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

NEWSLETTER

SOFTWARE
COMPETITION
DEADLINE

MARCH 3,1987

RENEW
MEMBERSHIP
NOW OR THIS
IS YOUR LAST
NEWSLETTER

TI-FEST

SATURDAY
MAY 16,1987

9 A.M. TO 5 P.M.
MERIVALE HIGH SCHOOL
1755 MERIVALE RD.
NEPEAN, ONTARIO, CANADA
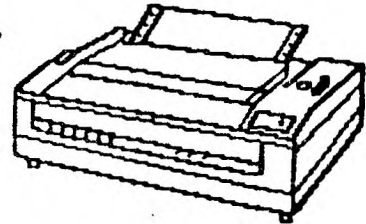
MR. Diskette News

Need a second Disk Drive? We have Panosonics on at a special price of:

$169.00

Looking For A Printer?

The Siekosha SP-1000 A is a Near Letter Quality printer that can't be beat. It sports a draft mode at 100 cps and a NLQ mode of 22 cps. With both tractor and friction feed the price can't be beat at

$369.00

Bulk DS/DD Diskettes

.79 EACH

DD-100L Diskette Box

$14.95

1

CHAIRMAN'S TWO CENTS WORTH
by Berry Minuk

There is some new information about the Geneve 9640 and the new IBM compatible system and both of these exciting new products are expected on the market shortly. In fact it appears that there may be another IBM card on the horizon since I have heard that Mechatronics in West Germany are also in the process of bringing out a card to allow IBM compatibility. It will be very interesting to watch the developements over the next few weeks to see how fast these products reach the market. Even if you buy a new computer as some of our members have, I think it very worthwhile to keep your TI since it takes a new computer about 2 years or so to have a mature software base and in the meantime your TI can provide you with much software that is not yet available on your Amiga, Apple GS or Mac, Atari ST, etc. If any further news appears it will be put on the BBS or announced at the March meeting. Another reason to attend the monthly meetings is our plan to give weight in awarding the membership prize to the number of meetings attended.

In previous newsletters I mentioned that the workshops had begun in Assembly under Art Green. Now I can let you know that Bill Sponchia has started an Assembly workshop for beginners. Further details can be obtained by contacting Bill, but he has let us know that they are on the 2nd and 4th Wednesdays of the month. The C workshop is continueing on the 2nd Wednesday of the month and has almost finished its first project which was the writing of a BBS in C. As previously announced the BBS is working but still needs some fine tuning. Lloyd has been working on Benoit's BBS and it too is nearing completion.

Once again I would like to stress that it is time to renew your membership. This is even more important than before since if you don't renew this is the last newsletter you will receive. It is very important that you do this now since your executive has extended the grace period for an extra month so everyone will receive the February newsletter. You must act quickly to renew. If you have not already done so act right now and make out your renewal cheque for $20.00 and send it in or bring it to the next meeting with you.

The executive has decided as an experiment to put in the newsletter some of the items of business that will come up at the next meeting. These are as follows:
1) Discussion and voting on the TI-Fest budget;
2) Renewal of our insurance policy;
3) Software Contest;
4) Discussion about Honourary Life memberships;
May we please have your reaction to this idea. What do you think about it?

The Executive has also scheduled the topics for the next few meetings and these are:
        March — A discussion with demos of databases and their uses;
        April — A Hardware tutorial including cleaning, etc.;
        May — A discussion with demos of most popular fairware programs;
The programs for the May meeting will be picked by you based on your responses to a list of Fairware programs which will be available at the March and/or April meetings.

This brings me once again to a problem which seems to me to be totally unnecessary. I am referring to the difficulty Dick Piche has been having in getting volunteers to bring their equipment to the monthly meetings. At each meeting Dick tries to get names of people who will bring all or part of their systems. However, the results are dissappointing. For February we did not have a system at the meeting. Fortunately we used this chance to have a lengthy question and answer session, since our last few meetings did not leave enough time for such sessions. This was quite a success since many good questions were asked and answered.

Remember that we still have a cassette library and tapes are available by contacting Jack McAllister.

I will see you all at the March meeting and let's have a super turnout for it. Remember — Back to the 1st Tuesday — Mar. 3.

--with STEPHEN BRIDGETT

Disk of the month sales have been brisk and the revenue generated for the club to date is over two hundred dollars. After a tricky revival of the monthly disk, it now seems that there is enough support and enthusiasm to make it a success. If you know of software that you feel would be a worthy candidate for the 'Disk of the Month', or if you have requests, please make use of your suggestion box at the monthly meeting or call me at the telephone number below.

In march the 'Disk of the Month' will be a fareware product by Marty Kroll. There are a number of excellent programs on the disk, games and utilities, and as a package it is one of the most interesting fareware projects I've seen. I heartily suggest you support Marty with a contribution to him directly. Better yet, why not contribute through the club and funds collected can be sent as a group.

This disk will be all the more interesting to the members because I have selected Marty's catalogue program as the one to be used for the club disk based software. After reviewing many excellent catalogue programs I settled on this one as offering all the options we need to maintain our software library. The program and all the documentation is on his disk. The club catalogue, as I mentioned in last month's newsletter, will be available by the time of the fest in May. Marty's program is a must to have access to the club software so I suggest obtaining your copy early by acquiring the 'Disk of the Month' for March.

As sales have been enthusiastic, I will have to insist that they only take place at the break and that members line up in an orderly fashion. I have had no problem to this point however when there is several products 'on the go' it all becomes a bit overwhelming, and further I do not want to 'sell out' on an individual basis, before the break and have to turn others away.

I will have back issues of the monthly disks available for the March meeting as well. By that time there will be a hint of Spring in the air and the cold snap should be over. Lets show our continued interest in our very viable club and make this another good turnout.

```
DISK BASED SOFTWARE.......STEPHEN...521 3631
CASSETTE BASED SOFTWARE...JACK...225 6989
DOCS AND FIX PROJECT.....
```

FORTH TO YOU, TOO! SESSION 4

GOOD NEWS: A FORTH disk which loads from Extended Basic is now available. I have checked it out and it works the same as the regular version (E/A), except that a few screens between 6 and 20 are also used for Code. If you know of anyone who has not been able to get into FORTH due to lack of the E/A module, let them know it's here. Another disk which loads from E/A,X-BASIC and the UTILITY option of TI-WRITER is available, too. As soon as I have a chance to see if it works as advertised I will let you know.

