TI-99 USERS OF PERTH

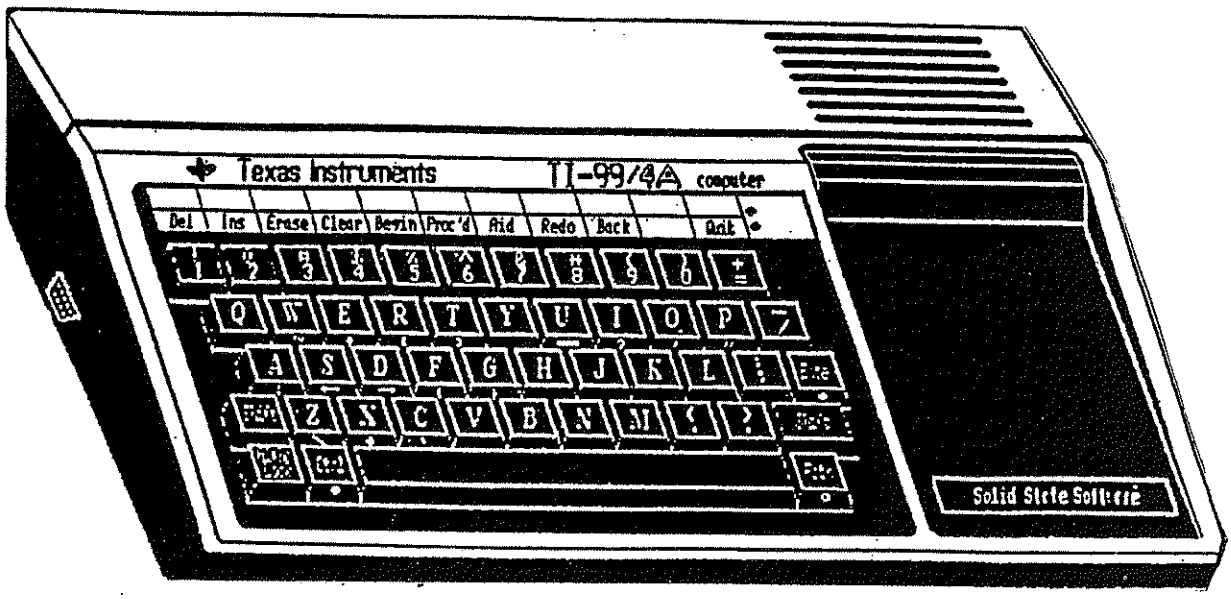
TIUP TIT BITS

VOLUME 15 No. 2
AUGUST 1996

"IT PAYS TO ADVERTISE"

This style of advertising bill, forming the foundation of our current publicity drive, is to encourage new members into our organisation. It is based upon similar ideas seen in the HUGgers and MUNCH Newsletters.

RECOGNISE ME?



IF YOU WISH TO KNOW MORE ABOUT ME, CONTACT

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PLEASE NOTE, OUR ADDRESS IS

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EDITORIAL by F.Graham Secretary/Editor

TI-99/4A - Trash or Treasure: The speed at which people replace their functional but outdated electrical and electronic equipment, for the latest with 'Bells and Whistles', never ceases to amaze me. It was refreshing, therefore, when I came across an article outlining the efforts of groups of dedicated people who have establish Obsolete Computer Museums. The purpose of these museums is to display a range of the once loved computer hardware, all repaired and restored to their pristine glory. A visit to these museums, will allow the sentimentalists among us to recall those long sleep depriving hours, trying to understand and tame the new frontier that was presented to us, with the purchase of our first computer.

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ATTENTION: GREENHORNS!

My friend was retyping the history of a scaled model of our community's original prairie home on my TI using Funnelweb. Imagine our shock when she received a message: Text Buffer Full.

When she asked me about it, what could I say? I didn't even know I had a text buffer! She had 3 1/2 paragraphs to go, the thought of her retyping was enough to get my adrenalin going up to 3rd. floor for the TI-WRITER manual.

The Index helped me find LoadF/Merge and Text Buffer Full, but the subsequent pages only impressed me with the fact she had already typed 23,000 characters and there was no room to merge! Horrors!

Next I called a local TIer who also was puzzled. Before I called another TIer long distance, I decided it was cheaper to experiment on 100 pieces or so of computer paper. My first idea was to break the file when it ended on a page, and thus have to type that part over and make an end file and print it independently. It wouldn't co-operate and end perfectly.

Back to the manual. Why not try this Include File stuff on page 109? So I broke the original into two files and saved one as Pat/E and one as Pat/F(oh, I was past numbers and earlier letters of the alphabet by now!). I tried the fancy part on file Pat/E and successfully merged the end in the beginning. Good, there is hope.

Next, I stripped the two files of all codes except the dot command to center the title .CE2. Then I put all the dot commands in a file I called PAT/EF. It looked like this:

```
.IF DSK1.C9
.IF LM12;RM73
.PL 62
.HE %
.IF DSK2.PAT/E
.IF DSK2.PAT/F
```

It worked! Only one thing remained, how to match it perfectly as I was one line off. I had left a line at the end of one file and at the beginning of the next. Once it was removed, it was perfectly merged and all the pages sequentially numbered as if it were truly one file. I had never used the .HE %, but while I was looking for answers came across it and decided I may as well learn all I can so the paper is not educationally wasted. It was neat to see every thing so cleanly merged and pages numbered sequentially, treating it all the same.

