



The Ottawa T.I.99/4 Users' Group



VOLUME 4 NUMBER 11.....NOVEMBER 1985

# C o n t e n t s

**NEXT MEETING....**

THURSDAY the 5th of December, starting at 7:30pm at the Merivale High School, 1755 Merivale Road in Nepean.

**EXECUTIVE NOTES....**

PAUL LECOURTOIS is the Co-ordinator of the Harddisk drive committee.....There are now 170 members in the group....Donations of double sided disks to copy BOB BOONE'S LIBRARY will be gratefully accepted.

**FEATURE ARTICLES....**

NUAC NEWS by Bob Boone.....R.A.GREEN is again with us with another article.....YVAN has an article on DISPLAY VARIABLE 80 FILE RECOVERY

**DEADLINE....**

The 13th of December is the deadline for the next Newsletter...PLEASE Try to be on time.

**P.O. BOX 2144, STATION D, OTTAWA  
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## HOTLINE NUMBERS

The executive has expressed a desire to assist all members should you have some problems or have some questions, do some library swapping or borrow a book. This will be the place to look. Of course if you wish to be placed on the list just give me a call...I know there is a lot of expertise within our Group. I hope to add to this list and improve the coding. Please respect normal hours unless you specifically know that someone doesn't mind a call at 3am or use the BBS to leave a message at 738-0617, 24 hours a day, 7 days a week.

BERRY MINUK.....CHAIRMAN.....TUTORIALS,ASL,B,F,XB.....(M)234-5472  
JANE LAFLAMME.....V/CHAIRMAN.RECORDS,Lb,Lc,Ls,MBX,Mwp,B....(M)837-1719  
BILL SPONCHIA.....P/CHAIRMAN..TUTORIALS,B,Ls,XB.....(M)523-0878  
DENIS DENNY.....TREASURER.....(M)596-0276  
CAROL LECOURTOIS..SECRETARY.....(M)824-5591  
BOB BOONE.....NUAC CO-ORD..UG CO-ORD,CC,I,Ld,Ls,S,SS.....(M)623-7841  
PETER ARPIN.....CO-SYSOP.....(M)523-0017  
BENDIT TANGUAY..CO-SYSOP..ASL,MBX,Mmp.....(M)830-1718  
MARG. O'CONNOR..EDITOR.....NEWSLETTER.....833-2626  
TONY HOPKINS..ADVERTISING..BUSINESS,Lb,Ld.....746-4463  
SHAWN MILLAR...YOUTH CO-ORD.SCORES.....(M)684-3466  
MAURO TOMIETTO.LIB.CHRMN..OTIUG SOFTWARE,Ls.....(M)230-3535  
LLOYD GALENZOSKI.MEMBER/CHRMN.MEMBERSHIPS.....(M)830-1522  
ART GREEN.....ASL.....837-1955  
PAUL LECOURTOIS...TIBBS CO-ORD.....(M)824-5591  
JEAN-PIERRE MORIN.....F,.....729-4579  
DICK PICHE.....TECK.....(M)521-8667  
TONY DOMEVSKI..\*TEXAS INSTRUMENTS GEOPHYSICAL SERVICES\*...416-884-9181

\*HARDWARE AND SOFTWARE REPAIR DEPOT IN RICHMOND HILL (TORONTO)\*

SOFTWARE:::ASL=ASSEMBLY LANGUAGE  
B=BASIC  
F=FORTH  
L=LOGO  
Lb=BOOKS/MAGAZINES  
Lc=CASSETTE LIBRARY  
Ld=DISK LIBRARY  
Ls=U/G SOFTWARE SALES

Mp=PLATO  
Mea=EDITOR ASSEMBLER  
Mmm=MINI-MEMORY  
Mmp=MULTIPLAN  
Mwp=TI WRITER  
S=SALES  
XB=EXTENDED BASIC

HARDWARE:::BBS=SYSTEM OPERATOR  
CC=CORCOMP EQUIPMENT  
I=INSTALLATION  
M=MODEM EQUIPPED

MBX=VOICE RECOGNITION  
MY=MYARC EQUIPMENT  
R=REPAIRS  
SS=SALES

## EDITOR'S NOTES

by Margaret O'Connor

My apologies at the lateness of the News Letter this month. It seemed that everyone was late with their copy. I hope it will get better as time goes on.

We have changed the format a little this month to see if we could get more articles in and would like to hear from you as to whether you like it or not.

The Membership Drive is to be held on Saturday November 30 at Compucenter, Carlingwood, Ottawa. Lets see if we can get everyone out to support those that will be demonstrating during the day.

You will note from the Hotline that Jane Laflamme has resigned as Sysop and I am sure she will be missed, I know she has been very helpful to me and I am sure to all. She will be working with Bob Boone on the National Group though so will be very busy there. This leaves Peter and Benoit to carry the Sysop's job on their own and I am sure they will do an excellent job of it.

## A LOOK AT ALPHA LOCK by

R. A. Green

Have you ever started playing a game then have to restart because you forgot to release the Alpha Lock? Well, here is a little trick that Assembler Language programmers can use to warn the player, and then wait till s/he releases the Alpha Lock. It will make a program a little more user friendly.

