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LEHIGH 99'ER COMPUTER GROUP

next meetings: Monday Nov 19, 7:30 PM Community Room, 1st Nat'l Bank
 7th and Hamilton, Allentown

reading matters

At the i-o port

The course for October is through the declension of persons -- first person, second person, third person singular and plural -- back to eleventh grade English. If that's obscure, you should see our BASIC demo.

(The problem posed: In console BASIC, write a subroutine that will, when given a date, give the next day's date. To be sporting, you must handle leap years and New Years. To be feasible, input and output is in three number variables, A,B,C where A is the month, B the day and C the year.
 Here's the puzzle: NO IF's and keep it to 5 lines, counting the RETURN statement.
 Hint: Our answer has a single temporary value, D. And the XBASIC version is a one-liner.)

first persons

The ubiquitous Dave Hendricks takes three tacks through books, periodicals and sundry. His second charts the waters of the Editor/Assembler's word processor, a subject introduced by one M. DeNardo, who in his first appearance either assumes a non de plume or confirms that we misspelled our methhead. Now if we can only get him to write about XBASIC sort routines...

Skirting the ALs of XBASIC, yet another first tierer, Terry Staph, details New Horizon's public domain disk of Assembly Language routines.

Proving that 'no man is an island, entire to himself', we reprint a thoughtful letter from Tom Krohn, proprietor of Penteware Computer Software. His letter, particularly, sets the true theme of the October I-O Port -- that the 99/4A phenomenon is made largely of first persons, individuals who make a difference.

Not to be out-Donne, your editor sails the junk of his prose in and out of the first person singular, the editorial plural, and into the mists of the third. My cargo this month consists of a couple first persons, some assembled guilt, and at least one broadside.

Several new books have been released by SAMS Publishing for the TI-99/4A. These books are similar to past releases in that they include a cassette of the programs already keyed in. You can then use the book for reference or to help make modifications to the programs. The titles of these four books and a brief description of each follows. All four retail for the same price: \$16.95 (cassette included).

TI-99/4A GRAPHICS AND SOUNDS by Knight is a collection of 37 various size programs on sound effects, three voice music, colors, bit mapped graphics, multi-colored graphics, 3-D graphics, and animation.

TI-99/4A BASIC PROGRAMS by Knight and LaBatt contains thirty programs in categories such as games, educational, graphics, music and sound effects, and utilities.

BASIC TRICKS FOR THE TI-99/4A by Wyatt is a collection of some thirty subroutines and programs which can be used when writing your own programs. There are routines to set up report formatting, menu screens, converting upper case to lower case letters and vice versa, also four methods to sort array variables, and using time and dates. Some of you programmers out there could find these routines very useful.

TRIVIA DATA BASE by Hunter and Guntle is a book designed to introduce the user to data bases and their applications and also show how to design individual file records. The book is one big data base containing a trivia game. This game is similar to the many trivia games that are very popular at the present time. In fact, at only \$16.95 with cassette, it is much less expensive than those games. The data base is flexible enough to allow you to add new trivia and questions.

TI-99/4A CALC by Gregory Schmalhofer may well be the winner of the whole group. This book contains a cassette based electronic spreadsheet! This spreadsheet is by no means as complex or as powerful as VISICALC or MULTIPLAN but I haven't seen either of those selling for a \$16.95! The book starts with an explanation of TI-CALC and then goes on to use it in six different applications. These applications were auto gas mileage, temperature conversion, piggy bank counter, income planning, loan analysis, and a savings plan. These are by no means the limits of this program but are meant to be used as examples. If your TI hasn't grown into a "supersystem" yet, this could be the spreadsheet for you!

Public Domain Bonanza

Last month I had the opportunity to review some public domain software from the New Horizons User's Group, authored, for the most part, by John Clulow. The programs were written as assembly language subroutines to be called from Extended Basic. To say that these programs have some utility would be an understatement.

How about a screen dump that runs in approximately one minute instead of the customary six to thirty-five? Or a program that will save an entire screenful of graphics, with sprites and call it back instantaneously? (No more waiting 20-30 seconds for the computer to generate the graphics background for your game program.) Or a alphabetical sort routine that executes faster than it can be printed out on the screen? These are just a few of the routines by John Clulow available for the Extended Basic user.

The minimum system requirements are: Extended Basic, disk drive, memory expansion, and printer (optional). Here is a thumbnail sketch of each of the routines:

LOAD	Menu driven demo program.
DSRLNK	Stand-alone Device Service Routine Link for disk, RS232, etc.
DUMP	Hi-res screen dump that executes in approximately one minute.
PLOT	Fast point plotting routine for your printer.
QUICKSORT	Routine that does a full ASCII sort on any string array, very quickly!!
SCREEN SAVE	Two part routine to save a full screen of graphics and recall it. The program space saved with this one is substantial.
VPEEK/VPOKE	Two routines that allow direct access to VDP RAM to modify sprites, color, character definition, etc.
SCROLL	Routine to horizontally scroll a string smoothly across any screen line.
JUSTIFY	This routine will right/left justify a body of text to 28 columns.
LOGO-I PRINT	Routine that provides a way to print an entire LOGO-I procedure file.

The complete descriptions of these routines are included in a "HELP" file on the disk, titled "INSTRUCT53". The source code for all of these routines is also included, so if you're curious as to how they work, you can see the programming step by step. You will, however, need to use the Editor/Assembler module to review the "HELP" file and source code. (Or write a quick and dirty DIS/VARBO reader; TI WRITER's OK, too.)

I think you will find these routines helpful and a great addition to your TI "bag of tricks".