You now have a system disk which autoboots the options you selected and before we do anything else, MAKE A BACKUP DISK! Believe me, this is no idle chatter. I have messed up quite a few disks with some ill-defined or -used word. While you are in the learning stage, making a backup is perhaps as important as getting familiar with Forth words and how they work. Take it from one who has spent a lot of time starting over (and over). Unlike TI-WRITER, Forth does not make an OOPS! available, only a %($! I have two drives and with my system disk in drive 1 (write protected!) I do all my programming on a disk in drive 2.
If you work with one disk drive, your best bet is to get a copy of Doug Smith's "3-PASS DISK COPIER". This clever 2-screen program was published in the June 84 issue of Miller's SMART PROGRAMMER. It's handy even if you have 2 drives, because it shortens the time required to copy a Forth disk. With 2 drives you can also use the

word FORTH-COPY (provided you booted -COPY). The disk to be copied must be in drive 2 and the blank disk in 1. It takes approximately 1 sec/screen or a minute and a half to copy a disk. Since it is done a screen at a time your drives get a good workout. But be sure to initialize the disk first with n FORMAT-DISK, where n is the number of the drive you put the blank disk in. Howevrr, remember that Forth starts counting with 0 (zero). What you would normally call drive 1 is 0, 2 is 1, etc. 1 FORMAT-DISK initializes the disk in drive 2.

In the last session I .ouched briefly on the SWCH and UNSWCH words of the -PRINT option. I know you'll have no trouble remembering them. SWCH n LIST UNSWCH will soon be as familiar to you as n EDIT. Try SWCH 3 LIST UNSWCH. If you didn't forget to turn your printer on you got a listing of screen #3. This is much easier to read then 3 LIST, because the lines are unbroken. Then there are TRIAD and TRIADS which are similar to LIST but have SWCH/UNSWCH built in. 31 TRIAD first looks for the next lower number than the on you gave which is divisible by three and then prints 3 screens. SWCH and UNSWCH are built in since you could not use TRIAD as a display command. TRIADS works the same way, except you specify a range of screens (n1 n2 TRIADS). It will print as many triads as are needed to cover the range you specified. Tricky, eh? But very neat: 3 screens per page. And one more: INDEX. It does not include SWCH/UNSWCH because it can be used on the display, too. But it is one of my favorites. n1 n2 INDEX lists the 0 (zero) lines of the screens from n1 to n2.(SWCH 0 89 INDEX UNSWCH will get you a printed index of your whole FORTH disk.) Like LIST it is really better in printed form, because on the display, which is limited to 40 columns, it is much harder to read and digest.

When you start programming, keep a printed INDEX of your disk on hand and make sure you use the Forth convention of identifying your screens on line zero. I not only like to name my programs but include the load options on line 0. Here is an example:

```
SCR 28
( DUMP DISPLAY TO PRINTER          -GRAPH -PRINT 7/22/84 LW)
( : GCHAR SCRN_WIDTH  * + SCRN START   + VSBR ;
  : ROWSCAN CR 40 0 DO I OVER GCHAR EMIT LOOP ;
  : COLSCAN       25 0 DO I ROWSCAN DROP LOOP ;
  : SCREEN-DUMP SWCH COLSCAN CR UNSWCH ;
```

I wrote this little routine to save my trials and tribulations before they scrolled off the display when working in the interactive mode. One of the beauties of Forth is the opportunity to try definitions from the keyboard in the so-called I/A mode. You can define a word (: ----- ;) and, before you use it in a program, see if it will do what you had in mind. The trouble is, as you keep trying various ways they disappear off the top of your display. Unless your memory is a lot better than mine, you will find SCREEN-DUMP a helpful addition to your Forth vocabulary. If -GRAPH is not part of your autoboot just remove the parenthesis from the GCHAR definition and it'll work without that load option. Since we either don't need -64Support or made it part of our autoboot, I saved this routine on scr #28, then added 28 LOAD on scr #3. SCREEN-DUMP is available anytime you need to invoke it.

RECAP:
1. Make a backup of your working autoboot disk
2. -PRINT is one of the most useful load options. It
   provides some new words and makes some others more
   useful than they already are (LIST INDEX)
3. Save and load the SCREEN-DUMP routine. It will help
   you by putting your experiments on paper for reference

Get busy with Chapters 4 through 6 of STARTING FORTH. (You can skip 3 because the TI editor is much better than what Brodie describes.

        : THATS-IT

        Lutz Winkler (619)277-4437

PRIOR PATTERNS
By Bob Boone

I can't say I've enjoyed NOT submitting articles to the newsletter the last 2 or 3 months; actually I missed it! I had been trying to write the articles after our general meetings and before the OUG executive meeting so I could hand them to Marg at that time. Needless to say, it proved impossible. I simply had too much to do in those 2 days and something had to give; unfortunately, at least from my point of view, the thing that gave was these columns. Anyway....

Things are certainly hopping throughout the TI worldwide community! I have, so far, sold an amazing 73 Horizon Ramdisk boards and/or kits over the last 3 months and have shipped them across Canada, to the USA, England, France and even Australia! The appeal of this product is such that I've experienced great trouble keeping up to the orders. This month, I've finally managed to get ahead of the market and now have assembled boards and kits, not yet spoken for! I've taken advantage of this opportunity to plug 2 additional ramdisks into my system at home (it may turn out to be one of the major mistakes I'll make this year!). With a utility like VER_MENU on ramdisk 1 and at least one other ramdisk in the system for ultra-fast file storage and retrieval, who could ask for anything more? So what's the mistake, you ask? I anticipate having to give up the 'extra' boards I have in my system to spread the joy around a bit!
I WILL MISS IT when and if it happens and will spare little effort to stay ahead of the orders so that it won't happen!