I thought there must be greenhorns like myself who would take courage in knowing we can produce work that looks like we know what we are doing.

Take heart, if I can, you can!

MICKEY'S PRINTER COMMAND REFERENCE SHEET - 9605 - PAGE 1/4

Make of Printer Model Number of Printer	Alphacom 81	Axiom GP-100	Canon BJ-100	Canon BJ-200	Canon BJ-200e	Canon BJ-200ex	Canon BJ-230	Epson FX-80
Reset Printer			27 64	27 64	27 64	27 64	27 64	27 64
Condensed Print On Condensed Print Off			15 18	15 18	15 18	15 18	15 18	27 15
Double-High Print On Double-High Print Off		27 65	27 119 1 27 119 0	27 119 1 27 119 0	27 119 1 27 119 0	27 119 1 27 119 0	27 119 1 27 119 0	
Double-Strike Print On Double-Strike Print Off			27 71 27 72	27 71 27 72	27 71 27 72	27 71 27 72	27 71 27 72	27 71
Double-Wide Print On Double-Wide Print Off	27 14 27 15	14 15	27 87 1 27 87 0	27 87 1 27 87 0	27 87 1 27 87 0	27 87 1 27 87 0	27 87 1 27 87 0	27 87 1
Elite Print On Elite Print Off			27 77 27 80	27 77 27 80	27 77 27 80	27 77 27 80	27 77 27 80	27 77
Emphasized Print On Emphasized Print Off			27 69 27 70	27 69 27 70	27 69 27 70	27 69 27 70	27 69 27 70	27 69
High-Quality Print On High-Quality Print Off			27 120 1 27 120 0	27 120 1 27 120 0	27 120 1 27 120 0	27 120 1 27 120 0	27 120 1 27 120 0	27 120 1
Italics Print On Italics Print Off			27 52 27 53	27 52 27 53	27 52 27 53	27 52 27 53	27 52 27 53	27 52
Proportional Print On Proportional Print Off			27 112 1 27 112 0	27 112 1 27 112 0	27 112 1 27 112 0	27 112 1 27 112 0	27 112 1 27 112 0	27 112
Subscript Print On Subscript Print Off			27 83 1 27 84	27 83 1 27 84	27 83 1 27 84	27 83 1 27 84	27 83 1 27 84	27 83 1
Superscript Print On Superscript Print Off			27 83 0 27 84	27 83 0 27 84	27 83 0 27 84	27 83 0 27 84	27 83 0 27 84	27 83 0
Underline Print On Underline Print Off	27 69 27 82		27 45 n 27 45 n	27 45 n 27 45 n	27 45 n 27 45 n	27 45 n 27 45 n	27 45 n 27 45 n	27 45 1
1/6 Line Spacing 1/8 Line Spacing n/60 Line Spacing 7/72 Line Spacing n/72 Line Spacing n/144 Line Spacing n/180 Line Spacing n/216 Line Spacing n/360 Line Spacing			27 50 27 48 27 65 n -------- -------- -------- 27 51 n -------- 27 43 n	27 50 27 48 27 65 n -------- -------- -------- 27 51 n -------- 27 43 n	27 50 27 48 27 65 n -------- -------- -------- 27 51 n -------- 27 43 n	27 50 27 48 27 65 n -------- -------- -------- 27 51 n -------- 27 43 n	27 50 27 48 27 65 n -------- -------- -------- 27 51 n -------- 27 43 n	27 50 27 48 -------- 27 49 27 65 n -------- -------- 27 51 n --------

(Continued on Page 5)

MICKEY'S PRINTER COMMAND REFERENCE SHEET - 9605 - PAGE 2/4

Make of Printer Model Number of Printer	Epson MX-80	Epson LX-800	Epson Stylus 800	Epson Stylus 850	Gemini 10-X	Gemini SG-10	Heulett-Pac Deskjet 310	Okidata 180
Reset Printer	--------				27 64	27 64	27 69	
Condensed Print On Condensed Print Off	27 15				27 15	27 15		
Double-High Print On Double-High Print Off								
Double-Strike Print On Double-Strike Print Off	27 71				27 71	27 71		
Double-Wide Print On Double-Wide Print Off	27 14				27 87 1	27 87 1		
Elite Print On Elite Print Off	-------- --------				27 66 2	27 66 2		
Emphasized Print On Emphasized Print Off	-------- --------				27 69	27 69	27 40 115 50 81	
High-Quality Print On High-Quality Print Off	-------- --------				-------- --------	27 66 4	27 40 115 49 83	
Italics Print On Italics Print Off	-------- --------				27 52	27 52	27 40 115 49 80	
Proportional Print On Proportional Print Off	-------- --------				-------- --------	27 112		
Subscript Print On Subscript Print Off	-------- --------				27 83 1	27 83 1		
Superscript Print On Superscript Print Off	-------- --------				27 83 0	27 83 0		
Underline Print On Underline Print Off	-------- --------				27 45 1	27 45 1	27 38 100 64	
1/6 Line Spacing 1/8 Line Spacing n/60 Line Spacing 7/72 Line Spacing n/72 Line Spacing n/144 Line Spacing n/180 Line Spacing n/216 Line Spacing n/360 Line Spacing	27 50 27 48 -------- 27 49 27 65 n -------- -------- -------- --------				27 50 27 48 -------- 27 49 27 65 n 27 51 n -------- -------- --------	27 50 27 48 -------- 27 49 27 65 n 27 51 n -------- -------- --------	-------- 27 38 108 8 68 27 40 115 n 86 -------- -------- -------- --------	

