

Covering the TI99/4A and the Myarc 9640

# MICROpendium

Volume 5 Number 12

January 1989

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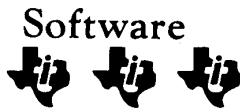


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# Comments

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#### Programming conventions

Here are some tips to help you when entering programs from MICROpendium:

1. All BASIC and Extended BASIC programs are run through Checksum, the numbers that follow exclamation at the end of each program line. Do not enter these numbers or exclamation points. Checksum was published in the October 1987 edition.
2. Long XBASIC lines are entered by inputting until the screen stops accepting characters, pressing Enter, pressing FCTN REDO, cursoring to the end of the line and continuing input.

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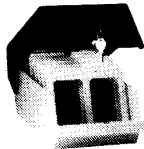
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# Comments

## Here's hoping the author doesn't get burned

I've recently come across a program designed for Extended BASIC programmers. It's called SuperBasic. And it was created by Steven Karasek in 1987. It provides a lot of support for programming, ranging from the ability to catalog a disk without loading a catalog program to turning D/V80 files into programs. However, if you haven't heard of it, don't feel left out. It hasn't been widely distributed.

As far as I know, SuperBasic is the only program for the TI that comes with a hardware-based protection scheme. To run it, you have to insert a plug into the 4A joystick port. If the plug isn't there, the program, which comes on disk and requires an expansion memory, won't run. Thus, those who view the software market as if everything were freeware can make as many copies of SuperBasic as they like and give them away like Christmas cards. Without the little dandle in the joystick port, the program is useless.

I am told that Karasek is planning on showing the program at the Lima (Ohio) TI fair in May. I am also told that the hardware protection scheme may be abandoned in favor of something less radical. I just hope that Karasek doesn't get burned. It is fine programming tool, one that can save hours of time, and the author should be rewarded for his efforts. Unlike a lot of public domain

software, it is obvious from the lengths that Karasek has gone to protect SuperBasic that he doesn't want it distributed as freeware or shareware. (We're publishing a program written by Karasek in this month's User Notes. The program provides a listing of line numbers in which specified variables or strings appear. A similar routine is included in SuperBasic.)

### DODD AND BIRDWELL TAKE MONTH OFF

Mike Dodd, our Geneve columnist, and John Birdwell, our assembly language columnist, have taken January off. Mike would like readers to supply some ideas as to what they would like him to write about. John is being kept busy by his employer and probably will be writing his column every other month. Meanwhile, we hope to begin carrying a Hacking the Geneve column by Jim Lohmeyer starting next month. We'd also like to welcome Jerry Stern as our Extended BASIC columnist. Jerry's column started running in December.

### WE WILL BE ACCEPTING CREDIT CARDS

It won't be long now before MICROpendium begins accepting credit cards. This service has been requested by many readers, particularly those from outside the U.S. We hope to have things ready by February. We'll keep you posted.

—JK

## Reviewed in MICROpendium

1984

**February:** B-1 Nuclear Bomber, Tandon TM-100 Disk Drive, Void, Beanstalk Adventure, Microsurgeon, On Gaming, Database 500.

**March:** Star Trek, Escape From Balthazar, Garkon's Getaway, Sky Diver, Mail-Call, Prowriter 8510 Printer.

**April:** Monthly Budget\$ Master, Budget Master, Home Budget, Thief, Donkey Kong, Khe Sanh.

**May:** Companion Word Processor, Q\*Bert, Mad-Dog I & II, Programs for the TI Home Computer.

**June:** Creative Expressions Accounts Receivable/Accounts Payable, CDC 9409 Disk Drive, Starship Concord, Lost Treasure of the Aztec, ASW Tactics II.

