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THE HUGger's
HOOSIER USERS GROUP
 People Helping People

August 1988

THE HUGger's NEWLETTER

Volume 6, Number 7

RAMblings

by Carl Clark

This month we have some very interesting developments coming on in the TI community. The much heralded TI-BASE has arrived and is being tried out by members of HUGGERS. There will be an extensive review of it next month. This appears to be one of the most revolutionary programs for our computer to be seen in quite a while.

There are more and more enhancements for TI-ARTIST coming on the scene too. While other programs for graphics offer special flexibility in certain areas none, to my knowledge, offer the all around support from their distributors and users that TI-ARTIST does. One of the latest disks available allows you to make cards and posters and control where everything goes. This is available from the author A.K. KIDDOO 120 Boy's City Drive Winona Lake IN 46590 . The price ? Only \$10. There is also a package of ARTIST BORDERS available from ASGARD SOFTWARE. Asgard also is marketing ARTIST ENLARGER which is just what I have been looking for. This program will actually enlarge or reduce instances or fonts. While it takes a considerable time the work and time are both much less than doing it by hand. It sells for only \$9.95. COMIC SHOW EDITOR is the latest

offering to go with TI-ARTIST. This allows you to do ANIMATION using pictures drawn with TI-ARTIST. This is available from TEX-COMP or directly from the author in Germany. TEXAMENTS offers six sets of ARTIST'S COMPANIONS with thousands of fonts pictures and instances. Most of these are \$9.95 a set. They also have DESIGNER LABELS so you can do fancy labels and index cards with instances. DISPLAY MASTER will let you present full color slide shows or your pictures including flashing windows! It sells for \$14.95.

These are some of the major support for TI-ARTIST that I know of if there are more out there please spread the word for this is the kind of support that makes our orphan one of the most useful computers around.

Now, when is someone going to come up with a C.A.D. program?

BULLETIN BOARD

In response to the many people, who have asked about the Bulletin Board. Our president, John Powell has purchased the Hardware and has a new phone number, (317-782-994A). Bear with us while we get the bugs out of the system. The board is on line around the clock. John is new at this so be patient and we'll all learn together.

Bob

TALKIN' SMART

by

JIM ELLIS

Part II

(Cont'd from a previous issue) In some modems there is the possibility that you can store the phone number for your favorite BBS. It then has a command that tells the modem to call the number in memory. Among other 'smarts' is the ability to change the baud rate between the modem and the phone line or between the computer and the modem. I recently found out some commands that were not in my manual for my modem. It DOES recognize them, whether it actually does anything or not. When I say recognize I mean that when the command is issued the modem responds with 'OK' as opposed to the word 'ERROR'. Everyone should know what that word means! You may get words or numbers depending how you have one of the commands set. I will attempt to put the commands, (that I am aware of) in a table for part of these articles. There are too many to be covered in just one or two columns. These will be taken from a manual for the Hayes 300 and my manual for my 2400 baud modem that I recently purchased. What led to me writing these articles was the fact that I found the manual either inaccurate, or in some cases, incomplete. I thought that probably there were others out there that were in the same situation, but were not brave enough to say so. So this is what came about. I am sure that this series will no means cover everything as I am sure that there are other commands that I have not been made aware of myself. I will try to submit all commands (and a brief explanation of each) that I know about the smart modem commands. Keep in mind that we are talking 'Hayes (tm) compatible'! There are some that allow a subscript, for example, ATMn, with n=0-2. The command modes are as follows: dialing, control, extended, synchronous, configuration, as in changing the 'S' registers. Oh, did I mention those? (to be cont'd).

)))) Programs you should know! <<<<

By: Paul E. Scheidenantle

The words can be in the puzzle backward, forward, and diagonally. Circle them as you find them. You should be able to complete this puzzle in 20 minutes.

| | |
|-------------------|---------------------|
| ARCHIVER | MUTIPLAN |
| ARTISTBORDERS | PARSEC |
| CHAINLINKSOLITARE | PICASSO |
| DMONETHOUSAND | REHINDIE |
| FASTTERM | SEGREGATION |
| FUNNELWEB | TIARTIST |
| GRAPHX | TIRLINER |
| JOLLYROGERLABELER | TIWRITER |
| JOYPAINT | USABLEDISKCATALOGER |
| MASSTRANSFER | WOODSTOCK |