(Continued on Page 6

MICKEY'S PRINTER COMMAND REFERENCE SHEET - 9605 - PAGE 3/4

Make of Printer Model Number of Printer	Okidata Micro 181	Okidata Micro 320	Okidata	Panasonic KX-P1091	Panasonic KX-P1123	Seikosha GP-550A	Seikosha SP-1000AP	Seikosha SP-2000AI
Reset Printer			24	27 64	27 64			27 99
Condensed Print On Condensed Print Off			29	15 18	15 18	27 67		27 113
Double-High Print On Double-High Print Off					27 119 1 27 119 0			
Double-Strike Print On Double-Strike Print Off			27 72	27 71 27 72	27 71 27 72			
Double-Wide Print On Double-Wide Print Off			31	27 87 1 27 87 0	27 87 1 27 87 0	27 14 27 15		14 15
Elite Print On Elite Print Off			28	27 77	27 77	27 69		27 69
Emphasized Print On Emphasized Print Off			27 84	27 69 27 70	27 69 27 70	27 35 27 36		
High-Quality Print On High-Quality Print Off			27 49	27 110				27 72
Italics Print On Italics Print Off			-------- --------	27 52 27 53	27 52 27 53	27 66		27 105 49 27 105 48
Proportional Print On Proportional Print Off			-------- --------	27 111	27 112 1 27 112 0	27 80		27 112
Subscript Print On Subscript Print Off			27 76	27 83 1 27 84	27 83 1 27 84	27 68		27 98 50 27 98 48
Superscript Print On Superscript Print Off			27 74	27 83 0 27 84	27 83 0 27 84	27 85		27 98 49 27 98 48
Underline Print On Underline Print Off			27 67	27 45 1 27 45 0	27 45 1 27 45 0	27 88 27 89		27 88 27 89
1/6 Line Spacing 1/8 Line Spacing n/60 Line Spacing 7/72 Line Spacing n/72 Line Spacing n/144 Line Spacing n/180 Line Spacing n/216 Line Spacing n/360 Line Spacing			27 54 27 56 -------- -------- -------- 27 37 57n -------- -------- --------	27 50 27 48 -------- 27 49 27 65 n -------- -------- 27 51 n --------	27 50 27 48 27 65 n -------- -------- -------- 27 51 n -------- 27 43 n	27 54 27 56 -------- -------- -------- -------- -------- -------- --------		27 65 27 66 -------- -------- -------- 27 84 n -------- -------- --------

(Continued on Page 7)

MICKEY'S PRINTER COMMAND REFERENCE SHEET - 9605 - PAGE 4/4

Make of Printer Model Number of Printer	Seikosha SP-1000AS	Seikosha SP-1200AS	Star NX-10	Star NX-15	Star NX-1000	Star NX-1001	Star NX-2420	TI-99/4A PHP 2500
Reset Printer	27 64	27 64	27 64		27 64	27 64	27 64	64
Condensed Print On Condensed Print Off	15 18	15 18	15 18		15 18	15 18	15 18	15 18
Double-High Print On Double-High Print Off			27 104 1 27 104 0		27 119 1 27 119 0	27 104 1 27 104 0	27 119 1 27 119 0	
Double-Strike Print On Double-Strike Print Off	27 71 27 72	27 71 27 72	27 71 27 72		27 71 27 72	27 71 27 72	27 71 27 72	27 71 27 72
Double-Wide Print On Double-Wide Print Off	27 87 1 27 87 0	27 87 1 27 87 0	27 87 1 27 87 0		27 87 1 27 87 0	27 87 1 27 87 0	28 69 1	14 20
Elite Print On Elite Print Off	27 77 27 80	27 77 27 80	27 77 27 80		27 77	27 77 27 80	27 77	
Emphasized Print On Emphasized Print Off	27 69 27 70	27 69 27 70	27 69 27 70		27 69 27 70	27 69 27 70	27 69 27 70	27 69 27 70
High-Quality Print On High-Quality Print Off	27 120 1 27 120 0	27 120 1 27 120 0	27 120 1 27 120 0		27 120 1 27 120 0	27 120 1 27 120 0		
Italics Print On Italics Print Off	27 52 27 53	27 52 27 53	27 52 27 53		27 52 27 53	27 52 27 53	27 52 27 53	
Proportional Print On Proportional Print Off	27 112 1 27 112 0	27 112 1 27 112 0	27 112 1 27 112 0		27 112 1 27 112 0	27 112 1 27 112 0	27 112 1	
Subscript Print On Subscript Print Off	27 83 1 27 84	27 83 1 27 84	27 83 1 27 84		27 83 1 27 84	27 83 1 27 84	27 83 1 27 84	
Superscript Print On Superscript Print Off	27 83 0 27 84	27 83 0 27 84	27 83 0 27 84		27 83 0 27 84	27 83 0 27 84	27 83 0 27 84	
Underline Print On Underline Print Off	27 45 1 27 45 0	27 45 1 27 45 0	27 45 1 27 45 0		27 45 1 27 45 0	27 45 1 27 45 0	27 45 1 27 45 0	
1/6 Line Spacing 1/8 Line Spacing n/60 Line Spacing 7/72 Line Spacing n/72 Line Spacing n/144 Line Spacing n/180 Line Spacing n/216 Line Spacing n/360 Line Spacing	27 50 27 48 -------- 27 49 27 65 n -------- -------- 27 51 n --------	27 50 27 48 -------- 27 49 27 65 n -------- -------- 27 51 n --------	27 50 27 48 -------- 27 49 27 65 n -------- -------- 27 51 n --------		27 50 27 48 -------- 27 49 27 65 n -------- -------- 27 51 n --------	27 50 27 48 -------- 27 49 27 65 n -------- -------- 27 51 n --------	27 50 27 48 -------- -------- -------- -------- -------- -------- 27 43 n	27 50 27 48 -------- -------- 27 65 n -------- -------- -------- --------