**July:** Theon Raiders, Introduction to Assembly Language for the TI Home Computer, Game of Wit, Pole Position

**August:** TE-1200, Tower, Galactic Battle, Galaxy

**September:** Wycove Forth, 99/4 Auto Spell-Check, QUICKCOPYer, Wizard's Dominion, Anchor Automation Mk XII Modem

**October:** Killer Caterpillar, ZORK I, Defender

**November:** 9900 Disk Controller Card/Manager, Super Bugger, Transtar 120S printer, Floppy-Copy, Data Base-X

**December:** Gravity Master, Data Base Manager System, Learning 99/4A Assembly Language Programming

1985

**January:** Super Sketch, Foundation Computing 128K Card, PTERM-99, TI-Runner

**February:** Super Extended BASIC, Beginning Assembly Language for the TI, ZORK II

**March:** Morning Star Software CP/M Card, WDS/100 Winchester Disk Drive, Sketch Mate, BMC Color Monitor

**April:** 9900 Micro Expansion System, Disk+ Aid, Gemini 10X-15X

**May:** Character Sets and Graphics Design, Draw 'N Plot

**June:** GRAPHX, DATA BASE I

**July:** Acorn 99, Advanced Diagnostics

**August:** Model Dow-4 Gazelle, TI-Artist, PC-KEYS, Not-Polyoptics' Bankroll

**September:** Midnite Mason, Myarc 32K/128K Card, GRAPHX Companion

**October:** 4A/TALK, Extende BASIC II Plus, XB Detective, Console Writer 2.a

**November:** Foundation Z80A/80-column cards, 9900BASIC, Adventure Editor

**December:** Display Enhancement Package, Triple Tech

1986

**January:** BITMAC, Starcross

**February:** Night Mission, Peripheral Diagnostic Module, BA-Writer

**March:** Super Duper, Tunnels of Doom Editor, Business Graphs 99

**April:** U.S. Open Tennis, PRBASE

**May:** 4A Flyer, GRAM Kracker, Artist's Companion

**June:** Myarc Disk Controller Card, Maximem

**July:** Horizon RAMdisk, Old Dark Caves, Funlwriter, TI99/4A Macro Assembler

**August:** JOYPAINT 99, GPL Assembler, TI99/4A Intern, GPL Linker

**September:** Mechatronic 128K Card

**October:** TI-Forth Utilities, CorComp Memory Plus

**November:** Submarine Commander, PEP, MAX-RLE

**December:** GK Utility I and II and GRAM Packer, X-10 Powerhouse, RAVE 99/101.

1987

**January:** MG DISKASSEMBLER, Myarc XBII

**February:** TI-Tax, Mechatronic Mouse

**March:** Wycove Forth version 3.0, DIJIT Systems RGB Conversion Kit, Spad XIII Flight Simulator

**April:** Geneve 9640, Disk Utilities

**May:** QS-Solitaire, Geneve 9640 (Part 2), Technical Drive, Console Calc

**June:** Character Sets and Graphic Design III, Writerease Ver. 1.1, 4A DOS, Prescan\_It

**July:** Junkman Junior, Avatex 1200/1200hc modem, Bubble Plane

**August:** Prostick, The Brain, Rocketman, Menu Ver. 6.3

**September:** TI-IBM Connection, Super Extended BASIC

**October:** Fontwriter, Mechatronic 80-Column Card, Star NP-10 printer

**November:** Legends, Music Preprocessor, QS-Wheel, Spin-to-Win

**December:** Remind Me, Certificate 99, Myart-Art and Myarc Mouse

1988

**January:** Quik Font, EZ-Keys

**February:** Disk Utilities 4.0

**March:** Telco, String Master, Epson LX-800 printer

**April:** Super Space II, PC-Transfer, Calendar Maker, Archiver II

**May:** Plus!

**June:** Captain's Wheel 32K Memory Expansion, Desk Top Publisher Ver. 1.0, Tex-link BBS

**July:** Artist Enlarger

**August:** Gramulator, Barrage

**September:** Myarc Hard & Floppy Disk Controller, Game Writers Pack I, Graphic Lister

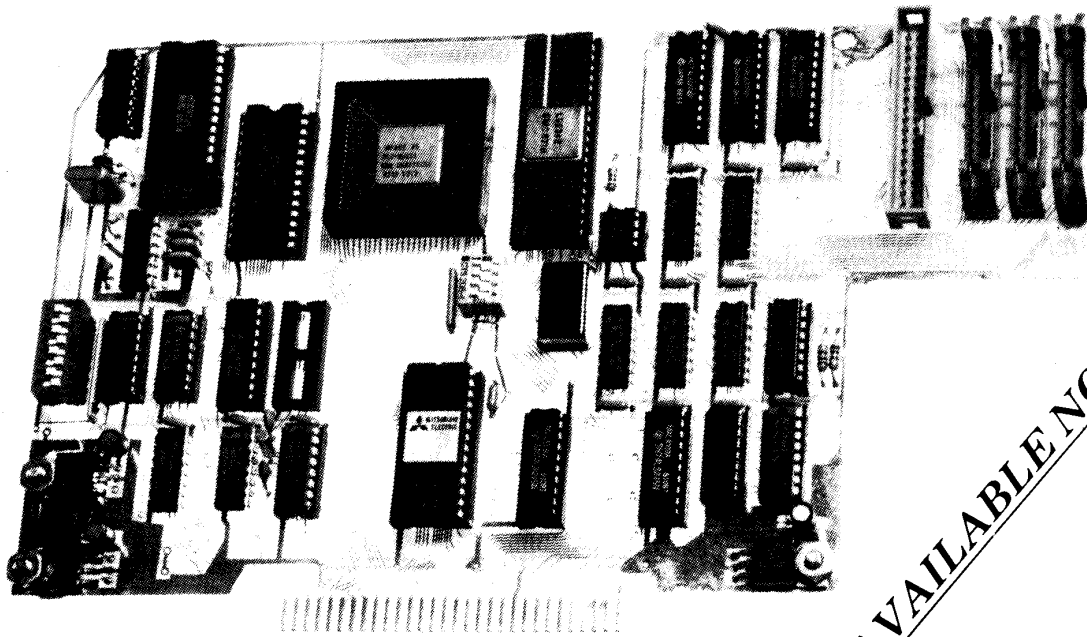
**October:** Bunyard Hardware Manual, Writerease Update, M-Copy, Disk of Dinosaurs, Infocom Fast Loader

**November:** TI-Base, 3D-Maze, Macflix, Disk Labeler 99

**December:** P-GRAM Card, Epyx 500XJ Joystick, Enhanced Display Package, Starfleet

Technical Drawings, Carfax Abbey, Rocketman

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# Feedback

## Book source found

One of your readers asked about *Dynamic Games for the TI99/4A*, mentioned in my TP99 Life article (September 1988).

To my surprise, I have now discovered that the publisher has the title in their back list! Can't be many TI books still listed!

The book contains programs written entirely in TI BASIC, runs to 159 pages, has 30 games (including LIFE) and each is preceded by a little programming explanation.

The publisher is Interface Publications Ltd., 9-11 Kensington High St., London U.K. W8 5NP.

They ask one pound per copy plus post and packing. Books are not light, and airmail postage to the U.S. would be about four pounds extra — total five pounds. Payment must also be by bank draft or international money order drawn in sterling on London. It may be cheaper for a U.S. dealer or for U.S. user groups to purchase in bulk. I do not know what quantity is available.

This information is passed on for assistance only and without recommendation. Another book they have listed, which I have not seen, is *Making the Most of Your TI99/4A*.

**Stephen Shaw**  
Stockport, England

## Group tells of efforts

After reading the article (October 1988) regarding the monies collected by the Greater Tampa Bay Users Group in support of Fairware authors, I felt you should know of the efforts of our group.

In November I appointed a special committee to look into the possibility of our group sending donations to fairware authors.

Attached please find a copy of the report (which was adopted) and a copy of a letter sent to the authors as outlined in appendix A of the report.

We are a rather small group, with a total paid membership of 22, and I would like to issue a challenge to all other TI user groups to undertake a similar project, whether it be collecting donations from individual members or using group funds to show support for fairware authors.

If a group of 22 users can come up with

\$300, how much can be raised by groups with a much larger membership basis?

**John W. Riley**  
President, Sacramento TI 99ers  
North Highlands, California

*The report shows that six authors were paid \$50 each from the club treasury.—Ed.*

## Asterisk problem

Recently I noticed a problem using the formatter of Funnelweb v4.0 and v4.10. In preparing files for our club newsletter with the MULTICOL program (January 1988 MICROpendium) with the format-to-disk feature, a member's assembly language tutorial containing a little arithmetic was changed as below:

$C+(R * 32)=\text{POSITION}$

became when formatted

$C+(R)=\text{POSITION}$

and with numerical values

column5,row 7 is

$5+(7 * 32)=229$  became

$5+(7)=229$

This is unacceptable, of course, and was solved by using "x" in place of "\*". Other symbols have been tried, but only "\*" fouls up when followed by a number (hence the handwritten asterisks in my letter). Doubling the \*s as for @ and & leaves one \*, but deletes the number. Formatting to printer has the same problem.

The TI-Writer manual and Funnelweb docs I have make no reference to this problem. The formatter shouldn't do this, and I wonder if other users have experienced the same problem.

**Ralph Mills**  
Selkirk, Manitoba, Canada

## Thanks to groups

A few months ago I had written your magazine about having trouble with getting software from a users group and the responses I received were outstanding.

Mr. John F. Willforth of the West Penn 99ers called me to see if it was from his group that I had ordered the software and I told him it wasn't. But since that time they have sent me their monthly newsletter regularly. I haven't seen their cost for membership yet but I plan to join and hope to keep getting the newsletter. It is a well done letter and I wanted to thank them publicly.

I would also like to thank the Ottawa 99er Users Group for their response. They have an outstanding library and I have gotten some excellent software from them.

One of the past articles indicated that you couldn't buy a hard/floppy controller card for any other machine for under the \$375 that Myarc is charging for theirs. Come on now. I enjoy the 99 and the 9640 and I use them both as well as an IBM-compatible and you can get good quality hard/floppy controller cards for a lot less. I just don't like the people that use the 99 and the 9640 to look like we have our heads in the sand when it comes to comparing other equipment to ours.

**Edward D. Trapp**  
Great Falls, Montana

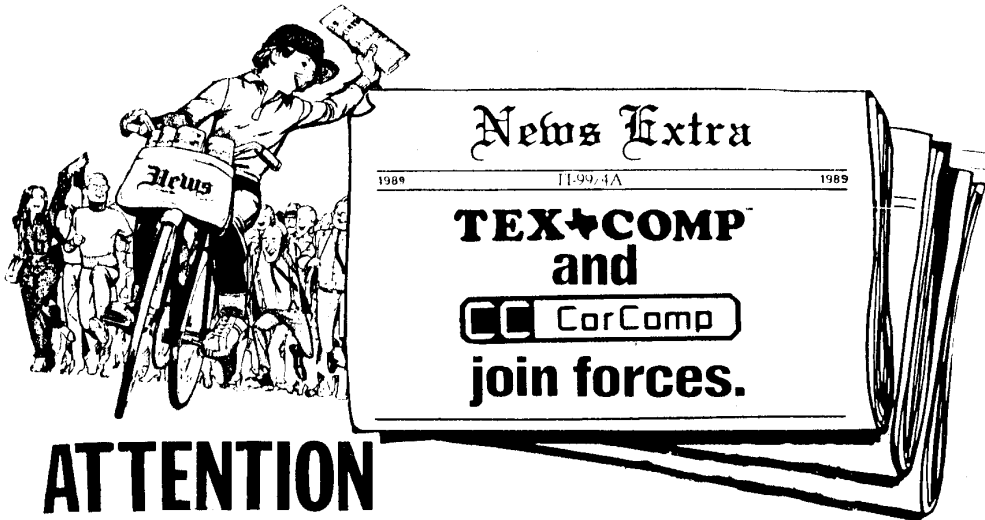
## Forth listing puzzle

Michael Rittweger of Keil, West Germany, correctly pointed out (User Notes November 1988) two errors in the listing of the Forth screens for my 80-column editor (June 1988). Strangely, my source screens do *not* show these errors and I am at a loss as to how they got into the published listing. Missing @ symbols are nothing new to Forth programmers. They have been known to disappear if the material is run through TI-Writer's Formatter. However, if this is done they *all* vanish, which is not the case nor was the Formatter involved in any way. My apologies to anyone who made the effort to enter those screens only to find the program not working as it should. And thank you, Michael, for finding and pointing them out, though there is a small error in the explanation of the second one: C@ retrieves the value stored at address "I" not in variable "C".