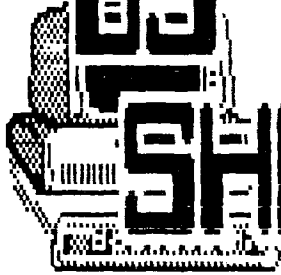
The following Assembler source program demonstrates the technique -- it literally looks at the Alpha Lock.

### ASSEMBLER SOURCE

```
*TITLE : ALPHA LOCK DETECTION
*AUTHOR: R. A. GREEN
*
  DEF ALPHA          Define entry point
  REF VMBW           VDP Multi Byte Write
*
ALPHA  LI  R0,0062    "ALPHA LOCK TEST"
       LI  R1,MSG1
       LI  R2,15
TEST   BLWP #VMBW
       CLR R12       CRU Base address of zero
       ORZ 21
       NUP
       TB  7         Test for alpha lock
       JEQ NOTON    Jump if ALPHA LOCK is off
MSG    LI  R1,MSGON  "ALPHA LOCK IS ON"
       LI  R0,00A2
       LI  R2,17
       BLWP #VMBW
       LIMI 2       Let interrupts in
       LIMI 0       So QUIT key will work
NOTON  JMP  TEST     Loop
       LI  R1,MSGOFF "ALPHA LOCK IS OFF"
       JMP  MSG
MSG1   TEXT 'ALPHA LOCK TEST'
MSGON  TEXT 'ALPHA LOCK IS ON '
MSGOFF TEXT 'ALPHA LOCK IS OFF'
END
```

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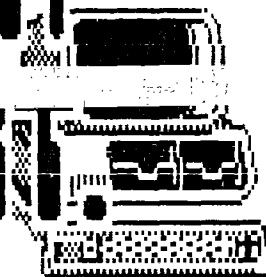
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## CHAIRMAN'S TWO CENTS WORTH

Hello again! This month I will vary from the usual format and instead of reviewing the last meeting I will give a brief report on the trip to Chicago. For those of you who were at the general meeting this will already be old news, but maybe there will be some new details which were not covered during the meeting.

To me, the most important thing that came out the trip was the personal contact made with people who were only names before. For example, we met Terry Atkinson from TINS, Dr. Corbeil from the Sher-TI group and also a contact from a group in Kitchener. As well as the Canadians we also met many of the U.S. people as well. In the ranks of programmers and Vendors we met Craig Miller and his crew, Lew Phillips, John Clulow and others. We also met Terry Masters from the L.A. Group and made contact with people from the Mid-Atlantic Group (Washington Bull Board). It would not be possible to list all the others that we met but much of the credit must go to 2 people who weren't even with us. I am thinking of Bruce Caron and Jean-Pierre Morin whose programs we took with us for distribution. They were well received by all at the show and I would like to extend a vote of thanks on behalf of all of us to them for their fine programs.

There were many new products at the show and others such as Bob, Jane and Dennis will deal with them in their articles. I would like to mention some of the new software that I saw. One program that impressed me was Version 2 of TI-Artist. I know that many of you have the first version and have found it to be an excellent drawing program but the new version is even better. It has easier menus and contains additional features.

There were several new adventure games and some other graphics programs but we were so busy at our booth that we didn't have a chance to get full info on these. However, they should be on the market soon.

To continue with our listing of our Tutorials and Workshops and try to keep up to date on them the Schedule for the future is as follows:

<u>Date</u>	<u>Event</u>	<u>Time and Place</u>
Tues Nov 19	Beginners Assmby	7:30 Jane Laflamme's
Frid Nov 22	B.B.S. Workshop	7:30 Lloyd Galenzoski's
Tues Nov 26	Assembly Tutorial	7:30 M.H.S.
Sat Nov 30	Membership Drive	Carlingwood Compucentre
Tues Dec 03	Debugger Workshop	To be announced
Tues Dec 10	Forth Tutorial	7:30 M.H.S.

For further details you can phone me at 234-5472 or 996-1371 (work) or Jean-Pierre Morin at 994-3425(work). If you want any other tutorials or workshops please let me or any other executive know and we will try to arrange it.

The December Meeting will have an explanation of the various cards and other peripherals for our machine and what they can do for you. See you at the meeting and bring a friend.

## PRIOR PATTERNS

Rap sessions; more hardware info; name tags at meetings..by Bob Boone

The above three suggestions were found in our suggestion box passed around at the last meeting (among others equally as good). They're all fantastic ideas, easy to implement and should have been thought of long ago by your executive. Unfortunately we're only human. Art Green has been wearing a nametag to general meetings for months now; possibly since he started coming to them. I remember on several different occasions; noticing it and thinking....what a great idea...then forgetting about it again before the next general meeting... This anonymous contributor will get at least half his wish. More structured meetings is a little tougher...we're not professional organizers. A common saying comes to mind...one man's 'structure' is another's 'mass-confusion'. At our last meeting; Bill tried to start up about 10 to 8 and several people picked that moment to approach me to inquire about items I still had for sale on a front bench there...I almost had to be rude to get these people to let Bill proceed with the meeting...structure needs co-operation from the membership as well as organization from the top.

Another member suggests we should have (and will try to) a 15-20 min general question period at each meeting. It seems to me we have never refused a question from the floor and always end each meeting with a line like 'is there anything else...'; but I agree in principle with this idea none the less. A formal time set apart each meeting for this purpose would induce more of you to ask the questions we know you have. Many of you do get to ask your questions and usually get your answers but its generally done in such a way that few benefit from either the question or its response (ie: on a one-to-one basis rather than in front of the membership). The second way would benefit all....

