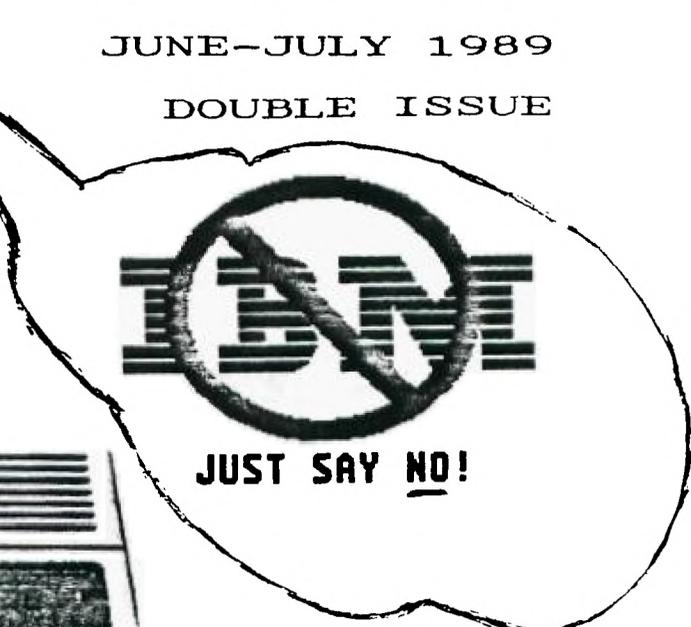
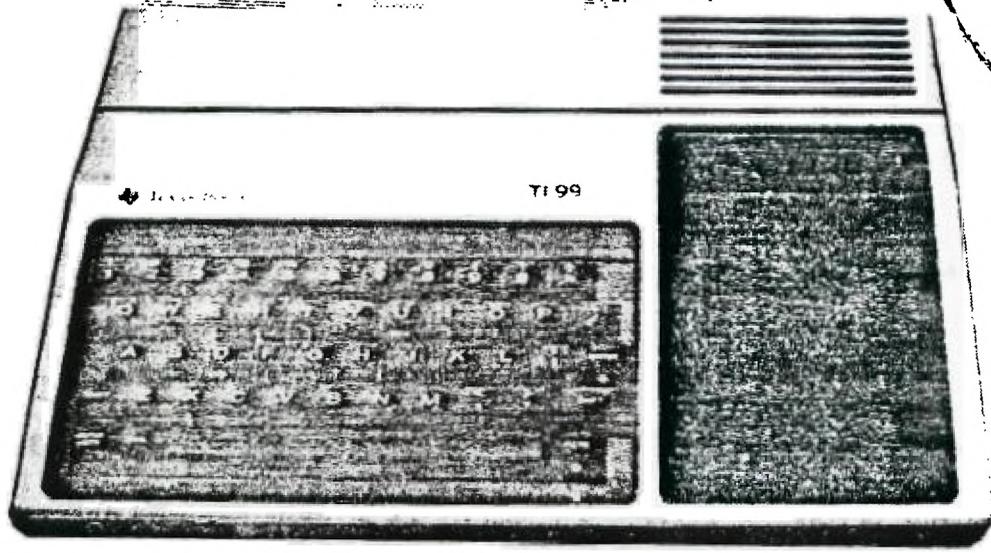


Texas Instruments
USERS GROUP
TORONTO

FOR THE TI-99/4A COMPUTER

JUNE-JULY 1989

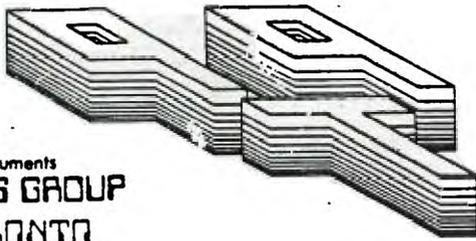
DOUBLE ISSUE



From:

9T9 Users' Group
109-2356 Gerrard St.E.
Toronto, Ont., M4E-2E2
Canada

To:



Texas Instruments
USERS GROUP
 TORONTO

FOR THE TI-99/4A COMPUTER

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MEMBERSHIP FEES

FULL MEMBERSHIP \$30.00 / year
 NEWSLETTER SUBSCRIPTION \$20.00 / year
 DISK-OF-THE-MONTH SUBSCRIPTION \$30.00 / year additional



All memberships are household memberships. A newsletter subscription is only for those who do not wish to attend meetings, but wish to receive our newsletter and have access to our library. You are welcome to visit one of our general meetings before joining the group. If you wish more information contact either our president, in writing, at the club address on the front cover or phone him or our membership director.

The meetings are usually held on the last Thursday of each month, unless stated otherwise. Consult this issue of Newsletter 979 for the date and time of the next meeting. Meetings are held at meeting room of Canada Remote Systems, 1331 Crestlawn Dr., Unit D, Mississauga, (Eglinton Ave./Dixie Road-Area), starting at 7:30 PM and ending at 10:30 PM. No meetings are held in the months of July and August. December's meeting usually takes place the second week of the month.

COMMERCIAL ADVERTISING

Any business wishing to reach our membership may advertise in our newsletter. The rates are as follows. (height by width):

FULL PAGE	(10" x 7")	\$50.00
HALF PAGE	(5" x 7")	\$25.00
QUARTER PAGE	(2 1/2" x 7")	\$15.00

Please have your ads camera ready and paid for in advance. For more information contact the editor.

Don't forget, that any member wishing to place ads, may do so free of charge as long as they are not involved in a commercial enterprise.

NEWSLETTER ARTICLES

Newsletter 979 is published ten times a year by the 979 users group. Members are encouraged to contribute to the newsletter in the form of articles, mini programs, helpful tips, hardware modifications, jokes, cartoons and questions. Any article may be submitted in any form by mail or modem. We welcome the reprinting of any article appearing in this newsletter providing credit is given to the author and 979. If more information is required, call the editor. The name 979, Nine-T-Nine, Newsletter 979, Nine-T-Nine Users Group, and 9-T-9 Users Group are Copyright,(c), 1986, 1987, 1988, 1989 by the 979 Users Group, all rights reserved.

DISCLAIMER

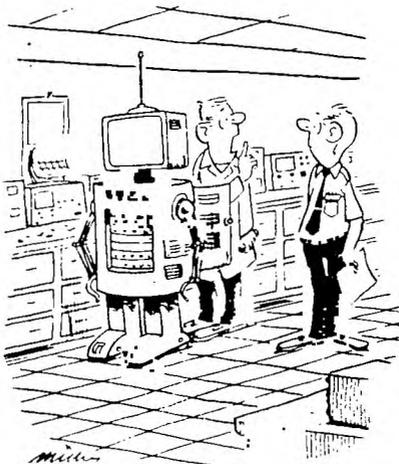
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CLUB BBS

The 979 Users Group sponsors the TI Tower BBS, (416)921-2731, 300/1200/2400 BPS, 24 Hrs. Sysop: Gary Bowser.

MAILING ADDRESS

979 Users' Group
 109-2356 Gerrard St.E.
 Toronto, Ont., M4E-2E2
 Canada



"Shh. Bob, not in front of you-know-who!"



By Steve Mickelson, President 9T9 Users Group
Compuserve 76545,1255; Delphi SMICKELSON; GENie S.Mickelson

Murphy's Law Revisited

I am not sure how or why, but Gary gave me a call to tell me that Steve Findlay's latest **Hard Copy** had been uploaded to the BBS. However, when I logged on the file was nowhere to be found????!!! Talk about strange occurrences. I am still not sure where that file went.