>Terry Staph

grey matter, cont.

Another new book on the market is the SPEED WALKER FUN TO PROGRAM YOUR TI-99/4A series by Howard Budin. In this book Speed Walker, a fictitious cartoon character, takes you through the wonderful world of basic programming. As one might expect the material in this book isn't too tough to take, but then neither is the price, a mere \$2.95 could get your child into BASIC programming.

COMPUTER OLYMPICS by Paul Somerson & Steven Manes is brought to you by the people who publish K-POWER and FAMILY COMPUTING magazines, none other than SCHOLASTIC inc.. This book is a collection of short programs that all carry the olympic theme. This is not, however, a group of graphic sports games. The content of the book is aimed at the younger school age child. The programs are listed for many different computers including the TI-99/4A, Commodore 64 & VIC 20, APPLE, IBM, ATARI, and Radio Shack. It retails for \$4.95. There are other books in this series including COMPUTER SPACE ADVENTURES, COMPUTER MONSTERS AND COMPUTER CRAZYNESS. They are all similar to COMPUTER OLYMPICS only with different programs.

>Dave Hendricks

from page 9.

It just had to happen. This article starts on page 7.

examples were slapped together for a Monday deadline on Sunday, so, please no hate mail but just a note about how they don't work (and how).

Remember how we mentioned that FORTH will spell out the essentials? Well, we'll try it. Assuming -GRAPH is on-line, the syntax ought to be

```
NEX 00CO C03E 7FAD 010E 1E CHAR
```

This'll put a small dinosaur into the cursor. (Well, YOU try it!) CHAR, on screen 57, looks like this:

```
: CHAR      ( M1 M2 M3 M4 CH --- )
B & PBT + >R (char x 8 bytes + pattern table base
-2 & DO     (FOR I=6 TO 0 STEP -2
PAD I + :   (move charpat into text buffer,
-2 LOOP    ( inverting its order, correct stack
R> 8 VNBW ; ( get the char add back and write
```

PBT is a constant >800, specific to the the VDP is set up. In other words, we'll have to change that depending. And although AL doesn't need the stack inversion routine, we'll have to come up with our own data management. (I'm assuming that the decomposition process is taken all of the way down to the bone and from there you'll write all of your routines. Sounds harder than it is. VNBW et al are quite simple; try disassembling from about >204A in IBASIC with SBUG.) FORTH does simplify things, doesn't it?

>Frederick Hawkins

Pewterware

Computer Software

September 15, 1984

Lehigh 99'er Computer Group
P. O. Box 4837
1501 Lehigh Street
Allentown, PA 18103

To whomever it may concern:

The president of our NW Florida 99'er's gave me a copy of your August newsletter which I read with interest. Apparently, I am guilty by association - of what, I'm not sure. Nevertheless, I shall explain to you what Pewterware is and its relation to Mr. Charles LaFara.

I bought my 99//4 in 1980 on the advice of my Navy CO and fell in love with programming it. I produced a couple of programs and sent them to the only TI consumer (non-TI employee) around that had a genuine interest in getting TI to meet the needs of the growing 99//4 user base, Mr. Charles LaFara in Oklahoma. He liked them and encouraged me to sell them. In fact, in 1980, Mr. LaFara was encouraging many third party writers, because without a solid flow of good software into the marketplace, he knew his new 99//4 would be so much toy stuck under the bed. I think he started the User's Group to maintain interest in the 99//4 and originally sent programs to members around the country just for the cost of shipping. He also sold third party software to his members. Mine was some of that software. I have no business connection with IUG other than it was the only source for distribution available to me in 1980-81. At that time the user base was too small for most software stores to even stock TI modules let alone third party programs!

Well, times change. Now there are many stores that carry TI stuff and I have found other channels of distribution including Tenex (now Microsphere) and Unisource and distributors in England, Canada, and Australia. It is amusing to think that in 1980-81, I was such a shoe-string business (and moving so often with the Navy) that I used the IUG's P. O. Box and phone number as a point of contact! I imagine that other third party programmers listed in your article were in the same boat (no pun intended). Pewterware has never been a part of the IUG and if you had looked through some other issues of 99'er Home Computer Magazine, you would have noticed that I have been a heavy advertiser on my own.

I do not know what your beef with Mr. LaFara is all about. I know that a lot of programs get past around within and without user groups. That is just a fact of life for programmers that I decided to live with four years ago because I enjoy programming and being in business for myself. I have never met Mr. LaFara, but I would certainly consider it my pleasure to meet with him. Without his encouragement, I wouldn't have been in business, TI wouldn't have been prodded into producing the modules and equipment that they did, and there might not ever have been a Lehigh 99'er Computer Group.

Sincerely, *Tom Krohn* Tom Krohn, Owner

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0 Some quick notes about some 1st Persons from the 3rd, 2nd, & 1st

1
2 Steve Ciarcia, whose column we promised to elaborate upon last
3 month and didn't, writes the hardware features for BYTE
4 magazine. With increasing regularity, he is answering
5 questions from TI users.

6
7 **NOTA BENE:** In his August Circuit Cellar, Steve writes,
8 "I have played around with the TI-99/4A and was frankly
9 amazed at the power and completeness of its BASIC. The
10 full-size keyboard was nicer to type on than the keyboard
11 on many inexpensive units today. I did not like the way T
12 used function keys to logically shift the keyboard char-
13 acters, however. Although the 99/4A has been discontinued
14 I'LL KEEP AN EYE ON THE MAIL TO SEE IF PROJECTS FOR THIS
15 MACHINE ARE WARRANTED." (caps mine -ed.)