I found out that the editor, though written with and for the DIJIT Systems Advance Video Processor Card is compatible not only with the Geneve but also the Mechatronics card. I have implemented some of the 9938's graphics capabilities. Those who ordered and received the disk offered in the June issue can obtain disk 2 with the additional screens by sending me a disk, mailer and postage. Otherwise send two disks for the entire package.

**Lutz Winkler**  
1540 Corsica St.  
San Diego, CA 92111





# ATTENTION

TI-99/4A USERS !!!!!

SINCE 1983 CorComp has been the leading name in 99/4A for reliability, dependability and value. CorComp is the only producer of TI-99/4A hardware to be sold by every major 99/4A supplier. In order to continue to be able to offer full support to the 99/4A Community, CorComp has instituted a "stocking dealer" program. Under this program, only those 99/4A dealers and distributors who are willing to demonstrate their support of the 99/4A by agreeing to stock sufficient levels of CorComp products will be part of the CorComp Stocking Dealer Program and will continue to offer CorComp products. Tex-Comp has carried CorComp products since their introduction in 1983 and is proud to announce that it will continue to do so as an "Approved Stocking CorComp Dealer". This commitment of support to CorComp by Tex-Comp is also a commitment to the future of the TI-99/4A and of course to you the TI-99/4A user. The TI-99/4A is the one to start with and the one to stay with....

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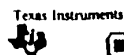
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- Full size ss/sd drive..59.95 add \$20 for ds/dd
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## BASIC

# Find your way around San Diego

By REGENA

First, a correction. In my column in the November 1988 issue of MICROpendium, I discuss using shorter line numbers. Line 2040 should be ON N-19 GOSUB . . . . Sorry!

This month's program has another example of using shorter line numbers for the subroutines. There are 20 subroutine numbers that must fit in Line 2160. If I had used the subroutines at the end of the program and they had four-digit line numbers, 20 of them would not fit in this line.

Therefore, I placed the subroutines at the beginning of the program so most of their line numbers would be three digits.

TI-Fest West in 1989 will be held in San Diego Feb. 18-19. Since San Diego is one of my favorite places to visit, I am looking forward to attending TI-Fest West. I wanted to write a new program especially for my friends there, so this month's program is it. This program is similar to location maps in airports or tourist centers. A map of San Diego is shown. Several of the popular tourist sites are listed. As each one is selected, an asterisk or arrow blinks on the map showing its location. Use the arrow key to change sites. You may also press the ENTER key to find out a little more about each place.

This program may be adapted. You may use the San Diego map and add or delete tourist information. I selected 20 places that San Diego is famous for. You may use your own city (or country) and put in your own tourist attractions. The descriptions are in subroutines at the beginning of the program. Characters are redefined for drawing the map. CALL KEY is used to move an indicator up and down among the choices.

I used a city street map to trace onto graph paper. As I drew the 8x8 high-resolution graph squares, I tried to make as many of them as possible close enough that the same character could be used in two or more places. With the ragged coastline, I needed more than 50 characters. These characters are defined for character numbers above 95 in sets 9 through 16 (thus Extended BASIC is not used).

The San Diego area actually spreads out more to the east, but I blocked off part of the screen to list the tourist attractions. Here we are limited by the 28-column printing. I hope you understand my abbreviations.

I PRINTed the map graphics line by line along with the tourist site names. The PRINT method is much faster than placing graphics with CALL HCHAR and CALL VCHAR.

Line 120 DIMensions variables X, Y and Z for 20 locations. X and Y are the row and column coordinates for the particular location on the map. Most of the sites use an asterisk, but arrows are used to show La Jolla, Wild Animal Park and Tijuana, which are in outlying areas of San Diego and off the map. Line 130 jumps



past the subroutines to the main program.

Lines 140-1230 contain the subroutines to describe each tourist attraction briefly. I thought about the possibility of drawing a more detailed street map for each site, but that took too many graphic characters.

Line 1240 clears the screen, and Lines 1250-1380 print the first screen while a few characters are defined. Then there is a little longer than 10-second delay while Lines 1390-1630 read in information

from data to define X, Y and Z for each of the 20 sites, define the colors for the graphics for the map and define the graphics characters for the map. If you type in the program and get error messages, these lines are the most likely place for a typing error to creep in. Line 1510 starts defining characters with number 96. Line 1550 starts with character 114; Line 1580, character 133; and Line 1620, character 145.

Lines 1640-1660 wait for the user to press any key before the program continues.

Line 1680 changes to a blue screen, and Line 1690 changes the first color set to white on transparent because some of the characters in the first color set are redefined and used in the map. Notice that the arrows defined in this set actually define the white part as foreground and the blue arrow as background.

Lines 1700-1930 print the 24 lines of map and place names. The last line ends with a semicolon so it does not scroll.

The variable ROW (for row number) was defined as 1 in Line 1330. This variable determines the row where the arrow appears in Column 20 (the right edge of the map and just in front of the names). The ROW value also determines X(ROW), Y(ROW) and Z(ROW) to show the location on the map. Line 1940 determines what character is originally in that position so the Z character can "blink." Line 1950 places the location character on the map. Line 1960 places the indicator arrow on the corresponding row. Line 1970 is the CALL KEY statement to detect if the user presses the ENTER key or an arrow key. Line 1980 replaces the arrow with a white space, and Line 1990 replaces the location character with the previous map character.

Lines 2000-2020 check the key pressed. If no key is pressed or if an invalid key is pressed, the program branches back to Line 1950, so it appears the location and the indicator are blinking. Lines 2030-2120 change the row number and move the indicator arrow if the key pressed is an up arrow or a down arrow. The arrow will "wrap" from top to bottom and vice-versa.

If the ENTER key is pressed, the program branches to Line 2130, which is a "beep." Line 2140 clears the screen, and Line 2150

(See Page 12)

## Attention 9640 Owners!

Genial Computerware now offers two products exclusively for the MYARC 9640 computer. Both programs run directly from MDOS, finally unleashing the power you bought the 9640 for!

### *Picture Transfer* by Paul Charlton

Picture Transfer allows you to view five different types of graphics files, create slide shows, combine multiple images, and convert between many formats.

Picture Transfer reads and displays the following file formats: GIF, MY-Art, RLE, TI-Artist, and GRAPHX. Pictures are saved in either GIF or MY-Art format. With Picture Transfer you can share your MY-Art, TI-Artist, and GRAPHX creations with users of other computers.

Picture Transfer can be run interactively using a flexible command line, or in batch mode. With batch files, you can easily create slide shows. And because Picture Transfer allows two screen buffers for most operations, you'll never have a blank screen. You can load a picture into one screen while displaying the other!

Picture Transfer supports the full graphics capabilities of the 9640, including a 256 by 424 mode with 256 colors, and a 512 by 424 mode with 16 colors.

Probably the most exciting graphics format available on microcomputers today is GIF: Graphics Interchange Format. These graphics files are supported on all major microcomputers including Amiga, Atari ST, and Macintosh II. Using Picture Transfer, you can view and convert GIF files. Because GIF allows for so many color combinations, Picture Transfer selects the optimal display mode for the 9640, although you may override this.

Using Picture Transfer you can easily extract pieces of several pictures saved in various formats and combine them into a single picture. This composite picture may then be saved in GIF or MY-Art format.

So that you can immediately advantage of Picture Transfer, complete illustrated documentation is included along with several sample pictures, numerous examples, and sample batch file scripts.

Picture Transfer has the ability to execute most MDOS commands from the program. It even has online help! If you have a 9640 and want to take full advantage of its extraordinary graphics capabilities you can't afford to be without Picture Transfer. Picture Transfer sells for \$30.

### *HyperCopy* by Mike Dodd

HyperCopy is the final word in disk copiers. It can copy a single sided single density disk in just under 35 seconds, including formatting the copy disk. It will copy a double sided 40 track disk in just under a minute and an 80 track disk takes just under two minutes.