I've now taken possession of VER_MENU 5.0 and it stands an arm and a leg above its predecessor V.2.0! It adds 2 more options to your power-up menu, allows

greater flexibility to possitioning of the ramdisk in your system AND allows automatic booting of Basic and X-Basic programs from the ramdisk from the main menu screen! If you have a Horizon RD and don't yet have this package; get it!

RAMBOSS has been developed by our own Art Green specifically for the Horizon ramisk too. Its powerful and very useful and serves very well to point out the superb flexibility inherent in Horizon's product but, it has one serious drawback to my way of thinking. Art's operating system allows you to tailor the contents of your ramdisk and very quickly access its contents from a 1st level menu on power-up but it takes away the ability to access the board for other essential tasks. He is using the RD as super-packed storage space BUT not as a Ramdisk DRIVE! You can therefore save modules, programs and other runnable files to the RD and add them to the menu but you cannot store and retrieve data for instance. Remember I said 'super-packed' a couple of lines back... One nice feature Art's program does have is the ability to compress information as its being saved to the ramdisk. Thus at very little cost up front(the software 'cause it needs to be re-interpreted as its running is a wee bit slower running) you can save a lot more to the board.

Contrary to rumour NUAC has NOT bit the dust! I had intended to reprint the emblem contest entries in this month's newsletter but time has again run out. Watch for it next month. My thanks to Terry Atkinson and Wayne Joyce of TI Nova Scotia; Steve Andrews and Pat Graham from North Bay; and Lucie Dorais and Marilyn Boone of the Ottawa TIUG; all of whom submitted artwork(and all supurb) for the contest. Special thanks to Master Artist Bob Lanoy in Ottawa for turning the girls' ideas into hardcopy for them(now if I could just get the files FROM HIM....). I hope to be presenting the prize to the North Bay users at our Faire in May in the name of Steve Andrews whom I'm declaring winner of the contest.

The bad news is I've pretty much given up on the idea of FORMALIZING NUAC's existence for the nonce. We'll take a step further in adopting an emblem but I really can't see the point in adopting a constitution as I'm not getting enough feedback from its members to decide where to go with it now that we got it.

Remember that January begins a new year for the Association and you'll need to renew membership if you want it to continue in any way shape or form. Thank you to the many that have already renewed.

Tony McGovern and his wild and wooly crew(possibly motly as well!...Spiders! Haruummpppph![to borrow a phrase for which Jane is famous]); have very generously sent us a cheque for $80 Australian dollars as a bulk contribution for DM-1000. Thank you very much! Another royalty cheque arrived last month from the Horizon Computer people and a huge cheque came to us from the Front Range 99ers as a bulk contribution late in 1986. I wish it would all stop as the greatest bulk of my time is spent in answering all of the mail we're getting in response to the freeware we're distributing. JUST KIDDING; JUST KIDDING! Please DO keep the cards and letters(and cheques) coming!

Since TIMELINE apparently had its plug pulled late last year, many of us incorrigable Telecommunicators have happily defected to Compuserve south of the border. I'll take you by the hand and tell all you Canadians how you too can access this HUGE TI source of information through DATAPAC next month and very easily spend a zillion bucks just like I and Jim McLaren are!

Till then keep on TI-ing!

PS: Thanks to Steven Shaw(of jolly ol' England) for permission to reprint his book in our newsletter and for the complimentary tome as well.

WRITER-WROUTES
by Jane Laflamme

Before I start, I might mention that I work with a Star SG-10 and a Gemini 10 and I haven't had the opportunity of working with a Serial printer, but I presume the commands would be easy to adjust.

Envelopes always gave me grief. Maybe that is just my frame of mind, but I found that to change the paper and spooler to labels, for just one envelope, a regular pain in the neck. In fact, I usually didn't and ended up hand writing it (very unprofessional!). Since which, I have found several ways around my envelope crisis. If there are several letters, we can use a mailing label program; if you have a mass mailing with a .ML file (Mail Listing), you can align your address on the letter and use window envelopes; but for one envelope here and there, you can again use the Formatter. In my last article, I showed you how to "print" your file to disk rather than the printer. I use this method for an envelope.

Enter the Editor in TI-Writer and in command mode, set the tabs (T) option at 1 and 39, (or 0 and 39 if you prefer). Create the following file and save it to disk with the name of, say, DSK1.JOHN:

```
0001 .FI;LM 0;RM 79(CR)
0002 .TL 62:27,56,27,69(CR)
0003 >(CR)
0004 Jane Doe(CR)
0005 123 Your Street(CR)
0006 CITY, Province, A1A 1A1(CR)
0007 .SP 8;IN 40(CR)
0008 John Smith(CR)
0009 321 His Street(CR)
0010 ELSEWHERE, Province(CR)
0011 Z1Z 1Z1(CR)
```

Line 1 asks the formatter to Fill In, and set the left margin at 0 and the right margin at 79. I have done this because in No Fill, the formatter disregards left margin, right margin, and indent settings and we need those for our envelope.

Line 2 changes character 62 (>) to a string that tells the printer to ignore paper-out sensor (the escape character 27 and "8", character 56); and then sets the printer to emphasized mode, characters 27 and 69; it looks better than draft quality.

Line 3 sends that string to the printer.

Lines 4 to 6 are the return address.

Line 7 tells the formatter to feed 8 empty lines and indent to column 40 (or the 41st column on the printer, column 0 is the first).

Lines 8 to 11 are the addressee.

Exit the Editor and select the Formatter. On the prompt, enter the filename you have created with the Editor, but when it requests the printer name, type DSK1.FORMAT or if you wish, follow Joyce Corker's advice and type DSK1.P_JOHN. Press enter to select all the defaults from then on. Once your file has been printed, select the Editor of TI-Writer, and load file (LF) you have PRINTED, (DSK1.FORMAT or DSK1.P_JOHN). That looks a little different, doesn't it? Window over (Fctn. 5) and page down (Fctn. 4) to see the whole file. Go to the top of the file by either paging up (Fctn. 6) or go into command mode, Fctn. 9, type in S for Show line, and now type 1, for line 1.