SCR #75

0 Send your wish list to
1 Steve Ciarcia, POB 582, Glastonbury, Ct 06033

2
3 BYTE magazine remains one of the deals on the micro market.
4 I've issues from five years ago that I'm still reading and
5 using. What seemed then impenetrable, has become pretty
6 easy. Of course, it helps to own a computer. Back then they
7 were running about \$1200 an expensive pipe dreaa. Times change.
8 As a source of ideas, it can't be beat. And a year's
9 subscription is only \$21 bucks.
10
11 Tracy Caine, the IUG's new librarian, needs mention: He welcomes
12 queries and often can either directly answer them or show you
13 who knows. Mr Caine IS not a yankee; 'sir'ing might take some
14 getting used to. His phone number at the IUG is (405) 948-1023.
15 By the way, we received the flip sides of the disks back from

SCR #76

0 Atlanta, thanks Marshall.
1
2 Marshall Gordon, Atlanta's president apologized for the delay,
3 saying his wife has been in the hospital for the past few
4 weeks. Speaking for all of the Lehigh 99'ers, we wish her well
5 and a speedy recovery.
6
7 Charles LaFara, in Tom Krohn's letter, emerges as less than an
8 ogre. Mr. LaFara in a letter to the Lehigh 99'ers, notes that
9 the IUG is still alive, although suffering from a cash-flow
10 problem brought on by not being able to resell TI-brand products
11 as well as falling advertising revenues and legal expenses. He
12 writes that IUG is "in its worst financial position in its four-
13 year history."
14 And: "The deterioration of the 99//4 user-base has come much more
15 rapidly than anyone...ever anticipated. ...There is a need for

SCR #77

0 organization; therefore, we're not willing to throw in the
1 towel. We will continue to serve our membership as best we can
2"
3
4 Craig Miller's back! And with two issues out. The May issue
5 arrived shortly after we went to press, and the June issue came
6 sometime late September, early October. June covers GPLLNK from
7 XBASIC. (One unwarranted statement: the GPLLNK is exactly what
8 TI sends out, and his XBASIC routine is just a version of the
9 test program that accompanied it. Hey, Craig, they both work)
10 The June issue maps out GROM chip 0, and also features an
11 XBASIC program to create a MERGE program that directly LOADS AL
12 routines. He's also got a public domain 3 pass FORTH disk
13 copier in the June issue.
14
15 Speaking of FORTH, Brodie of STARTING FORTH fame, has a second.

SCR #78

0 This one, called THINKING FORTH, is better. In fact, it may be
1 the single best book on any computer language I've seen. It
2 features a running commentary about the book, FORTH, and FORTH
3 style by FORTH's creator Moore and others -- making for the
4 fastest and most effective teaching I've ever seen. Enough so,
5 that I feel confident in making this comment about Smart Program
6 ner: when it comes to FORTH, it may work but it sure ain't very
7 good. I won't republish the 3 Pass Copier, even though it's
8 public domain, until it gets worked over.

9

10 The Smart Programmer isn't the only place where suspect FORTH is
11 bandied about, but rather than thumping these people, I'll just
12 advocate Brodie's book:
13 GET THINKING FORTH READ IT!
14 Thinking FORTH by Leo Brodie Prentice-Hall, Inc. a Spectra
15 book (\$13.95, special discount in bulk: P-H., Inc., Special

SCR #79

0 Sales, Englewood Cliffs, N.J. 07632)
1
2 \$3 Associate Membership available: send Lehigh 99'er CG \$3, and
3 we'll send you the newsletter for a year.
4 Xmas Dinner/Dance: Two tickets remain sold, we're gonna look
5 like chumps on this one. YOU wanted it-- now support it.
6
7 XBASIC, MINIMEN, EDITOR/ASSEMBLER, etc. If you haven't got them
8 get them NOW!!!! (No hard facts, just suspicions. Mail order
9 'em if you must, but do it soon.)
10
11
12
13
14
15

SCR #80

0 BASIC demo & puzzle; a relational for tomorrow:
1
2 100 D=(A=2)\$(B>27-(INT(C/4))+((A=4)+(A=6)+(A=9)+(A=11))\$(B>29))
3 +(B>30)
4 104 A=ABS(D)-A\$(ABS(D)+A(13))
5 108 B=-B\$(D=0)+1
6 112 C=C+(A=1)\$(B=1)
7 116 RETURN
8
9 NOT RECOMMENDED, AND WAIT A MONTH: You may have noticed that the
10 I-O Port is sporting a new ribbon on the Epson this month. The
11 last one was put on in August, and petered out while working on
12 a 13 page YBASIC program. In a week's time of some 30 copies of
13 the program the LISTING could be dated by the fade. The pgn had
14 DATA statements with CTRL N,J,L and M characters; these were
15 effectively printer controlling REMarks. CTRLs in DATA statements

SCR #81

0 do not get retokenized & if you get the right ones, they will
1 shift your printer thru its steps.) The point is that the progr
2 was 13 printed pages but a lot less if printed straight out -
3 84 sectors I think. The stadard Epson ribbon is rated at three
4 million characters, and 30 LISTINGS does not that make.
5
6 The brand was CARTER, bought in a stationery store (1/2"x20 yds)
7 They're a division of Dennison Manufacturing Company.
8
9 Why all this folderole? Well I bought a new ribbon yesterday
10 from a shop that advertises Epson computers. The guy in there
11 says I ought to be using a ribbon a month, and then sells (all I
12 got) an Elephant (tm) ribbon. Guess who makes them?
13
14 Aha. Dennison. Wait'll next month!
15