XTFJUDMONETHOUSANDAX
EJKQGNFMASSTRANSFERZ
IZGHGRAPHXSQRGKFCECV
WFNATDQOBBKENWMSGREM
IVWSPWOOEUVHZEROERMY
HEFQZSWEMIRFNELLACRS
GDYHSLPTHEYADAETNEPW
TQPAEISCTCLRTBIOTUEC
ZLCNKIRTZPOAALIIVXHN
TINYTASBIBCLOTRNRQJP
PUPRSAXTTKRSAMCETKNB
FXAYFDLSSEKGIQNCJJTO
IIMSKUIIGNETENEONQX
TOOZHTDOIRYMUSTIIAIR
HOXYRERLGEDRRSPAXNDD
CTKALYNEENIADJPLSPKD
BZBBLISUITPOBYCJDRLW
GCALAVZMTHOEOKUZZWT
OSOHSEEURWPJMYZTORGD
UJCAPRDEKWBKKNWGIRPF

DISK DRIVE CONTROLLERS

(continued from July)

Beyond Double Density

A two format system can be managed using only the floppy disk controller's inherent ability to sense single and double density recording patterns. To get beyond this limitation, the additional data stored in sector zero must be read, stored, and used to modify the special binary commands sent to the FDC (floppy disk controller) chip.

DISK CONTROLLERS - Cont'd.

Pg 3

Fortunately the TI99/4A system design already provides for such innovations through the Device Service Routine concept and standard "GPL" calls. The system doesn't care what hardware is attached as long as it plays by the rules -- an interface program stored in a memory chip (EPROM) on the peripheral device does the trick. This program handles calls for I/O operations from other programs such as TI Writer or the Basic Interpreters. Another set of rules controls the way disk and file information are saved on a disk. Disk parameters are stored in sector 0, while sector 1 must have a two byte "pointer" (a hexadecimal sector address) for each block (one sector) containing the bookkeeping data for a file. It is these blocks that are scanned in order to display the disk directory.

Since the Myarc controller must read sector zero to determine the number of sectors per track, the other parameters in that sector are available to control other variables such as number of tracks. But there were other limitations to overcome. The number of files on a disk is limited by the space available for pointers. 256 bytes at 2 bytes per pointer would give 128 files -- except the pointer list must end with a null word (20000) so directory routines know where to stop -- so we got 127 files per disk. The pointer itself can address sector numbers as high as 65535, so this is no problem. The real limitation is the bit map in sector 0. It begins at byte 56 leaving only 200 bytes or 1600 bits available to map the disk. Since a bit must be turned on for each sector used, the 1440 sector DSDD 40 track disk is already near the limit. The answer devised for the 80 track DSDD system is to map two consecutive sectors with each bit. It wastes some space but no more than systems that use a standard 512 byte sector.

Making the Quad System Work

So now lets say we have new code in the disk controller EPROM (an "erasable"

version of the PROM chip used by TI) that does all the proper tricks with the bit map and has the FDC commands to control the new 80 track drives we have added to the system. We still have to tell the controller which drives are 80 track and find a disk manager program that can use the new commands. The selection problem can be taken care of using the DIP switches on the card (but in the process you lose their original function -- setting stop speed). Since the Epron responds to standard GPL calls, most functions can be handled by the TI Disk Manager 2 cartridge. The exception is the disk formatting process -- the formatting works OK, but the initial data written into sector zero is for the standard bit map. (This can be fixed by changing byte 56 from 203 to 201 with a sector editor.) Read/write operations from ID or TI Writer work fine since they use the GPL protocols. Myarc has an excellent disk manager program that works beautifully with 40 track drives, but it has suffered from a number of subtle bugs in 80 track mode. This program, like many others designed for high speed I/O, uses assembly language code to handle the FDC -- bypassing some of the routines in the EPROM. Differences in bit map handling, even slight differences in execution times can affect the performance of 80 track drives. The code in the 80 track EPROM has had a lot of attention to proper timing -- the price you pay for higher performance.