Using my telecommunications program, I tried to 'capture' a Library listing from the BBS. As both Fast Term Geneve and Mass 80 sent the CTRL S and CTRL Q, control codes while 'writing', (saving), the filled buffer to disk, the BBS should stop transmitting data and resume when it gets the appropriate signal from the user's telecommunications code. However, the BBS continued to transmit and the listing, I fear is incomplete. The BBS does pause when viewing a file in the File Transfer area. I'll try to get a listing soon.

Thanks to Delphi and GENie, I was able to edit articles from Sudbury and ROM Users newsletters. As most of our members are unlikely to be members of these other groups, I hope you find these informative.

Forth

Both c99 and TI Forth have been accepted in the TI community. The c99 is still undergoing changes, writers such as Ken Gillian, (Music Man and Patsy Cline Fame), and Clint Pulley are writing software for the 9640, Forth software has worked only on the 4A, until recently.

McCann Software, a long-time supporter of our community, with all its major software written in Forth, has extended support to the 9640 by offering Forth for the 9640. For more info. you can write McCann Software at P.O. Box 34160, Omaha, NE., 68134, U.S.A.

This issue of the newsletter has several articles and Forth references. This language was originally written to aim the astronomical telescope at Kitt Peak, Arizona. I had a phone call from a TI user who wanted to use his computer to control his telescope. I referred him to the Forth Interest Group, (FIG), and found that he decided to abandon the project as the cost and technical knowledge required to interface stepper motors to the 4A was beyond their club's resources.

TAPE came through!

I am happy to say that TAPE has come through and I have received my Mechatronic EPROMMER and copy of TI99/4A Intern. I hope to have a review soon. Bob Coffey in New York has been using this device for sometime, and gave me some good advice through EMAIL on Delphi. Barry Boone has used the Epromer to 'burn' his new update software for the Mechatronic 80 col: card, which he now has for sale.

Speaking of Barry, he has come out with a utility for the 80-column cards and Geneve which will allow Imagewise Files to be displayed. The software has not been beta tested and only displays 32 shades of grey. It will eventually handle all 64 shades of grey and convert these files to Myart format, whereby the user can do a 'Ted Turner' and colorize the file, if he so desires. I am awaiting a copy of this utility for testing and evaluation, (and hopefully a demo at a future meeting). I don't know whether this software will be released commercially or as shareware.

Fairware Contribution:

Speaking of donations, our club has been using the MUG, (Miami User Group), loader utility on our disk's of the month. Our 9T9 executive recognizing that we have not had a featured software the last couple of months, has saw fit to ask for a Fairware contribution for this gem. We thought \$5.00 would be a reasonable amount for a program most of us use on a regular basis. See Cecil Chin for your contribution.

Summer break

The 9T9 Users Group will have its annual summer hiatus, for the months of July and August. There will be no meetings for those two months. Since Randy recently acquired a Digit 80-column card and Gary a P-GRAM card, expect to see some interesting demonstrations in the next few month's. Gary said that he would be able to buy and build the P-GRAM, for around \$200.00 Canadian, if enough interested parties pool together for a minimum of ten orders. Gary said that the card would have the clock option. Gary will also upgrade your P-Box to two half height DS/DD drives for \$200.00, including cables and labour. If you have a TI disk controller, you will only be able to use the drives as DS/SD, which will still give you twice the storage capacity--no more flippies. For more info contact Gary Bowser, at the number inside the cover of the newsletter.

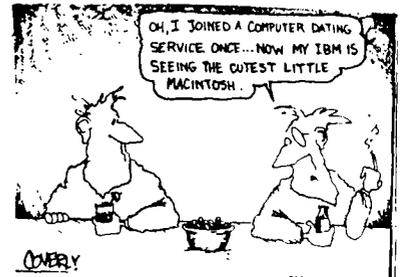
Randy Rossetto still has a number of memory chips for sale, to expand your Horizon RAM disks. You may find Randy's number on the same page as Gary's.

I hope everyone has safe and enjoyable summer! See you in September.

Summer sale:

The following software is for sale, includes manual, cartridge and disk(s):

TI Writer.....	\$30.00	} call Steve 657-1494
Microsoft Multiplan.....	\$30.00	
TI Logo.....	\$15.00	
Editor Assembler.....	\$20.00	



CLUB NEWS

-By Randy Rossetto

LIMA NEWS, MAY 20, 1989.

Gary Bowser and I attended the Second Annual Multi User Group Conference sponsored by THE LIMA TI 99/4A USER GROUP, held at the Lima campus of the Ohio State University on Saturday, May 20, 1989.

I had the opportunity to meet Charles Good and Dave Szippel, the newsletter editor and president, respectively, of the Lima User Group.

The vendors at this little (big) show were impressive and were moving a fair number of hardware/software items. They were, L. L. Conner Enterprises (Larry Conner), Ramcharge Computers (Ron Markus), Asgard Software (Chris Bobbitt), Great Lakes Software, Bud Mills Services, Genial Computerware (Barry Traver), Compuserve (Jim Horn), Tigercub Software (Jim Peterson), and P A Software (Paul Scheidemantle).

Among the user groups present were; Cin Day UG, St. Louis 99ers, C.O.N.N.I., Great Lakes UG, Cleveland Area UG, Oh Mi TI UG, The Fort's UG, West Penn 99ers, N.W. Ohio 99'ers UG and of course 9T9 UG. Notably absent were the Ottawa UG. Each group represented themselves with software libraries, newsletters and commercial software as representatives of various vendors.

The Lima group had set up two rooms for presentations throughout the day as well as a User Group officers meeting at noon which I attended and found out that we are not alone in regard to problems with meeting places, volunteers, raising money, increasing membership and keeping the interest lively and active.

The only other presentation that I attended was for the Dijit AVPC card, the 80 column card for the TI-99/4A. I was so interested that I bought one and will comment on it once I get it up and running. An interesting bit of software from the McGovern's of Funnelweb fame was an 80 column TI Writer that enabled one to load two (2) separate DV80 files into memory and with the screen split vertically page through both files on command. Note that this was possible ONLY with the AVPC card with 192k of VDP ram (the card comes with 128k or 192k, \$220 versus \$250 US). Also note that the Geneve has only 128k of VDP ram, so eat your hearts out boys!! because this will not work without the extra 64k of ram. But do not worry because the Genevers are already talking up stacking up the extra 64K and running with the rest of us!

Charlie Good had a PA system set up and made announcements all day reminding everyone of the presentations and giving away door prizes to all who had registered for this event.

The notable NO SHOWS were "PRESS" and the "Zenoboard" and "DM2000" from Ottawa.

Yes it was a fine event, almost like one BIG computer club meeting, which is why I think it is such a successful event. An event which I will try to get to next year as well.

NEWSLETTER EXCHANGES PLEASE NOTE

I have heard from some people that our decision to send out exchange newsletters was not a good one due to the fact that there may be dated material within our newsletter.

To eliminate any misconception of our intentions of doing our exchanges in this way I give the following reasons and some solutions in avoiding these delays.

- 1- Because I am lazy and tired of licking ALL those stamps myself.
- 2- It does save us on postage especially to the US of A. (even with the cost of additional envelopes).
- 3- I don't have to fold and seal all those newsletters every month.

NOW PLEASE NOTE that the User Groups that have subscribed to the 9T9 USER GROUP DISK OF THE MONTH (DOM) DO get their newsletter every month, just because the material on these diskettes is much more volatile than the print on our pages. Therefore if you think our printed word is leaving you in the dust subscribe to our DOM and you will get both the NEWSLETTER 9T9 and the DOM every month, on time!!

Regards, Randy Rossetto.