SCR #82

0 Noted with Displeasure.
1 Arizona User Group has been getting our newsletter for a while
2 now. Guess what? They'll let us subscribe for about \$13 a year
3 Not me, Charlie. (This newsletter stuff needs a critical pass o
4 perhaps 30 to make it; each reading the others and then writing
5 against/for it. I don't care for Arizona's idea)
6 Haven't seen Bakerfield for a while now.... maybe they're up to
7 the same thing.
8 FINALLY. (the names have changed to protect the foolish)
9 !! @@ or !! @@ is published monthly by the [ti group] as a ser-
10 vice to it's members. Any article in the !! @@ may be reproduce
11 for the use of any non-profit group unless the specific article
12 is copy-righted. !! @@, @@, \$@, Z @, ^ @, & @@, & @ (, and
13 & ++ are trademarks of the [ti group] and may not be used witho
14 permission.
15 -Coe' on guys, are you serious?

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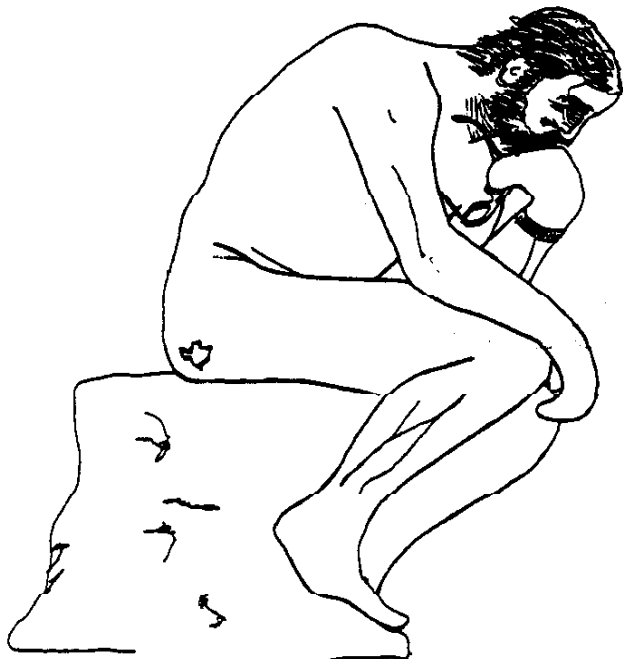
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not a bad price but
the peanuts will get
you.

looking into hell



I'd like to talk iconography here. Let me hasten to add, this figure has nothing to do with Tom Krohn, Pewterware, IUG, et al. Visually astute readers will doubtless recognize the silhouette of Auguste Rodin's 'The Thinker', his most familiar work. "Rodin's sculpture...gradually became a public symbol of such wider import. The fame of The Thinker spread from a minority interested in aesthetic questions to a worldwide public, joining the ranks of those works of art, few in number, that are genuinely popular." Originally, Rodin had conceived The Thinker to be Dante planning his Inferno. But the poet turned out to be a wimp -- 'thin, ascetic' and Rodin gradually dropped the link. The Thinker did fit a parallel niche as Dante::Inferno as the central figure within 'The Gates of Hell'. Here, The Thinker is "a judge at the same time that he is a prisoner of hell". The Thinker also serves as Rodin's headstone and epitaph. In a memorable photograph The Thinker peers down into Rodin's grave, a huge white figure surrounded by hundreds of dark-clothed mourners gazing at his open coffin.

In my youth at the San Francisco Art Institute, I briefly shared the silkscreen studio with a younger Gary Kaplan. As I recall it now, Gary quickly apprenticed himself to our teacher and soon forsook the studio for his master's and later, the school when our instructor tragically collapsed and died moments before before a major show opened. The last of Gary's art I saw, if memory serves, was of rainbow trout floating over maps of Mount Shasta. Gary had a facile technique and was a good draftsman -- his trout looked like trout and the seeing was much better than the retelling. The last I heard he headed north to Marin County...

I've often wondered if HCM's Kaplan is the same guy. If he is, I can easily envision his preparation for the self-portrait sketched for 'On Screen'. This quickly explains why our 'Thinker Looks Up' is a mirror image of Rodin's masterpiece. (Our tracing is flipped too, to illustrate the reference.) The Gary I knew was only a little concerned with his cultural heritage, particularly anything east of the Rockies, and wouldn't have known that his icon was looking up from hell.

Two problems with this hypothesis -- firstly, Kaplan's image is rendered in such too commercial an idiom, and secondly, I don't recognize him. But if these people in fact do merge into one, such is explained. And as a friend of the younger I would like to convey to the older -- in a friendly way, 'studio to studio' if you will, a couple friendly observations.

First of all, Gary, I subscribed to a monthly magazine. Yeah, I know deadlines must be tough for a West Coast guy but, what the hell, slap it together and get it out. Further, I subscribed to get a valuable reference, not a trivialized, garish, visually overworked piece of crap. I subscribed to get news of what's available -- from the horse's mouth in the form of ads as well as timely reviews. I would have preferred some sophisticated software or at least an approach to it. Your best, Balthrop, still has to discover a GOSUB. And finally, Gary, I subscribed to a TI 99/4A based magazine, not to get yet another demonstration of a pyramid scheme.

As to the 'speculative suckraking' your executive editor accused newsletter editors of, I don't think they were doing anything more than pointing out the remarkable nature of your latest transformation (no ads) of HCM. "Mommy, the Emperor hasn't any clothes on!" And as to 'hurting the feelings of (y)our dedicated magazine staff' mine get pushed out of shape every time I get a four-month-late issue of nil intrinsic value. You people are PAID to perform; as such, you deserve no kid gloves. And if you had stayed at the Art Institute a little longer you would have learned there is an elemental difference between "what's on the wall" and the artist. And if you aren't the G.K. I knew, a little art school education of 'call 'em like ya see em' wouldn't hurt.