Now, we don't like the 3 line feeds at the top for an envelope, so simply delete them with line delete, (Fctn. 3). Also, we don't want a line feed after the control characters are sent to the printer, so delete the "LF" after it with character delete, (Fctn. 1). Most of the LF's after the addressee are not required either, so enter command mode, (Fctn. 9), type D (enter) for delete, and specify the start and stop lines to delete them (I recommend to start at line 27 to the end of the file - to do this, type in "27 E"). Test your file by entering command mode again, type PF (Print File) enter, and type in PIO.LF in this instance, to turn off the

line feed, as the file created by the Formatter has inserted the line feeds you need. If all is well, you can now save that file as say, DSK1.JOHNSENV, for John's envelope. You can also save it as a master copy, and just change the addressee each time you need an envelope. (To type a LF after the line, use Ctl. U, Shift J, Ctl. U.) Remember though, DO NOT REFORMAT this file, or as I said before, you'll have one "heckava" jumbled mess. At this point, you can clean up your disk, and delete the original Editor file, and the file that was printed to disk.

This article may sound long and complicated but actually it is a very easy process. I have thown in a few commands as a tuturial on the Editor also, which made it a little longer. I am at the point that I would like a few suggestions from you on what topics you would like me to cover. If you have a special application that you are having difficulty with let me know... You'd be surprised how many others probably are having the ume problems! Write to me in care of the Newsletter, or call 745-22?? (wk), 837-1719 (hm.). Or if you have a better way of doing things, share it with us!

LETTER FROM STEPHEN SHAW....ENGLAND

DEAR OTTAWA....

Greetings from the UK. Matters here are fairly quiet, but Christmas is bringing in a new crop of new owners - it is a pity that the people they bought their consoles from have in many cases sold ONLY the console, failing to pass on even cassette leads - which are not easy to get hold of here.

There is great demand from more established owners for PEBs, and not many boxes to go round- TI never sold them very enthusiastically over here.

I notice from your newsletter you have a SERGEANT AT ARMS- now the Chicago group has one, but we all know that Chicago is a somewhat violent place where everyone carries at least two dozen guns. But Ottawa??? Is there something our newspapers are failing to tell us about Canada?

We seem to be dividing into small special interest groups- Pascal, Machine Code, DIY Hardware and so on. And of course all these new owners who are writing in asking for the address of their nearest shop selling TI software (there are NONE).

Following a rather large drop in members in the past year, as unexpanded owners in particular move on to more recent machines with all the extras included, we are approaching a reorganisation of our user groups, in order to ensure continued support. This time next year we expect to still be around - but almost certainly with some changes to organisation and publications!

The machine of the moment here is the AMSTRAD PC512 which is an IBM compatible, with the GEM operating system (as well as MSDOS) with a starting price of just four hundred pounds, or the colour model with 20meg hard disk for under a thousand. AMSTRAD have the UK market pretty well sewn up, with leading models in all sectors, from the SPECTRUM at the low end, to the CPC6128 to the word processor to the PC...

The only other machines here are the BBC (never a huge seller to private buyers) the Commadore 64! (wow!) which is still holding its price, and a clearout of Atari 800's selling with disk drive for under 150 pounds.

It is notable that new machines lack both reasonable music and speech.

User Groups are being very good at NOT mentioning all these "unreleased modules" that are being passed around - yes TI knows about them - but is there anyone out there with the code for CHOPLIFTER or COMAL? Both of these were in an advanced state when TI pulled out but have so far not surfaced. Anyone?

Hey... what was your October Program of the Month? "Previously $23" huh? So good you have to keep its name and purpose TOP SECRET?

8

I am sending on to Bob millions of words for possible publication in your newsletter! and possibly even a book for serialisation? Who knows what you will see in future issues!

In return, one small favour... could you send me an occaisional copy of your newsletter? Maybe the odd disk of new programs just hitting the streets!

Best wishes for 1987, and as Chinese New Year may be hitting you around the time you see this, Kung Hei Fat Choy!

Stephen Shaw

TI99/4A BOOK

(c)1983 STEPHEN SHAW

INTRODUCTION

The Texas Instruments Home Computer, TI99/4A, represents an easy introduction to home computing. The machine is supplied with a language called TI BASIC. This simple implementation of BASIC includes useful and easily used subprograms to enable you to use the machines graphics and sound capabilities.

TI BASIC is one of the simpler forms of the BASIC language, and as such you should find it easy to learn. Commands are typed in normally, you do not have to search for special keys.
TI BASIC is not a fast language and you should not expect to write arcade speed games in this language. For really fast action games you must either purchase Modules, or the peripherals which are covered later in this book.

When you are ready to move on to more professional areas of computing, the TI99/4A is capable of expansion to an extremely powerful computer, and may even be used as a terminal for a large 'mainframe' computer.

The TI99/4A console on its own is only a start : it is not equivalent to a business minicomputer, and if you wish to use it now for any demanding task you should consult your dealer, who will advise you what extra devices you need to buy.

Many of the words used in this book are the Trademarks of Texas Instruments Incorporated.Their use here does not imply s|onsorship nor endorsement of this book by Texas Inst-uments.

Texas Instruments follows a policy of continual product improvement, and the operating system of the TI99/4A may be subject to minor amendment.

Read this book ,try a few short programs of your own, as time progresses you will learn how to harness the power of your computer, but remember it will take time and practice.

CHAPTER ONE SETTING UP

HOW TO PREPARE YOUR CONSOLE FOR OPERATION

This information is included in the manual supplied with your console, but is supplied here, in a slightly different format, to provide you with a central source of information.

Unpack the console carefully. The power supply and television modulator are separate units packed with the console.

If your dealer has not fitted plugs onto the power supply cable, you should attach a mains plug fitted with a 3 Amp fuse.

The power supply may become quite warm, so place it where high temperatures can cause no damage. It will be out of the way if you

place it on the floor,preferably not on a carpeted surface.