JUST SOME MORE PEOPLE WITH TI EQUIPMENT FOR SALE

GARY CORUPE - 857-1759
CONSOLE, PEBOX, RS232, 32K, DISK CONTROLLER DRIVE
2XB, TI-WRITER, LOGO, ADVENTURE, TUNNELS OF DOOM
LOTS OF GAME MODULES

ROBERT CAMPBELL - 846-7327
CONSOLE, CASSETTE RECORDER, JOYSTICK ADAPTOR
NUMBER MAGIC, BUDGET MANAGER MODULES
99ER MAG VOL1 TO END

RICK WOJEWODA - 236-3143 (leave message)
CONSOLE, CASSETTE RECORDER, MUNCH MAN



"When I said that we are dealing with 'limited memory', I was not talking about the computer. I was talking about you!"

Downloaded from Genie:

(Editor's note: 'Great minds think alike!' -Forget the 'Fools never...' part. I like the name of this column, quite similar to a 9T9 bi-line; talk about a parallel universe! -S.M.)

TI BITS * Number 26

By Jim Swedlow

From THE R O M NEWSLETTER
USERS GROUP OF ORANGE COUNTY
17301 SANTA ISABEL STREET
FOUNTAIN VALLEY, CA 92708

EDITOR ASSEMBLER (EA) MODULE

Do you own the EA module? Probably not. Most of us have XB but not EA. With the price down to \$10, it is a good buy. Many fine programs run with the EA module including FUNNELWEB, ARCHIVER and DM1000. All of these programs will run under XB but they load much faster with EA.

Next time you see EA on sale, pick up a copy. Take the book and put it on a shelf somewhere. Put the disks in your master box. You won't need either unless you start programming in assembly).

You will wonder how you got along without EA.

LOADING UTIL1 FILES IN EA

When you insert the EA module and "PRESS ANY KEY", you have two choices:

- 1 FOR TI BASIC
- 2 FOR EDITOR ASSEMBLER

Press <2> and you get FIVE choices. Only two are of use for loading programs:

3 Load and Run
5 Run Program File

"Load and Run" is for object code (Display Fixed 80) files while "Run Program File" is for EA Program files.

If you press 5, EA will ask you for a file name. If you just press <ENTER> without entering anything, EA will look for and try and load a file named <UTIL1> in Drive 1 (close to the XB autoloader of LOAD but you have to press two more keys). That's why FUNNELWEB has a UTIL1 and a LOAD program - one for XB and one for EA.

YOUR DISK WON'T WORK

Every now and then you get errors when you try to read from a disk. This can mean any of many things. Your drive might be dirty. You might have the wrong disk. The disk could be blown. The file could be lost. The list of horrors is long.

Here is a simple solution that you might try first.

Remove the disk from the drive. Holding it by a corner, put your fingers in the center hole and turn the disk in its sleeve a few turns. Then move the media (the disk) around a little. Touch only the corner and the center.

Sometimes this will restore your disk.

BAD DISKS

I purchased a box of disks at a discount house (low prices and no service!). One of the disks had bad sectors when I formatted it. I wondered what would happen, so I sent the disk back to the manufacturer asking for a replacement.

I was out about \$1 (between postage and mailer) but it was worth the try. Over a month later another disk came in the mail along with a form letter explaining about quality control and such.

The only problem was that the new disk also had bad sectors. That one went into the trash and I won't buy that brand again! Who was it? I really shouldn't say, but they are known for their film and there aren't any K's in their name.

FUNNELWEB VERSION 4.13

The McGoverns released version 4.13 in December, 1988. The major changes are a fix to DM1000, a mod in QD, 80 column support and some minor bug fixes in UTIL1 and LOAD.

DM1000 (through early releases of Version 4.12) would not work on a one drive system and lost the copy/delete sector count when moving from one screen of files to another. These have been fixed.

Eighty column support works with the DIJIT and similar cards. A separate fix is available that includes an 80 column ROS (RAMdisk Operating System).

Quick Directory (QD) and Show Directory now support CTRL E and CTRL X for moving between displayed pages of files. The earlier CTRL/SHIFT paging system was removed due to compatibility problems with the Geneve.

EIGHTY COLUMN CARDS

In his note on Version 4.13, Tony McGovern said:

"The main new TI event around here has been the arrival of an evaluation model of the DIGIT AVPC card a few weeks ago. I'm really impressed with this item and I suspect most of my program writing in future will be directed towards exploiting this device. I've already done a preliminary 80 column version of the FWB Editor (it should run on the Geneve also)."

Enjoy.

A SAD DAY

Written by Jim Swedlow of the ROM User's Group.

!!!!!!!!!!!!!!!!!!!!
OCT 28, 1983.
!!!!!!!!!!!!!!!!!!!!



Who would have believed it? Five years later and we are still getting better software every year. Consider this very incomplete list:

1988

1983

FUNNELWEB
TELCO
DISK MANAGER 1000
TI ARTIST
TI BASE & PRBASE

JIFFY FLIER, CLASS
& CERTIFICATE 99
ARCHIVER
PLUS!

TI WRITER
TE 11
DISK MANAGER 11
VIDEO GRAPHICS
PERSONAL RECORD
KEEFING
NOTHING

NOTHING
NOTHING

Another indicator is TI Bulletin Board Systems (BBS). I recently saw a list of 165 BBS that support the TI. Not bad!!!.

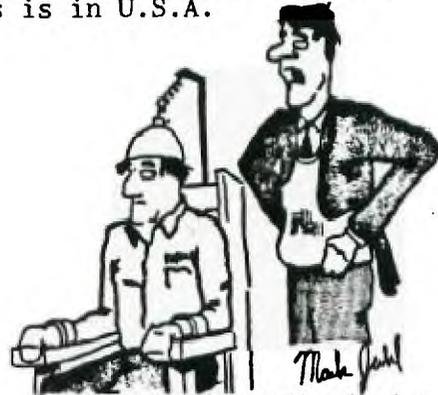
There are problems. Membership in User Groups is dropping. Some groups are in trouble. New members are harder to find. The migration from TI to other systems continues. Some who have given us first rate material are heard from less often.

We are, however, stronger today than anyone expected. The sixth anniversary should see us still a hale and hardy orphanage.

USER GROUP SUPPORT IS STRONG.

I wondered how the 4A stood up to other computers so I spent an hour counting the User Groups in the September issue of Computer Shopper. There is a bias in these numbers. Computer Shopper has FOG maintain its User Group Listing and FOG has every CP/M group that ever was. Others are only listed if they send in a request. With that, here are the numbers : This is in U.S.A.

COMPUTER	UG'S
CP/M	130
DOS	95
!!!!TI 99/4A	79!!!!
COMMODORE	57
APPLE	34
ATARI	31
AMIGA	30
TANDY/TRS/CoCo	19
MACINTOSH	11
TIMEX SINCLAIR	10
PC Jr	8
KAYPRO	5
ADAM	5



"We're having a little problem, but they tell me you're good with electronic stuff. . .could you give us a hand?"

I only included computers with five or more user groups and skipped software based operations.

OUR 4A STACKS UP PRETTY WELL I THINK;?

Sudbury News

Gleaned from recent issues of SUDBURY 99'ERS NEWSLETTER(by Jim McLaren):

PROGRAM WANTED LIST

I am looking for files or templates for Multiplan. I already have a few like Budget and Checkbook but would like others. Also I am looking for Tunnels of Doom adventures. There have been a few new ones created with the TOD editor. Something else I am interested in is PRBASE created screens. PRBASE is a very popular database I am sure that there is a lot of interesting data bases created with PRBASE.