Advice on using higher modem speeds

Software, cabling can make the difference

The following suggestions on using a TI with a modem were taken from a series of messages by Michael Maksimik on the Chicago BBS and was edited by William M. Lucid for use on the Hoosier Users Group BBS. We found it in the HUG newsletter.

If your computer is a TI99/4A, use Term80 (a new emulator which I am currently evaluating) or Telco or Mass Transfer. Telco has some nice windowing features, and it supports 80-column cards using the V9938/V9958 video processors. Mass Transfer, in all its inceptions, has some unique file transfer protocols for sending bunches of files to/from a BBS.

Term80 allows ANSI cursor emulation in 80 columns using a standard TI display. If you have a standard V.22 1200-baud modem, you should be able to connect to a BBS with no trouble. Bell 103 modems (300 baud) are also supported, but for your phone bill's sake, upgrade! V.22bis (2400 baud) will work with the TI, but it is really the limit that the TI can display easily unless you have some type of processor upgrade or hardware flow control (RTS/CTS signals from modem get controlled from the terminal program to prevent loss of data). I have tested Telco at 4800 baud and it is marginal. Super Mass Transfer, 80 columns and ANSI monochrome, is better suited to 4800 baud/9600 baud. Some 2400-baud modems have the data compression feature and this allows a terminal rate higher than the line rate.

Such a modem (2400 line rate, with compression and error correction) needs a higher host rate so it efficiently compresses/decompresses and corrects errors with no overrun errors. On such a modem, make your terminal rate 9600 baud, which is four times the line rate. It is rare that the modem will generate long sequences of 9600-baud data, but the decompression can produce short bursts of 9600-baud packets, especially with text data which is highly compressible. Make sure you use ITU-T V.42/V.42bis (or LAP-M) protocols. Don't use MNP protocol unless you have to for maintaining a stable connection. Most phone lines now can handle higher baud rates, and since this BBS supports a maximum carrier of 14,400, you may want to invest in at least a modem of this type. Computer fairs are practically giving away V.22bis/V.42bis modems (2400-baud modem with compression).

THE TI AND 9600 BAUD

It is very difficult for the TI to keep up with 9600 baud, not that it is a slow computer, but because most terminal programs use the video circular buffer for receiving characters. When a character is sent through the RS232 port, the interrupt routine will grab the character and put it into the video RAM. This is the secret of how TE-II works.

TI is slow in this routine for a couple of reasons. First, there is only *one* IRQ line to receive interrupts from *all* peripherals. A second line was planned for the TI99/8, and an interrupt ID scheme was developed but never implemented, allowing faster detection of the interrupt. The problem occurs when an interrupt is detected; the TI does not know which peripheral generated it. It must then turn on each card and pass control to the card so that TI can check itself for a possible interrupt.

Some cards implement an interrupt routine consisting only of a return instruction, other cards actually check for a data byte. The RS232 card checks for interrupts on *every* port (serial and parallel ports) and if you have two RS232 cards, that means six ports are checked for an incoming character. If you have a DIJIT video card, it also has an interrupt routine, and, generally, all cards are scanned.

Some cards (like the Myarc 512K card) do some type of bank switching on interrupts; the bottom line is that the computer is doing a lot of unnecessary searching for one little character, which takes a lot of processor time.

The problem is compounded when we actually get the character; we need to store it somewhere. Well, the TI wasn't made with any large amount of CPU RAM, so we must store it in slow VDP RAM.

VDP RAM access is byte-oriented, and it is pretty slow. Having a faster video (even if it is in 40-column mode) helps. A V9938/V9958 processor is a much better choice, because it can handle data faster from the CPU.