If that was all that HyperCopy did, it would be impressive enough. But it doesn't stop there. It is the first program in the entire TI/9640 community to allow formatting a disk with a skew. Skew is a technique whereby the physical layout of a disk can be shifted on each track, resulting in a much faster sector read. No longer will the computer pause between tracks -- it will step and continue reading without any noticeable pause at all. To allow you to take full advantage of this revolutionary feature, HyperCopy will allow you to format a disk without copying. It also include a "box format" feature, similar to DM1000.

HyperCopy also makes multiple copies of the same disk. You can read a disk into memory once and then write it out to multiple disk drives. After all the disks are written to, all you have to do is switch disks and press a key, and HyperCopy will write to the disks again.

A common problem with all past fast disk copiers for the 99/4A and 9640 have been that they only allow you to use physical disk drives. If you wanted to copy a floppy to a RAM-disk or a RAM-disk to a floppy, you had to use a normal, slow disk copier. But not with HyperCopy -- it fully supports reading and writing from/to logical devices such as a RAM-disk.

There have been fast disk copiers before for the 99/4A, and, recently, for the 9640. However, HyperCopy is the fastest and most versatile such program ever written. It is physically impossible for a disk copier to attain a faster speed than HyperCopy.

HyperCopy runs with the MYARC, CorComp, and TI disk controller cards. HyperCopy sells for only \$20.

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## REGENA ON BASIC—

(Continued from Page 8)

redefines the color for Set 1 so the apostrophe will appear black. Line 2160 branches to the appropriate subroutine with the description for the tourist attraction selected, then the program returns to Line 2170. Lines 2170-2220 offer the option to return to the main San Diego map or to end the program, and the computer bran-

ches appropriately. Line 2230 ends the program.

If you prefer to save typing effort, you may have a copy of this program by sending \$4 to REGENA, P.O. BOX 1502, Cedar City, UT 84720. Be sure to specify that you need the TI version of "San Diego Fest West" and whether you need cassette or diskette.

## San Diego Fest West

```

100 REM SAN DIEGO FEST WEST
1006
110 REM BY REGENA 1071
120 DIM X(20), Y(20), Z(20) !19
8
130 GOTO 1240 !043
140 PRINT TAB(5); "CLARION HO
TEL." !047
150 PRINT "SITE OF FEST-WES
T 89" !105
160 PRINT "2223 EL CAJON BO
ULEVARD" !248
170 PRINT "1 800 843 9988"
!247
180 PRINT "LOCATED NORTH OF
BALBOA PARK ON EL CAJON BLVD
. BETWEEN CAIRHILLO FRWY 16
3 AND HIGHWAY 805." !2
45
190 PRINT " : : : : : !218
200 RETURN !136
210 PRINT TAB(5); "BALBOA PAR
K" !120
220 PRINT "LOCATED NEAR THE
JUNCTION OF CAIRHILLO FRWY 16
AND INTERSTATE 5." !
143
230 PRINT "1400 ACRES INCLU
DING BOTANICAL GARDEN
S, HOUSE OF PACIFIC RELATION
S, AEROSPACE" !113
240 PRINT "MUSEUM, HALL OF C
HAMPIONS, MUSEUM OF MAN, MU
SEUM OF NATURAL HISTORY,
FINE ARTS" !252
250 PRINT "GALLERIES, SPACE
THEATER, SAN DIEGO ZOO, AN
D TENNIS AND GOLF." : : : :
: !113
260 RETURN !136
270 PRINT TAB(5); "SAN DIEGO
ZOO" !013
280 PRINT "1000-ACRE SITE IN
THE HEART OF BALBOA PARK C
ONTAINING 4,000 SPECIMENS
OF BIRDS," !052
290 PRINT "REPTILES, AND MAM
MALS IN A BOTANICAL GARDEN.
" !035
300 PRINT "FOLLOW SIGNS ON
INTERSTATE HIGHWAY 5 OR HIGH
WAY 163, OR ENTER ON ZOO DRI
VE FROM PARK BLVD." : : : :
: !223
310 RETURN !136
320 PRINT TAB(5); "SEA WORLD"
!008
330 PRINT "THE WORLD'S LARG
EST FAMILY OCEANARIUM FEATU
RES SHAMU THE KILLER WHALE
PLUS SEAL," !077
340 PRINT "DOLPHIN, AND PENG
UIN SHOWS. AQUARIUMS, EXHIBI
TS, AND GIFT SHOPS ON BEA
UTIFULLY" !022
350 PRINT "LANDSCAPED GROUND
S." !181
360 PRINT "FROM INTERSTATE
5 OR HIGHWAY 8 USE SEA WORLD
DRIVE IN MISSION BAY, NOR
THWEST OF SAN DIEGO." : : :
: !035
370 RETURN !136
380 PRINT TAB(5); "OLD TOWN"
!205
390 PRINT "CALIFORNIA'S FIR
ST SPANISH PUERTO NOW CONTAI
NS MEXICAN CURIO SHOPS AND
RESTAURANTS" !024
400 PRINT "AMONG THE EARLY A
DOBE STRUCTURES." !071
410 PRINT "TO GET TO BAZAAR
DEL MUNDO IN OLD TOWN, FRO
M INTERSTATE 5 EXIT ON OLD TO
WN AVENUE." !224
420 PRINT "TURN LEFT ON SAN
DIEGO AVE, RIGHT ON TWIGGS,
AND LEFT ON JUAN STREET." !11
6
430 PRINT "FROM INTERSTATE 8
, EXIT AT TAYLOR STREET, FO
LOW TAYLOR AND TURN LEFT ON
JUAN ST." : : : : !037
440 RETURN !136
450 PRINT TAB(5); "CORONADO"
!219
460 PRINT "FROM INTERSTATE
5, USE HIGHWAY 75 AND T
HE SAN DIEGO CORONADO BAY BRI
DGE TO GET TO CORONADO." !1
59
470 PRINT "THE NORTH ISLAND
HOUSES THE U.S. NAVAL AIR S
TATION. ALONG OCEAN BLVD
IS THE" !132
480 PRINT "FAMOUS CORONADO B
EACH. FOLLOW SILVER STR
AND BLVD TO SILVER STRAND
BEACH." : : : : !018
490 RETURN !136
500 PRINT "SAN DIEGO CORONA
DO BRIDGE" !036
510 PRINT "CONSIDERED ONE O
F THE MOST ARCHITECTURALLY BE
AUTIFUL BRIDGES IN THE W
ORLD, WITH" !186
520 PRINT "UNIQUE FEATURES I
NCLUDING ITS BRIGHT BLUE C
OLOR, A 3 FT HIGH RAILING
PERMITTING" !113
530 PRINT "A VIEW OF THE ARE
A, AND AN 80-DEGREE GRADUAL
CURVE ON THE CORONADO SIDE
. ENTER" !215
540 PRINT "THIS 2.2-MILE LONG
BRIDGE ACROSS THE SAN DI
EGO BAY USING HIGHWAY 75.
" : : : : !051
550 RETURN !136
560 PRINT TAB(8); "MISSION BA
Y" !170
570 PRINT "BETWEEN MISSION
BEACH ON THE PACIFIC OCEAN AN
D INTERSTATES AND NORTH OF I
NTERSTATE 8" !118
580 PRINT "IS MISSION BAY WI
TH ITS GOLF AND WATER SPORTS.
SEA WORLD AND MISSION BAY P
ARK ARE IN THIS AREA." : :
: !014

```

(See Page 13)

## REGENA—

(Continued from Page 12)