JIM MCLAREN, SITE 1 BOX 7
WHITEFISH ONTARIO, POM-3E0, CANADA
(705)866-2668

RAVE MX01

Here is some interesting news about the Rave card MX01. I was talking to John McDevitt over the phone. He was kind enough to return my phone call and to point out these facts about the Rave memory card. If you add a second card to the box it actually acts as one card. This means that you get 544k of memory. You already have allocated 32k for replacement of the 32k card. So that memory is used on the first card. If you require a second card the U17 chip is not needed because you already have the ROS loaded on the first card. (U17 chip). That's a savings of \$20.00. Even though you have 2 Rave memory cards in your box, it acts as one. When I configure my card I set it up for 3 drives and configure the card this way, 1440, 360, 119 sectors but with 2 cards it will say 1440, 1440, 1440, 95. So even though you have 2 cards it is used as one unit.

By the time you read this version 08 of the operating system will have been released. There are improvements in the program to eliminate the loading of the Macro program. You reload the Macro program when you lose your operating system or when it hangs up. The problem I had was with the widget. As soon as you switched to Extended basic you cause conflict between the Rave card and extended basic. What I have done to avoid the problem is to shut the computer off then select XB then turn the computer back on. John mentions that you could go back to basic and turn off the cartridge space with a CALL CF. Then when you wanted the cartridge space back on just do a CALL CO.

John has also added a small program that will load the Myarc XB II from the ramdisk via the menu. It does cut down on loading time and saves going back to basic to do a CALL 128KOS.

John tells me that they are working on a print spooler.

John mentioned that he has only sold 50 MX01 memory cards. Attending different computer shows and user group meetings John said that most were unaware of the features of the Rave card. The add will also be redone. Most people were saying there was a lot of technical info on the card but no real general info.

RAVE 99/105 KEYBOARD

This is part of a letter I received from John McDevitt.

"To keep you up to date with what's happening, we recently attempted to make another purchase of our very successful 105 keyboard from a distributor on the west coast of the U.S. They informed us that they had completely sold all of the keyboards they had (over 2000) to a customer overseas. After many attempts to try and buy whatever we could, we finally realized that we were not going to get any more Model 105 Keyboards.

We have shipped about 50 keyboards to both our distributors, TENEX and TRITON, and have about 10 here at RAVE 99 CO. If you know of any one who may be considering buying one of these keyboards, please let them know of this situation.

When I talked to John he mentioned that they have found a different distributor of keyboards. The price is a little more expensive and for that reason John is carefully deciding what to do.

MULTIPLAN

When I was inputting data into Multiplan I had several entries for one category. I used the calculator to add them all up before I entered the data. Then I thought why not let Multiplan do the work for me. Select "VALUE" and then I entered 5.67+4.32+9.09 then enter. Multiplan gave me the total plus when you highlight that area again your formula is still there.(5.67+4.32+9.09).

At our monthly meeting I mentioned that you could add figures up into one cell. No one in the group was aware of that. So we tried all the math functions.(*-+/.). We even tried the following and it worked (100+50)-(50-25).

So if you are entering data and you have more than 1 entry in a particular cell then let Multiplan do the work for you. Just remember to choose "VALUE".

TELCO HINT

If you ever use Telco when you are on Compuserve and Delphi and you are in conference with other Tiers. What I always had trouble with was sending out a message. You would start typing something and before you could finish your sentence someone else would send a message a scroll over yours. So you couldn't see what you just typed and it was very confusing. Well Telco solved that problem. FCTN . (ALT . for Rave 105 keyboard) will put a dividing line at the bottom of the screen about 1/4 of the screen. Within this divider line you can type text and actually see what you have typed before sending it out in conference.

I found another use for "FCTN ." I use it to log on to Compuserve and Delphi. You can see what you type before you send it. This means that when you type your password you actually see it before you send it. I don't know about you but I always make typing errors especially if you cannot see it.

Another use of "FCTN ." is when I am on Compuserve. On Compuserve when I want to download a file in a certain data library I usually do a Directory of the Library to see the particular file I want to download. Then I usually browse the file before downloading. (BRO FWB412.ARC) Now here is where FCTN . comes in handy. Press FCTN . if you have not done so already. After you see the Directory and see the file you want you press B to get you back to the menu screen. There is a time lapse before it gets back to the menu. What I do when I am waiting is to type "BRO FWB412.ARC" you will see that entered on the bottom of the screen. Now when the menu gives you a prompt just press enter and it will send "BRO FWB412.ARC". It saves you a few seconds. If you use Compuserve and Delphi as much as I do it will save you a bit of money too.

COMPUSERVE/DELPHI

If you are interested I have uploaded the November issue of the newsletter to Compuserve. They are packed and compressed so at 1200 baud it should only take a few minutes to download. It is in data Library #1 in TI forum. I believe the file is called NOV88.ARC.

I have also uploaded November issue to Delphi. Look for the subfile called "CANADA" under databases. This is where my newsletter is located. In the November issue I used Arc 3.02 to compress the file.

If you want to contact me on Delphi my username is "JDMCLAREN".
If you want to contact me on Compuserve my ID # is "73776,2324".

MYARC HFDC

Myarc has had their Hard and Floppy Disk controller out for awhile now. Some favourable reviews on it already. The only negative thing I heard was that it will not work with ARC 3.02.

John Majkot (club president) was saying that he may be interested in purchasing one. With the controller you can purchase a Hard Drive. Apparently John has a chance to pick up a 5 meg Hard Disk from a friend for a good price. So rather than going to a Horizon or a Rave memory card John figures the price will be the same. With memory chips on the rise the Hard Disk looks better and better. Unlike the Horizon and Rave where you can lose the data from time to time there isn't that problem with the Hard Disk. John just may venture into buying one and I,ll be in there like a dirty shirt to find out the pros and cons.

By the way Phil Townsend is thinking of doing the same thing.
It is really something to think about. The Myarc HFDC has really opened up a new avenue for potential Hard Disk users.

Apparently Bob Boone has the new HFDC from Myarc for sale.
As most of you know Bob has moved to North Bay. His new address is listed below.

BOB BOONE, 8 TALON ST.
NORTH BAY ONTARIO, P1A-1N5, CANADA
(705) 476 9391

MISC NEWS

This is a rumour I heard awhile ago. Apparently T.A.P.E. the Mechatronics dealer in California is suppose to be dropping Mechatronics line of hardware. The 80 column card was suppose to be selling for less than a \$100. to get rid of it. From what I hear they were not present at the Chicago faire.

Bob Boone had mentioned to me about a 80 column card by DIGIT AVPC it installs in the PE box. Bob said that there were some minor modifications to install the card. I believe Bob quoted a price of well over \$300. for the card. I must find out more about it.

TIBASE the very popular database is supposed to be coming out with Version 2.0 in the near future. I have never seen a program covered as much as TIBASE. I received 4 newsletters in one day and every one of them had a tutorial on TIBASE. The majority of newsletters I receive have at least mentioned TIBASE as well as some real good tutorials.

I am very happy to see a lot more of the newsletters I receive are including the last issue they received.

TIBASE--REPLACE

When I use to send out the newsletters to the individual groups I use to keep track of the newsletter I sent as well as the date it was sent. This meant about half an hour's work just to enter the individual data for all the exchanges. This was done with PRBASE V2.0.

With TI-BASE V2.0 this half hour manual and tedious labour can now be done in minutes. By using the "REPLACE" command I can accomplish the same thing I did with PRBASE.