You may find that you will use the console for many hours at a time, so give careful consideration to its location: a table or desk with a firm top and room for you to spread your papers books. You will need a chair which allows you to sit comfortably without backache.

If you wear glasses, the tv will not be located at the most comfortable distance whether you are near or short sighted. You cannot damage your eyesight using the computer, but the use of glasses prescribed for the distance of your tv set when you compute, will alleviate problems of eye strain.

The tv modulator connects your tv to the console. Plug the 'DIN' audio plug into the computer and the coaxial plug into your tv. You will need to tune your tv to Channel 36, and it is essential that your tv is able to 'fine tune'. If you have problems, ask your dealer. Some fringing occurs on some colours: this is normal, but you should tune your set for the sharpest picture you can which does not introduce heavy diagonal lines over the entire picture.

When the console has been connected to the mains and to your tv, you may switch on and adjust your tv set for best reception. When properly tuned, the computer sound output should be heard on your televisions loud speaker. It may be necessary to slightly adjust the tuning. To produce a sound output, press any key (except SHIFT,FCTN,CTRL, or ALPHA LOCK) so that the tv display changes to:
PRESS:
1 FOR TI BASIC

Instead of pressing 1, press the space bar, and a brief rror tone is produced. If you have difficulty adjusting the tuning to provide both sound and picture together, your television may be unsuitable, and you should consult your dealer.
Your computer is now ready for use. Press Key 1 and you are ready to key in a program in TI BASIC.

If you wish to use a TI Module, push it gently into the slot at the right hand side of the computer. The tv screen will flicker and the 'test card' will reappear. Press any key for the 'menu' to select TI Basic, or the contents of the module.

You may need more than one attempt, as module contacts can become tarnished or grimy. If the computer ceases to respond, it is a 'lock out', something which happens with all computers. Do not panic – switch the console off and try again. DO NOT touch the printed circuit board contacts in the module or you may destroy the electronic components within.

HOW TO KEY PROGRAMS INTO THE COMPUTER

Your computer is capable of much, but requires a little help. It can do nothing unless it is first programmed either by inserting a preprogrammed module, or keying in a program, written by yourself, or from a magazine.

BASIC (the name given to the 'language' most home computers are programmed in) was once quite standardised, but with each new computer adding new commands, and new features, there is now a great difference in the versions of Basic used in different computers.
Your TI99/4A uses TI BASIC, and your computer can only understand programs which are written in TI BASIC.

BASIC is very similar to English, using common words to instruct the computer what to do, but the computer is very precise in its requirements for the way those instructions are keyed in.

Each command word is separated from any other word or number by a space. Some computers permit you to leave out spaces, but in order to allow you a wide choice of variable names, your 99/4A needs to see those spaces. If you put in a space where one is not required, the computer often removes it itself.

Take special care when entering the number 1 or the letter I, and the number 0 and the letter O. These can very often look similar

in magazine listings.If you use the wrong one, the computer will
usually be unable to RUN the program, and halt with an error
message, such as BAD VALUE or STRING-NUMBER MISMATCH.

If the printed program contains DATA lines, check them thoroughly,
as one comma too many or too few can cause a "program crash" when
you try to RUN the program you have entered.

Learn to use the SHIFT key on the left : if you use the key on the
right of the keyboard the inevitable accident will occur and
instead of entering a + (SHIFT and =) you may press the FCTN key
and the = . This will cause a system reset and you will lose your
program.

Take note of the spaces in the printed program: if one is printed,
you should enter it!

Listings will run if entered carefully, but occasionally a misprint
occurs, or sometimes whole lines will be omitted.

If you do encounter problems, carefully check each line you have
entered.   Information on 'debugging' or correcting programs can be
found in the section on 'How to use TI Basic'

Normally you should key programs in with the ALPHA LOCK key in the
DOWN position, unless the listing clearly uses lower case letters,
in which event release ALPHA LOCK when entering those letters.

BASIC TI INPUTS AND OUTPUTS PART 3

MODIFYING THE BEIGE TI-99/4A FOR USE

WITH A SECOND CASSETTE

SCHEMATICS FOR CS2 MODIFICATION
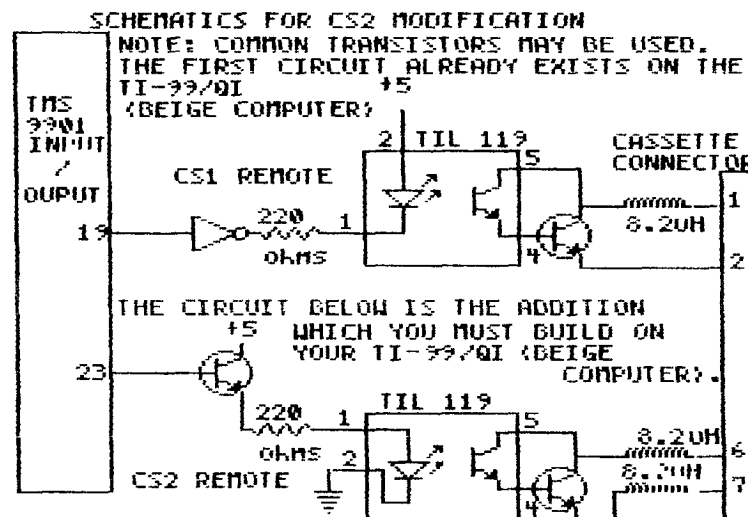
In case you have not heard, all your people with beige TI's lack
your
CS2 remote! But do not dispair! All is not lost, with the
modifications below you can increase your TI's basic logic outputs
by a factor of 2 and upgrade your TI so it now posseses 2 outputs
interfacable with simple logic circuits !

Those of you who just arrived and possess black and silver TI can
feel releived to know that you already possess this device and
therefore need not burden youselves with gaining some practical
knowledge obout TI's cassette remote(s).

Enough of this babbling, that was just to get your attention,
however those of you with beige computers may have noticed that a
second cassette ignores the remote. Their happens to be a very
good explanation for this phenomenon, THE REMOTE DOES NOT EXIST
even through BASIC still accepts CS2 as a valid filename. The only
thing that is missing is an optocoupler, 2 transistors, 2 coils,
and a resistor.