A third suggestion (again unsigned) was to impart more hardware info at the meetings. Again a good one...but its difficult to touch everyone's base with it. I would suggest this user and any others reading this and silently agreeing with the suggestion subscribe to Micropendium and write to Darryl Dhein, 7 W Airline Highway; Waterloo, Iowa, 50701...tell him you read about him in our newsletter and would like to receive a free copy of his catalog. Micropendium has numerous ads from Unisource and Texcomp throughout its 40+ pages and lots of great software and hardware reviews too. A subscription to it costs only \$18.50 (US). Again plug our group if you write please... MICROpendium, P.O. Box 1343, Round Rock Texas, 78680. I personally consider it money well spent...something I rarely, if ever, could say about the washed-out HCM. In the meantime we are trying to keep you all abreast of new hardware available for the TI at meetings and on these pages...I also know from personal experience the subject crops up with great regularity at most (if not all) Special Interest Group meetings offered by the club on a week to week basis.

Maureen Dymond (and probably quite a few more of you shier ones) would like to have tutorials in Extended Basic and Multiplan as well as in E/A. Editor/Assembler tutorials, and Forth have already begun. Every Tuesday evening (with few exceptions) a classroom at the Merivale High School is booked for our use. Obviously we're at fault here for not spreading this word far enough...we'll try to publish Subject/Date info on a month by month basis in the newsletter from now on. If we can't get eight or more people interested in a subject we will take the effort to try to arrange tutorials for smaller groups in members homes and let you know where and when you can attend with regard to Multiplan and Extended Basic.

Mike Marcotte wrote us a book (with good reviews) full of good stuff! He included some good suggestions and an offer of his help in implementing them. They and all the rest will be discussed at length at our executive meeting tonight at Bill Sponcia's. The above article was left out of the October Newsletter due to lack of space. We're scrambling for ways to cut down our newsletter costs so that we can look at expanding our Newsletter beyond the 24 page mark...any helpful suggestions along those lines will be very

welcome. The big factor stunting our growth beyond this level is a dramatic increase in mail costs(something of the order of 17 cents per issue).

One member at the November meeting requested we publish the club's constitution and bylaws in an issue of the newsletter. A good idea and one that would allow our non-attending members to get a look at it but a lack of space in the thing rears its nasty head again. We have discussed and will enact a proposal to have copies of the document at all meetings for you that are interested and to hand out to new and prospective members.

Hardware tutorials and workshops... Eleanor Brooker requested we try a workshop on cleaning computer hardware and another member suggested we run Hardware tutorials... We're currently trying to set up a workshop to guide you through the building of an E/A module with an 8K ram buffer; when more details are known they'll be announced. Cleaning of computer hardware has been a popular topic of previous meetings and I'm sure will be demonstrated again Eleanor. We'd appreciate a little more detail from the person that requested hardware tutorials...do you want info on what each add-on can do for you...or do you want instruction on how to build them? Perhaps many of your questions can be answered during our question and answer period at the meetings(to everyone's benefit.

Lucie Dorais has asked for help with writing a small program to dump message files from the BBS to her printer once she's downloaded them.... Peter Arpin has put 2 such programs into the download section of the BBS Please feel free to avail yourselves of them and thanks Peter!!!

Another slip of paper yeilded the following fantastic question.... Why doesn't someone write an article describing the different types of object code executible on our machines and a method to load and run them in Extended basic??? Anyone feel they can take this ball and run with it?

Mike Marcotte again submitted a couple of dillies! Thank you Mike and please come up and introduce yourself sometime! You probably don't know this but almost a third of our group(and a very high percentage of our more active/helpful user-base)is Francophone! We're obviously doing some thing right already and hope we can keep doing it whatever it is! Mike thinks we should mount a more aggressive campaign to attract more of our French brethren to our fold(ie: French corner in the newsletter etc).

The "pass the suggestion box" idea worked so well last month we'll try to keep it up and thus get more input from you that way. The club executive meetings are not closed sessions. If any of you are interested in attending and seeing first hand how club business is conducted please speak up! Call any executive member to find out the where and when; then call the host/hostess to see if they can fit you in. They'll appreciate you're interest!

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## MYARC AT THE TI CHICAGO FAIRE by Jane

Laflamme

It was a hard decision to go to the T.I. Faire in Chicago, being the only woman; but after my husband gave me his blessing, I made the decision to go and I didn't regret a minute! We had good times; we had problem times; but all in all, it was informative, enjoyable, and we had many laughs. We found we were very good in hind-sight; poor in pre-planning. We met Terry from N.S.; Jacques from Quebec; "whatshisname" from Kitchener-Waterloo; and a mess of Chicago and U.S. TI users too numerous to mention. The one thing that delighted me was the extent that Bruce's DM1000 has made a name for itself across the U.S. thanks to a one man blitz by Bob Boone to circulate it and our other talented user written programs. They were swarming around our booth to acquire the update! My impression was that about 90% of the people I talked to were aware of the program, and those that didn't were "sold" within 5 mins. I was proud to be part of the Ottawa TI99/4A Users' Group; and I believe Ottawa now might show on, at least, the TI99/4A yankee map! Due to the success of this and other programs, though, we had to man our booth most of the time and were unable to really see the rest of the fair. It was unfortunate; but next year..... You see we are good on hind-sight! I highly recommend you TI-olics consider going next year. Flying would have cost around \$150 return (although someone needs to drive to take all the equipment we'll need) and motels, approx. \$50 Cdn. a night. Chicago Users were wonderful hosts, provided reservations in a good motel close to the fair, provided all the equipment we thought we needed, could have used more, plus invited us into their homes.