My database was set up with the usual "USERGROUP ADDRESS CITY etc.etc....". Here are the three key fields I set up "STATUS" under status I put EX if I traded newsletter with that group. The last two fields I left blank as I would be using the "REPLACE" command to fill the necessary data in later LASTSENT and DATE ".

```
REPLACE DATE WITH "12/29/88" ; FOR STATUS = "EX" (enter)
REPLACE LASTSENT WITH "V1N3/JAN89" ; FOR STATUS = "EX" (enter)
```

Each line was entered and then I checked the database and all the records that had EX under the fieldname named "STATUS" had the LASTSENT V3N1/JAN89 and under DATE 12/29/88.

With two simple commands I saved myself a half hour of typing. The more I use this database the better I like it. When it saves you time thats an added bonus.

A couple of notes here; make sure you include the quotes around what you want to replace. Also make sure you leave a space between your data and ;(semicolon) if you do not leave a space you will get an error.

```
eg REPLACE DATE WITH "12/29/88"; FOR STATUS = "EX" (incorrect)
REPLACE DATE WITH "12/29/88" ; FOR STATUS = "EX" (correct)
```

Something else, if you just put REPLACE DATE WITH "12/29/88" it would only change the first record in the database.

DIGITIZER

Recently I visited Chris and Steve Andrews in their new home. Steve had been working with his digitalizer and had some digitalized pictures of ERNEST from the movie ERNEST GOES TO CAMP. Steve mentioned that he used TI-ARTIST to touch up the pictures.

FAIRWARE

Steve had some interesting fairware including, TI-WRITER V4.0, GRAPHIC LABELLER V3.1 and NUCLEAR 99 V2.0.

- o NUCLEAR 99by Scott Morrow
A simulated operation of a steam type CANDU nuclear reactor.
Includes four screens of information.
- o Warning screen: giving warning temperatures , flow rates etc
- o Damage screen: any damage will be reported on this screen.
- o Indication screen: giving present temperatures flow rates etc.
- o Control screen: indicating gauges for your reactor controls.

You use the arrow keys to control the coolant of the various coolants available. Documentation is included on disk as well as the following diagram in TI-ARTIST format.

MCpl S.E. MORROW, PO BOX 1763, CFPO 5056
BELLEVILLE, ONTARIO, PIA-2Z7, CANADA

FAIRWARE

- o TI-WRITER V4.0...RAG SOFTWARE..ART GREEN...NOVEMBER 1988.

This is a extensive modification to TI WRITER. It removes a lot of the annoyances of the original TI WRITER and is compatable with the original.

The documentation is extensive and describes all the changes.
Here are just some of the changes.

EDITOR

- o Improvements in speed of Move, Copy, Delete lines.
- o QQ exits editor immediately without any other prompts.
- o "CTRL ," will put you to the top of the file i.e. line #1.
- o "CTRL ." will put you to the bottom of the file i.e. line E.
- o A configure program that will customize the editor. Defines printer, screen colors, initialize tabs, wordwrap on or off, line # on or off, define character set.

FORMATTER

- o Speed of formatter improved
- o Reduction in file size which means faster loading.
- o Formatter commands can be entered in upper lower & mixed case.
- o Handling of asterisks improved.
- o Eight new format commands have been added.
- o A configure program to define your printer for the formatter.

There is also a Supercart version included.

Art Green is well known for his MACRO ASSEMBLER along with other software releases. This is fairware and they are asking \$10.00

RAG SOFTWARE, R. A. GREEN
1032 CHANTENAY DR., GLOUCESTER, ONT.
K1C 2K9, CANADA

- o GRAPHIC LABELER..V3.1..STEVEN MCWATTY

This is a label program that allows you to use CSGD graphics and to display them on the left hand side of the label. This latest version allows you to catalog the CSGD graphic filenames on the screen before loading them from disk.

One of the better label programs.

STEVEN MCWATTY, RR #1, KINBURN ONTARIO
K0A 2H0, CANADA

file is called DEC88.ARC.

I have also uploaded December issue to Delphi. Look for the subfile called "CANADA" under databases. This is where my newsletter is located.

If you want to contact me on Delphi my username is "JDMCLAREN".
If you want to contact me on Compuserve my ID # is "73776,2324".

QUESTIONS

1. What ever happened to Mark Beck? The last update I received from Mark was version #7. Apparently he was supposed to be working on a new database.
2. Fractured files ; how do they become fractured? I even have a fractured file on the ramdisk. I have a program to fix fractured files but soon after it is fixed it becomes fractured again.

DIJIT--80 COLUMN CARD

I read in the Lima Ohio newsletter that Charles Good, the president of the club, had purchased a 80 column card by Dijit. I had been interested in a 80 column card so I decided to give Charles a quick call via Ma Bell.

- o Card comes with a 80 column version of Ti-Writer with some Myart picture files included.
- o It also has spring clip wiring harness that make installation easier.
- o Card installs in the PE box and you connect your monitor directly to the 80 column card.
- o No extra cables required.

Charles said it took him about a hour to complete the installation. You have to cut one trace inside the computer to complete the installation. Charles mentioned that the documentation had pictures and was very well explained. The price was around \$220.00 American.

Apparently it will not work from Funnelweb and you have to use the TI-Writer module. The problem could soon be rectified because apparently Tony McGovern has just purchased one.

When I was in North Bay I actually had a Dijit 80 column card in my hand but Bob Boone didn't have the documentation readily available.

So next visit with Bob Boone I'll spend some time investigating this new hardware release.

FROM MELBOURNE TIMES, (T.I.M.U.G.)

WITH THANKS TO ATICC AND COLIN CARTWRIGHT.

**KALIEDAWRITER DATA
BANK NOV 1988**

My next subject may help to satisfy some curiosity and create a lot of disbelief. Once again, problem, where do I begin?. What I am currently working on is a device that I call Kaleidawriter Data-Bank, which with a bit of luck is only the beginning of the Kaleidawriter family.

It all began about 9 years ago when I designed a device which would let me draw all over my TV screen, and due to lack of finance and many other problems I made one and then decided to shelve the project. Well since then it has been dragged out from time to time and modified and shelved again. Well to cut a short story short it was a year ago when it raised its ugly head again. I say ugly because it had undergone so many changes that I had more bugs in it than a light bulb gets around it on a hot summers night.

Well once again it was seen by a few more people, Fred being one of them. I am not going to tell you all the things that it did or all the things that it would not do anymore, because part one of it didn't work, But never the less I showed the little bit that it could do and the photographic record of some of the things that it could do.

Interest bloomed again! I am now sure that I must be totally MAD!. Anyone that sits up until 2am. nearly every morning working on the damn thing must be. Well thats how I felt for quite a while but now things are starting to come together.

Let me step back one step for a moment. I am not sure how it happened but someone had the bright idea that the device would be easier to get off the ground if it was adapted to aid a computer, well being an ex-employee of TEXAS Instruments in their so called electronics department and being in possession (<hasn't that word got a lot of s/s?) of a 99/4A, It became the obvious choise, and after many sleepless nights I now know what it will do and won't do for the 4/A.

Mind you when I started this project I think that I may have used my TI maybe three for four times only. It was then that I came to the conclusion that the 99/4A needed all the help that it could get. For example, all the other current computers that are on the market had so much more back up and appeared to be better graphics and programs.

At first I figured that maybe I should be designing the DATA-BANK around a Commodore(sorry about this bad language?) but due to the fact that all my spare money was going into renovation of my home, I had to settle for a 99/4A.

NOW that I have you in suspence long enough I will get to the punch line.

What will DATA-BANK do for YOU?.

"It is an intelligent life form" that will allow you to run all those fancy programmes that you see on computers that have cost their owners a small fortune.

