

TEXAS INSTRUMENTS

TI Forum

by Ron Albright
and Jonathan Zittrain

We Get Letters...

Jonathan and I get lots of letters here at *Computer Shopper* and enjoy everyone of them. This month, we have an exceptionally informative letter from Timothy Hutson of Cumberland, Maryland. Tim took on the October 1986 project to install a 14 Mhz crystal in the console to gain speed. His experience is worth sharing. If you would like to see more letters published, let us know. Timothy writes:

I was able to obtain everything I needed for the project from the local Radio Shack store except for the 14.318-Mhz crystal. After looking around other local electronics stores in town and coming up with the same results, I began to page through the advertisements in the *Computer Shopper* and ordered two 14.318 Mhz crystals (one was a spare just in case) and also a TMS9918A NL video display processor chip. I don't know exactly why I ordered the VDP chip but I'm glad I did as you find out later.

Well, five days later my crystals arrived and I immediately began to disassemble my TI. I carefully followed the directions given in the article and had no problem until one of the leads to the existing 12.000 Mhz crystal snapped off. The problem here for me was that the existing 12.000 Mhz crystal leads were very short and did not allow too much room for me, not being too experienced with electronic components, to work with.

I now had to resort to finding a 12.000 Mhz crystal to replace the one I broke. Believe it or not, I could not find one of these around town either. Now it was back to ordering a 12.000 Mhz crystal from the *Computer Shopper* advertisements. Needless to say, I did order two 12.000 Mhz crystals just in case.

Five days later I was ready to finish the project I began which I originally thought would take about one hour to do. Well, I installed the new 12.000 Mhz crystal with the 14.318 Mhz crystal and hooked the wires up to the switch. Now, without the computer in its casing, I was ready to test it out. Fingers and toes crossed with a prayer thrown in, I flip-

ped the switch to the "on" position. I heard the familiar power-on "beep" but could only see garbage on my monitor.

After trying to adjust the monitor with no luck I double checked my connections with the article once more and could not see any reason why the TI would not work. Well, I then thought of the VDP chip I had ordered and decided to install it in place of the existing VDP chip. What the heck, it wouldn't hurt anything, I thought.

Happily to say, that was what my problem was. For some reason unknown to me, between the time I started the project and the time I finished it, my VDP chip went bad. I am very pleased with the results I have had with the 14.318 Mhz crystal. It really does work and you can really tell the difference in speed in both BASIC and Extended BASIC. I haven't tried LOGO yet. I have done some benchmarking with the two crystals and would like to share my results with you. By the way, I cut a notch in the rear of my TI right beside the cassette port and placed my switch there. It fits perfectly.

The following program was run in both TI BASIC and Extended BASIC:

```
10 CALL CLEAR
20 FOR X=1 to 100
30 PRINT X
40 NEXT X
50 END
```

Here are the program's results as measured by myself in seconds:

TI BASIC -12 Mhz: 18.91 Seconds

TI BASIC -14 Mhz: 15.84 Seconds

Extended BASIC -12 Mhz: 10.05 Seconds

Extended BASIC -14 Mhz: 08.35 Seconds

I also tested all of my command modules with the 14.318 Mhz crystal running. I own 51 command modules as of this date and tested all but four of them. The four not tested are Personal Real Estate, TI LOGO II, Ms. Pac-Man and Championship Baseball. The following modules will work with both the 12.000 and 14.318 crystals.

Timothy goes on to list 44 or so modules, all common ones including the games and several third-party cartridges like "Paint 'n Print,"

"Miniwriter II" and the Atari game cartridges. According to Tim, the following modules will work only under the 12.000 Mhz crystal: Indoor Soccer, Super Demon Attack, Moon Mine.

Thanks for a terribly informative letter, Timothy. Maybe we should start a "Best Letter of the Month" contest and give out some software to the best letter sent in and published. What are your thoughts?

Good Idea!

User Groups, the heart and soul of the TI community, survive by the hard work of the users. How these groups put out such great newsletters and mail out, often, hundreds of copies on the meager income they have from membership dues, I'll never know. For the larger groups, the costs are enormous. One solution from the continually innovative LA Users (P.O. Box 3547, Gardena, CA 90247) is to produce their own software offerings, make them available nationally at next-to-nothing prices, and make a little profit to supplement local club activities. But, then not every club has a programmer as ingenious and proliferative as Tom Freeman. Tom and the LA group has made available "Printgems"—a disk full of printer utilities that go a long way to making the TI a (I shudder at using the term) a desktop publishing tool. With this set of extensively documented (27 pages of printed docs) utility programs, one can print files in two, three or four columns, print a file sideways, and print program listings or any file in any width column you like. A great set of programs. Cost? Would you believe \$10? While you are at it, if you are using TI Forth, order the LA group's "Forth Notes." There are 6 issues, each about 20 pages or so, and each \$2.50. Highly recommended.

