THE GUILFORD 99'ER NEWSLETTER

VOL.2 NU.9 SEPTEMBER

OUR NEXT MEETING

DATE: Sept 3, 1985
TIME: 7:00 P.M.
PLACE: Glenwood Recreation Center
2010 S. Chapman St.

SEPTEMBER AGENDA

This month's agenda will focus on some more sound and color demonstrations. The last segment we did in this area brought to light some original programs written by one of our younger members. I think everyone present was impressed with the fine color and sound that the TI produced, as well as the originality and skill of the program writer.

This past meeting showed what can be passed on to all of us by those of you willing not only to come to the meeting, but also to share your programs, questions, solutions to problems, etc.. So please bring al of these to the next meeting, including yourself, and share with the rest of us.

One final note, bring your programs on cassette tape this time since we will only have the recorder at the next meeting. Hope to see you there!!

Dave Cohen

CLUB PICNIC

At our August meeting the subject of a club picnic was brought up by Carl Foster. After a discussion of the matter amoung the members present it was decided to have a picnic of the type held last year. The picnic is to be a "eat what ya brung" affair to be held at the Jaycee park on September 14th (the date was originally set for the 15th to coincide with the bike race to be held at the park on that date, however the park authorities decided not to reserve shelters for the day of the race).

All members and their families are urged to attend this event as it affords an excellent opportunity to get to know new members and to just set around and talk about matters of common interest. We have reserved shelter #9 near the paddle boats.

The **Milwaukee Area 99-4 User Group** has organized the TI National Forth Information Center. The group is collecting and disrtibuting public domain FORTH screens and information. The address is **4122 N. GLENWAY; WAUWATOSA, WI 53222.**

DISK DRIVES
By Jim Ness

It's funny (at least to me), but there are lots of people who seem to know lots of stuff about their computers, and all those tiny chips, and how the bits and bytes are handled. And there seems to be next to nobody that knows anything about disk drives, and how they work. Sensing this huge gap in man's knowledge, I decided to figure out what makes them tick.

The great thing about disk drives is that they can find files buried randomly within a huge field of data, and they do it pretty fast. Actually, they can do it so fast because it's not at all random.

The mechanical concept is not all that complicated. A small motor spins at 300 rpm (at least in this country, with its 60 hz power supply), and there is a tiny stepping motor attached to a read/write head. A stepping motor is a common item in indexing applications, where you want a motor to move a precise distance and stop on a dime. The read/write head is just a smaller version of what you have on a cassette recorder.

The stepping motor "steps" the head from track to track on a diskette. The tracks are concentric circles, not a long spiral as you would have on an album.

All of this is ultimatly controlled by the disk software provided with your computer. Usually this is located in ROM within the machine. In most machines, the ROM is only sophisticated enough to load in the official Disk Operating System (DOS) which is located on the disk in the drive when the machine is turned on. The DOS contains all the file handling software, copying software, etc, and because it is on disk, it can be easily modified and/or updated as time goes by.

Our friends at TI decided to put the whole thing in ROM, which has a few bad side effects. First, it makes it hard to update and improve the software, wlich is located in the Disk Controller Card. Second, although the machine is a 64k machine, just like all the others, TI has set aside so much memory for special purposes, that there is only 32k left to play with. They set aside 8k for cartridges, 4k for disk drive, 4k for RS232/PIO cards, 4k for the Operating System (can't complain about that one), and 8k for various interfaces (speech, sound, VDP). Ok those are all good applications to have, but if you don't use them, you still can't use that memory for other things.

Anyway, all of the controlling software for the TI99/4A is located in the ROM card, as I said. This software tells the step motor when to step to the next track, when to return to the beginning, etc.