I was at least fortunate to attend the talk by Lou Phillips of Myarc, the developer of the new computer. We taped most of his talk (ran out of tape). A little late, I arrived when he was talking about his 128K card and the new Extended Basic 2 they have developed to work with this card. The card has a bank of memory that can be used as a printer spooler, but also it can be used as a dynamic RAM disk, to emulate DSK1 and to maintain memory when the C.P.U. is down (within reason, something might go wrong...) There is a crystal, oscillator circuit, and several level detection circuits on the board and room for further memory expansion, I can't remember how much though.

Their new Extended Basic 2 Cartridge will only work with their 128K card. The card is now on the market but the XB will be "available shortly". He was unable to demonstrate the XB as they had developed it on a Winchester and had misplaced one disk for the operating system of the hard disk. The architecture of their XB2 has been changed completely from TI XB. 24K is available for program and line tables, 1K for pointers, the balance, 23K for program; 24K string space; all support routines available in XB cartridge. There is 8K of assy. language program space; it works 3 to 7 times faster; has entire linking loader to load multiple assy. language pgms. There is 8K value stack, 3 times the size of TI XB module and this frees VDP RAM for display and two new modes: Text mode or 40 column, and bit map graphics mode. New commands supported: CALL DRAW (draw between 2 points), CALL CIRCLE, CALL RECTANGLE, CALL DRAW2, and CALL FILL (Fill any shape). These are all intergrated into the XB language. Another command is CALL MARGIN which is almost windowing. e.g. the screen can be divided into 2 parts, 40 wide x 12 chars. long, while one part can scroll and the other remains stable. The screen can be divided down to a 1 by 1 character window. CALL TERMCHAR (it sounded like TERMCAR but believe the above is correct.) will call the last key press on a menu driven program so if a mistake is made, the user will not have to reenter all of the options; this command is good for 8 keys. It will speed up processing of integers; the TI99/4A was originally developed as a home computer not a number cruncher. Another added feature is the LINE EDITOR; it will allow line editing with cursor control, up and down! Two more character sets of 16 each have been added. It will support full 32 columns, not just 28, and you can use sprites in bit map and GRAPHICS 1 as well as in Extended Basic. One more added feature is an expansion slot within the cartridge to add an Editor/Assembler chip now selling for approximate \$3.00 U.S. (Or any other chip, if you have the expertise to dismantle a module and retrieve the chip!)

Now to the computer. Lou showed us a board in one hand and a shell

in the other and announced "We are going to come through! [...with the development of this computer.]", release expected the first quarter of 1986. It looks very much like an IBM, with reason....future plans, not worked on as yet, include an IBM compatible Microsoft internal card expansion. It has a numeric pad; function keys on top..one key press, and beige in colour. Here are a few stats.:

1. TMS 9995 chip;
2. 256K bytes main memory
3. 64K VDP (vs. 16K in the 4A);
4. 64K ROM (vs. 8K " ");
5. Parallel output (no input);
6. RS 232
7. 2 internal expansion slots;
8. Cartridge port; (with lid to keep out dust...)
9. MOUSE support!;
10. 30 MHz clock;
11. G.P.L. interpreter in ROM instead of GROM;
12. Event driven keys;
13. Will use 16K RAM at power up leaving 240K;
14. Physical memory map; due to the mapper able to support 2 Meg. of main memory. (256K internal plus 3 outboard RAM Expansion banks on 512K card now being manufactured with jumpers on card.)

The TMS9995 is similar to 9900 therefore will be approx. 95% compatible, (does not support speech.) It has 254 bytes internal RAM memory, has load vector and timer and will run twice the speed of the 9900 because it implements an on board 16 bit parallel memory. Although this chip was developed in 1981 its multiplying time for integer is as fast as the Motorola 68000 running at 6 MHz. While running, the BASIC interpreter will occupy 3 8K segments and each 8K segment will have one each of program page, string space, and symbol space.

The 9938 chip by Yamaha will support 2 text modes, 8 graphics modes, 512 colours, RGB or Composite monitors. TEXT 2 mode will have 80 x 24 lines or 80 x 26 lines. GRAPHICS mode 1 will be exactly same as 4A; four sprites on a line; GRAPHICS 2 allows 10 sprites; GRAPHICS 2 & 3: 8 X 8 dots per character for a total of 768 possible patterns; 16 colours of 512 per screen. GRAPHICS 4 will be 512 x 212 dot or pixels per screen but by interlacing can be doubled to to 512 x 424. GRAPHICS 6 will have 16 colours per screen but with each pixel individually addressable. In another GRAPHICS mode (?) you will be able to address two screens enabling some very interesting animation by going back and forth between the two. The 9938 has 32 control registers compared to the 9918 which had 5 or 6.

In summary Lou said it put us in the league of the Atari ST and Amiga. They ARE committed to produce and not to make the same mistakes that TI originally did with the 4A (the reason it has taken soooo long to launch); and similar to IBM they plan to publish a technical manual. The latter elicited a round of applause!