NOTE: The TI console schematics for BOTH computers are recommended for this modification, however the schematics for the TI-99/QI (beige machine) use reverse logic for their remote. The above diagram duplicates the remote on the black and silver computer instead because an inverter is not required.

When building CS2, the opto-coupler is piggy-backed on the existing opto-coupler with pins 3 and 6 soldered to the existing opto-coupler. The resistor, transistors and coils

STEP 1:Drill two tiny holes between the existing coils to allow the added coils to connect to the cassette port connections(pin 6 and 7) on the underside of the board.

STEP 2: Mount the opto-coupler.

STEP 3: Insert the coils connecting one end of each to the cassette conector and the other ends to the outer transistor.

STEP 4: Connect (I really mean solder) the transistor to the opto-coupler as shown in the diagram.

STEP 5: Ground pin 1 of the opto-coupler.

STEP 6: Connect the base of the inner transistor to the 9901 input/output chip as shown, connect the collector to +5.

STEP 7: Insert the resistor between the emiter of the inner transistor and pin 1 of the opto-coupler.

WARNING: check to make sure you have not accidentally shorted +5 V with ground or you may blow your power supply.

Basically this is how it works:
- 1. BASIC controls pin 23 on the 9901 interface chip, when it goes high it will allow the cassette to run, when it is low it will prevent to cassette from running.

- 2. The signal coming out will be amplified by a transistor in order to power the led inside the optocoupler.

- 3. That led will turn on whenever pin 32 of the 9901 interface chip goes high , when that occurs the light sensitive transistor in the optocoupler will also turn on.

- 4. The last transistor will when in its turn , turn on effectively shorting pins 6 and 7 on the cassette connector and allowing current to pass through them. When the transistor is off an open circuit between pins 6 and 7 occurs preventing current from passing through.

- 5. The coils are there to filter out "noise" produced by the cassette.

- 6. The resistor is used to cut down the voltage to the led since +5 V is produced by the transistor in the "on" state and yet the led can only take 3 V
Note: Do not attempt to prove me wrong on the neccesity of that resistor, I blew two optocouplers thinking that the resistor was unimportant.

One more thing, for those of you how are failly familiar with circuitry, there may be an unused inverter in the beige computer, if you find one, then you can wire up CS2 the same way CS1 is wired up, using inverted logic.

DEBUG
There was a gremlim got into Nov. issue of the Forth Tutorial the 4th paragraph should read as follows:-

: SEE 252 22 DO I DUP . 7 VWTR KEY 2 = IF ABORT ENDIF LOOP;

NOT AUTHOR'S FAULT. Sorry about that.

SOFTWARE CONTEST-QUICK REFERENCE

The following gives relevant information for our software contest:

1. At the last general meeting, it was decided that the grand prize to be drawn at the TI-FEST would be an Horizon Ramdisk.

2. The contest is open to all paid up members including affiliated groups.

3. Affiliated groups are eligible in the groups' name and not in individual names.

4. The closing date for submitting entries is at the March 3, 1987 general meeting.

5. Enquiries may be directed to the following contest chairpersons (before 9.00 P.M.):

Thom Mercer: 837-9449
Henri Monat: 824-0941

TIUG CASSETTE LIBRARY

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Present Value   Outliner   Inamaze   Monster Match
Car Maintenance   Astrostorm   Alphablast(keyb'd)
Future Value   Geometrie   Crazy Climber
Check Book   Phone Cost Monitor Pearl Harbour
Wallpaper/Paint   Snertle   Tacoman
                                         Alphablast(Joyst.)
                                         Runway 180

Speech(01) / Speech(02) / Musical(01) / Musical(02)
**********   **********   **********   **********

Speech(01)		Speech(02)		Musical(01)		Musical(02)	
Caboose	TE2-SP	2/3 Letter Words	TE2	Boat Song	$	Beethoven	
Change		4/5 Letter Words	"	Bouree	$	Composer 1	
Division	$ SP	6/7 Letter Words	"	Fur Elise	$	Composer 2	$
Farm Song	TE2-SP	Happy Spell		Greensleeves	$	Music Editor	$
Speech Generator	"	Help	$	Main Screen	$	Music Box Dancer	
Lincoln's Speech	"	Rocky 1	TE2	Mash		Mother Goose	SP-0
Planets		Rocky 2	"	Piano	$	Mozart	
Speak	$ SP	Rocky 3	"	Pink Panther	$	Music Skills	
Speaksong	TE2-SP	Rocky 4	"	Puppy Town	$	Mystery Melody 1	
Speech Builder	SP$	Rocky 5	"	Robot Boogie	$	Mystery Melody 2	
Speech Demo	SP$	Say Spell	"	Somewhere		Organ	
Speller	TE2-SP	Speech Demo	$	Sonata 5		Play Music	$ M-ED
Teco				Venus Boogie	$	Prelude	
Verbose	$ SP			Western Boogie	$	Random Music	
Word Twins	TE2-SP					The Sting	

Musical(03) / Musical(04) ? / Musical(05) ? / CAI-Math(01)
**********   **********   **********   **********

Musical(03)	Musical(04) ?	Musical(05) ?	CAI-Math(01)	
Bumble Bee	Alphasong	Amazing Grace	Tiny Math	$
Chopsticks	Aussie Fair	Breeze Along	Number NIbbler	$
Create Music	Candy Man	Elephant Walk	Math Race	
Name That Note	Dixie	Fiddler	Math Drill	
Star Trek	Finale	Music	Math Aids	$
Star Wars	Godfather	Music Maker	Math for Kids	
This Old Man	Mame	Penny Lane	First Math	
Larry's Fiddle	Music Anonymous	Raindrops	Division	
Valse	Music Word	Rising Sun	Counting	
Witch Dance	Music Magic	San Jose	Counting Fun	
	Music Synthesizer	Sunglasses		
	Musique	Yesterday		
	Oh Susanna	Time In a Bottle		
	Phil's Tune	You Light-My Life		
	Sounds			

