or incorrect results on the bottom line of your computer-generated income statements.

Here's why static electricity causes problems of this sort. A static shock is only a mild annoyance to humans because the current flow or amperage is low, although the static voltage, the force that drives the current, may actually exceed 25,000 volts. The integrated circuits or chips in your computer are extremely sensitive to high voltages, and even minute currents can cause problems. If a high-voltage static charge gets to your computer, it may even damage a chip and send your machine to the repair shop.

If the voltage of the static charge is low, you may suspect your computer is prey to strange gremlins that prevent a program from responding to your command or replace part of the letter you're composing with gibberish. You can banish the gremlins temporarily by restarting your program and retrieving a previous version of the letter from your backup file. After one or two of these encounters, you'll probably make a habit of saving your work on a disk at very frequent intervals.

The most common cause of static is carpeting, especially nylon carpeting. Many carpet fibers acquire a positive electrical potential when they rub against some of the common materials in shoe soles. When you walk across the carpet, you pick up a negative charge. This difference in electrical potential is like the voltage in a battery that has a positive and a negative terminal. When you touch a grounded conductor, like your computer cabinet, electric current will flow, and you receive a static shock.

You can protect your computer from static shock simply by touching some other grounded conductor before you touch the computer. You can also use an antistatic spray on the carpet—a popular, inexpensive remedy—but this does have problems. Because it wears off, you must reapply it at regular intervals. You also should take great care not to get any of the spray on your equipment because it can cause corrosion.

A more permanent solution is an antistatic rug or mat. Antistatic rugs contain metallic fibers that drain off excess charges. Antistatic mats, often with grounding wires, resemble the carpet protectors you see under office chairs.

If you notice static charges when you rise from your chair, you can eliminate this source by using one of several antistatic chairs that include small conductors in the upholstery.

Static charges are most likely to build up when the air is very dry. Most heating and cooling systems tend to pull moisture out of the air, so you might want to try a humidifier when you have the heater or air conditioner running. However, make sure that the moisture doesn't condense, as that can damage your equipment. Most computer equipment can tolerate relative humidity between 20 and 80 percent—the ideal is 40 to 50 percent. Operating a humidifier can also have the pleasant side effect of making your computer room a more comfortable place to work.

Even if static electricity doesn't cause problems in your day-to-day computer operations, there is one special circumstance in which you should take extra care to guard against it: when you need to open your computer cabinet to make repairs or add a new chip or circuit board. Without the protection of your computer cabinet, your components are especially vulnerable to damage by static electricity.

While you're working, you should avoid touching any materials that might produce static charges, such as nylon, vinyl, or Styrofoam. It's also a good idea to wear cotton clothing and stand on an antistatic surface. Then, before you touch any electronic components, put your hand on the power supply housing to drain any static charges.

With these precautions you should be able to keep the static electricity gremlins at bay and get more reliable performance from your computer.

- That's all for this month's column. See you in December!

The purpose of this column is to present, to the user, techniques that will be useful in the writing of programs for the TI-99/4A home computer. As not all readers will have the same programming skills I will present the material at a fundamental level but in a way that tries to be stimulating to the more experienced. Not everyone has knowledge about assembly language and I hope that what is presented here will get some of those people started with it. I hope that there is something, in what follows, for everyone. If you can provide some programming insight that might be useful to someone, please, feel free to pass it on to me, and I'll get it into the next newsletter.

BASIC/EX-BASIC:

This month I will take a look at the various statements that can be used to get input for a program. Input is some unknown that a program requires from a user during program execution (ie. when the program is running).

The simplest form of inputting data to a program is by means of the INPUT statement. It looks like this:

```
INPUT "some message":variable list
```

The "message" can be a simple request or an informative comment as to what the user is required to give the input. The message may be omitted all together. In this case the above INPUT looks like this:

```
INPUT variable list
```

The variable list is a list of one or more variables that will receive the data entered by the user. The variables in this list may be numeric or character. An example of the INPUT is:

```
INPUT "Enter your name:":NAME$
```

The message 'Enter your name:' is printed followed by a '?' and a blinking cursor. At this point the program is waiting for the user to type his name. After the 'enter' key is pressed, the data typed after the '?' is assigned to the character variable NAME\$ and is used by the program where ever the user's name is needed. If more than one variable is used, then the data entered by the user must be separated by commas and each variable in the variable list must be supplied with some data.