You can also do some other things to speed the system up a bit:

1) Get the Western Horizons Technology keyboard module, which includes an updated system ROM, containing a much better interrupt scanning routine. It is more efficient than the old console routine, and the new unit allows use of new PC keyboards (101/102-key keyboards) and it adds some usable system memory.

2) You can boost processor speed during terminal I/O by having a switchable 16-

(Continued on Page 9)

MODEM —

MHz crystal. The TI uses a 12- or 48-MHz crystal. The 48-MHz crystal is used with the TIM9904 chip. You can substitute a TIM9904A and use the 12-MHz crystal instead, and use a switch to "turbo" the system to 15 MHz. Be aware that this will screw up baud rates, so use Telco, which allows a custom-calculated baud rate taking into account the increase in system clock speed.

3) Use some flow control. Although no terminal programs are available which use flow control (Term80 may use it, I haven't found out yet), this allows a high line rate and controlled terminal rate so you don't use data, and it is easier to start/stop the flow of data.

On the Geneve, I have been able to use Super Mass Transfer in GPL mode, with much better results. In fact, if you combine this with TEXEC, which is EXEC modified to allow use of a single interrupt input from *one* RS232 port (serial port 1), then the only scanning done on interrupt (EXTINT) will occur to serial port 1. This devotes more processor time to useful scanning for characters, and you can actually connect at a rate of 9600 (true rate) with a line rate of 9600 if you like. I have tried higher rates, but TEXEC doesn't really keep up at higher than 12,000 bps, and many modems don't allow those terminal rates.

You have to understand that line rates (300, 1200, 2400, 4800, 7200, 9600, 12,000 and 14,400) are rates negotiated on the line itself, between the two modems. Your terminal must be one of the following: 300, 1200, 2400, 4800, 9600, 19,200, 38,400, 57,600 or 115,200.

If your modem connects at 14,400 bps, you must have a terminal rate of at least 19,200, to allow for software compression and error correction to work properly. Since at these rates, interrupts for programs like Telco, Mass80, SuperMass80 and GEN-TRI usually fail, you must keep the rate at 9600.

If you implement flow control on the modem, this forces the modem to buffer data while the computer is busy. On PCs, the buffer is usually built into the 16550AF UART, which has a 16-,32- or 64-byte buffer for receiving character overruns when the CPU is busy doing something else, like drawing a screen. For our Geneve, we have no buffer and the CPU must read each character before the next one comes in, or we lose data.

Tim Tesch has made PORT work with the interrupt routine in native MDOS mode, using high-speed system memory to allow successful interrupt scanning and video (monochrome) update. (PORT is a new, high-speed terminal program for the Geneve. It is available through Cecure Electronics or from GEnie, Delphi and other services. It is currently in beta.—Ed.) Color screens at that high speed require a generally slower video mode and a color interpreter. So you need to enable flow control and the modem must support this feature if it has a high-speed modem. Be sure your modem has *hardware flow control*, which uses the RS232 pins 4 and 5 to control the flow of data.

This will allow you to use PORT's enhanced color ANSI features and high-speed YMODEM-G file transfer routines, and also high baud rates, which most new modems use and require for successful data compression and error correction. I normally run PORT at 38,400 with full flow control using the "MIKE" cable design.

TI	modem
2	3
3	2
5	20
7	7
8	4
20	5

The pin 2 is data from RS232 card to modem; pin 3 is data from modem to RS232 card; pin 5 is used to control DTR signal on modem, for fast hang-up; pin 7 is ground on both modem and RS232 card; pin 8 or RS232 represents request to send flow control. Internally, the TI RS232 has one lead cut and jumper soldered. This allows PORT an additional control line to switch this wire on and off independently of whether or not we want to send data. This line is like a faucet which shuts off the modem from sending us data, and the modem can thereby tell the remote system to stop sending data in turn. Pin 20 of the TI is the inbound clear to send flow control. The modem uses it to stop the TI RS232 from sending data. If the modem encounters a line error, or if the distant modem stops flow, then this stops it from sending the data.

The distant modem may encounter errors or the modems may negotiate data packets or may be in the process of ranging. These situations must prevent either system from sending data so both clear to send lines on both ends are deactivated. These lines (RTS and CTS) are very important, because they allow a faster serial device to access a slower computer or host, and the flow lines prevent loss of data. They allow your computer to accept data as fast as it can receive and they allow your computer to send data as fast as the remote system can handle reception.

Jeff's cable design is similar to mine, but he uses pin 5 to activate the flow control, and pin 8 is used to handle DTR hang-up, or you just disable DTR hang-up in other programs which toggle that line during transmission.

In other words, if you use Telco and PORT, with Jeff's cable, you have to disable DTR hang-up in Telco and use the three plus character and ATH to hang up. My cable (Mike) does not require this change, and you can still use DTR hang-up in PORT, Mass Transfer and Telco with no changes.

Jeff's cable design is ideal for those who have a non-TI card, and who do not wish to make the mod to their RS232 card to add the extra CRU line.

Ramcharged to sell Texaments programs

Ron Markus of Ramcharged Computers says he has bought all the rights to programs for the TI99/4A formerly produced by Texaments.