- 590 PRINT : : : : 1112  
 600 RETURN 1136  
 610 PRINT TAB(8); "POINT LOMA"  
 " 1094  
 620 PRINT : "HIGHWAY 200 HEAD  
 S SOUTH TO THE WESTERN PENI  
 NSULA WHERE POINT LOMA IS LO  
 CATED." 1249  
 630 PRINT "DRIVE ALL THE WAY  
 SOUTH TO GET TO CABRILLO A  
 ND POINT LOMA LIGHTHOUSE."  
 : : : : : : : : 1000  
 640 RETURN 1136  
 650 PRINT " CABRILLO NATIONAL  
 MONUMENT" 1239  
 660 PRINT : "TRAVEL SOUTH ON  
 HIGHWAY 200 TO THE SOUTHERN  
 TIP OF POINT LOMA. JUAN RODR  
 IGUEZ" 1247  
 670 PRINT "CABRILLO, DISCOVER  
 ER OF CALIFORNIA, HAS A  
 STATUE. OLD AND NEW LIGHT  
 HOUSES" 1193  
 680 PRINT "ARE INTERESTING,  
 AND THERE IS A VISITOR CENT  
 ER. TAKE TIME TO LOOK FOR  
 WHALES OR" 1228  
 690 PRINT "TIDEPOOL, MARINE L  
 IFE." : : : : : : : : 1096  
 700 RETURN 1136  
 710 PRINT TAB(8); "CIVIC CENT  
 ER" 1220  
 720 PRINT : "THE CIVIC CENTER  
 OR 'DOWNTOWN' AREA  
 OF SAN DIEGO IS JUST SOUTHWES  
 T OF BALBOA" 1000  
 730 PRINT "PARK. TAKE INTER  
 STATE 5 OR THE CABRILLO HWY  
 163 TO 10TH AVENUE THEN  
 TURN WEST ON BROADWAY." 101  
 1  
 740 PRINT : "BROADWAY LEADS R  
 IGH TO THE PIERES AND HARBOR  
 DRIVE." : : : : : : : : 1190  
 750 RETURN 1136  
 760 PRINT "ROBERT H. FLEET S  
 PACE THEATER AND SCHEM  
 ER CENTER" 1231  
 770 PRINT : "THIS IS 2 BLOCKS  
 SOUTH OF THE ZOO ON THE E  
 ASTERN SIDE OF BALBOA PARK.  
 FROM" 1229  
 780 PRINT "INTERSTATE 5 USE  
 PARK BLVD. OR FROM CABRILLO  
 HWY 163 USE Rt. 160 TO G  
 ET TO THE" 1102  
 790 PRINT "MUSEUMS. THE THE  
 ATER IS A 76-FOOT DIAMETER  
 HEMISPHERE WITH UNIQUE PROJ  
 ECTION" 1112  
 800 PRINT "EQUIPMENT." : : "TH  
 E 8500-SQ FT SCIENCE CE  
 NTER IS NEAR THE MAIN LO  
 BBY AND HAS TOUCHABLE" 1205  
 810 PRINT "EXHIBITS. THE GI  
 FT SHOP OFFERS AN ARRAY O  
 F SCIENCE GIFTS." : : : : 1096  
 820 RETURN 1136  
 830 PRINT TAB(5); "STAR OF IN  
 DIA" 1255  
 840 PRINT : "THIS CLIFFER SHI  
 P IS A FLOATING MARITIM  
 E MUSEUM. IT IS LOCATED AT  
 B STREET" 1218  
 850 PRINT "PIER SOUTH AND IS  
 OPEN DAILY UNTIL 8 P.M  
 . FROM THE AIRPORT, HEAD EAS  
 T THEN" 1118  
 860 PRINT "SOUTH ON HARBOR D  
 RIVE TO GET TO THE PIER. IT  
 IS NORTH OF THE SAN DIEGO-COR  
 ONADO BAY BRIDGE." : : : : :  
 : : : : 1091  
 870 RETURN 1136  
 880 PRINT " INTERNATIONAL AI  
 RPORT" 1178  
 890 PRINT : "SAN DIEGO INTERN  
 ATIONAL AIRPORT LINDBERG  
 H FIELD IS LOCATED SOUTH OF  
 MISSION BAY" 1006  
 900 PRINT "AND WEST OF BALBO  
 A PARK. FROM INTERSTATE 5  
 FOLLOW THE SIGNS, OR USE NOR  
 TH HARBOR" 1000  
 910 PRINT "DRIVE TO GET TO T  
 HE TERMINAL." : : : : :  
 : : : : 1219  
 920 RETURN 1136  
 930 PRINT TAB(5); "HARBOR ISL  
 AND" 1036  
 940 PRINT : "FROM INTERSTATE  
 5, FOLLOW POSTED SIGNS TO  
 SAN DIEGO AIRPORT. JUST A  
 CROSS FROM" 1201  
 950 PRINT "(SOUTH OF) THE AI  
 RPORT IS HARBOR ISLAND. T  
 HIS MAN-MADE AREA HAS  
 RESORT" 1061  
 960 PRINT "HOTELS, RESTAURAN  
 TS, PARKS, MARINAS, AND GREA  
 T VIEWS OF THE BAY." : : : : :  
 : : : : 1113  
 970 RETURN 1136  
 980 PRINT TAB(5); "SPORTS ARE  
 NA" 1252  
 990 PRINT : "JUST SOUTH OF MI  
 SSION BAY AND INTERSTATE 8  
 , AND WEST OF INTERSTATE 5,  
 USE" 1006  
 1000 PRINT "ROSECRANS TO GET  
 TO SPORTS ARENA BLVD (W. P  
 OINT LOMA BLVD)." 1112  
 1010 PRINT : "CHECK A CURRENT  
 SCHEDULE TO SEE WHAT CONCR  
 TS OR ATHLETIC EVENTS  
 ARE TAKING" 1072  
 1020 PRINT "PLACE (SUCH AS P  
 RO HOCKEY)." : : : : : : : : 108  
 0  
 1030 RETURN 1136  
 1040 PRINT TAB(5); "SEAFOOD M  
 ART" 1223  
 1050 PRINT : "SAN DIEGO IS GR  
 EAT IF YOU ENJOY SEAFOOD.  
 GO WEST ON MARKET STREET T  
 O HARBOR" 1178  
 1060 PRINT "DRIVE TO FIND A  
 SEASHORE RESTAURANT, GIFT  
 SHOPS, AND SEAFOOD SNACK BA  
 RS." : : : : : : : : 1101  
 1070 RETURN 1136  
 1080 PRINT TAB(5); "LA JOLLA"  
 1165  
 1090 PRINT : "GO NORTH ON INT  
 ERSTATE 5 PAST MISSION BA  
 Y TO GRAND AVE OR ARDRETH R  
 OAD. EVEN" 1219  
 1100 PRINT "THE RESIDENTIAL  
 AREAS ARE BEAUTIFUL WITH C  
 ALIFORNIA PLANTS. LA JOLL  
 A HAS UNIQUE" 1119  
 1110 PRINT "RESTAURANTS, HOT  
 ELS, PARKS, BEACHES, ART GAL  
 LERIES, AND DELICANT SHOPS."  
 : : : : : : : : 1209  
 1120 RETURN 1136  
 1130 PRINT " WILD ANIMAL P  
 ARK" 1008  
 1140 PRINT : "GO 30 MILES NOR  
 TH OF SAN DIEGO USING INT  
 ERSTATE 15 THEN HIGHWAY 78  
 TO SAN" 1198  
 1150 PRINT "FACUAL. VIEW T  
 HE WILD AFRICAN ANIMALS,  
 RIDE A MONORAIL TRAIN,  
 AND SEE THE" 1203  
 (See Page 14)