There is no standard for how a computer keeps track of data. In the case of TI, there is a directory of existing files, and a map of where they are located, at the beginning of each disk. These files are not necessarily all in complete groups. If you delete a 12 sector file from a disk, there is a 12 sector gap recorded in the map. Then if you add a 20 sector file, the software will put the first 12 sectors in the gap, and put the rest in the first available spot. When you ask for a file that is broken up this way, you can hear the disk head scooting along to read each individual segment.

Because the disk drives themselves are pretty standard, there are a few things that don't change. For instance, there are 48 tracks per inch in most 5 1/4" systems (There is a new 96 TPI system around, not TI compatible).

And most systems only use 35 or 40 of the available 48 tracks. There are either 9 or 18 sectors per track (single or double density). Each sector holds 256 bytes of data. And the standard design allows 250,000 bits per second to be written.

Wow, you say, 250k! That is about 25k bytes per second, right? How come I can not load a 25k pgm in one second, then?

Two reasons. First, as I said, the transfer of data is actually controlled by the ROM software in the TI99/4A. And to be as good as it is, it had to be a little bit slow. Not REAL slow (anyone ever use a C64 disk drive?), but not as fast as it could be. The second reason also has to do with software, but it is a universal problem associated with single density storage.

The major difference between single and double density storage is the way in which the data is coded. In order for the software to keep track of where the read head is located on a particular track, there are clock or synch bits laid down with the data bits. In the old fashioned single density format, a synch bit was laid down ahead of each "0" bit, so there were never two "0" bits in a row. That kept the software from getting lost if there were a lot of "0" bits in series. Putting all those synch bits on the disk took up a tremendous amount of space that should be used for data.

So, some genius came up with a way of encoding the clock bits in with the data bits, so that no unnecessary space was lost. Voila, double density storage was born! And double density, as used with the Corcomp software, is said to increase transfer speed by at least 80%, mostly because the number of bits to transfer is cut way down.

So much for the exciting story of double density versus single density. How about double sided versus single sided? Well, obviously, it requires two read/write heads in the drive. Did you know that when reading a disk, the software reads, first, a track from side one, then the opposing track from side two, and continues back and forth? You didn't know that? There is a simple reason for doing it that way.

The disk head needs something to keep the disk stationary against it. In a single sided drive, there is a small arm holding the back side of the disk against the head. In a double sided drive, that arm would be in the way of the back side read/write head, so the solution was to use the two heads, directly across from one another, to hold the disk in place. In order to keep them across from one another, they alternate reading or writing as I said above. Very interesting, right? So if you wreck one side of a dbl sided disk, you can kiss the whole thing goodbye.

PROGRAMMING TIPS

Want a sharper display with your black white TV? Add this line at the start of your program:
CALL SCREEN(15)
This will disable the color generating circuit in the computer and remove the vertical lines often seen on BW TV's. It also increases the sharpness of the characters.

If you accidently enter OLD CS1 when you mean to enter SAVE CS1, don't panic... All is not lost. Type SHIFT E and hit ENTER. You'll get an I/O error but don't worry. The program will still be in memory and you'll get a second chance at saving it.

This month, we are going to switch back to Wycove Forth for a series of menu screens that will read the menu options from screen #1 on a disk. Screen #1 must be configured as follows:

```
Screen #1

0 ( Application Definitions )
1 2 FLUSH/RELOAD 7
3 BINARY-NUM 19
(etc)
```

The option is followed by the screen number of the screen itself. Incidently, these screens are from "the source" himself. In a recent issue of Micropendium, Tim McEachern, the V.P. of Wycove Systems stated that these (and other) screens were free for the asking.