A second method of input is the CALL KEY statement. This statement is used when you want to check to see if a key is pressed on the key board or a joystick. The CALL KEY statement looks like this:

```
CALL KEY(unit,key variable,status variable)
```

Here the key unit refers to which part of the key board is to be checked. A key unit of zero (0) refers to the standard keyboard, 1 to the left half (and joystick 1's fire button), 2 to the right half of the keyboard (and joystick 2's fire button), and 3 refers to the upper case keys of the keyboard. The 'key variable' is the variable to which the ascii value of a character is to be assigned (if no key is pressed then a -1 is assigned). The ascii value of a character is a number between 0 and 255 that represents that character inside the computer. The status variable is used to hold the status of the keyboard queried. If the value assigned to the status variable is zero (0) then no key was pressed, a 1 indicates the first press of a key, and a -1 indicated that the last key pressed is still being held down. A CALL KEY statement is useful when you want a single character input from a user, ie. a Y or N or a single digit number. If you want to test to the keyboard until a key is pressed you must repeatedly CALL KEY until the status variable no longer indicates a zero. For example the following code will check key board zero until a key is pressed,

```
100 CALL KEY(0,KEY,STATUS)
```

```
110 IF STATUS=0 THEN 110
```

To get the character representation of the key value you must use the CHR\$() function and assign the result to a character variable, like:

```
B$=CHR$(KEY)
```

If you want to get the numeric value from an ascii character code you must subtract 48 from the key value (KEY=KEY-48).

Another means of input, available only in Extended BASIC, is the ACCEPT AT command. It looks like this:

```
ACCEPT AT(ROW,COL):variable
```

The ACCEPT AT functions much like an INPUT except that only one variable is allowed, no '?' is displayed, and the input cursor may be located at any position on the screen.

Several options are available with the ACCEPT AT that make checking for correct input easier than with a simple INPUT statement. This option is the validate and is used to specify what characters are allowed to be entered. A BEEP is also available, with the ACCEPT AT, to alert the user that data is requested. A SIZE option will let you set a limit on the number of digits or characters that may be input at one time. An example of an ACCEPT AT with the mentioned options is shown below:

```
ACCEPT AT(24,1)BEEP VALIDATE(NUMERIC) SIZE(9):A
```

This statement allows a 9 digit number to be input from the first column of the 24'th row of the screen, after a beep is sounded. For other options that may be used with the ACCEPT AT check the Extended BASIC manual.

Well, that's all there is to user input in BASIC and Extended BASIC. Hope this has been informative.

ASSEMBLY:

To continue the theme of input this section will discuss keyboard input from assembly language. All BASIC operations like INPUT, CALL KEY, ACCEPT AT, and CALL JOYST are executed in assembly language with the aid of the KSCAN (Keyboard SCAN) utility (stored at location >6020 in the Mini-Memory Module). To perform an INPUT or ACCEPT AT kind of operation in assembly language you have to accept characters or numbers one at a time, checking to see if they are valid, printing them on the screen if they are, and storing them somewhere in memory until the code for the ENTER key is detected, indicating that the operation is complete. The stored value can then be operated upon by some other part of your assembly program.

To use the KSCAN routine there are some scratch pad memory locations that are used to indicate keyboard selected, the value of the key pressed, and the status of the keyboard. These addresses are >8374, >8375, and >837C respectively. To select the desired keyboard you must place the key board number in the byte at >8374. Address >8375 will contain the value of the key pressed after a call to KSCAN, and the 3rd bit from the left of byte >837C, if set to a one, will indicate that a key was pressed, and if set to zero will indicate that a key has not been pressed.