And Another One...

Rory Binkard (808 S. Cloudas Avenue, Sioux Falls, South Dakota 57103), who I mentioned some time back with a great tip for using PC Pursuit, is back at it again. He now makes available 2 disks crammed with information about Pursuit. Besides the text files to read and print out, Rory has included a set of programs to help figure out if a certain prefix is available

through PC Pursuit in a given area code. If you are on PC Pursuit, this package is a must. If you are not, you should be. Cost? Nothing. Send Rory 3 initialized disks, a mailer and return postage, or send \$4, your address and preferred disk format and Rory will do the rest. If you send disks, why not include some public-domain software for Rory's efforts? You won't find a better deal than this anywhere.

New Products From RYTE Data

Again, Bruce Ryan of RYTE Data (210 Mountain Street, Haliburton, Ontario, Canada KOM 1S0) supports your TI Forum column. Bruce has corralled one of the most gifted TI programmers around and is working him to death! Monty Schmidt who has already produced a GPL code "linker," and a "Super Clock Support" package for the Corcomp clock card, has now published a manual. "Technical Drive" is for the hard-core hackers among you. The 36 pages or so of the manual contain detailed, commented, assembly language listings of the Corcomp 9900 clock card, the TI RS232 card and the TI Disk Controller card. The section on the controller card also contains a map of VDP memory used by the Disk Controller, a review of the format of TI disks, and descriptions of the various low-level access routines used by the cards. This is some heavy-duty "tech-talk" here folks. So, if you are into the innards of the TI, this handbook has information previously unavailable. Check it out if it is for you. Cost: \$17 plus \$2 shipping. RYTE Data also announces something he referred to as "4A Command Line DOS." This software is a command line driven DOS like MSDOS that includes commands like BATCH, BEEP, CLS, COPY, DELETE, DISKNAME, DIR, ECHO, HELP, INIT and many more. It reportedly will also let you run BATCH files and has an auto-boot batch file option. The software will reside in the >6000 space so it will need a "supercartridge," Gram Kracker, Gram Karte, or anything else with RAM from >6000 to >8000. Monty intimated that if there is enough interest, RYTE Data may release this as a stand-alone cartridge. I don't have any more details, but if you are interested (and who wouldn't

bel), write RYTE Data for further details. Sounds like another winner.

Service Available

Richard Fleetwood, president of the Forest Lane TI Users Group (winners, incidentally of our "Newsletter of the Month" award; P.O. Box 743885, Dallas, TX 75248) has a repair service available for TI equipment. He and Bruce Palmer have been doing repairs on TI equipment for several years—all kinds, from cards to consoles. In fact, Bruce worked out of Lubbock on the 99/4A system when it was being built, as a technician. So they know what they are doing. They will do most repairs on the console for \$25, which sure beats the TI Exchange Center price of more than \$40. And Richard offers this deal: if the required repairs will cost more than the TI exchange price, then they will return the console or ship it to Lubbock as the customer requests. Fair enough! Write before you send anything for repairs to get full shipping instructions. The company is Amardillo Bytes, 1125 Easton Road, Dallas, TX 75218; (214) 328-9257.

Jonathan Speaks

It is hard to believe, but there is still a dedicated legion of 99/4A users that have a TI Thermal Printer. The Thermal Printer (also known as device "TP") is not extremely useful, since it uses thermal paper and supports only 32 columns of text. Thermal paper has a tendency to darken over time, and has a different look and feel than regular white paper does. The thermal paper on the TI TP is three and one half inches wide, which makes it even more distinguishable from standard paper.

However, there are advantages to TP's. They are perfect for making disk catalogs, for example. Using Disk Manager 2, one can produce a neatly-printed catalog of files on a disk which can then be inserted right into the disk sleeve. Also, some old TI modules only support the TP for printing.

The TI TP is fairly difficult to find, but there are occasional sales of them, usually for around \$20-25. For that amount, the TP is a good investment. It plugs right onto

continued on page 166

Reader's Digest Sells The Source

The Reader's Digest Association, Inc., has sold Source Telecomputing Corp. to Welsh, Carson, Anderson and Stowe, one of the nation's largest venture capital firms. The purchase price was not disclosed.