SCREEN # 13

```
0 ( String Definer Word :" )
1
2 : :" ( delimiterD :" WN WORDS ; )
3 BUILDS ( WN textD -- adr len WORDS )
4 CO STATE ! IMMEDIATE SMUDGE
5 , [ ' : CFA ] LITERAL , COMPILE R
6 COMPILE COUNT COMPILE DUP
7 COMPILE 1+ COMPILE R
8 COMPILE + COMPILE =CELLS
9 COMPILE R
10 COMPILE BRANCH 4 ,
11 [ ' : CFA ] LITERAL , [COMPILE] ]
12 DOES
13 STATE IF
14 DUP 2+ ,
15 WORD HERE C 1+ =CELLS ALLOT
16 ELSE
17 DUP WORD HERE COUNT
18 ROT 24 + EXECUTE
19 ENDIF ;
20 34 :" CC" CR CR TYPE CR CR ;
21 : TST
22 CC" type this" ;
23 CC" String Definer has been loaded"
24
25
```

SCREEN # 10

```
0 ( MLOAD - load from directory menu )
1
2 13 -LOAD :"
3 BL :" MLOAD ( MLOAD NAME -- : menu load )
4 >R >R IN BLK R> R>
5 40 IN ! 1 BLK !
6 SWAP OVER PAD SWAP MOVE PAD SWAP
7 BEGIN
8 OVER OVER
9 BL WORD HERE COUNT
10 OVER C WHILE
11 COMP$ 0=
12 BL WORD
13 IF
14 BASE HERE
15 DECIMAL NUMBER ROT BASE ! 16 DROP LOAD
17 DROP DROP BLK ! IN ! ;S
18 ENDIF
19 REPEAT DROP DROP DROP DROP
20 TYPE ." ? not found.  "
21 BLK ! IN ! ;
22
23 -->
24
25
```

SCREEN # 11

```
0 ( Menu words )
1 ( MENU re-opens the screen file to
2 make switching disks easier, unless
3 screen 1 has been edited.  )
4
5
6 : MENU ( -- : generate menu )
7 R/W-CLOSE CR
8 1 BLOCK 2- DUP 0>
9 IF 0 SWAP ! ELSE DROP ENDIF
10 IN BLK 40 IN ! 1 BLK !
11 CR ." APPLICATION" 9 SPACES ." SCREEN"
12 CR 26 0 DO ." -" LOOP
13 BEGIN
14 BL WORD HERE COUNT
15 OVER C WHILE
16 CR SWAP OVER TYPE
17 24 SWAP - 1 MAX SPACES
18 BL WORD HERE COUNT TYPE
19 REPEAT DROP DROP
20 CR BLK ! IN ! ;
21
22
23
24
25
```

TI SHOPPER

TENEX has come out with its new catalogue and it is really interesting. They are running a special on a whole group of cartridges. Moonmine, Sneggit, Munchmobile, Bigfoot, MASH, Return To Pirate's Island, Jawbreaker, Slymoids, Burgertime, TI Invaders, Munchman, Parsec, Adventure (cart. and cassette), Music Maker, Weight Control, Addition and Subtraction, and Division 1 and all on sale for $5.95 or any 4 for $14.96.

There are other real values scattered throughout the catalogue. They have both Microsurgeon and Super Deamon Attack for $5.95 also and some of the best prices around for TI-compatible Atarisoft cartridges. Pac Man, Defender, Donkey Kong, Protector II, Picnic Paranoia, Shamus, Jungle Hunt, and Moon Patrol are available at prices varying from $7.95 to $14.95.

Despite having filed for Chapter 11 bankruptcy, Corcomp has come out with some new products. They have come out with a Clock/Calendar Card for the PEB that includes a 64K printer buffer. It also has a speech synthesizer connection that allows you to move the speech synthesizer inside your PEB. No prices have been quoted but the card is available either from Corcomp or TENEX

There are also rumors that Corcomp is coming out with a complete line of stand-alone accessories for the 99/4A. These will include 32K memory, RS232, and others. They are separate from the 9900 and 99000 expansion systems that were recently introduced. They will be in the $120 each category.

Myarc has come out with a 128K RAM Disk-Printer spooler Card. It includes the card and disk-based RAM disk and spooler routines. The memory is bank-switched in 32K blocks and will allow for the almost instant loading of programs and text stored there. The best retail price that I have seen is $199.