As alot of his talk was somewhat over my head, some of these notes might have been interpreted erroneously. We plan to make the original C90 tape available for those who would like to hear it for themselves. (The flip side is Craig Millar, of Millar Graphics, speaking about his GRAM-CRACKER. Bob Boone will let you know more about this super-module in this Newsletter). Would appreciate you calling me for orders to be delivered at the next general meeting or sooner; price to be determined by the executive.

Incidentally, we had a chance to see the Myarc disk controller card while in Chicago. We found it very user UN-friendly requiring many keystrokes to execute commands, so hopefully they will develop a much better disk manager for the new computer or at least, let's hope that DM1000 will be compatible.

As for my travelling companions to Chicago, Berry, Dennis, and Bob, thanks for inviting me, being perfect gentlemen, and sharing one of the highlights of my computing life. Can't wait until next year and showing our Ottawa software on the MYARC 99/128(????!!!!).

P.S. Editor's Note: Myarc has a new version of the Disk Controller Card which is reported to be more friendly than the one Jane saw.

# COMPUCENTRE CONTINUES TO SUPPORT THE

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WHEN : SATURDAY NOVEMBER 30 1985  
TIME : 9.30 am to 5.30 pm  
CONTACT : Lloyd Galenkowski 830-1522

RENEW or JOIN prior to or at the JANUARY 9 1986 meeting  
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## DISPLAY VARIABLE 80 FILE RECOVERY by Yvan Breton

The extensive use of a Terminal Emulator program (TeII or Fast-Term) or any program that creates a Display/Variable 80 file could lead some day to the loss of a valuable file; the Disk Manager shows you a directory where your file is listed, for example: "FILENAME 1(sector) DISPLAY/FIXED 0" but such a file can't be read by Ti-Writer. This article deals with a way of recovering a "lost" file using a program like Disk Fixer or Disk+Aid and was made possible thanks to Bruce Caron's articles on the disk organization. This important series of articles appeared in the Ottawa TI99 User's Group Newsletter from November 1984 to March 1985.

Since the following is the result of only a few trials, it would be more prudent to work on a duplicated diskette copied sector by sector rather than using the bit map. For more information on this process, see the Disk Manager 1000 manual.

The "lost" file, as it seems, was probably sent to the disk and a Directory entry sector created for it but, for no known reason, it wasn't closed. Since the exact location of the file is printed on that sector during the closing process, the file doesn't seem to be anywhere although it's proper name figures on the directory. If you use the File Recovery option from DM1000, you'll find that it recovers exactly what the directory screen was showing just before. This option won't work in such a case probably because this program rebuilds the file from the directory entry and not from the file itself. Let's bear in mind that when a file is deleted, the Disk Manager erases the "pointer" of the file directory entry (on sector 01) but not the file directory entry itself.

A disk fixer program like DISK+AID allows you to read or modify information contained on each sector of the disk. If you read the directory entry sector corresponding to your file, you'll see that its name is the only information printed there. If your disk doesn't contain too many files, the directory entry should be located between sector 01 and sector 22, otherwise somewhere close to 22. In order to recover that file, the task will be to write in the same sector the necessary information to be able to read the file from TI-Writer or another similar program. Here are the operations:

- 1: SCAN THE DISK; to find the exact location of the file;
- 2: SEARCH THE END OF FILE MARKER;
- 3: WRITE TO DIRECTORY ENTRY SECTOR;
- 4: READ AND RE-SAVE YOUR FILE.

### SCAN THE DISK

To find the file location, it is necessary to scan the disk sector by sector. This process shouldn't be too difficult since the file we're looking for is the DISPLAY type, so we should be able to read it as a text on the screen. Scan the disk until you find a sector that you recognize as belonging to your file. You can scan the disk skipping a few sectors at your convenience. What is then needed are the numbers of the first and last sectors used by the file. With that information, we'll be able later to calculate its size. If your file is not fractured, that is in more than one piece of consecutive sectors, this will be an easy operation. If not, the scanning will then take longer since we'll have to find the number of the starting and ending sectors of every portion of the fractured file.

### SEARCH THE END OF FILE MARKER

Once the file has been found, we have to find the position of its end on its last sector. If we're dealing with a fractured file, its location will be on the last sector of the last portion of the fractured file. In all the cases I've examined, at the end of a file there is a marker "FF" called the End of File Offset. Depending from which program you've save the file with (TI-Writer or an emulator program), the marker may or may not be preceded by some other characters, not always printable. In the case of the TI-Writer files, these characters refer to the file's tabulation. You can easily check this by comparing the last sector of a file saved by any program and the last sector of the same file saved by TI-Writer. What we need to remember is the exact position, in hexadecimal, of the marker for our file.

### WRITING TO DIRECTORY ENTRY SECTOR

We now have almost everything we need to write on the file's

directory entry sector (a minimum of nine items). Ask your disk fixer program to print on your screen the file's directory entry sector. If you toggle from ASCII to HEX notation, you'll see the corresponding codes of the letters of the file name between position 00 to 09. The file name can occupy a maximum of 10 of the 256 bytes available in that sector (from 00 to FF). Remaining in the hexadecimal notation will make our work easier since the numbers we have to write don't always have a corresponding and printable ASCII character. Here's what we should write:

(position=POS; value=VAL, both in hex)

POS 0C ; VAL 80 : This position is for the file status flag so 80 indicates that the file is the DISPLAY/VARIABLE type.