It does seem that The Thinker's iconography is more fitting than one might imagine. Given the volatility of the magazine market, The Thinker might have all of eternity to contemplate a grave.

(Quotes are from John Tancock's 'The Sculpture of Auguste Rodin'. Tancock was the curator of the Rodin Museum, a Philadelphia landmark. If you can get to Philly, visit it. The art is at once real, accessible and good; its mere presence speaks much of the less parochial view of the world that Philadelphia and SE Penna. once had. The Museum's founder, Jules Mastbaum, was instrumental in getting 'The Gates of Hell' executed at least seven years after Rodin died. This work and others make up the largest collection outside of the Musée Rodin in Paris. What's this to do with a home computer? Nothing. And everything.)

>Frederick Hawkins

THE USE OF THE EDITOR ASSEMBLER MODULE

I don't own a word processor, but I used my EDITOR/ASSEMBLER to write this article. Like as you've probably wondered what, beyond Assembly, can I use it for? Do you want to type a letter and print it later, or maybe write a column for the newsletter? Or perhaps you just want to practice typing. At the price of \$24 to \$39 (if you can find it) the Editor will allow you to type in a text such as this, save it on disk and/or print it. This is all done using functions similar to the features provided in TI Writer without the additional cost (about \$90). Sure, you say, it isn't quite the same, but it includes most of TI Writer's benefits. (-- and such more, like FORTH)

To use the cartridge's Editor you need 32K Memory Expansion and a Disk Drive. Just enter the Editor mode and start typing. The Editor has 80 columns that scroll horizontally just like TI Writer. You type in the document exactly as you want it to be printed. Then save it or print it. Try it, maybe it's just what you were looking for.

Want to PEEK and POKE around the TI but you don't have Extended Basic and the 32K Memory Expansion? With just the console and the Editor/Assembler Module you can PEEK and POKE the TI99/4A's memory. Console BASIC gets six extra CALL commands with this cartridge: INIT, LINK require the 32K expansion, but LOAD, POKEV, PEEK, PEEKV, and CHARPAT. Again, quite a bargain if you can find it.

By the way, if you've found some unique qualities of this or other software, your thoughts and insights would be appreciated. Afterall, that's what a user's group is for.

>M. De Nardo

This month I'm going to try to tell you a little bit about using the Editor/Assembler module as a word processor. I'm now using it to write columns for this newsletter and find it adequate for that use only because the finished files are edited and printed using TI-WRITER. Anyone interested in writing articles for the newsletter can use this method and then send the DIS/VARBO files to Fred Hawkins via modem for final editing and formatting.

The first thing to do is to plug in your Editor/Assembler cartridge and select #1 EDIT. At the next prompt select #2 EDIT making sure you have the E/A Disk part A in DSK1. After the disk has loaded you can remove it and put your file disk in the drive.

If you are setting up a newsletter file the best thing to do is set up some visual tabs to keep your column straight. I usually space over 55 spaces and

mark the spot with FCTN A (!). I then repeat this several times until I have 5 or 6 lines marked with this character. To make a much larger file use the copy mode by pressing FCTN 9 and then the letter C. To the prompt you then type I,E,E. This will double the size of your file each time you repeat the procedure. When your satisfied that the file is large enough you're ready to begin filling in text.

Return the cursor to line 0001 and begin to type. remember to indent for paragraphs and release ALPHA LOCK so your text isn't all in upper case letters. When you reach the tab setting (!) hit enter and go on to the next line. Don't worry about going over the tab setting when you type through as you can easily fix it. Remember that the tab setting was put there to remind you of the end of the line.

As you fill the screen with text, you may want to look back over what was already written. To do this use the FCTN 4,5,6 keys to scroll up and down or to the left. This comes in mighty handy when you have written a large file and want to find a particular section of text.

There are several editing commands that can be used to make writing easier for you. These are EDIT, FIND, REPLACE, MOVE, INSERT, and COPY. To use these commands type FCTN 9 and select the proper command by using it's first letter. More information on these commands can be found in the manual which came with the E/A module.

When you have finished writing hit FCTN 9 twice to return you to the Editor selection screen and save your file. Be sure to select the VARIABLE option. Don't forget to press alpha lock again or you'll get error messages. Once you have saved the file you can always go back and edit it again and again until you are satisfied with it.

To load a previously saved file select the load option at the Editor screen and type the device and file name at the prompt.

Remember before printing the file to remove the tab reminders (!) or they will print out with the text. You can then rather quickly by using the FCTN key and alternating between the X and I (down arrow and delete). (Or try this RS command: 1000(50,60)/// This will eliminate the first thousand markers between columns 50 and 60.)

I hope that this may inspire others to take a shot at writing something for the newsletter. The method requires little extra equipment and is quite a different way of using the Editor/Assembler.

>Dave Hendricks

assembled guilt

At the I-O PORT has been promising something about Assembly Language (AL) programming for a while now. We could plead lack of space, time and material. But, like everyone else, we've been meddling with TI FORTH.

FORTH, by the way, seems to be the ideal environment to do AL-like things -- without the headaches. A FORTH word isn't that far removed from a straight AL program. Once you have a FORTH program running, you've described all of the elements needed for an AL version. Since we've the kernel's source code, it's possible to cut and paste a working AL version.