Fine Tuning the Myarc Disk System

Before you start using the Myarc system routinely, there are some experiments that can get maximum performance from your drives. Use the Myarc disk manager to try different interlace settings -- first with your 40 track drives, then with the 80 track drives. Watch for hesitations as each formatted disk is verified, then use the Test option to read the sectors you have layed down. Look and listen for "retries" -- when the sector number pauses with a head seek noise. Use the best disks you have and note the combinations that test smoothly. With fast drives in good

condition, you should be able to run 9 sector (single density) format at interlace 2 and 16 or 18 sector double density format at interlace 3. Don't worry if 18/3 pauses at the end of each track -- this is just the extra revolution forced by having sectors 17 and 0 adjacent on the disk.

When you try this with 80 track drives, don't be surprised if the results are different. The time required for the head to settle into a wide standard track may not be adequate to get it reading properly from the narrow tracks on the quad drive. Such subtleties as erase delays and disk quality are also more critical on the skinny, low power tracks. My Mitsubishi 4833s (96 tpi) will support both 16/3 and 18/3 but are unreliable at 18/4, while my TEAC 558s support all three at 48 tpi. Don't take chances with any setup that is marginal. The error rate may be low, but it always seems to happen to a file that isn't backed up.

Hot Rodding

If you want to try for a little more speed, there are two more tricks you can use. The faster WD1772 FDC chip is pin compatible with the standard WD1770 supplied by Myarc. It will try to step the head at 2ms rather than the 6ms setting of the standard chip. (The 80 track EPROM automatically uses the fastest step speed available.) Many of the latest drives can step at 2ms or 3ms even though they are conservatively rated at 4ms or 5ms. The change is noticeable but may not be worth the high price of the WD1772 (it is not a commonly used chip and is rarely discounted). The second fix is cheap and very useful for producing large quantities of copies. The FDC chip's automatic "write verify" function can be defeated by shorting one pin on the controller card to ground. This is best done with a switch so the verify can be enabled for acaal operations. The effect of this modification is equivalent of the "turbo" option on the Corcomp controller and should be used only after testing.

QB MONITOR ~ QB-99'er NEWSLETTER

DISK CONTROLLERS - Contd.

Pg 4

Interface Patterns

Note: The configurations marked * and ** are the standard interface patterns for TI and Corcomp formats. The end-of-track intervals are only approximate since the 9 and 16 sector formats include more buffer space than the 18 sector format.

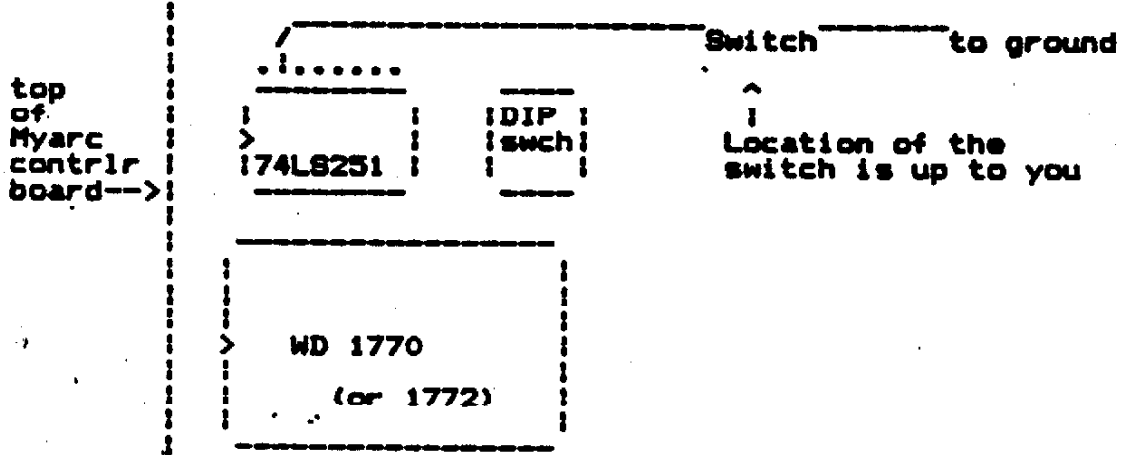
| Sect/trk | Interface | Pattern (dashed line is time available for head step) | | | | | | | | | | | | | | | | | |
|----------|-----------|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 9 | 4 * | 0 | 7 | 5 | 3 | 1 | 8 | 6 | 4 | 2 | | | | | | | | | |
| 9 | 2 | 0 | 5 | 1 | 6 | 2 | 7 | 3 | 8 | 4 | | | | | | | | | |
| 18 | 5 ** | 0 | 11 | 4 | 8 | 15 | 1 | 12 | 5 | 9 | 16 | 2 | 13 | 6 | 10 | 17 | 3 | 14 | 7 |
| 18 | 4 | 0 | 9 | 5 | 14 | 1 | 10 | 6 | 15 | 2 | 11 | 7 | 16 | 3 | 12 | 8 | 17 | 4 | 13 |
| 18 | 3 | 0 | 6 | 12 | 1 | 7 | 13 | 2 | 8 | 14 | 3 | 9 | 15 | 4 | 10 | 16 | 5 | 11 | 17 |
| 16 | 5 | 0 | 13 | 10 | 7 | 4 | 1 | 14 | 11 | 8 | 5 | 2 | 15 | 12 | 9 | 6 | 3 | 5 | |
| 16 | 3 | 0 | 11 | 6 | 1 | 12 | 7 | 2 | 13 | 8 | 3 | 14 | 9 | 4 | 15 | 10 | 5 | | |