## REGENA—

```

(Continued from Page 14)
;CHR$(138);" ";CHR$(131);"#
#SEAFOOD" !197
1870 PRINT TAB(12);"h";CHR$(
137);" {HHA JOLJA" !027
1880 PRINT TAB(13);CHR$(136)
;" ";CHR$(133);"#HW ANIMAL
P"; !191
1890 PRINT TAB(13);"f";CHR$(
135);CHR$(134);"#HHTJUANA"
!196
1900 PRINT TAB(13);"fHHHHH"
!201
1910 PRINT TAB(13);"#HHHHH"
!134
1920 PRINT TAB(13);"fHHHHH"
!201
1930 PRINT TAB(13);"HHHHHH";
!058
1940 CALL (CHAR(X(ROW),Y(ROW)
),G)!100
1950 CALL (CHAR(X(ROW),Y(ROW)
),Z(ROW))!221
1960 CALL (CHAR(ROW,20,34)!2
48
1970 CALL KEY(0,K,S)!187
1980 CALL (CHAR(ROW,20,35)!2
49
1990 CALL (CHAR(X(ROW),Y(ROW)
),G)!101
2000 IF K=13 THEN 2130 !142
2010 IF (K=69)+(K=101)THEN 2
030 !101
2020 IF (K>88)*(K<>120)THEN
1950 !107
2030 IF ROW=20 THEN 2050 !24
1
2040 ROW=1 !176
2050 GOTO 1940 !234
2060 ROW=ROW+1 !105
2070 GOTO 1940 !234
2080 IF ROW>1 THEN 2110 !245
2090 ROW=20 !226
2100 GOTO 1940 !234
2110 ROW=ROW+1 !105
2120 GOTO 1940 !234
2130 CALL SOUND(150,523,2)!1
35
2140 CALL CLEAR !200
2150 CALL COLOR(1,2,1)!171
2160 ON ROW GOSUB 140,210,27
0,320,380,450,500,560,610,65
0,710,760,830,880,930,980,10
40,1000,1130,1180 !105
2170 PRINT "PRESS 1 TO RETUR
N TO MAP" !221
2180 PRINT "      2 TO END P
ROGRAM";!017
2190 CALL KEY(0,K,S)!187
2200 IF K=49 THEN 1670 !201
2210 IF K>50 THEN 2190 !140
2220 CALL CLEAR !200
2230 END !139

```

## Extended BASIC

## Utility saves program segments

By JERRY L. STERN  
©1988 J.L. Stern

You finally finished that big program. You worked, worried, cajoled, and coaxed until the computer did what you wanted. Big success, too. Your little girl is delighted that the funny talking machine is teaching her to count. It doesn't have to leave and go to work. Oh, but your spouse wants the machine to teach the alphabet, too. You groan. (groan...) "But I just finished..."

You have several options. Start from scratch. Retype all the repeated chunks of program lines. That makes a lot of sense; the programs will be very similar. Maybe deleting all the parts you don't need would be faster. No matter which way you try to solve this, you have a lot of work ahead of you. You might as well keep reading. It will be easier than redoing your whole project, anyway.

This is a tricky problem. TI Extended BASIC will not save less than a complete program in either program format or MERGE format. You could save portions to a disk file with the LIST command, but display format won't do any good for this application. You need to be able to feed

these program lines into another project. Extended BASIC also won't allow loading just part of the program. This calls for a utility program solution.

Unfortunately, an Extended BASIC program cannot read a Extended BASIC program file. However, a program can read a merge file. Merge files were intended to be used for storing subprograms and other program chunks for merging into other projects. That's pretty close to this application, but MERGE format files are stored in a shorthand form that's part way between base 16 machine code and the program you actually saved. This is also called "crunch" format, and it was originally supposed to be strictly unpublished, hush hush stuff. Texas Instruments once told me on their help line that "No, that's proprietary information. We can't explain that." That's about the same time they started losing sales.

Hmmm....

Anyway, smart programmers have long since decoded these shorthand codes, published them in magazines and newsletters, and found that not too many programmers cared. What could you *do with them*? The most obvious use for token or crunch

codes is to manipulate programs with them. This time we'll create a utility program that can split programs into pieces wherever we like.

The first step must be to save the program you'd like to split in MERGE format. MERGE DSK1.STUFF, MERGE

Put that disk away for a while. We'll come back to it later. In the meantime we'll look at the number 256. That's two raised to the eighth power. Or, that's how many different ways you can set eight little on/off switches in a row. All on, all but the last one on, all but the second one on.... You get the idea. Well, this does have something to do with the subject; those switches are bits of information. Eight bits make one byte, right? Here's where you use that little nibble of information.

When computer information is placed in memory or on a disk file, the information is converted to numbers and then stored in bytes. Since each byte has eight bits of information, there are 256 different things that could be stored there. The numbers up to 127 have been used to represent all the letters of the alphabet in large and small

(See Page 16)

## EXTENDED BASIC—

(Continued from Page 15)

letters, the digits zero through nine, and lots of punctuation marks. Texas Instruments has used the numbers above 127 to represent the words of BASIC commands like PRINT, DATA, and DISPLAY. In this token format, these commands are represented by 156, 147, and 162. Certain numbers are always followed by stored characters for numbers or words.

Line numbers are stored two ways. Every line of an Extended BASIC program starts with just the line number by itself, written as a multiple of 256. That is, if the first two bytes of a line are 0, 100, then the line number is  $0 \times 256 + 100$ , or line 100. Or, 3,232 means  $3 \times 256 + 232$ , or line 1000. When a line number is in the middle of a line, it is preceded by the number 201. So the line number is always two bytes long at the beginning of a line, but three bytes anywhere else. The rest of this will be useful for other projects, but for now, it is only those first two bytes that we need to decode.

If we use the string variable T\$ to store a program line from the merge file, we can use a formula to calculate the number of that line.

$$LN = ASC(T\$)*256 + ASC(SEG$(T\$,2,1))$$

This is a little awkward to include within other formulas, so we'll pre-define it at the beginning of the program.

```
DEF LN(T$)=ASC(T$)*256+ASC(SEG$(T$,2,1))
```

Now we can use the formula by just including LN(T\$) wherever we need it.

That's enough preparation, let's put

together the utility program, beginning with a title screen provided by the subprogram TITLE, called out of my subprogram library disk for convenience and consistency, and modified as needed. Next, the program will need the name of the source file, which we'll call S\$, and the new file to make of the cuttings, D\$ for destination file. Both of these files need to be opened, S\$ as input, D\$ as output.

Now the program will need the range of numbered lines to copy to the new file. We'll call those variable F and T, for From and To. All programmers have their own philosophies about how to name their variables. I prefer to reuse the same names. L is always a loop counter in my programs, T is a temporary flag, and S and D are always source and destination. The names SAM and DAVID would do as well, but that would mean more typing.

Here's what the core of the program does. Line 210 checks to see if there are lines left in the file. The next program line is read into memory by line 220, and then the line number is decoded, displayed on screen as a progress report, and tested to find if it is in the range to copy. If the line number is too low, another line is read. If the number is in the range, it is copied to the new file and another line is read. If the number is too high, the program asks the user for the next range of lines to copy. The program begins reading the source file from the beginning for the next range, so the ranges do not have to be given in numerical sequence.

When all the ranges have been copied,

a press of the Enter key by itself in response to "From?" will end the program. The source file will be closed. The destination file will have one more line written to it, two bytes of token number 255. That marks the end of every Extended BASIC merge file. Then the destination file is closed, and the program ends. Now your work is nearly ready to begin again.

Before digging into that new alphabet program, there are a few last steps to take care of. LINESAVER left your new file of salvaged program chunks in a merge file. To convert that back into a program file, type:

**NEW**

**MERGE DSK1.NEWTEMP** (or whatever name you used for the destination file.)

**SAVE DSK1.NEWSTUFF** (or **NEWALPHA**, or whatever.)

Now your program segment is ready to use in another project. Alternatively, by running LINESAVER more than once, a program could be split into a lot of small parts to be edited into subprograms. Writing programs by building them out of subprograms is probably the fastest way of doing a large project. That's what the professionals do, only they call it "structured programming." Maybe you had better get back to the alphabet trainer before the kid wakes up, and we'll save "structured programming" for a **really** big project.