The reason that FRED has not given very much information out about DATA-BANK prior to this is that I was not prepared to make any claims about DATA-BANK until I had proven its bug free operation to myself. I did not want to be in a position making claims only in theory.

From my last statement you can work out for yourself why it has taken so long.

I have proven that it is better to have something that you can receive straight after you have paid out for it. There is nothing worse than waiting on a delayed order due to a bug in a system that wasn't thought out thoroughly prior to sale.

KALEIDWRITER DATA-BANK is not yet available, but it won't be much longer, hopefully early next year. Now that I have finished most of the design, proven and tested it I now have the task of trying to work out which functions to make standard and what to offer as optional extras.

For example, it will be able, if you had every option, to run IBM, AMSTRAD, COMMODORE, AMIGA, and MSX software via the 99/4A console.

It will also have a direct monitor interface for Fourty or Eighty columns . It will be able to do all the things that GRAMCRACKER did PLUS.

Most common TI software will be resident, no more waiting to Load.

It will give the TI 99/4A massive speed increase without loss of useability of any software. There will also be a wide selection of KALEIDAWRITER software for your enjoyment. Each KALEIDAWRITER Module will allow memory expansion up to 5 MEG.

When I say each Module, I am letting you know that there is a lot more on the drawing board. Don't say I did not warn you about disbelief, but there is more!. Getting harder to believe yet?. THE PRICE!!!.

At this point of time that has not been totally settled. As I said before , it depends on what is resident and what is optional, but I can say it will be much less than then buying even one of the other computers mentioned. Every so often I read back to myself what I have written so far and I sound like a Mid-Dawn TV commercial. You will have to excuse me but I tend to get a bit excited as I get closer to completion. There is more that I could tell you but I don't want to give away all my cards at this point of time. Hoping that this has whet your appertite.

Well I hope all of you 99ers out there are faithful to your machines as KALEIDAWRITER DATA-BANK will compliment any computer that I choose to configure. What I am trying to explain is that without your support in quantity DATA-BANK is not a viable proposition. Thats all about DATA-BANK for now and I will keep you up to date. COLIN CARTWRIGHT.

**ANNOUNCING THE
WORLD'S FAIRE OF TI SHOWS
TI INTERNATIONAL EXPO 89**

When: Saturday, September 16, 1989

Where: Howard Johnson Inn
5821 Richmond Highway
Alexandria, Virginia
703-329-1400

Route 1 South and I-95 on the
Capital Beltway - Exit 1S

Sponsored By:
Mid-Atlantic Ninety-Niners (MANNERS)

Show Time: 9:00 am - 5:00 pm
Exhibition floor

Pre-Show Reception: 6:00 pm Friday

Post-Show Reception: 6:00 pm Saturday

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Cost:
\$3.00 - Advance sale admission
tickets to all show events
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Two free show admissions included.
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Show Rates for Hotel:
\$55.00 + tax per night. Regular
price \$85.00. Contact hotel
directly for show rates. Mention
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West.
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Both stations have subway stops.
Ride to the station nearest the
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Major TI/Geneve hardware and
software vendor booths
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Speakers
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Celebrate the 10th anniversary of the
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Many large and small TI/Geneve vendors have been invited to attend EXPO 89, the largest Faire in the Southern United States, to sell the latest in TI hardware and software.

Noncommercial booths are available to sell user owned, noncommercial, excess or surplus TI/Geneve hardware items. This alone could pay your way to the show.

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Rockville, MD 20850

Complete packets will be available in June.

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See you at the TI International Expo 89
on September 16th !



INTRO. 4TH (ADVANTAGES OF FORTH)

An article by Giles Spruill on an overview of the FORTH programming language.

Preface:

The purpose of this file is not just to tell u "Forth is Great", but rather to clarify just what advantages Forth has over other languages, and to communicate th "feel" of Forth in relation to programming tasks.

I hope it does that job well enough to give u a sense of th possibilities, so that, when u pursue ur desire to see for urself what u can accomplish w/ it, u will be expecting to create elegance. And if u are intent, u will be gratified.

Please read this w/o bias, and if u doubt any statements made, th author is prepared to provide proof or acceptable evidence, or upload a corrected version of this file.

If, on th other hand, u are not willing to find out that there is a programming language considerably more capable & elegant than others u r familiar with, then better to not even give it a single quick scan! (grin)

- Giles

Abreviation Definitions

#, Number
&, And
cmd, Command
hdw, Hardware
r, Are
sfw, software
th, The

u, You
u're, You're
ur, Your
u've, You've
w/, With
w/o, Without
4th, Forth



"HE'S THE ONLY PASSENGER WHO WAS QUALIFIED!
HE'S HAD A HUNDRED HOURS ON A FLIGHT-SIMULATOR!"

Handwritten signature

Commands That Fit

Have u ever wished:

1. A particular command went about things just a little differently?
2. A particular command behaved consistantly, rather than doing th wrong thing at just th wrong time?
3. U had a particular command, that would make things SOOooooo simple?

In Forth, th process of finding th code of a command & installing a rewritten version is trivial.

Programing Environment

Have u ever felt that programming would always be a pleasant experience, if only U never had to program around bad system sfw?

Have u ever wished:

1. U could program twice as fast? ..Five times as fast? ..TEN times as fast?! And that u could debug th program as u write it, so that (generally) when u finished writing a module u wouldn't have to come back to it?

(4th often takes on th order of a hundredth th time equivalent programs can be coded in assembler. It also happens often enough, that assembler takes MORE than 100 times as long & th program STILL won't work satisfactorily.) (grin)

2. That all th clever little subroutines u've worked out were instantly available, w/o having to look for them, or take any special pains to integrate them into th present program.
3. That calling a subroutine required nothing more than naming it?
4. That someway ur programming environment would help u keep track of where u r, & how th routine u r working on now will affect other routines, or which ones will be affected?
5. That u could change th way ur compiler behaves? Or that u could add th ability to handle special cases w/o changing anything else?

6. That u could use hi-level commands, & a magic genie would come along & convert them to efficient machine code? Or maybe just th ones needing speed, & leaving th others in th most compact form to save memory?

7. That u never had to worry about linking library routines, or that ONE copy of routines would suffice for ALL processes?

8. That u could have a multitasking, multiuser operating system w/ all th features of, say for instance, OS9, but ALSO have th immediate utility of a powerful toolbox & programming language combined?

9. That u could bring th same, familiar environment & applications from obsolete hdw. to new hdw. w/ expanded capabilities, & easily add features to take advantage of th new hdw w/o having to change much if any of what u already have? Examples:

Transfer ur system & applications to a Tandy Color Computer in order to have graphix that beat some MS-DOS & Macintosh machines at a fraction of th price.

Or to an IBM styled machine, in order to take advantage of all th hdw options available, yet having an EFFECTIVE multitasker, instead of being stuck w/ OS2.

10. That u had a powerful environment on which u could write a similar environment, (but with all ur own improvements, of course), and compile th new environment & have a system of ur very own, w/ no royalties owed to anyone? (Perhaps for ur own system to be manufactured & sold.)

11. To have th ability to implement other languages, such as BASIC, LISP, Pascal, Prolog simply & efficiently?

In Forth, u can move about freely. There is no "black box" compiler to shackle u w/ unnecessary restraints. No restriction to predefined data structures. U cannot get lost in GOTOs or jumps because 4th neither has nor needs them.

Forth assumes u know what u r doing, & often how u do it is implicit.