Disk drives have come down in price to where the going rate for a "bare" drive is in the $129 to $149 range. These are mainly single-sided, single-density, half height drives. You will need to supply the necessary cables and a power supply if you are planning to use them as an external drive.

If you are in the market for a modem to talk to Dave Cohen, George Von Seth and the gang, the Volksmodem is selling for about $69.95 (plus $11.95 for the cable) and the Signalman Mark III is $79.95 and it includes all of the cables and a coupon for a subscription to The Source for $29.95. Both are 300 baud modems and both are compatible with Bell 103 protocols. They are,incidently, direct-connect modems.

Volkmodem has also come out with the Volksmodem 12 for the TI which will operate at either 300 or 1200 baud. Of course, the price is just a bit more than the original Volksmodem. The price on this one is $239.00 plus cable.

Well, that about does it for this month, For the addresses on Corcomp or TENEX, please consult the back issues of the newsletter.

Bob Carmany

The GUILFORD 99'ER USERS' GROUP NEWSLETTER IS FREE TO DUES PAYING MEMBERS OF THE USERS' GROUP (ONE COPY PER FAMILY, PLEASE). DUES ARE $12.00 PER FAMILY PER YEAR. SEND CHECK TO P.O. BOX 21691, GREENSBORO, N.C. 27420 THE SOFTWARE LIBRARY IS FOR DUES PAYING MEMBERS ONLY.