## LINESAVER

```
100 ! LINESAVER !076
110 ! JLS '89 V 2.1 !139
120 DEF LN(T$)=ASC(T$)*256+ASC(SEG$(T$,2,1))!212
130 CALL TITLE :: DISPLAY AT(5,1): "NULL AT 'FROM?' ENDS PROGRAM": "NULL AT 'TO?' SAVE S 1 LINE" !020
140 DISPLAY AT(8,1): "NAME OF EXTENDED BASIC MERGEFILE TO EDIT?": "DSK1.TEMP" :: ACCEPT AT(10,4)SIZE(24)VALIDATE( ALPHA,DIGIT,"@."):S$ !030
150 DISPLAY AT(11,1): "NAME O
```

```
F NEW FILE?": "DSK1.NEWTEMP"
:: ACCEPT AT(12,4)SIZE(24)VALIDATE( ALPHA,DIGIT,"@."):D$ !175
160 OPEN #1:"DSK"&S$,INPUT,DISPLAY,VARIABLE 163 !203
170 OPEN #5:"DSK"&D$,OUTPUT,DISPLAY,VARIABLE 163 !037
180 DISPLAY AT(13,1)LOOP: "LINE RANGE TO SAVE?": "FROM? TO?": "(LINES 1 TO 32767)": :: ACCEPT AT(14,7)VALIDATE(DIGIT)SIZE(5):F$ !029
190 IF F$="" THEN 260 ELSE F
```

```
=VAL(F$):: IF F<1 OR F>32767 THEN 180 !239
200 ACCEPT AT(14,17)VALIDATE(DIGIT)SIZE(5):T$ :: IF T$="" THEN T F ELSE T VAL(T$):: IF T<1 OR T>32767 THEN 180 !045
210 IF EOF(1)THEN 270 !061
220 LINPUT #1:F$ !202
230 X=LN(F$):: DISPLAY AT(19,9): "LINE ":X :: IF X<F THEN 210 !126
240 IF X>T THEN 270 !120
```

(See Page 18)



## Trials of a c99 beginner

## Trigonometric functions for math library

By CHARLES E. KIRKWOOD JR.

Some trigonometric functions will be discussed in this month's article. The `init()` function included in August is rewritten so that it can be used with functions published in June and also this month's functions. Delete `init()` from the MATH FUNCTION LIBRARY and rename the library `ALG`.

Separate files are used for the algebraic (ALG) functions and trigonometric (TRIG) functions to prevent the total program from being too large if only one file is needed.

The function `init()` will be in a file by itself which I called `MATHFN`. The real variable `er` was supposed to be `.00000001`. (I believe I said `er` was `.000000001` — a miscount of the zeros. Guess I'd better learn to count again — I've been using the computer too long!) This worked out okay in Extended BASIC, but it appeared to be zero using the floating point functions. This defeated the purpose of using it at all, so `er` is changed to `.000001`, which appears to give accurate enough results and the execution is faster.

I removed the `;C` from all the names of the function libraries supplied with `c99` so that the names would not exceed six characters.

The new `init()` function is:

```
/*TRIG FUNCTION init()*/
/*Global real variable arrays used*/
/*with the ALG and TRIG Function*/
/*libraries*/

float mwone[8],zero[8],wone[8],oez[8];
float two[8],er[8],pi[8],three[8];

init()
{
  int z,o,mo,th,h,h,t,p,d,hc;
  z=0;
  itof(z,zero);
  o=1;
  itof(o,wone);
  t=2;
  itof(t,two);
  th=3;
  itof(th,three);
  mo=-1;
  itof(mo,mwone);
}
```

(See Page 18)

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VERY UNSTABLE... CALL

c99—

(Continued from Page 17)

```

hc=180;
itof(hc,oez);
p="3.1415927";
stof(p,pi);
d:".000001";
stof(d,er);
return;
}
    
```

Your program should include:

```

#include DSK1.FLOAT      or      #include DSK1.FLOAT
#include DSK1.MATHFN    #include DSK1.MATHFN
#include DSK1.ALG       #include DSK1.TRIG
main()                  main()
{
    your program
}
    
```

or

```

#include DSK1.FLOAT
#include DSK1.MATHFN
#include DSK1.ALG
#include DSK1.TRIG
main()
{
    your program
}
    
```

The following trigonometric functions are included:

```

degrad(d,r) /*degrees to radians*/
raddeg(r,d) /*radians to degrees*/
sin(x,s) /*sine of angle in radians*/
cos(x,c) /*cosine of angle in radians*/
    
```

The results of the trigonometric functions are r, d, s, and c, respectively.

There are pi radians in 180 degrees. This relationship was used to convert from one to the other in the **degrad()** and **raddeg()** functions. Several approximation polynomial formulas were tried for the sine and cosine functions, but had varying degrees of accuracy. So, the Taylor series are used for each; they are quite fast.

The Taylor series for the sin(x) is:

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$$

and cos(x) is:

$$\cos(x) = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots$$

TRIGONOMETRIC FUNCTIONS

```

500 REM BASIC SUBPROGRAMS      /*DEGREES TO RADIANST*/
                                /*input in degrees = d*/
                                /*output in radians = r*/
510 SUB DEGRAD(X,R)            degrad(d,r)
                                float *d,*r;
                                {
                                init();
                                fexp(pi,"*",d,r);
                                fexp(r,"/",oez,r);
                                return(r);
                                }

520 PI=3.1415927
530 OEZ=180
540 R=PI*D/OEZ

550 SUBEND

600 SUB RADDEG(R,X)           /*RADIANSTO DEGREEST*/
                                /*input in radians = r*/
                                /*output in degrees = d*/
                                raddeg(r,d)
                                float *d,*r;
                                {
                                init();
                                fexp(oez,"*",r,d);
                                fexp(d,"/",pi,d);
                                return(d);
                                }

610 PI=3.1415927
620 OEZ=180
630 D=OEZ*R/PI

640 SUBEND

700 SINX(X,S)                 /*SINE OF AN ANGLE*/
                                /*input in radians*/
                                /*sine of x = s*/
                                sin(x,s)
                                float *x,*s;
                                {
                                int six;
                                float so[8],n[8],fo[8];
                                float xx[8],xxx[8],d[8];
                                float f[8];
                                init();
                                fcpy(x,so);
                                fcpy(mvone,n);
                                fcpy(three,fo);
                                fcpy(vone,d);
                                }

710 SO=X
720 N=-1
730 FO=3
740 D=1
    
```

(See Page 19)

LINESAVER—

(Continued from Page 16)

```

250 ERINT #5:PF :: GOTO 210
!009
260 PRINT #5:CHR$(255);CHR$(
255):: CLOSE #1 :: CLOSE #5
:: STOP !164

270 RESTORE #1 :: GOTO 180 !
016
30000 SUB TITLE !240
30010 DISPLAY AT(2,10)ERASE
ALL:"LINESAVER" :: CALL CHAR
(95,"OFF"):: CALL HCHAR(3,
2,95,9)!052
30020 DISPLAY AT(4,3):"FAST
PROGRAM DELETIONS" !106
30030 SUBEND !168
    
```

c99—

(Continued from Page 18)

```

750 F=6
760 XX=X*X
770 XXX=XX*X
780 IF D<=.000001 THEN 910

```

```

790 S=SO+N*XXX/F
800 N=-N
810 FO=FO+1
820 F=F*FO
830 FO=FO+1
840 FO=F*FO :: REM !F
850 XXX=XXX*XX
860 D=S-SO
870 IF S<>0 THEN D=D/S

```

```

880 IS D<0 THEN D=-D

```

```

890 SO=S
900 GOTO 780

```

```

910 SUBEND

```

```

1000 SUB COS(X,C)

```

```

1010 CO=1
1020 N=-1
1030 FO=2
1040 F=2
1050 XX=X*X
1060 XSQ=XX
1070 D=1
1080 IF D<=.000001 THEN 1210

```

```

1040 F=2
1050 XX=X*X
1060 XSQ=XX
1070 D=1
1080 IF D<=.000001 THEN 1210

```

```

1090 C=CO+N*XX/F
1100 N=-N

```

```

six=6;
itof(six,f);
fexp(x,"*",x,xx);
fexp(xx,"*",x,xxx);
while(fcom(d,">".er))
{
    fexp(n,"*",xxx,s);
    fexp(s,"/",f,s);
    fexp(s,"+",so,s);
    fexp(n,"*",mwone,n);
    fexp(fo,"+",wone,fo);
    fexp(f,"*",fo,f);
    fexp(fo,"+",wone,fo);
    fexp(f,"*",fo,f);
    fexp(XXX,"*",xx,xxx);
    fexp(s,"-",so,d);
    if(fcom(s,"!=".zero))
        fexp(d,"/",s,d);
    if(fcom(d,"<".zero))
        fexp(d,"*",mwone,d);
    fcpy(s,so);
}
return(s);