Personal Experience

Before I knew of the existance of Forth I knew I would have to have a language that was infinitely extensible, and selfcompiling to do the things I wanted to do. When I learned what Forth was, it was like manna from heaven.

With systems such as OS9 having some of th advantages of Forth, & excellent file handling, and w/ the availability of a powerful text editor such as TSEdit, a person has a very effective system for gathering textual data piecemeal & editing it.

But in using such a system, I have had to program around deficiencies of other languages, been so hampered in reaching the hdw. functions of the machine, that some applications that should have been done were not practical to tackle, (because of time restraints) and as a result been forced to use sfw for which we haven't the source. And so have been unable to adapt it exactly to our needs, or add enhancements and upgrades that we should have had.

So, I am FORCED to incorporate the advantages of OS9 into Forth, as I can no longer do without 4th's other, inherent advantages.

What is Forth?

Forth is an infinitely extensible metacompilable language/op system in which subroutining is inherent. (Metacompilable is a Forth term meaning it can compile new versions of itself from source)

The stack's use is direct and largely automatic, and you can directly manipulate it.

The most implementations are sparse from an applications viewpoint, (tho I know of none that do not include an editor & assembler), it is so trivial to extend it, that you can relatively easily write a LISP or BASIC interpreter, C compiler, or a Prolog extension.

Since Forth is so compact, (it compiles to only subroutine addresses), and so fast, (tho slower than Machine Lang. to do exactly the same operations, practically it's often faster, because of the better organization of the functional blocks), and it can duplicate the power of any existing language, as well as any you dream up that are MORE powerful, it's hard to deny that Forth can be the MOST powerful language there is. As a practical matter, complete control is in the programmer's hands, so the extensions will be just as bad as the programmer forces them to be! (grin)

On the other hand, you don't have to say "stupid compiler writer! Why didn't he do it THIS way?!" You can just recompile the whole system to suit yourself! Good idea to, because that way, it is your own system. to sell as an application, development system, arcade game, or whatever, with no royalties owed to anyone, and as a complete standalone system.

Different Installations

It is also easily transportable. You can redefine the primitives for the new cpu, and recompile it, with all the resources of the present system at hand.

And because of th small # of necessary primitives, & of th extreme modularity & interactive method of programming this allows, u will not believe how easy such a port is until u see it! Examples

You may know that the RSdos BASIC PALETTE cmd (for th Coco) takes a slot number (0-15) and puts a color value (0-63) into it. The zero slot's hdw address is 65456. So I defined a PALETTE cmd in Forth thusly:

```
: PAL -80 + C! ;
```

: is a word called Colon, and is the most commonly used compiler. It enters the following word, (a word is a group of non-space characters bounded by spaces, in this case PAL), into the dictionary, and compiles the addresses of the following words, (which normally must have already been defined), into the dictionary as it's definition.

-80 is the signed 16 bit integer equivalent of 65456. Mention of a number puts it on the stack.

+ takes the 2 top stack entries and adds them, leaving the result on top of the stack.

! is pronounced "store". It takes the second stack item and stores it in the address on top of the stack. But it stores SIXTEEN bit values. In this case we only want to store 1 byte, so we use Cstore, C being for "character". Of course C! is a different word from !.

; terminates all definitions started with :.

So now instead of PALETTE8,38 as I would use in basic, I can do 38 8 PAL.

38 pushes 38 on the stack.

8 pushes on the 8.

PAL first takes the top item and adds it and 65456 to give the address of slot 8, then stores 38 (second stack item) into one byte at that address. And all of a sudden, your text is orange.(grin)

To make this cmd "system independent", you could first define a constant, SLØT, thusly:

```
65456 CONSTANT SLØT
```

(Constant is a compiling word that compiles...You got it, Constants! (grin)

Then define PAL thusly:

```
: PAL SLØT + C! ;
```

That way, only SLØT would have to be changed for another system. All system dependent values could be stored in a single place, and so be easy to set up for a different system.

Here's an edited example of th procedure for installing a rewritten primitive, as explained by my friend Bob McIsaac:

```
' <EMIT> DUMP ..display code being used.
```

You can figure a new version then install the hex code using:

```
CREATE EMIT NNNN , NNNN , NNNN , NEXT SMUDGE
```

If it works then install it:-

```
' EMIT ' <EMIT> CFA ! FREEZE
```

This works because the code field addr's of a word always points to executable code and this can be anywhere in memory.

In this example:

A dictionary header is made up like this: Up to th 1st 31 bytes are th name field.

Next 2 bytes are th LINK FIELD, which points to th previously defined word.

Next 2 bytes r th CODE FIELD, & point to executable code. (Th following parameter field, if th word is a primitive.) The remaining bytes r th PARAMETER FIELD, which may contain executable code, addresses for other words, variable storage, constant storage, tables, or what have u.

' (pronounced "tick") puts th PFA (Parameter Field Address) of th word following it, on th stack.

DUMP gives a hex dump starting at th address on th stack.

CREATE creates a dictionary header for th word following it, in which th 1st character is altered (smudged, by flipping a bit) so that it can't be found, (while it is being defined).

, (Comma) Inserts th 16 bit value on top th stack at th current end of th dictionary, & bumps th dictionary pointer 16 bits, (to th NEW end of dictionary).

NEXT puts code in place for a "return" for th virtual Forth machine.

SMUDGE flips th flipped bit in th altered letter of th keyword, so that actually, in this case, it's working more like an "unsmudge". (grin)

CFA takes a PFA & converts it to a CFA (Code Field Address). In this case, th PFA of <EMIT> is converted to its CFA

! Takes th second stack item (in this case, th PFA of EMIT) & stores it in 16 bits at th address on top of th stack, (in this case, th CFA of <EMIT>).

FREEZE sets th system so that it permanently recognizes this installation.

Small Concept = Large Capability

Just a few additional concepts give u a great deal of added power. Understanding "Compile time" & "Run time" behaviors of words, and "Compiling" words, allows u to do things in th most direct way possible.

And th "Reverse Polish Notation" use of th stack allows elimination of all other local variables.

I find Forth the easiest language in which to conceptualize a task. Many procedures that would not be trivial in any OTHER design of language, can b programed in Forth out of hand. Each part of the problem can always be programmed seperately, as a preliminary word to the final word that does the whole job. Also you can start out with a word that just handles limited conditions, and keep adding new functions to it as you elaborate on the problem.

If you choose word names carefully, Forth is self documenting, also you can add comments inside (or outside, of course), the definition.

Grand Scale Programming

I have talked about designing or redesigning whole systems, for customization, or porting to new hdw, & I expect it sounds like something that someone might spend months, or maybe even years doing, but it more likely would take u only a matter of days, because:

1. Forth systems tend to be very small
2. U usually have th tools to do things in th most direct way possible. When u don't, u can MAKE them.
3. Th combination of interactive programing w/ very small modules which are all subroutines usable individually, allows u to very efficiently "snowball" th power of ur code. In other words, tho in any language a good programmer tries to write code whose power increases geometrically w/ th amount of code he writes, Forth was designed to allow u to do this very efficiently.
4. Th modularity, interactivity, use of subroutines by naming them, as well as automatic stack use, makes debugging a breeze!

Use

You can code interactively, at the term, to test things, but then for real work, you enter the editor, and edit scripts or source onto disk.

Then you can take input from disk with a LOAD cmd, and do execution and compiling directly from disk (until your file gives the cmd to take input from term).

Forth can accomplish everything OS9 can, simpler.

My plans

I've always wanted to write my own OS because I eventually wanted to put out my own h/w, and wanted complete control of maintenance and no royalties. There are many PD Forths, and Forth workalikes out there to build upon.