For further information, contact Ramcharged Computers, P.O. Box 81532, Cleveland, OH 44181, (216) 243-1244.

USER NOTES

Mosquito correction

There was a small error in a small program that you probably figured out very quickly. In MOSQUITO, in last month's user notes, has a line with one too many commas in line 120. Here is the error:

```
1808,A,B,) :: CALL MOTION(#1
```

Here is the correction:

```
1808,A,B) :: CALL MOTION(#1
```

Web page address corrected

A tilde got dropped from a WWW page listed in the January edition. Rich Polivka's TI home page is at http://w3.gwis.com/~polivka/994apg.html.

TI/Geneve archive site set for Internet

Steve Hayter is setting up a software archive for TI/Geneve software. According to a post on the TI Internet newsgroup, "I've got the server already configured and have about 150MB allocated for the TI. I'm just waiting for the connection to come in and for the assignment of my domain name to be finalized."

Hayter can be reached at shayter@spar.ca.

Transcription error

Woodrow A. Wilson of San Diego, California, reports a small problem with a user note published in January entitled "Using hex codes to modify fonts." Wilson was the author of the user note.

Unfortunately, a minor error in the transcription crept into the paragraph that starts, "Now that we have the value, ..." The fifth sentence should read: "The next row will have column 1 and 2 filled in on the left half of our box and 8 and 4 on the right half."

When I wrote the article (for the *Computer Voice* newsletter), I had to eliminate some of the explanation because of lack of space. I would much prefer to have used a more descriptive term than "column," since it actually should be "the column with the value of 1," etc.

Printing line numbers with TI-Writer

When printing out TI-Writer documents, it is sometimes desireable to include the line numbers. If you are using a parallel printer, enter PF in the command line, and type L PIO and Enter. The line numbers will be included in the printout.

Multiplan works swimmingly with formulas

The followed was written by Dennis Wood.

I had been using Multiplan to keep records of my son's swim times by entering his times in seconds and hundreds of seconds, such as 31.89. This allowed me to add a row that consisted for a formula that searched through his times for the minimum — MIN(rc:rc) — to automate a visual search for the lowest time. A major problem occurred, however, when he began swimming longer lengths and exceeded 59.99 seconds. One solution would have been to express all times in seconds, such as 61.99 seconds, instead of 1:01.99. This allows the MIN( ) formula to still work, but the time display does not look correct and requires conversion back and forth.

What I did was to convert all the times to text entries by entering them in the Alpha mode instead of the Value mode. The display of 59.99 or 1:01.99 now look correct and can be entered directly without conversion.

Then I wrote a series of formulas using Multiplan's ability to convert text to value, VALUE( ), and value to text, FIXED( ), functions. If the string had a length of more than five, then it was assumed to have a colon at the sixth position counting from the right.

Then two formulas, one for minutes and another for seconds were written. If the length was more than five, minutes were extracted and converted to a value. If the length was five or less, minutes was set to zero. Seconds were converted by taking the last five positions and converting them to a value. One cell calculated minutes and a second calculated seconds. Then a third cell was used to combine the two values into seconds by multiplying minutes by 60 and adding seconds. I can now find the minimum by searching through a range of these converted values.

After finding the minimum, it is now necessary to display it as "min:sec." This is accomplished by using the integer function, INT( ), to find minutes and the modulo function, MOD( ), to find seconds, and converting them back into a text stream using the FIXED( ) function.

I printed the formula uising a printer setup of DSK1.XX, giving me a TI-Writer file on disk. I then merged the file into this report, and added comments. Cell format is expected to be "MM:SS.HH" where MM is minutes, SS is seconds and HH is hundredths of seconds.

Text input

```
1 "1:01.99"
```

Formula to compute and convert minutes to a value:

```
2 IF((LEN(R[-1]C)<6),0,VAL-
UE(MID(R[-1]C,1,LEN(R[-1]C)-
6)))
```

Formula to compute and convert seconds to a value:

```
3 VALUE(MID(R[-2]C,LEN(R[-
2]C)-4,R))
```

Formula to combine minutes plus seconds:

```
4 60*R[-2]C+R[-1]C
```

Formula to search several columns of converted times for minimum:

```
5 MIN(R[-1]C:R[-1]C[+4]
```

Formula to convert value back to text "min:sec," with seconds displayed to two decimals:

```
6 FIXED(IJNT(R[-1]C/60),0)&"
:"&FIXED(MOD(R[-1]C,60,2)
```

I hope this short note has helped make the power of Multiplan more useful to you.

Scrunch your numbers

Scrunch is an Extended BASIC routine that compresses the appearance of numbers. The numbers are displayed small in

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USER NOTES

all dimensions. They appear to be easily readable. The program was written by Jim Peterson.