POS 0D ; VAL 03 : This position refers to the maximum number of record on the sector. since the size of the sector is 256 bytes, we can only have a maximum of  $(256/80) 3$  or 03 records on a sector.

POS 0E and 0F ; VAL X : The value X represents the total number of sectors occupied by the file. This number will represent one sector less than what you would get with a disk manager which counts the directory entry sector. For our purpose the value X will be the number of the last sector of the file minus the number of the first plus one so if, for example, the first sector is 22 and the last is 25, X will be  $(25)-(22)+1 = 4$  sectors (22, 23, 24 and 25). The directory entry uses two bytes to store that value; if your file is longer than FF sectors (255 in dec) it'll need two bytes like 01 and 3F for a length of 13F. If your file is shorter than FF it will use only one byte so, in this case, the value X should be written at position 0F only.

POS 10 ; VAL Y : The value Y represents the End of File Offset. We have to write here the position in hex of the marker "FF" seen in the last sector of the file.

POS 11 ; VAL 50 : This value stands for the maximum length of each record. Since we are using Variable 80 we'll write 50 which equals 80, but in hexadecimal notation.

POS 12 and 13 ; VAL X : This position stores the number of sectors used by variable length records. In the files I examined, all had less than 255 sectors, the number of sectors used (X) was repeated at the position 12. Even if this information uses two bytes, the bytes are put in reversed order. If the file would have been ABC sectors long, the value BC would have been located at 12 and the value 0A at 13.!

That's it for the file description. And now for another trick: the last thing we must do is indicate the specific location of the file on the disk. This is done on the directory entry in the block link starting at position 1C (28).

The location of each continuous portion of a file uses three bytes. Lets take three of them as an example: AB, CD, EF found at position 1C, 1D, 1E. Say the D goes before the A and the C goes after the F, we now have the two values DAB and EFC which would mean that the starting sector of the file is DAB and the file continues for EFC additional sectors (fictitious of course). Since EFC means the number of the sector we will be at when reaching the last sector of the file, the size of the file would be EFD sectors since 00 is the first sector.

To reverse the process, lets say that our file is 10 sectors long and starts at 35. The first value to take would be the starting sector 035 and the second would be 009 because the 10th sector of the file would be sector number 009 (starting at 000). We now have to do the magic trick; take these two values and form the three bytes for directory entry. Since we have 035 and 009, we take the last character of the second value which becomes the first of the second byte and the first character of the first value which becomes the last of the second byte; 035 and 009 now becomes 35, 90, 00 that will be written at position 1C, 1D, and 1E.

Tricky isn't it; just like Bruce said, they must have been high on something when they decided it was going to be organized like that. If your file was not fractured, the writing part is over, you can skip what's following and go to the Read File section. If it's not the case the difficulty rises a little bit but is still sort of trivial. The same process described above will be applied to other portions of the file.

Since the value that goes with the starting sector of every portion of the file is the number of the sector we're at when reaching each last sector of the portions, we'll have to calculate that number for every portion with numbering starting at sector 00. As an example, lets say that our file is 15 sectors long, that is 0E sectors. If the first portion goes from sector 51 to 59, then



## TI-99/4A National Users Association News

First: We now feel we have a strong enough user-base to carry on with the project...indications are that continued growth is a virtual certainty. Thank you all across Canada for your response to my article last month...we're now going to begin contacting individual and group members to see where you think we should go from here. We want to begin developing a program for the Association (ie: software and hardware development contests...National BBS Sub-system on TIMELINE and whatever other ideas you can come up with).

The TI Faire in Chicago was by all yardsticks a major success, widely attended, interesting and exciting! Estimates peg the attendance at about 2400 very eager beavers! We literally had to plow our way through many of them 1/2 hour before the show was to open just to get in and set up our booth! The sons of guns pulled a real nasty on us poor guys from the hinterland though...they put our booth right next to Craig Miller's..... We were too awe-struck by such a famous name in the TI subculture. We sat and stared open-mouthed wasting precious setup time before the on-slaught.

Big names at the Faire didn't stop with Craig though. The renowned Terry Atkinson (of TI Nova Scotia) stood beside us sharing space at our booth. Terry and I have been exchanging pleasantries for about 2 years now and had to go to Chicago to finally meet face to face. Incidentally, I am not being patronizing when I say 'renowned' in Terry's case; he is a well-known and respected voice in TI circles. John Clulow, Ron Gries and Dave Romer of the New Horizons User Group were there to promote a new piece of hardware for TIers (multi-purpose memory expansion card for the PEB). Terrie Masters, President of the San Diego 99ers, flanked us on the left. Terrie, and some other high-profile TIers on the Source, have recently instigated a plan to try to get powerful locally developed software, from the many groups around the world, wider exposure. We're committed to become a part of that plan as its a good one. Another well-known and highly respected TI Figurehead by the name of Barry Traver was there too, I think from Boston. He's just started a fantastic and original project he's billing as "DISK-A-ZINE". Due to space limitations I'm going to have to expand on some of these Group/Individual projects at a later date.