The system I want to develop now, would include "Universal Random Block Access", or URBA which means the ability to access all common disk formats, (Mac, MSdos, Amiga, OS9, RSdos, CPM, ProDOS, CDOS, etc.) Each format description would be contained in a "DOS Descriptor Block" data structure, and if a new format became popular, you could just add another DDB. With additional device descriptors, and drivers, you could access WORMs, and VHS, etc.

Naturally it will have multitasking, & I want to add all the most useful commands of OS9. Of course it will always have the advantage of being a programming lang. as well as an OS, over OS9.

Learning Forth

For a first text, I'd recommend: "Starting Forth" by Leo Brodie.

Social Aspects

There are people, some of whom r pretty good programmers, that consider Forth a "Cult" language. I've tried to figure why this is so, (*I* don't feel like a cultist.(grin)), & so far I've come up w/ these possibilities:

1. Forth IS after all fundamentally "different" from any other language. (Despite its similarity to LISP.)
2. Once some people realize how much they can accomplish w/ Forth, they may get overexcited, & sound as tho they have gone overboard! (Hehe..couldn't happen to ME!)
3. I think it likely that Forth is better than what they (th people that call it a "cult" lang.) are used to, & maybe, for whatever reason, they would rather not find that out!(grin)
4. Tho Forth tends to attract good programmers, (Th best!), it also attracts a few poor ones. (I once saw a guy use a whole screen to define a single primitive. (grin)) Such a programmer is not likely to present Forth to a newcommer in its best light, also if th newcommer is himself a fairly good programmer, he's likely to figure that if his less capable friend thinks well of a language, it's probably a dud! hehe

So, then, if he hears th enthusiasm of someone who really knows & uses th potential of Forth somewhere near its fullest, he's likely to attribute such enthusiasm to "cultism". (grin).

Problems

Plex or contact me as follows:

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I would also appreciate any advice that would help make this article better.

Downloaded from Genie:

AND SO FORTH #40

By Earl Raguse

From THE R O M NEWSLETTER
USERS GROUP OF OKANGE COUNTY
17301 SANTA ISABEL STREET
FOUNTAIN VALLEY, CA 92708

I attended the ANSI Technical Committee Meeting at the Marina Del Rey International Hotel on Jan 26, as an observer. I was impressed at the lengths they go to insure that Forth is transportable to all computers, in particular the newer ones. One of the problems is that most computers are 2's complement machines, but some are 1's complement machines. I had been under the impression that all computers built in the last few years had standardized on 2's complement binary arithmetic, but I found to my amazement that several of the more important ones use 1's complement binary arithmetic. Don't expect me to explain that, it just appears to be so.

What's the difference, you may well ask. Well, the 2's or 10's complement is what is termed a Base complement, and is obtained by subtracting a number from its Base. The advantage of using a complement is that subtraction can be carried out by adding a number's complement, and discarding the carry. You could well ask how does that help, if the complement is obtained by subtraction? If that were strictly the case, there would be no advantage, however, there are other ways of obtaining the complement of binary numbers. I am not at all sure if there is advantage in using 1's or 2's complement systems. Apparently the industry experts aren't sure either. With the 1's complement, you must add 1 the the result to be correct. Looks moot to me, but read on.

The 1's complement is obtained simply by inverting all bits, this can be done by XORing with all 1's. The 2's complement is just the 1's complement plus 1. There is a way of getting the 2's complement apparently without the addition operation. If you examine a binary number from right to left, and start inverting bits ONLY after the occurrence of the first 1, you will produce the 2's complement. The last time I talked about this (ASF#31 I think) I didn't explain why. Did you figure it out? If you think about this a little bit you will see why this is true. By not inverting the first 1 you encounter, you are in fact adding 1. Inverting the rest of the bits gets the required complement. Try it on some small numbers.

I had planned to write a little more on string handling with Forth, but I have already used half of my allotted space, so I will just do a review of past ASF's to give you something to think about, and get into it next month. In the first place, Forth has very few special string handling words. Also, Forth does not have special data types.

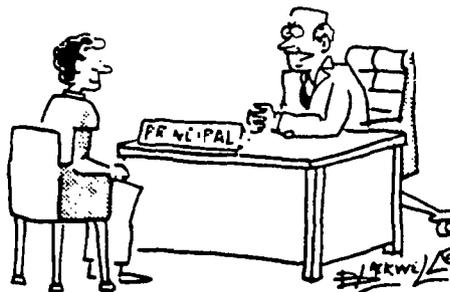
A string is really no different from a number, both are a series of digits. The Forth interpreter assumes all input is a string, if after a search, it cannot find a text word in any vocabulary, it tries to convert it into a number using the current base. Failing that, it prints the text on the screen followed by a "?". Two words which act differently are ." (dot quote) and !" (store quote). The first (".) causes the following characters, numbers or text, to be printed, up to the first (") that is encountered. The word (!") plays by essentially the same rules, except that the string is stored at the designated address. The only other word in Forth which appears to have been designed for strings is WORD, but it in fact does not care if the intercepted string is text or numbers. WORD does compute the length of a "string" of characters and inserts it as the first byte in the string. This is referred to as a "counted string". The end of a string is determined by encountering a designated character (like enter). I recommend reading the TIFM page 65 for an explanation of WORD.

Two simple things we often wish to do is find the length of an uncounted string, (not all strings in Forth are counted by WORD), and to center a string on the screen or page. X BASIC does have a length command, LEN(A\$), but no centering command; however, most of us know how to do it anyway. Forth has neither, but almost everybody knows how to do it.

Just in case you do not, I have included Screen #43 which has both GLEN (Get Length) and CENTER, along with a dumb little demo to allow you to exercise them. CENTER as written is good only for the CRT (ie 40 columns) and works by subtracting the string length GLEN from 41, then outputting half of this result to SPACES. GLEN has been written for a 80 character string length, and finds the length by starting at the end and working backward to the first non-space, (ie I - C 32 = 0 = IF I LEAVE THEN). Note that 0 = is the logical equivalent of NOT.

The variable STPS is initiated by VARIABLE with a value of zero, and assigned a length of 80 spaces, 2 by VARIABLE and 78 by ALLOT. If you attempt to put more than 80 characters in STR\$, Forth will crash.

```
SCR #43
0 ( STINGS EGR 2/1/89) FORGET IT IT ;
1 VARIABLE STPS 78 ALLOT
2 : SWP STR$ SW BLANKS ;
3 : GSTR ( n-- ) CLS 5 12 AT ." INPUT "
4 : ." A STRING UP TO " DUP ." CHAR"
5 : 1 16 AT 1+ GSTR$ ; : LOC CLS 10 4 AT ;
6 : GLEN ( adr-- ) 80 + 80 @ DO DUP
7 : I - C 32 = 0 = IF I LEAVE THEN
8 : LOOP SWAP DROP 80 SWAP - ;
9 : CENTER ( a ) GLEN 41 SWAP - 2 / SPACES ;
10 : SWEE LOC ." : WAIT FOR EFFECT"
11 : 2 WAIT 13 6 AT CLS ;
12 : .STMT .SWEE ." AND HERE IT IS !" CR ;
13 : .STR PAD GLEN PAD STPS ROT MOVE
14 : .STMT CR STR$ DUP : CENTER GLEN TYPE ;
15 : STRG CLS INIT 40 GSTR .STR QUIT ; STRG
```



"I DON'T CARE HOW IMPRESSED YOUR COMPUTER TEACHER WAS! YOU'RE NOT SUPPOSED TO BREAK INTO OUR COMPUTERS TO CHANGE YOUR GRADES!"