#BASTRAN.....UTIL-BU-03
#COMPXB.....UTIL-BU-03
#CREF.....UTIL-BU-03
#CREFPRINT....UTIL-BU-03
#DIR.....UTIL-BU-03
#QUICKREF.....UTIL-BU-03
#XREF.....UTIL-BU-03
84FM1040.....UTIL-BU-03
ADDRESSBOK....UTIL-BU-01
AGE/CHART.....UTIL-BU-02
ALPHABETIZ....UTIL-BU-02
ASCCON/BAS....UTIL-BU-01
ASMSRC1.....UTIL-BU-08
ASMSRC3.....UTIL-BU-08
AUTOMAINT.....UTIL-BU-01
BARTEND.....UTIL-BU-01
BINARYNUM.....UTIL-BU-01
BOOTOBJ.....UTIL-BU-08
BOWLRECORD....UTIL-BU-02
CALC1/BAS.....UTIL-BU-01
CARDLIST.....UTIL-BU-01
CASH/FLOW.....UTIL-BU-03
CAT.....UTIL-BU-02
CATLOG.....UTIL-BU-01
CHARA1.....UTIL-BU-04
CHARA1.....UTIL-BU-05
CHECKBOOK.....UTIL-BU-01
COMPUSERVE....UTIL-BU-06
CONFIG.....UTIL-BU-06
COOKIEFILE....UTIL-BU-03
CREDITCARD....UTIL-BU-01
DATEPRO.....UTIL-BU-01
DEF/CHAR.....UTIL-BU-02
DIAL-DOC.....UTIL-BU-06
DISK/LIST.....UTIL-BU-03
DRIVER.....UTIL-BU-08
EDITA1.....UTIL-BU-05
EDITA2.....UTIL-BU-05
FACTORIAL.....UTIL-BU-03
FAMILYTREE....UTIL-BU-03
FINANCE.....UTIL-BU-01
FLOORCOV.....UTIL-BU-01
FORMA1.....UTIL-BU-05
FORMA2.....UTIL-BU-05
FORMA4800A....UTIL-BU-05
FORMA4800B....UTIL-BU-05
FORTH.....UTIL-BU-08
FORTH2.....UTIL-BU-08
FORTHSAVE.....UTIL-BU-08
GENEOL.....UTIL-BU-01
HAM/FILE.....UTIL-BU-02
HELP.....UTIL-BU-07
HOMESECY.....UTIL-BU-01
HOUSE/COMP....UTIL-BU-02
INSTRUCT.....UTIL-BU-02
IRS1040.....UTIL-BU-01
KITCHEN.....UTIL-BU-02
LCW.....UTIL-BU-03
LOAD.....UTIL-BU-02
LOAD.....UTIL-BU-05
#BASTRAN.....UTIL-BU-05
#COMPXB.....UTIL-BU-05
#CREF.....UTIL-BU-05
#CREFPRINT....UTIL-BU-05
#DIR.....UTIL-BU-05
#QUICKREF.....UTIL-BU-05
#XREF.....UTIL-BU-05
ACD/EBASIC....UTIL-BU-01
ADDRESSES.....UTIL-BU-01
AIR/GUIDE.....UTIL-BU-03
AMORT-SCED....UTIL-BU-02
ASMSRC.....UTIL-BU-08
ASMSRC2.....UTIL-BU-08
AUTODIAL.....UTIL-BU-01
BARGRAPH.....UTIL-BU-01
BELL.....UTIL-BU-06
BOOT.....UTIL-BU-08
BOUNCE.....UTIL-BU-02
BUDGET.....UTIL-BU-01
CALENDAR.....UTIL-BU-02
CASES.....UTIL-BU-02
CASHDATA.....UTIL-BU-03
CATEGORIES....UTIL-BU-02
CATLOG.....UTIL-BU-01
CHARA1.....UTIL-BU-05
CHARA1.....UTIL-BU-06
COMPACTOR.....UTIL-BU-03
COMPXBDOC.....UTIL-BU-05
CONVERT.....UTIL-BU-01
COOKIES.....UTIL-BU-03
DADA.....UTIL-BU-02
DAY/O/WEEK....UTIL-BU-02
DEPRECIATE....UTIL-BU-03
DISK/DISP.....UTIL-BU-03
DOCUMENT.....UTIL-BU-03
EDITA1.....UTIL-BU-04
EDITA2.....UTIL-BU-04
ERASE.....UTIL-BU-03
FAMBUDG.....UTIL-BU-03
FEDTAXIN.....UTIL-BU-02
FINDEX.....UTIL-BU-02
FORMA1.....UTIL-BU-04
FORMA2.....UTIL-BU-04
FORMA4800A....UTIL-BU-04
FORMA4800B....UTIL-BU-04
FORMSGEN.....UTIL-BU-03
FORTH.....UTIL-BU-08
FORTHSAVE.....UTIL-BU-08
FUTUREVAL.....UTIL-BU-01
GRAPHMSG.....UTIL-BU-02
HEAT/LOSS.....UTIL-BU-02
HEXDUMP.....UTIL-BU-02
HOST.....UTIL-BU-06
HOUSE/INVN....UTIL-BU-02
INVESTMENT....UTIL-BU-02
JBBS.....UTIL-BU-06
LARGE/CHAR....UTIL-BU-02
LOAD.....UTIL-BU-01
LOAD.....UTIL-BU-02
LOAD/MANU.....UTIL-BU-02

LOAN.....UTIL-BU-01
MAILLIST.....UTIL-BU-01
MEMORY-X.....UTIL-BU-03
MORTGAGE.....UTIL-BU-01
MPCHAR.....UTIL-BU-04
MPINTR.....UTIL-BU-04
PLOTTING.....UTIL-BU-03
POSTER.....UTIL-BU-02
PRINT.....UTIL-BU-03
PRNT1040.....UTIL-BU-02
RECIPECONV....UTIL-BU-01
SBUGC.....UTIL-BU-07
SESFEDTX.....UTIL-BU-02
SETUP.....UTIL-BU-05
SHRINK.....UTIL-BU-03
SOUND/GEN.....UTIL-BU-02
SYS-SCRNS.....UTIL-BU-08
TAPE/DIR.....UTIL-BU-03
TE3/DOC.....UTIL-BU-06
TE3S.....UTIL-BU-06
TE3S1.....UTIL-BU-06
TE3S3.....UTIL-BU-06
TEST-1.....UTIL-BU-03
TEXNETMAIL....UTIL-BU-03
TIWORD/BAS....UTIL-BU-01
UFENG.....UTIL-BU-06
UTILRAM.....UTIL-BU-08
WALLPAINT.....UTIL-BU-01
WORDPROCES....UTIL-BU-02
XYZ-PLOT.....UTIL-BU-03