Myarc had a booth; Navarone was there; DataBioTics; Asgard; Insebot (developers of the fantastic TI-Artist program) was there too. Great Lakes Software was there with lots of powerful disk-based software for all. The only unfortunate aspect of the entire show was that there was far too much for us to see, and man our booth at the same time. Interest and sales of our DM-1000 and 2D-Graphics was at times brisk to say the least, although an argument could be made to the effect a lot of it was spillage from Craig's booth! Just kidding (I think)!

There were 5 seminars in the upstairs mezzanine area during the 7 hours of the show. During the first 1 1/2 hour Craig Miller unveiled his GramCracker. What a show-stopper!!! This little piece of hardware does tricks you wouldn't believe! A part of his demo entailed downloading the PARSEC module; tacking HIS title screen on the front, saving it to disk and rebooting it again...all in about 25 seconds!!! With this magic box and its associated software utilities you can alter ROM, GROM and even whole Operating Systems to suit your own purposes!!! Change text; title screens; default parameter settings in modules...piece of cake!

An outstanding feature of this beast is you can now save modules to cassette so now unexpanded users can build libraries of modules using this medium. You can now expand the TI's main menu to include several of your most used modules, all loadable virtually instantaneously at a keystroke!

All memory in GramCracker is usable program space so that with the addition of the memory expansion chips, which he'll supply for an extra \$20 US you'll have about 100K of program space available to you. It has a Lithium battery built in, which makes it transportable like minimemory.

Not happy with your model console's operating system....download a

friends and plug it into yours. It can be done with GramCracker! I don't know if you noticed but I was impressed.... Craig will be selling this little beastie for \$175 US plus shipping and handling, complete with the utility software on disk and full documentation. As mentioned back a bit full expansion(3 memory chips you can plug in yourself will cost \$20 more. I'm sure I can meet or beat his price and I'll soon have one to demo at an upcoming meeting. Craig, as of the Faire date expected to have this little wonder available for around the first of December. Watch for it!

Another of the seminars was given by Lou Phillips of Myarc. He spent about 45 minutes on their 128K card and Extended Basic II module before one impatient, intrepid soul(bless his pea-pickin' heart!) stood up and asked about the new computer. Only after several others joined in and the whole room turned impatient did he send someone out for the 99/128!

We saw it(it LOOKS great); and have pictures to prove it; but we did NOT see it working! They 'forgot' to bring along the disk-based operating system!!! They have great and ambitious plans though barring unforeseen circumstances(what else is new?) they're forecasting a release of the system in the first quarter of 1986. My opinion is it will eventually see the light of day; but I'm not gonna forecast a release date!!! Jane has forecast that she will release an article for this newsletter on the 99/128 so I'll leave it to her. Bye for now

### The Library Corner

by Bob Boone

Obviously, the pep talk I gave at the October meeting on the library offerings there that night was a large factor in the booming sales that night so we'll institute it as a regular feature at our general meetings.

The public domain software catalog(all 28 pages) was published and offered for sale at the last meeting. The cost per issue, at meetings, is \$1/copy. To receive a copy by mail please send \$2. You may now order software for pick-up at the next general meeting directly from the catalog by calling in your order in advance. Cassette-based members may do so as well but delivery time may need to be extended somewhat, depending on whether or not a master has already been made of your selection. You can also order this software by mail at an additional 50 cents per cassette or diskette. Price, per disk(at meetings) will continue to be \$5 and for tape. . . \$4.00

Each month I'll attempt to give a detailed description of the contents of several disks on the list at the general meeting. With the exception of a disk of the month feature or a particularly attractive freeware package or two I'll no longer be mass-producing diskettes for the meetings. I hope you'll all avail yourselves of the catalog and feel free to select at your hearts-content from it. I've tried to sensibly name all files on the list but obviously some will be meaningless to some of you...if a filename does intrigue you; consider a slip of paper in the suggestion box to ask about it, or a question during the question-period part of the meeting. I may not be able to answer right away but all questions will be answered.

Thank you all for your past indulgences and patronage. Lets work together to keep it working.





R. A. Green

There are seven different ways to store programs in the TI 99/4A. In this article we will have a look at each of these seven forms and at how they are used.

Everyone is familiar with the form used by TI BASIC to store programs on cassette or disk. It's identified as "PROGRAM" in the disk catalog. It is created or stored by the BASIC SAVE command and loaded by the BASIC OLD command. This is the only way that TI BASIC uses to store your programs.

Extended BASIC can, and usually does, use the same form as TI BASIC to store programs. In fact, Extended BASIC can use TI BASIC programs. There are, however, two other forms that XB uses. Both these forms can only be used to store programs on disk.

If you have the 32K Memory Expansion, you can write an XB program which is too large to store in the usual format. XB will store these large programs in an "INTERNAL VARIABLE 254" file. The usual "SAVE" and "OLD" commands are used to store and load these programs.

The third form used by XB is the "merge format" stored in a "DISPLAY VARIABLE 163" file. This form is created when the "MERGE" option is specified on the "SAVE" command, and is loaded by the XB "MERGE" command. The beauty of merge format is that when it is loaded it does not necessarily overwrite the program in memory. The MERGE command does just that - it merges the new program (or program segment) with the program in memory according to the line numbers.

Now, we get to the good stuff, Assembler language programs. There are three forms for an assembler program: tagged object, compressed tagged object and memory image.