SCRUNCH

```
100 CALL CLEAR !209
110 CALL SCREEN(8)!153
150 PRINT TAB(6);"SCRUNCHED
NUMBERS": :"          by Ji
m Peterson": : :" This utili
ty routine will" !139
160 PRINT "compress numbers
into half  the space, but th
ey may not  be very legible
on your    screen.": : : : :
!085
170 PRINT "            Pres
s any key" !251
180 CALL KEY(0,K,ST)!015
190 IF ST=0 THEN 180 !015
200 CALL CLEAR !209
210 RANDOMIZE !149
220 DATA 75557,22222,25127,6
1216,55571,74616,74757,71222
,75257,75711 !018
230 FOR J=0 TO 9 !064
240 READ C$ !254
250 CH$(J)="00"&C$ !108
260 NEXT J !224
270 CH=91 !125
280 RX=INT(10000*RND+1000)!0
74
290 N$=STR$(RX)!034
300 IF LEN(N$)/2=INT(LEN(N$)
/2)THEN 320 !030
310 N$="0"&N$ !082
320 FOR J=1 TO LEN(N$)STEP 2
 !160
330 P1=VAL(SEG$(N$,J,1))!231
340 P2=VAL(SEG$(N$,J+1,1))!1
63
350 FOR T=1 TO 7 !073
360 Z$=Z$&SEG$(CH$(P1),T,1)&
SEG$(CH$(P2),T,1)!087
370 NEXT T !234
380 CALL CHAR(CH,Z$)!176
390 Z$="" !003
400 P$=P$&CHR$(CH)!044
410 CH=CH+1 !143
420 IF CH>159 THEN 480 !147
430 NEXT J !224
440 PRINT N$;" ";P$ !210
450 P$="" !249
460 N$="" !247
470 GOTO 280 !104
480 PRINT "NO MORE CHARACTER
S AVAILABLE" !016
490 END !139
```

Disk catalog routine works on hard disks, RAMdisks and floppies

The following subroutine was written by Jesse Slicer. It allows users to catalog

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USER NOTES

hard disks, RAMdisks and floppies from Extended BASIC programs. It can be merged into a program and CALLed at anytime. A simple way to use it, is to merge it into memory and enter the following line:
1 CALL CAT("DSK2.")

SUB CAT

```
32000 SUB CAT(A$):: DIM B$(7
):: B$(1)="DIS/FIX" :: B$(2)
="DIS/VAR" :: B$(3)="INT/FIX
" :: B$(4)="INT/VAR" :: B$(5
)="PROGRAM" :: B$(6)="<DIR>
 " :: B$(7)="EMULATE" !183
32010 CALL CLEAR :: OPEN #1:
A$,INPUT ,INTERNAL,RELATIVE
:: INPUT #1:C$,B,B,C !158
32020 PRINT A$&" - DISKNAME=
 "&C$ :: PRINT "AVAILABLE= "
&STR$(C)&"  USED= "&STR$(B-C
):: PRINT !141
32030 PRINT "FILENAME    SIZ
E         TYPE      P" !05
5
32040 PRINT "---------- ---
--  ---------------- -" ::
FOR D=1 TO 127 :: INPUT #1:C
$,E,B,C :: IF C$="" THEN 320
80 !088
32050 D$=C$&RPT$(" ",10-LEN(
C$))&"   " :: E$=STR$(B)&RPT
$(" ",5-LEN(STR$(B)))&"  " :
: F$=B$(ABS(E))&" "&STR$(C)&
RPT$(" ",15-LEN(B$(ABS(E))&"
 "&STR$(C)))&"  " :: D$=D$&E
$&F$ !192
32060 IF E<1 THEN D$=D$&"Y"
ELSE D$=D$&"N" !118
32070 PRINT D$ :: NEXT D !09
6
32080 CLOSE #1 :: PRINT :"Pr
ess Any Key";!144
32090 CALL KEY(0,K,S):: IF S
=0 THEN 32090 !027
32100 SUBEND !168
```

Disk tips to keep you out of trouble

The following was written by Jim Swedlow and appeared in his TI-Bits column in the newsletter of the User Group of Orange County, California.

A while back a "Disk Doctor" attended one of our meetings. He had a number of interesting things to say. Here are a few of his comments:

• Do not clean your drives until you need to. Your system will tell you when it is time — you will have trouble reading disks.

• When you clean your drive, use any brand name commercial disk drive cleaner, and follow instructions.

• If this fails, you need to have your drive cleaned professionally. If you want to try it yourself, and you have a double-sided drive, be careful with the second read/write head. It is very easy to bend the bracket to the point that the head must be realigned.

• He has tested the amount of residue left on heads with brand name disks and cheapies. He found no difference. This does not mean that they are of equal quality, only that the cheapies are not dirtier than the expensive disks.

• He opposes flippies for single-sided users. His point is that when you flip a disk and it runs backwards in its cover, dirt is loosened and spun into the drive.

Over the years I have mentioned the importance of backing up your disks. Simply put, disk drives eat disks. One weekend when the temperature was over 100 degrees F., I was working on some letters, I blew both my word processing disk and my data disk.

I had a backup of the word processor, but it was not configured. That night, after it cooled down a bit, it took me about 30 minutes to recreate a working disk. The data files were simply lost.

The moral? Keep two backups of your program disks — one of the disk as you received it (the master) and one of your configured working disk (backup working disk). Do not forget to backup your data disks every now and then. This will save you time and aggravation next time your drive gets hungry.