CAI-Math(02) / CAI-Misc.(04) / CAI-Misc.(06) / CAI-Misc.(07)
**********   **********   **********   **********

CAI-Math(02)		CAI-Misc.(04)		CAI-Misc.(06)		CAI-Misc.(07)
Algebra-I		Animals		Diagraphs	$	Calorie Cop
Barnyard Math	$	Birds	$	Morse		ESP Tester
Fractions		Flowers	$	Morse1		Letter Builder
Color Math		Trees	$	Morse Code		Morse Coder
Cootie Math		Vitamins		Speedread/Type		Numerology
Derivative		Build the USA	$	Spell Down	$	Participes
Formulae		Capitols	$	Spell Score	$	Planet Fact
Menu Math		Spelling Bee		Sun Test		Presidents
Simple Beam	$	Constellations		Type-Teacher		Same-Diff1
Snurtle		Elements	$	Words		Same-Diff2
Super Fly	$	Files Tutorial	$	Write a Story		Same-Diff3
Trigonometry		Findex		Name Bones	$	Same-Diff4
		Flag-O-Rama		Solar System	$	Seastates
		Money	$			Teeth
		Mots Pel Mel				Typing Invaders

Utility(05) ? / Utility(07) / UTILITY(08)
**********   **********   **********

Utility(05) ?	Utility(07)		UTILITY(08)	
Addmachine	Average Income		Homeadis	$
Business # 4	Bargrapher		Mortgage	$
Calculator	Black Book	$	Address Book	
Compinvent	Calendar		Alpha Sort	
Deleter	Cheque Account		Calendar	$
Finance Math	Flight Plan	PR	Conservation	
Finance # 8	Fraze Craze	$	Financial Whiz	$
Geosatel	Freezer		Coupon Counter	
H-Pad	Home Budget		Geneaology	
Labelmaker	Home Worksheet		Kitchen Aids	$
Line Editor	Joystick		Stock Market	

Logic Test	Metal Converter	Taxes	$
Mortgage	Text Processor	The Biller	
Overland	Disassembler 1	Yarn Estimator	MM
Phone Cost	Disassembler 2		
Truth Table			
VCR Filer			

$ on right - Extended Basic
PR   "   - Printer
MM   "   - Mini Memory
? Pgms. not yet checked as to Basic vs XBasic

TIMP Tips and Techniques

by
Steve Zimmerman

Well, I said once that I didn't do windows, and that's what my last
several columns were about, so, having DONE windows, let's move to
another topic. I have mentioned several times the use of the NAME
function, so let's cover the varied uses of the NAME command in
this column.

NAME allows you to assign a name or label to a cell or range of
cells. Sounds simple enough, doesn't it. Well, it is! It can also
be useful! For example, let's say that you are setting up a sheet
to figure taxes, commissions, or anything which uses a percentage
which may vary from time to time, but which remains constant
throughout the sheet. You can enter this percentage in just ONE
cell, ONE time, NAME that cell, and refer to that cell BY NAME in
your formulas! Thus, when the prcentage changes, you need only
change it ONCE, rather than changing it in EVERY formula! This can
save a lot of time editing formulas!

NAME is also used to make formulas easier to understand, by NAMEing
cells and using the NAMEs in formulas.   It's much easier to
understand "INCOME-SUM(EXPENSES)" as being an appropriate formula
for PROFITS, than "R25C34-SUM(R27C2:R29C13) ", isn't it! Of
course, NAMEing cells (or groups of cells) uses up memory, so, if
your sheet is getting close to its maximum possible size, you may
need to dispense with the NAMEs. When I refer to ranges, or groups
of cells, a single NAME can refer to more than one cell. In the
example above, the NAME "EXPENSES" refers to R27C2:R29C13, a range
(or group) of cells. In this case, there would be labels in R27C1,
R28C1, and R29C1 indicating the type of expenses, and the
individual entries would probably be monthly totals for each row.
The NAME which you use can be a label, or you can assign any NAME
you wish.   NAMEs cannot have spaces in them, however, so if your
label has spaces, MulTIplan will fill the spaces with underline
characters (_), so, if the label was "Total Expenses", the NAME
would be"Total_Expenses".

If there is a label in the cell where your cell pointer is,
MulTIplan will propose that label as the name of the cell or range
of cells to be named. You can accept this or override and enter
something else. NAMEs don't have to show, however. You can NAME a
cell without labeling it with text.

To NAME a cell, you key N, or move the command line cursor to the
command NAME and press Enter. MulTIplan will show: NAME: define
name: (and the proposed response, if any) to refer to: (the cell
the cell pointer is in). Enter the NAME you wish to use, and use
the TAB (ctrl 2) to move to the "to refer to:" field.   (The first
time you do this, MulTIplan will access the system disk.) You can
now enter the cell coordinates, either by typing them in or by
using the arrow keys to move the cell pointer. Move the cell
pointer to the first cell if you are NAMEing a range, key a colon
(:), and move the cell pointer to the last cell in the range, and
press Enter. You have NAMEd something! (I christen thee ...)

The Xternal Copy refers to cells to be copied from supporting
sheets by NAME, so, if you plan to link sheets, you will have to
name the cells or ranges of cells you need to copy from one sheet
to another. (More on Xternal commands another time!)

To unNAME something, you enter the NAME you used in the define name: field, key ctrl 2 (tab), and MulTIplan will show what that NAME is defined as refering to. Use fctn 0 (delete forward) to blank out the to refer to: field, leave it blank, and hit Enter. You have UnNAMEd it--that NAME now refers to nothing!

That will be enough NAME calling for now (and we won't count the NAMEs you use when a 4,000 cell sheet starts to recalculate when yhou didn't want it to!). Let me know what you'd like to hear about next on MulTIplan!