Tagged object is stored in a DISPLAY FIXED 80 file on disk only. All program data is in hexadecimal so that it can be edited by the E/A editor. Tagged object can be loaded via CALL LOAD in XB, option 3 on the E/A menu, option 1 on the MM menu or by CALL LOAD in TI BASIC when either the E/A or MM module is used. The program can be "absolute" or "relocatable". An absolute program must always be loaded at the same place in memory. A relocatable program can be loaded any place in memory. A tagged object program may have references to other programs or subroutines. The loader will resolve these external references, except for the XB loader.

Compressed tagged object is very nearly the same as tagged object except that the program data is stored as bytes rather than as hexadecimal digits. Compressed tagged object loads faster than regular tagged object as you would expect. The XB loader cannot load compressed object.

Tagged object, in either form, is produced by the Assembler when it assembles a source program.

The "memory image" form of assembler programs is the most compact and the fastest loading. It can be stored on cassette or disk. It is identified as PROGRAM in the disk catalog (just like a BASIC program). Memory image programs can be loaded by option 5 on the E/A menu or option 3 on the TI Writer menu (and I assume, by Multiplan, although I have never tried since I don't have Multiplan). It should be noted that there is one slight but important difference between how the E/A calls a memory image program and how TI Writer does. TI Writer blanks the screen just before calling the program and the E/A does not. This means the program must turn the screen back on or nothing will show. Memory image programs are created by a Utility program (one is provided on the E/A disk).

A PROGRAM file, containing an Assembler memory image or a BASIC program, can be read or written to any input/output device with a single I/O operation. This is one of the reasons they load so quickly.

There is a restriction on the size of an Assembler memory image

program of 2400 bytes (9216 decimal). However, the E/A and TI Writer modules will load multiple memory image files to make a program of any size. They use the convention that the file name of the second and following files is obtained by incrementing the last digit or letter of the previous file name. For example, the TI Writer editor consists of two memory image files: EDITA1 and EDITA2.

As a matter of interest, the ADVENTURE, Tunnels of Doom, Personal Record Keeping, Statistics and Personal Report Generator modules use a memory image or PROGRAM file for their data bases. The fact that memory images can be saved or loaded with a single I/O operation makes them attractive for such uses.

A lot of the Assembler language games that are circulating around are in the memory image format so let's look closer at them. Assembler memory image files have a three word header followed by the data to be placed in memory. The three header words are:

- (1) This word is a "flag". If it is not zero (i.e. FFFF) then this file is not the last in a multi-file program. For example, the flag word for EDITA1 is FFFF indicating that there is another file called EDITA2; the flag word in the EDITA2 file is 0000 indicating it is the last file and there is no EDITA3.
- (2) This word is the length of the memory image in bytes, including the six byte header.
- (3) This word is the CPU memory address where the memory image is to be loaded.

Execution of a memory image program always begins at the first byte of the first segment loaded.

Finally, the seventh form for programs. This form is created and loaded by EASY BUG of the Mini Memory Module. It can be written only to cassette and is a memory image, but is slightly different from the E/A memory image file. The EASY BUG memory image program can consist of only one segment. The header on the EASY BUG format is two words, as follows:

- (1) This word is the CPU memory address at which the memory image is to be loaded.
- (2) This word is the length of the memory data, not including the four header bytes.

If this whole thing is too complicated - maybe a table showing all the options will help.

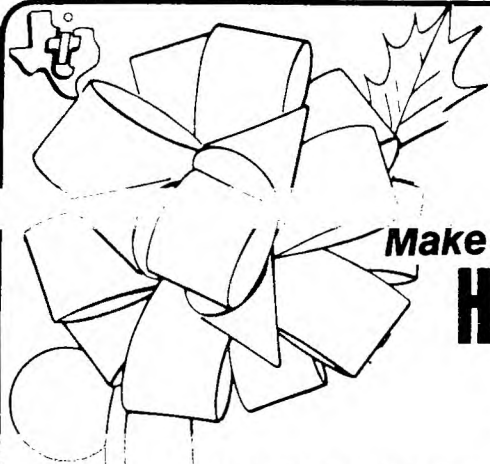
```

*****
| FILE TYPE | CONTENTS | MODULE | DSK | CS |
|*****|*****|*****|*****|*****|
|PROGRAM |BASIC Program |Console| YES | YES |
|PROGRAM |BASIC Program |XB | YES | YES |
|INTERNAL V 254|BASIC Program |XB | YES | NO |
|DISPLAY V 163|MERGE Program |XB | YES | NO |
|*****|*****|*****|*****|*****|
|DISPLAY F 80 |Tagged Object |XB | YES | NO |
|DISPLAY F 80 |Tagged Object |E/A | YES | NO |
|DISPLAY F 80 |Tagged Object |MM | YES | NO |
|DISPLAY F 80 |Compressed Object|E/A | YES | NO |
|DISPLAY F 80 |Compressed Object|MM | YES | NO |
|PROGRAM |E/A Memory Image |E/A | YES | YES |
|PROGRAM |E/A Memory Image |TIW | YES | YES |
|PROGRAM |MM Memory Image |MM | NO | YES |
*****

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PHM3042T Tunnels of Doom

PHM3042D Tunnels of Doom

PHM3043 Reading Fun

PHM3046 Reading On

PHM3047 Reading Roundup

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