16-sector patterns are not precisely to scale

Disk Controllers — an Addendum March, 1987

I mentioned a "turbo" modification to lock out the "read after write" (write verify) routine usually performed by the controller. Here are the details:

Find the 74LS251 chip at the top center of the controller board, above the DIP switches and beside the large FDC chip (marked WD1770). Solder a wire from the number 2 pin of the 74LS251 through a switch to ground (e.g. the wide trace of the DIP switches or any trace connected to that wide trace). It looks about like this from the bottom (non-component side) of the board.



As always you proceed at your own risk. (One person has told me this did not work on his 40 track system, but I haven't verified that.) You can tell it is working if your controller writes as fast as it reads (normally the write takes twice as long).

The above article was downloaded from Bob & Bill's BBS, (BBBBS) Clinton, MD (301) 292-1482 - Jerry Coffey 74716,3525 can also be contacted thru this BBS

OFFICERS

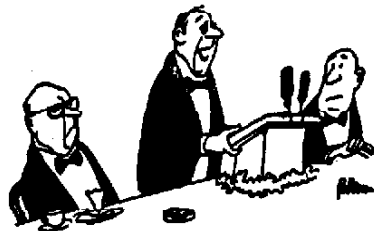
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VICE-PRES.....CARL CLARK 1-398-6226
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* FOR LOCATION *



"Our next speaker needs no introduction although he could use a few new jokes and a better conclusion."

ROUGH NOTES

TRACK BALL

It seems like such a long time ago that I first sent for my Mico Track Ball. July 2nd is not that long, but when it got here, it wouldn't work. There was no place to plug it in!

I phoned ZEBRA SYSTEMS. I phoned WICO CORPORATION. No one gave me any hope. "It's the only kind we have." "We don't make it any more."

Well I sent it back anyway.

Guess what! When I got home from work today, there it was, courtesy of UNITED PARCEL. Not only that, it works. I have never used a Mouse, but it would have to be pretty good to out due my TRACK BALL.

Bob

DISCLAIMER

This newsletter is brought to you through the efforts of the officers and members of the HOOSIER USERS GROUP. Every member is encouraged to submit articles.

If you have an article you would like to share with the other members mail it to:

John Powell
327 W. Southern Ave.
Indianapolis, IN 46225

Opinions expressed are those of the author and not necessarily those of the HOOSIER USERS GROUP.

New Mills board reduces soldering

Bud Mills of Bud Mills Services, manufacturer of the Horizon RAMdisk, announced that his new board, at the same price as the old board, no longer requires additional soldering on the control chips.

He says this will simplify construction because it means there is no stacking of any chips up to 384K.

For further information contact Bud Mills Services, 166 Dartmouth Dr., Toledo, OH 43614 or the TI-COMM BBS, (419) 385-7484 (300 baud, 7 bit, even parity; 1200 baud, 8 bit no parity).

Steven Sims
212 South Hancock
Indianapolis, IN 46222

88/12 77255

TIME DATED
AUGUST 21 1988
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Correction Requested
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Make check or money order payable to **Hoosier Users Group**. Send completed application to:

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