The following short program shows how the KSCAN routine is used to get characters from a keyboard. The keys pressed on the keyboard are displayed onto the screen from the upper left corner and continue, like a typewriter until they reach the bottom right hand corner. Once the 'typewriter' has reached the lower right hand corner it will go back to the upper left hand corner and continue to display the keys pressed, this is called screen wrapping. This program is from Compute's Beginner's Guide to Assembly Language, and can be found on page 69.


```

CLR R0          Set character display position to screen location 0.
CLR @B374       Set the key board desired to zero by clearing B374.
LP BLWP @KSCAN  Main KSCAN loop. Call KSCAN here.
MOV B @B37C,R1  Move status byte to R1.
CDB @BT,R1      Test third bit of B37C to the mask.
JNE LP          If bit is not set (0) then loop until a key is pressed.
MC @B374,R1     Move the value of the key pressed to R1.
SWPB R1         Want the ascii value of the key as left
byte so that the VSBW routine can display it.
BLWP @VSBW      Display the character that was pressed at the key board.
INC R0          Increment the screen position by one.
CJ R0,76B       Compare screen position to end of screen.
JLT LP          Jump to kscan if not at end of screen.
CLR R0          Set position to top of screen (0) if at end.
JMP LP          Jump to the key scan.
BT DATA >2000  Mask to test if third bit in B37C is one.

```

The above routine shows how a simple keyboard scan is done, and should be easily adapted to most input needs. Joystick scanning involves a bit more checking but is not much more difficult to implement. Happy programming.

FORTH:

A frequently recommended text for learning Forth is the book called 'Starting Forth' by Leo Brodie. The Forth discussion will be postponed till next month's newsletter.

CURIOSITIES AND PASTIMES

This column features a monthly BRAIN TWISTER for your intellectual entertainment. Possible puzzles for future issues include cryptographic messages, logic puzzles, word games, and real life problems. There was some dismay at the disappearance of the word searches included in the early newsletters. This column is meant to fill that gap, and will let the occasional word search puzzle appear now and then. In the meantime I bring you a puzzle called "Instant Insanity".

Instant Insanity is the name of a popular puzzle consisting of four small cubes. Each face of every cube has one of four colors: red(R), blue(B), green(G), or white(W). Each cube has at least one of its six faces with each of the four different colors, but the remaining two faces necessarily must repeat one or two of the colors already used.

A two dimensional, flattened out, representation of the cubes, and the colors of their faces, is shown in the accompanying diagrams. To reconstruct the original cubes simply fold at the edges of the adjoining faces and rejoin adjacent non-connecting edges, keeping in mind that the colored faces should end up on the outside surface of the cubes.

The goal of the puzzle is to arrange the cubes one on top of the other in such a way that they form a stack four cubes high, with each of the four sides having exactly one red cube, one blue cube, one green cube, and one white cube.