THE DISK CONTROLS part 2

By Michael A. Ballmann

The FDC recognizes some data bytes as special when a write track command or a read command is given. These bytes and their meaning are:

F7-Write CRC characters used in error checking
F8-Data address mark (deleted data) Aa=11
F9-Data sddress mark (user defined) Aa=10
FA-Data address mark (user defined) Aa=01
FB-Data address mark (user defined) Aa=00
FC-Index address mark (hole in disk)
FD-Spare (no special meaning)
FE-ID address mark

When data is written it is intermixed with a clock bit betweem each data bit. In order to easly identify address marks they are written with some clock bits missing. The special coding is why data can not be written to the disk with the write track command.

```
x=data bit  c=clock bit
x 0 0 0 1 1 1 =07        x 1 0 1 0 1 1 1 =D7
cxcxcxcxcxcxcx           cxcxcxcxcxcxcx
1 1 1 1 1 ? ? ?=F8,9,A,B,E  1 1 1 1 1 1 0 0=FC
```

When the FDC sees an F7 byte on write track, two bytes of data to be used for error checking are written. Remember TWO bytes.

```
  GAP  AM TRACK# SIDE SECTOR# SECTOR-LEN CRC
000000 FE  20    00    09       01        ??
```

The ID field tells the FDC where it is. This information indicates track 40 and sector 9 on a single sided disk with a sector size of 256 bytes. By changing this information or putting it someplace else on the disk, the data in the sector will not be found with the TI DOS (disk operating system). This a type protection used prevent backup of their software.

Under the 'IBM' disk format (TI's also 01) the sector length is used as a shift value of 0 to 3 giving a sector length of 128 to 1024 bytes. If the 'b' bit in the read and write commands is a zero, the length byte is used as a multiplyer. That's 16*(sector length)=bytes in sector, giving a sector length of 16 to 4096 bytes. (Don't use the reserved bytes F7 to FE.)

```
VREG1  BSS   20           SET-UP REGISTERS
H30    DATA  0030         DATA FOR CONVERSION
H07    DATA  0007         DATA FOR CONVERSION
TRACK# DATA  0000         TRACK NO. TO READ
SCREN0 DATA  PRESS, 0000  TEXT POINTERS
PRESS  DATA  02E2,22      ADDRESS AND LENGTH
       TEXT  'SELECT TRACK TO READ >'
GET#   DATA  VREG1,BEGIN  BLWP POINTERS
BEGIN  LI    R0, 2000     BYTE TO WRITE
       LI    R1, 0300     BYTES TO CLEAR
       LI    R2, 0000     ADDRESS TO START
       BL    CLEAR        CLEAR SCREEN
       LI    R10,SCREN0   GET POINTER FOR SCREEN
       BL    TEXTO        WRITE SCREEN
********************************************************
*  KEY SCAN                                           *
********************************************************
       LI    R1, 02F8     LOAD WRITE LOCATION
KEY    LWPI  83E0         USE GPL REGISTERS
       BL    000E         SCAN KEYBOARD
```

```
           LWPI VREG1          GO TO MY REGISTERS
           CLR  R0             CLEAR R0.
           MOVB 8375,R0        GET KEY
           CI   R0, FF00       CHECK FOR NO KEY
           JNE  KEY            YES. KEY PRESSED
KEY1       LWPI 83E0           USE GPL REGISTERS
           BL   000E           GO TO SCAN ROUTINE
           LWPI VREG1          USE MY REGISTERS
           MOVB 8375,R0        STORE KEY
           CI   R0, 0D00       WAS KEY ENTER?
           JEQ  ENTER          YES.
           CI   R0, 3000       WAS KEY ZERO OR HIGHER?
           JLT  KEY1           YES.
           CI   R0, 3A00       IS KEY GREATER THAN 9?
           JLT  DECODE         YES. DECODE AND DISPLAY
           CI   R0, 4100       IS KEY LESS THAN 'A'?
           JLT  KEY1           YES.
           CI   R0, 4600       IS KEY GREATER THAN 'F'?
           JGT  KEY1           YES.
DECODE     MOV  R0,R5          MOVE KEY TO R5
           MOV  R1,R2          GET WRITE LOCATION
           INC  R1             ADJUST WRITE LOCATION
           BL   ADDST1         SET-UP WRITE ADDRESS
           MOVB R5, 8C00       WRITE KEY TO SCREEN
           SWPB R5
           S    H30,R5
           CI   R5, 000A       IS KEY A HEX DIGIT?
           JLT  SAVE           NO.
           S    H07,R5         MAKE A HEX DIGIT
SAVE       SLA  R8,4
      --->  --->  continued     ------->
           SOC  R5,R8          STORE NUMBER IN R8
           JMP KEY             GET NEXT KEY
ENTER      ANDI R8, 00FF       MASK OFF MISTAKES
           MOV  R8,TRACK#      SAVE TRACK TO READ
           RTWP                RETURN TO READ PROGRAM
TEXT0      MOV  R11,R6         SAVE RETURN
TEXT1      MOV  *R10+,R0       GET POINTER TO TEXT
           MOV  R0,R0          WAS IT LAST TEXT?
           JEQ  RETN6          YES.
           MOV  *R0+,R2        GET WRITE ADDRESS
           MOV  *R0+,R1        GET LENGTH
           BL   ADDST1         SET UP VDP ADDRESS
WTEXT1     MOVB *R0+, 8C00     WRITE DATA
           DEC  R1             ADJUST COUNT
           JNE  WTEXT1         DONE? NO
           JMP  TEXT1          GO FOR MORE TEXT

*****************************************************
* CLEAR SCREEN                                     *
*****************************************************
CLEAR      MOV  R11,R6         SAVE RETURN
           BL   ADDST1         SET-UP VDP WRITE ADDRESS
WLOOPA     MOVB R0, 8C00       WRITE BYTE
           DEC  R1             ADJUST COUNT
           JNE  WLOOPA         LAST BYTE? NO.
RETN6      B    *R6            RETURN
*****************************************************
* SET-UP VDP WRITE ADDRESS                         *
*****************************************************
ADDST1     AI   R2, 4000       MAKE A WRITE ADDRESS
           SWPB R2
           MOVB R2, 8C02
           SWPB R2
           MOVB R2, 8C02
           B    *R11           RETURN
```

Next month we put these two segments together.