Recommended: The TI-FORTH manual and source code ought to be on every programmer's reference shelf. It contains a virtually complete listing of every important utility or utility link on the 99/4A, as well as dozens of simple routines that are the AL programmer's stock in trade.

Assembly Language, on the other hand, is about as direct as you'll ever want to get. One could retrograde back 25 years and hand-LOAD bits to program, but except for HCM's self-modifying AL screen-dump (& they at least used hex), it's only the most crude (i.e. homemade) systems that bother. Bootstrapping, a horrible exercise of toggling real honest-to-god switches on the front panel to get that first program into place is fortunately something you only read about in books. And should you consider bringing up a computer system the hard way -- writing your own code and so on, you'll want another computer to do the work. Twenty years ago, genius types tinkering with million dollar machines would have traded dog, wife, parents and left hand for a 99/4A to do just that. The difficulty for them would have been slowing the 4A down.

Interestingly, getting your own FORTH or another TIL (threaded interpretive language) going, "booting" it's called, is similar. FORTH's first move is to create an assembled dictionary and it's executive routines, all aimed towards starting up an on-line interpreter. Once this minimum system is achieved, the rest of the TIL is written in its own language. There's a trade-off here: if you go for the bare essential dictionary of assembled primitives and write the bulk with the interpreter, your system will slow down. That's because it's executing so many secondary words that in turn call the primitives. But what you lose in speed you gain in memory -- a smaller kernel.

TI FORTH's code breaks into three main sections. The first section consists of the assembled dictionary (about 4K). By page 19 of the compiled listing (ASHRC2), we're out of the AL woods. The listing from here on is largely made of secondary code words.

Breaking it down, of the 7280 bytes of dictionary (>1C72), only the first 1634 bytes (>662) is AL! In other words, if you're willing to trade off size for speed, TI FORTH could be speeded up. A profiler would be handy! (A profiler checks how much code is used.)

The second section of FORTH, the executive routines, is in the file called DRIVER. It includes all the adjustments to the fig-FORTH to make it at home on the TI. This part of the code drives a stake through the black-hearts who obfuscated the Ed/Asm manual. If you haven't at least looked through it, do so!

The third section is called BOOT. Here's the trick: BOOT is just an AL program that reloads the dictionary and the driver routines. On the TI-FORTH disk, BOOT is saved as FORTH, which in turn loads FORTHSAVE. I have not looked closely at BOOT, but it's probably a close relative to the Ed/Asm's SAVE utility.

BOOT, in and of itself, isn't the important thing; it's AGNSRC and DRIVER that run FORTH. Further, DRIVER is the code to alter to bring FORTH up on XBASIC and MINIMEM. A MINIMEM based FORTH, I'd a positive, will burn the socks off the standard TI FORTH. Two reasons: a. the MINIMEM's got 4K RAM extra AND b. the standard utilities are in the cartridge from >6000 to >7000. The Ed/Asm environment is just as bad as XBASIC in this respect -- those utilities get stuck into the low memory expansion (>2000 to >3FFF). Not that they take up that much space, but all of Driver would fit on the MINIMEM cartridge. Just think, a two-pass disk cloner!

Howsoever! Swinging our unwieldy prose more on the mark of aids for the 99/4A programmer, albeit slowly, we'll start out with a couple easy knockovers:

Ed/Asm QRC fixes

Add this to the front of your AL quick reference card:

R0: Can't be used as an Index Reg.
(NO LABEL(R0))

If shift count operand in a shift instruction = 0, count is taken from the LSB byte of R0. If all 0's, the count is 16.

R11: Return address, used by BL & RT.
(BL: PC+2 ->R11 RT: R11 ->PC)

R12: CRU hardware base address.
(top three bits and LS bit ignored)

R13: WP pointer stored after BLWP\ used
R14: PC+2 " " " > to
R15: ST " " " / RTWP

continued -->

reference card formats, cont.

The instruction formats' bit image table, if not outright incorrect, is misleading. Here's a correct version:

X's= don't care bit by= flag for byte operations
FORMAT | 0i | 1i | 2i | 3i | 4i | 5i | 6i | 7i | 8i | 9i | Ai | Bi | Ci | Di | Ei | Fi

2 Ops | opcode | byIT | dsti | dest. | operIT | srci | source | operi

Jump/ID: | 0 | 0 | 0 | 1 | opcode | 12's | compl | displacement |

Logical: | 0 | 0 | 1 | Opcode | dest. | reg | IT | srci | source | operi

CRU | 1 | 0 | 0 | 1 | opcode | bit | count | IT | srci | source | operi

Shift | 1 | 0 | 0 | 0 | 0 | 1 | opcode | bit | count | register |

1 Gen | 1 | 0 | 0 | 0 | 0 | 0 | 1 | opcode | IT | srci | source | operi

Control: | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | opcode | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
don't use any: IDLE, RSET, CKOF, CKDN, LREX

Immedi: | 0 | 0 | 0 | 0 | 0 | 0 | 1 | opcode | 12's | register |

ORI/AI | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | Opcode | 12's | register |
(ADDED) Notice the 0 0 in the quick reference is wrong!

XOP | 1 | 0 | 0 | 1 | 0 | 1 | 1 | vector | IT | rtn | return | operi

MPY, DIV: | 0 | 0 | 1 | Opcode | dest. | reg | IT | srci | source | operi

(ADDED) XOP, MPY, DIV and so-called formats III and IV are alike. XOP and CRU multi-bit are evaluated a little differently.