MICROpendium pays $10 for items used in this column that are sent in by readers. Send User Notes to MICROpendium User Notes, P.O. Box 1343, Round Rock, TX 78680; email jkoloen@io.com.

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FOR SALE

HARDWARE FOR SALE
Smart One 2400X 2400baud modem with power supply (works with any TI modem cable), $30; Volksmodem 1200 baud modem (needs TI cable), $15; Signalman Mark XII 1200 baud modem (incl. TI cable, no docs), $15; Signalman III-TI 300 baud modem (incl. TI cable, no docs), $7.50; Commodore 1702 color composite monitor, incl. cables for TI99/4A (measures 13" diagonally), $70; add $5 shipping for each item except monitor. Will split shipping cost of monitor. Call John Koloen, 512-255-1512.

WANTED

PLATO PROGRAM DISK OR COPIES WANTED
I have lost the elementary math course and need replacement for and included all 10 #5207 to #5217, might also be interested in a catalog of other PLATO programs. Please write to Allan Madsen, 4608 38th Ave. Ne. Salem OR 97305-1607. v13n1

Museums blow the dust off early PCs

BY JAY APPERSON

LIKE a classic car buff lifting the bonnet of a vintage model, Bob Roswell lifted the hinged shell of his Commodore PET and propped it open with a metal rod.

"This thing never worked," he said, flushed with nostalgic amusement at the shortcomings of 1977's big splash in personal computers.

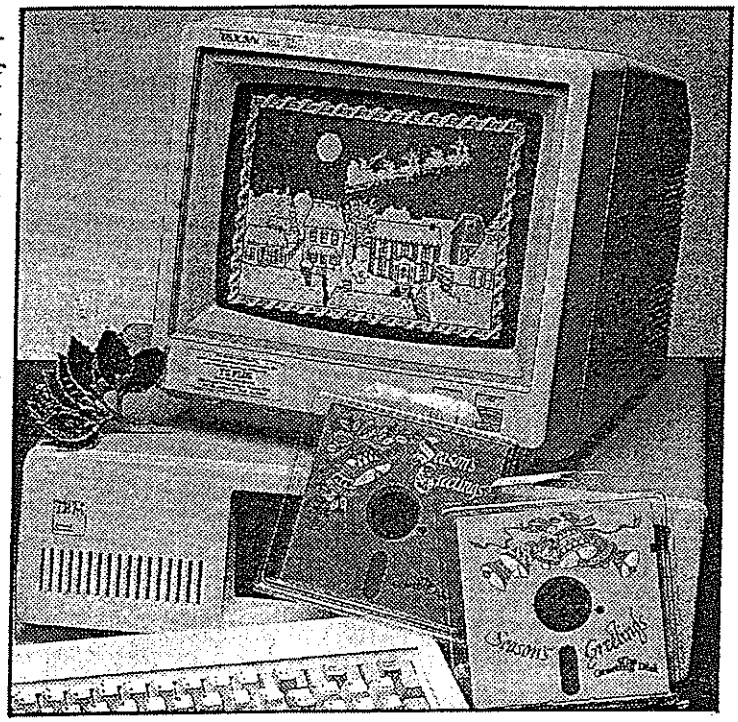
"We used to get in there and blast these things with a hair dryer to get the connections right."

Computers may be nothing more than appliances, the most calculating of machines. But to Mr Roswell and others of his generation, old models cast warm reflections for those who worked with them.

"Many people have spent hundreds, if not thousands, of hours behind these computers," he said, explaining why he established a personal computer museum.

"I find it very interesting that everybody who comes in here focuses on what their first computer was."

Anyone still grappling with the notion that memories are to be measured in megabytes, must consider that personal computers are now historical art objects.



Ancient: Vintage computers have become items of nostalgia in museums across the USA.

Computer collectors are a growing breed.

"Admirers of the youngest antiques around!" is the motto for the Historical Computer Society, which has grown from a dozen members to 300 in three years, according to the group's founder, David Greelish.

A similar group, the Computer History Association of California, has more than 1000 names on its mailing list and more than 20 vintage computers.

"It's a nice nostalgia in that you don't have to be old to enjoy it, and it's a valid nostalgia," said Tom Carlson, who posted photos of his collection in a Worldwide Web page titled The Obsolete Computer Museum (http://www.ncsc.dni.us/fun/user/tcc/cmuseum/cmuseum.htm).

"It really is the way people look at their old cars. Computers today are really pretty interchangeable — either you have one of a different number of Macintoshes or one of a number of PC clones. It didn't used to be that way."

Comparisons between the early personal computers and classic cars are many. George Keremedjiev, founder of the American Computer Museum notes that the early personal computers came in kits, inviting lots of tinkering.

"It was like a car where you did your own tune-up," he said.

"You could see where the signal was going from one chip to that chip. You'd go in there and do your soldering and work on it."

Not long ago, the very idea of a computer museum was unheard of. Now, the Smithsonian Institution has a computer display. Intel Corp, which developed the microprocessor, has a museum at its corporate headquarters in Santa Clara, California

The Computer Museum in Boston draws more than 130,000 visitors a year.

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