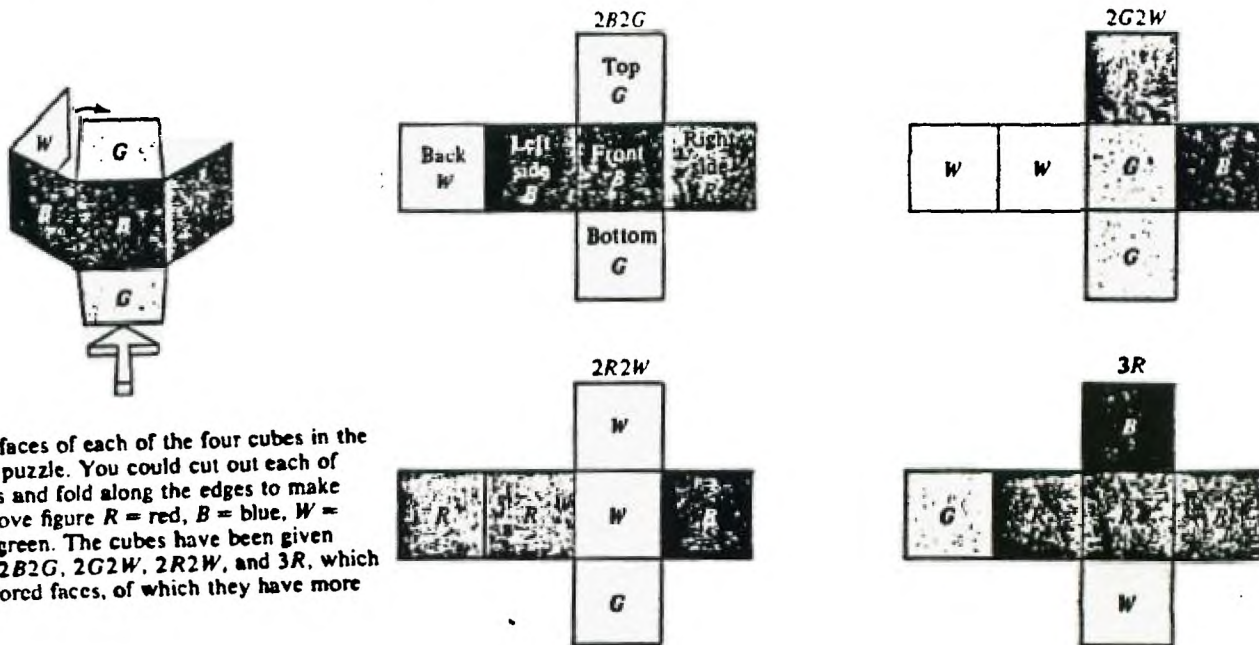


FIGURE 2-1

The six colored faces of each of the four cubes in the Instant Insanity puzzle. You could cut out each of the above figures and fold along the edges to make cubes. In the above figure R = red, B = blue, W = white, and G = green. The cubes have been given these "names": 2B2G, 2G2W, 2R2W, and 3R, which indicates the colored faces, of which they have more than one.

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**President's Message:**

By Dr. R. D. Kurtz

We would like to express our thanks from the National Headquarters to all of our 20,000 + members. We feel confident about the future of the 99/4A. You may not be aware of the constant lobbying the 99/4A National Assistance Group is doing to continue the support of the 99/4A computer. The future looks great. Many of the manufacturers have expressed a positive desire to produce new products. Only through the members support can we continue to expand and develop new products, ideas and technical assistance. With the increased membership of the group we can buy in large quantities and pass the savings on to our members, but we must have your support and the support of others you know who have a 99/4A computer. Thanks for your continuing participation.



We now have MasterCard - Visa - C.O.D. and super express delivery service.

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Note on Renewals

From Patty McKenzie

Please DO NOT send in you next years membership fee even if it is time to renew. A special renewal pack with you new membership card, bumper sticker, and free offers will be coming in the mail shortly, watch for it. "A special thank you from Patty in membership for all the great support from the members in making this a record year for our group."

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11. Mysteries of T.I. Dos Unvelled

**99/4A NATIONAL ASSISTANCE GROUP**

P.O. Box 290817
Ft. Lauderdale, Florida 33329

PLACE
STAMP
HERE

Tim W. Northrup
3305 Rutherglen
El Paso, TX. 79925

Dear Sir,

Recently, I placed an ad in the September issue of "COMPUTE" magazine for memory expansion of the TI 99/4A home computer.

This modification brings the total internal RAM storage to the maximum amount of 48 kBytes that the TI 99/4A can utilize. This is the same amount of memory gained as when you use the TI expansion box and memory card; in fact, my expansion replaces them both.

Extended Basic is required to be able to use the extra memory with Basic programs or the memory can also be accessed in assembly language programs. When using Basic, the expansion allows 24,488 bytes of program space and 13,928 bytes of stack memory. The stack is used to store string and numeric variables instead of using the program space to store them. This allows the microprocessor to use the available memory more efficiently and run programs at a higher rate of speed.

The expanded memory is added inside and is powered by the computer. There are no external signs that the computer has been altered and this retains a neat appearance and maximum portability. Compatibility with all software and plug-in modules is retained. As far as the computer is concerned, the expansion box and memory card are attached and turned on. The port on the right side of the console remains open for use with RS 232, printer, etc.

All added parts are burned in for 36 hours and then tested in each of the 262,144 bit locations. If there is a failure of the memory expansion due to faulty components or workmanship for a period of 12 months, I will repair or replace the expansion for free.

If you desire this expansion for your computer, send only the console and a check or money order for \$119.95. Insure the package for your own protection. Expanded computers will be shipped from El Paso a maximum of 5 business days after being received.

I also have the TI Extended Basic cartridges with the manual, that can be purchased only if you buy the expansion. These cost \$39.95.

Texas residents, add 5% state sales tax to the total amount.

Sincerely,


Tim W. Northrup

*PS: Due to the expense
of shipping internationally, you
can purchase the schematic of
this expansion for \$15.00 (U.S.)*

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Contact: Norm Willey at 489-3172 (anytime)

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