The thing to realize is that the instructions' "FORMAT" is merely a device to clarify the Ed/Asm manual. A much briefer and concise description of the form and action of instructions can be found in the

TMS 9900 Microprocessor Data Manual (MP001 REV A)

This thirty-eight page Strunk and White of AL manages to get the instruction set documented in eleven pages. With good drawings yet. The better 99/4A AL books tend to simply layout this material in their typefaces.... Want one? Send to TI, POBox 225012, M/S 308, Dallas, Texas 75265.

not in my closet!

A source of frustration to a beginning AL programmer and a puzzle to those that 'got it', is the question of skeletons. Just in time for Halloween! Why on earth TI didn't synopsise the different requirements for an AL program as viewed from each cartridge's environment? To keep the peons in place, I guess. Well, for the first time ever, in one place, we'll make a stab at it.

But first! let's marshall our facts. There are eight possible environments that can execute (RUN) an AL program, but only four that can easily develop AL programs. Starting from the least effective and working up, they are:

1. TI WRITER (surprise!) option #3, loads and runs DSK1.UTIL1, whatever that is. I suspect this option is equivalent to option #5 of Ed/Asm -- RUN PROGRAM FILE. Try a game. (This piece of info is worth a balloon. Since the utility option LOADs a program file which is a memory image file, there are no REFS or DEFs to be handled. And since your run-of-the-mill game program works, that means TI WRITER's UTILTAB, and links are quite standard. I suspect, on the other hand, that there's a DSR in TI WRITER's cartridge, since EDITA1 doesn't work on the Editor/Assembler side. Interesting.)

These environments can possibly develop AL programs, but it is easier further on:

2. XBASIC. only number 2, because of its flatfooted LOADER that can't handle DEFs, REFS or compressed code.
3. BASIC with ED/ASM. Can handle any AL file on LOAD, Has CALL PEEKV & POKEV.
4. BASIC with MINIMEN. This one gets three RAM files, MINIMEN, EXPMEM1, EXPMEM2. EXPMEM1 can't be used when you've got an AL program going.

These environments can develop AL routines but have big problems loading a separately compiled application.

5. PASCAL. It's there but you could put what I know about it in a thimble. The AL is a subset, though, limited by PASCAL syntax & environs.
6. FORTH. In my view, FORTH is an AL environment, already. It does have an assembler pretty close to PASCAL's, in that a FORTH word is like a procedure.

- 6A. DEBUG, SBUG. Although these don't look too inviting, it is possible to test out hand assembled code. Like FORTH, these are already AL environments.

These are our top guys:

7. ED/ASM. Develop, load, link etc, the works.
8. MINIMEN. Top dog, not on the basis of what is it, but what it may become. Or put another way, in the hands of a great programmer, the sky is the limit. Too bad this one is tied down by our Operating System's quirks.

new cursor routines

Enough itemization. The simplest way to demonstrate the necessary elements to get an AL program to go is to list a couple. This program was passed to us by bless-his-big-heart Jim Peterson, who hopefully is managing to get a couple bucks from us tightfisted hardhearted users. (Better to get blood from a stone, Jim.) It's a neat gimmick which turns your cursor into whatever shape you like. The Columbus, GA group in the REM statement is Columbus 99/4A UG, c/o Dr. R.G. Albright, 3434 Flint Drive, Columbus, GA 31907 -- Ron can write! and puts together a top notch newsletter.)

```
1 !TEXAS CURSOR from GOTO Newsletter of Columbus, GA
Users Group; unattributed
2 CALL CLEAR :: CALL INIT
3 CALL LOAD(8196,63,248)
4 CALL LOAD(16376,67,85,82,83,79,82,48,8)
5 CALL LOAD(12288,48,48,63,255,254,124,24,12)
6 CALL LOAD(12296,2,0,3,240,2,1,48,0,2,2,0,8,4,32,
32,36,4,91)
7 CALL LINK("CURSOR")
8 INPUT X$ :: GOTO 8
```

Line 3 sets up the REF table pointer in low memory expansion at >2004 with >3F, >F8. Then at >3FF8 (16376) it sets up a program named CURSOR that starts at >3008. Next in lines 5 and 6, beginning at >3000 a DATA entry of 4 words is set up (change the next 8 numbers to change the cursor). Finally, the AL is LOADED into memory and LINKed. The ultimately curious might check to see if, indeed, it's the same program as the next one.

This version comes from HOCUS (put out by the Milwaukee Area 99/4 UG, 2007 N 71st St., Wauwatosa, WI 83213), who, in turn, credit Tony Johnson of the Houston Users Group. The DATA changes the cursor to an underscore character.

```
DEF CURSOR
VMBW EQU >2024 XBASIC equate (XB can't REF)
NEWDEF DATA 0,0,0,>7E00 DATA forces whole words
CURSOR LI R0,>3F0 † 1008 in decimal
```

† The screen image (one byte per char. on screen) † goes from VDP location >0 to 2FF (0 - 767, dec) † The Pattern table base is also at location 0, but † since each pattern takes 8 bytes and there's 256, † only >300/8=>60 or 96 patterns are lost. Anyway, † BASIC adds >60 to the CHR\$(num) to find the pattern † and since the cursor is >1E (30, dec) everything † works out thus: in HEX 1E 60 + 8 † . 3F0 (FORTHed) † in decimal (30 + 96)†8 = 1008

```
LI R1,NEWDEF \
LI R2,8 > THESE THREE SET UP FOR
BLWP 3VMBW / VMBW UTILITY
RT
END
```

† This version is for BASICs; ED/ASM won't work.

```
† For ED/ASM environment
DEF CURSOR
REF VMBW
NEWDEF DATA 0,0,0,>7E00 DATA forces whole words
CURSOR LI R0,>8F0 † 2288 in decimal
```