MA/BELL.....UTIL-BU-01
MAINLINE.....UTIL-BU-02
MONEYSTACK....UTIL-BU-03
MPBASE.....UTIL-BU-04
MPDATA.....UTIL-BU-04
OVERLAY.....UTIL-BU-04
POCINV.....UTIL-BU-02
PRESVALUE.....UTIL-BU-01
PRINTTEST.....UTIL-BU-05
PRNTSCAB.....UTIL-BU-02
SBUG.....UTIL-BU-07
SECRETARY.....UTIL-BU-03
SESFEDTX1.....UTIL-BU-02
SHOPPING.....UTIL-BU-03
SNAPCALC.....UTIL-BU-02
SYS-SCRNS.....UTIL-BU-08
TALK/TELE.....UTIL-BU-02
TAXFILE.....UTIL-BU-01
TE3C.....UTIL-BU-06
TE3S0.....UTIL-BU-06
TE3S2.....UTIL-BU-06
TE3S4.....UTIL-BU-06
TEST-2.....UTIL-BU-03
TEXSCRIBE.....UTIL-BU-02
TRIPPLAN.....UTIL-BU-01
UTILEQU.....UTIL-BU-08
UTILROM.....UTIL-BU-08
WORD2/BAS.....UTIL-BU-01
WRITER.....UTIL-BU-05
YARNEST.....UTIL-BU-01

PRESIDENT'S CORNER

Fall is upon us at last, Labor Day is the traditional "end of summer". Let's hope that with the cooler weather we get more participation in our meetings. It is very difficult to maintain an active program throughout the summer months with all of the vacations and other summer plans. If you missed the programs that we had during the summer, you can get "instant re-plays" on some of them through the club library. Most of the programs that we used for demonstration purposes came from the library.

There are several items of interest in this month's newsletter. The TI Shopper has some information about reduced prices on TI cartridges and there is a short article about writing Asembly Language programs without the use of either Editor/Assembler or Mini Memory. The Forth Forum continues this month with more Wycove Forth screens.

Let's hope that everyone caught up their dues so that they can take advantage of the library facilities and the tips that we publish in the newsletter.

This will be shorter than most of my "president's Columns" because there is so much other information that we wanted to include in this newsletter. So, 'til next month . . .

Bob Carmany

COMPUTER SHOW

On July 20, 1985 there was a computer show at the Carolina Circle Mall. It was organized by David Bodman of the Triad Amateur Computer Society in Greensboro. Dave did a super job getting this show together. It was very interesting and seemed well received by the public.

There were exhibits of several computers, such as the C-64, the Kaypro, the IBM, and even a Heath- Kit model. Various computer clubs in the area ran their machines and demonstrated programs. In addition, they provided printed information on their clubs and computer systems to those interested. For example, I learned that T.A.C.S. is the oldest computer club in the Triad. They began in 1975 and now have about 80 members, only one of whom has a TI computer.

There is, however, a wide variety of brands and types other than this, and perhaps if some of us join their club too, we can get an exchange of information going that can help us, and them, especially since some of their members are capable of designing and building computers. Their address is :

T.A.C.S.
P.O. BOX 7073
GREENSBORO, N.C. 27417

Dues are $7.00 per year and include a monthly meeting and newsletter. In any case the show was very nice, with another one being considered for this winter. If Dave Bodman of T.A.C.S. does orgnaize another one, our club has been invited to participate and I would urge that we do so.

Dave Cohen