Reader's Digest in 1980 purchased an 80 percent stake in The Source, an electronic database and information services provider. The Source, based in McLean, Va., earned a profit on more than \$14 million in annual revenues in 1986. More than 60,000 subscriptions serve

over 100,000 personal computer users worldwide.

George V. Grune, chairman and chief executive officer of Reader's Digest, and former CEO of The Source, said, "We're proud of the people at The Source and the progress they have made in establishing a leadership position in their market. With their new partnership, The Source can be expected to get the maximum return on their information services and marketing savvy."

Jay Keller, president of The Source, said, "We've had an excellent relationship with

Reader's Digest and we're developing a similar one with WCAS." Welsh, Carson, Anderson and Stowe's investment strategy focuses on information services, which Keller calls "an ideal situation for The Source." Andrew Paul, a general partner of Welsh, Carson, Anderson and Stowe, calls the acquisition "a foundation on which we can build a large organization through internal growth and additional acquisitions."

Reader's Digest publishes the world's most widely read magazine in 15 languages.

More than 100 million people in 197 countries read 39 editions of *Reader's Digest*. The company also is among the world's largest book publishers, recorded music producers and direct-mail marketers. The fiscal year ending June 30, 1986, was the company's most profitable in history. As a private company Reader's Digest does not disclose profits.

Grune said the Reader's Digest strategic plan calls for capitalizing on the company's strengths in publishing and direct marketing. "Our future growth will come from other

magazines, expansion of our current businesses and development of products and services that will be marketed by direct mail," he said. Reader's Digest made its first acquisition of another U.S. magazine in December 1986 with the purchase of *Travel-Holiday*.

L.F. Rothschild, Unterberg, Towbin, Inc., served as investment advisor for Reader's Digest on the sale of The Source.

For further information contact Reader's Digest, Pleasantville, NY 10570; 914-241-5159. ●

TI Forum

continued from page 165

the side connector on the 99/4A (and has its own side connector to allow for more peripherals) and uses paper in a large roll, reminiscent of adding machines. TI is reputed to have stockpiles of the paper available.

One problem with used TP's is that the two print elements (ceramic tiles which produce "dots" of heat much like a dot-matrix printer) can become misaligned or dirty. To clean the

elements, first remove the cover of the printer.

Next, unplug the motor from the board, noting the direction that it plugs in (a black wire runs toward the heat sink). Then, carefully remove the two screws holding the print element assembly. *Carefully* lift up the assembly and tilt it forward. Two printed circuit strips lead up to the elements, and are merely "stuck on" to them. If all works well, they will not become unstuck! If they do, however, it is laborious, but not impossible,

to get them reattached.

At this point you should be able to unhook the spring beneath the paper holder. You can now move the print elements away from the roller, clean them with alcohol, and reposition them.

Quick TI Disk Drive Repair

Several times I (JZ) have heard of a particular problem with the old-style TI PHP1250 disk drive (with the pop-open door). The drive will function flawlessly in both reading and writing, but will not properly initialize a disk. Instead, a "drive not ready" or "disk error 16" is returned, depending on the disk manager program in use.

My own drive had this trouble about two years ago. Working with Richard M. Bies of Pittsburgh, PA, I finally discovered the cause: the "popping" of the disk drive door had jarred the index hole detector out of place. Since the drive could not find the index hole, it returned an error.

In most cases, readjusting the detector should not prove to be a real problem. First, remove the drive from its p-box housing (or external power supply), and then remove its metal "shell." Most of the drive's innards should now be exposed. Next, look at the circle with a radius of where the index hole would be if a disk were inserted on the drive. A small plastic connector will be right above that area, on a metal strut that moves as the disk drive door is opened and closed. This is the connector to the index hole detector. Usually pushing this firmly back into place on the strut will solve the problem. However, the metal leads going into the connector may have snapped. Some soldering will be required if that is the case.

My drive is still working fine, grinding noises as it reads and writes to disk notwithstanding. Barry Boone of Sand Springs, OK, provided a little more information about the in-

dex hole detector. Since the index hole is referenced "only" in initializing a disk, it would seem that the detector is not even necessary—any spot on the disk could be arbitrarily chosen as its first sector. In fact, the Apple II line of computers do just that. In making "flippys" (using the other side of a disk to store data, which, by the way, is not recommended), there is then no need to punch out a new, mirrored index hole. Boone said that the "feature" of requiring an index hole for the 99/4A disk systems lies in the disk controller, not the drives.