† The Pattern table base is at >800.
† works out thus: in HEX 1E 8 † 800 + . 8F0
† in decimal 30†8+2048 = 2288

```
LI R1,NEWDEF
LI R2,8
BLWP 3VMBW
RT
END
```

† For MINIMEN's LINE-BY-LINE assembler
† ED/ASM's version will LOAD & RUN ok, but
† you can't write AL that way with L-by-L.

```
AORG >7D00
MW EQU >6028
ND DATA 0,0,0,>7E00 DATA forces whole words
CR LI R0,>8F0 † 2288 in decimal
LI R1,ND
LI R2,8
BLWP 3MW
FF B †R11 RT may not be implemented
END
```

† For MINIMEN you have to hand-LOAD the DEF table.
† There's one pointer to its start, as well as one † for the next available byte after your program.
† Together, these two are used to figure how memory † is left over: LFAM - FFAM (Last Free Add. in Mem.
† minus First Free Address in Memory)
† LFAM is at >701C; it shows the start of DEF table † (a list of LOADED programs)
† FFAM is at >701E

† hand-LOAD (using AORG, TEXT and DATA directives † like this: AORG >701E we'll do FFAM 1st.
† DATA FF+2 LABEL at B †R11
† AORG >701C show current LFAM
† subtract 8 bytes from what's displayed and then † DATA (new HEX value)
† AORG (new HEX value)
† TEXT 'CURSOR' puts the pgm name in
† DATA CR puts the pgm start in
† (all this assumes you didn't exit the Line-by- † Line assembler until you're done -- and I'm not † certain if you can recover the values of FF and CR † if you skip this part-- it's probably in the VDP & † disappears when you quit.
† All versions use the 0PLMS at >83E0. I've had † problems with that when
† 1. a syntax error is created
† & 2. the routine was executing off the USER † INTERRUPT at >83C4

† Recommendation: create your own workspace.
I've got to caution readers that the second two
-- continued (sorry) on page 2

NIBBLES THEN BYTES

Well I'm back again with another assortment of useful tidbits. We start this month with the following scenario: You're the owner of a TI-99/4A with a cassette recorder and have also purchased a sore elaborate and equally expensive computer such as a IBM PC or one of it's clones. You're thinking to yourself that there ought to be some way to connect the the two machines together in order to use the PC's drives with the TI. Well, your prayers have been answered! In an excellent article in the Oct. COMPUTER SHOPPER, Michael Covington tells us just how to do it. What you must do is connect the two computers through their RS232 serial ports. You then transmit the program data to the PC disk to store it. The article contains a 172 line program named TI-LINK to accomplish this data transfer. TI-LINK also links to the IBM printer. Although TI-LINK is not very user friendly, it really gets the job done. The disadvantage of this system is the rather slow loading time to disk. It takes just as long to record to tape, evidently the TI outputs the tokenized programs at a fixed rate. The return trip from disk is much faster. A sample program which took 32 seconds to record on tape still took 31.4 to disk but blazed back on-line in 4.2 seconds! This program should also work with the TI Professional as well as other MS-DOS systems with no modification and should be easily adapted to other computers.

After mentioning the COMPUTER SHOPPER several times I realized that some of you may have never seen this publication. The COMPUTER SHOPPER is a rather large magazine/newspaper in which you'll find articles and major advertising and a large classified ads section. The ads run from computers to computer chips. You will find some TI software listed that you never heard of! (COMPUTER SHOPPER PO BOX F TITUSVILLE, FL 32781-9990 copy: \$1.95, \$15 yr) If you are really into your TI, you will enjoy reading Randy Holcomb's articles (and others). (CS is the only major magazine to publish hacker level information

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about the TI. Eat your heart out, Gary Kaplan! -ed)

MY KIND OF TOWN, CHICAGO IS.... Wait a minute, what's all the singing about? Well, if you happen to be in the "Windy City" on Saturday, November 10th, you would sing too! That's the date set for The 2nd TI-99/4A Computer Faire. The Faire will be held in the College Center Building at Triton College, in River Grove, IL.. The college is about 3 miles from the 1st Ave exit of I-290.

The Faire which attracted some 1000 users last year, will run from 10am to 4pm(maybe longer). The theme for this year's Faire is "TI-99/4A, STILL GOIN' STRONG". Attractions this year will include vendor displays, door prizes for software, arcade game contests with cash prizes, hourly presentations on TI-WRITER, FORTH and MULTIPLAN, plus special guest speaker Don Bynum. The topic of Don's speech will be "LIFE AFTER DEATH FOR THE 99/4A". Admission to the Faire is FREE to all card carrying members of recognized TI user groups and \$2.00 for all others. The Faire is sponsored by the Chicago TI User Group. For more information, write them at P.O. BOX 578341, Chicago, IL., 60657.

For those of you who own add-ons you'll be happy to hear that a disk revision of TI's TE-III has been released into public domain. The features of this revision include 40 or 80 column, 24K download buffer (about 100 disk sectors), 20K upload buffer, auto-dial, two pages of documentation (D/V80 file), will load TI-WRITER true lower case, online help menu, will support ASM3A communications, source code is provided, upload and download in D/V80 files, supports 11 FCTN and 8 CTRL keys, and supports 1200 baud operation. If you're interested in this disk contact me for details on how to obtain it.

Enough of this month's ramblings, my eyes are bleary and my fingers are tired! Remember, if you hear some informative tidbit let me know and I can pass it on!

>Dave Hendricks

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| here, pal |
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Unfortunately, The Real Programmer's Life is absolute proof of Murphy's Law.