Using PRINT USING with a Printer

One of the more obscure statements available with TI Extended BASIC is one called PRINT USING. Even more obscure is the fact that this statement can be used to format variables and constants that will be dumped to your printer. The Extended BASIC manual, on page 150, shows several examples of how PRINT USING can be used to format data for screen display, but nary a word of how to do the same with open files. It can be done, and is much more powerful than you may realize.

Any discussion of PRINT USING will require an understanding of the IMAGE statement, so if you are not familiar with it, you had better brush up on it first. The PRINT USING statement uses IMAGE in one of two ways, either with a string expression, or a line number reference. I prefer the latter, as it allows for more flexibility, but since these different methods are explained in the manual, I will limit this to a few simple examples that are not shown in the manual.

```
100 TCOST = 19.55
110 IMAGE ###.##
120 OPEN #1:"PIO" (or your printer code (TP?))
130 PRINT #1,USING 110:TCOST
```

Running this sample program will effectively show how

the PRINT USING statement will work with an open file. Of course, there are many other variations of IMAGE that can be used, so experiment with them and watch how it performs when line 130 dumps it to the printer. Shown below are a few more examples for use with an open file.

```
110 IMAGE "###.##"
130 PRINT #1, USING 110:COST1,COST2
```

This IMAGE statement will allow you to print two (or more) variables at a predetermined spot on the same line. The length of the string expression in the IMAGE statement can be as long as you wish, up to the limit of an Extended BASIC line.

```
110 IMAGE "#####"
130 PRINT #1,USING 110:"TOTAL COST",TCOST
```

This version shows how you can format the printed line for string data as well as numerical data. A string variable could be used in place of the string constant, as below.

```
105 A$ = "TOTAL COST"
110 IMAGE "#####"
130 PRINT #1,USING 110:A$,TCOST
```

It is possible to place the IMAGE statement inside the PRINT USING statement, as shown below. First, delete line 110.

```
130 PRINT #1,USING "###.##":TCOST
or 130 PRINT #1,USING "##### ###.##":A$,TCOST
```

A few other points to remember include the fact that IMAGE and PRINT USING can be used to round off calculated variables. A single string expression such as "#####.##" will round off and decimal align numbers as small as .01 up to 999999.99, and print the number at any designated location. This function could save many hours of algorithm development for accomplishing the same thing. ●

It Isn't Sweep, It's Cweep, And It's Excellent And Cheep!

by Hal Nieburg

To correct an error in the series of pieces on free-ware/public domain utilities, let me once again point to one of my favorite programs, CWEEN.EXE. Based on the popular SWEEP.COM of CP/M fame, it has been around a long time, but is still one of the best file managers around! I keep it handy (on the hard drive BIN1) and find myself using it every day.

I use it for backing-up hard drive directories on multiple disks. Using the "W" command, one can tag all the files of a sub-directory, the total exceeding 362K. Then one can mass-copy them to a floppy drive. As each disk becomes full, the message "insufficient space" appears and the activity pauses. After inserting a new floppy, the copying resumes exactly where it left off, not missing a beat or a file.

The View command provides a fast scrolling facility, or the Hex command can be used for viewing the code of software in hex notation. A real contribution to the public domain. Every function executes swiftly with clear, uncluttered displays. And the whole utility occupies only 26K bytes on the disk.

Here is the main menu of commands:

```
sp/cr Advance to next file
[A] Re-tag '#' marked files
[B] Back up one file
[C] Copy file to drive
[D] Delete a file
[E] Erase (un)tagged files
[F] Free space on a drive
[H] Hexadecimal display
[I] Print size/time for file
[J] Jump to a named entry
[P] Print this message
[L] Log new drive/filename
[M] Mass copy tagged files
[P] Protected mass copy
[R] Rename a file
[S] Sort directory
[T] Tag a file
[U] Untag a file
[V] View file on screen
[W] Wildcard file tag
[X] Exit program
[Z] Change sub-directory
```

Written by Gary M. Berg, Chemineer, Inc. P.O. Box 1123, Dayton, OH 45401. I know many users who would not be parted from this elegant and compact utility. The program is available on PC-SIG disk #283 under the name CWEEN13.EXE, along with plenty of documentation. Or perhaps, you might write to author Gary Berg. The current release is Version 2.14. Highly recommended! ●