```

```

/*COSINE OF ANGLE*/
/*input in radians = x*/
/*cosine of x = c*/
cos(x,c)
float *x,*c;
{
    float co[8],n[8],fo[8];
    float xx[8],xsq[8],d[8];
    float f[8];
    init();
    fcpy(wone,co);
    fcpy(mwone,n);
    fcpy(two,fo);
    fcpy(two,f);
    fexp(x,"*",x,xx);
    fcpy(xx,xsq);
    fcpy(wone,d);
    while(fcom(d,">".er))
    {
        fcpy(two,ii);
        fexp(x,"*",x,xx);
        fcpy(xx,xsq);
        fcpy(wone,d);
        while(fcom(d,">".er))
        {
            fexp(n,"*",xx,c);
            fexp(c,"/",f,c);
            fexp(c,"+",co,c);
            fexp(n,"*",mwone,n);

```

```

1110 FO=FO+1
1120 F=F*FO
1130 FO=FO+1
1140 F=F*FO :: REM !F
1150 XX=XX*XSQ
1160 D=C-CO
1170 IF C<>0 THEN D=D/C
1180 IF D<0 THEN D=-D
1190 CO=C
1200 GOTO 1080
1210 SUBEND

```

In August, the function **an(a,n,r)** used logarithms like the function **ax(a,x,r)**. A better version of **an(a,n,r)** is written using multiplication. Not only is it more accurate, but it is quite fast. You might like to replace the August function with this one. The integer exponent **n** can be positive, negative, or zero.

```

/*Function an()*/
an(a,n,r)
float *a,*r;
int n;
{
    int i,m;
    init();
    fcpy(wone,r);
    m=n;
    if(n<0)
        m=-m;
    i=1;
    while(i<=m)
    {
        fexp(r,"*",a,r);
        ++i;
    }
    if(n<0)
        fexp(wone,"/",r,r);
    return(r);
}

```

### MONTE CARLO METHOD OF DETERMINING PI

Have you ever heard of the Monte Carlo method for determining **pi**? It is rather interesting. You will be surprised at the results. Draw a square, it doesn't matter how long the side is. Now draw a quarter circle, whose radius is equal to the length of a side of the square and the center is at one of the vertices, within the square. I don't recommend drawing this on the den floor — there could be an objection and you might end up in the doghouse.

Drop or throw a handful of pennies so that they will scatter randomly over the square. Repeat dropping or throwing handfuls of pennies. The total number of pennies is not critical, but the more dropped, the better the distribution. I chose 1000 for this problem. Another problem, where will you find 1000 pennies? The piggy bank? Well, perhaps, but this can also be a problem in itself.

(See Page 20)

c99

(Continued from Page 19)

After you have dropped or thrown 1000 pennies, count the number within and on the quarter circle. The value of **pi** is 4 times the number of pennies within or on the quarter circle divided by the total number of pennies dropped. My back hurts just thinking about counting and picking up 1000 pennies. There must be a better way!

This problem can be simulated with the computer. Another file must be added to your disk — RANDOM:C (changed to RANDOM). A side length of 100 was chosen.

```

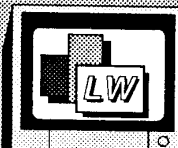
/*MONTE CARLO METHOD FOR GETTING PI*/
#include DSK1.FLOAT
#include DSK1.RANDOM
#include DSK1.CONV
int i,r,h,f,t,j,x,y;
char cb[6],four[8],thou[8],pi[8];
char s[15],hits[8];
main()
{
    randomize();
    h=0;
    for(i=1;i<=1000;++i)
    {
        for(j=1;j<=2;++j)

```

```

r=rnd(101); /* 101 is one more*/
if(j%2!=0) /*than the maximum*/
    x=r; /*number; i.e. the*/
else /*numbers will be*/
    y=r; /*from 0 to 100,*/
        /*inclusive.*/
    if(x*x+y*y<=10000)
        h=h+1;
    }
    itof(h,hits);
    f=4;
    itof(f,four);
    t=1000;
    itof(t,thou);
    fexp(four,"*",hits,pi);
    fexp(pi,"/",thou,pi);
    puts("throws = 1000 \n");
    puts("hits = ");
    puts(itod(h,cb,6));
    putchar(10);
    puts("pi = ");
    fpput(pi,s);
    putchar(10);
}

```



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## Myarc Q&amp;A

# No room for GPL on EPROM

Myarc Q&A is designed to answer questions about Myarc products. Answers are provided by Myarc spokesman Jack Riley. Readers are encouraged to submit questions to MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

## Does V1.14 of MDOS include support for hard disks?

There's a hook in there. You can assign the hard drive whatever you want it to be — like E=hds1:. (Full support of hard disks comes with the "H" version of MDOS.—Ed.)

## But you wouldn't be able to run a directory of a hard disk drive through MDOS V1.14?

It does not have full support. It has the same level of support that MDOS 1.06 had, but instead of using WDS1 you use hdS. In fact, "H" version of DOS will refer to it as hdS because it's a hard drive not a Winchester. "W" denotes Winchester.

Incidentally, we put in some fixes in MDM5 that allow the Myarc Personality Card and the HFDC to reside in the PE Box simultaneously. However, the commands in MDM5 cannot be used on the personality card because the support is not in it. It doesn't have the EPROMs. Nevertheless, you could use Extended BASIC to take files out, put them in a RAMdisk and then MDM5 can go into the RAMdisk and copy the files into your new hard drive. So transferring files will be easy.

## As for Hard & Floppy Disk Controller EPROMs, if a user is trying to do backups with a 4A, would they need to have a version 10 EPROM, rather than a version 7?

Not necessarily, but some of the earlier EPROMs — and the same thing for MDM5 — had bugs in them. It was more MDM5 than the EPROMs that wouldn't allow the HFDC to use the backup command correctly. With the later versions, however, there are no known bugs in the EPROM nor in MDM5 itself.

## What are the later version numbers?

The EPROM versions went 7, 8, 9 and 10. They're consecutive.

## So, anywhere from 7 to 10 wouldn't cause a problem on backups?

Should not, not on the EPROM.

And V1.25 of MDM5 is what people

## should be using?

I know that there was a problem with version 1.24. I don't know of any problems with version 1.25. There are no bugs that anyone has reported back to us.

## How will GPL be configured on the EPROM? Will we be able to specify how we want it on our EPROM?

We're not sure there's enough room on the EPROM for GPL. The EPROM is a 128K EPROM and as I understand it 2K is needed for other things leaving approximately 126K for actual programming. Well, if we add some bells and whistles to DOS, which is already 90K, we're not going to have much room. And I doubt that we're going to have room for GPL on the EPROM.

I think by the time we add the additional features that there isn't going to be a lot more room.

## Is the static RAM upgradable to only 32K? Can't I get more?

The static RAM is upgradable by 32K, which means it's 64K once you upgrade it.

## How much would Myarc charge to upgrade it?

Seventy-five dollars. That includes the RAM and everything, assuming the card's not damaged. (To do this, users should contact Myarc's Alabama office at 205-854-5843 to get an RMA number. The actual modification will be done at Myarc's New Jersey office.)

## Can we expect to see a 20 megahertz model of the Geneve?

Not in the near future. 20 megahertz is probably not going to be doable. Realistically, 16 or 18 megahertz is all that will be doable, and that's based on some very preliminary, early tests. But it appears to be doable and at some point in the future we'll take a closer look. Right now all of our concentration is on finishing Advanced BASIC, Pascal and the "H" version of DOS. Once that's finished we have to turn our attention to finishing the 512K modification card and some other projects. Once those are done then we can look at new projects, and the 16 or 18 MHz idea is on the board and we'll look at it to see how viable it is.

While we're on this subject, there appears to be a great deal of interest on two

particular projects. One of them is an EPROM-loading version of DOS and the other is a faster clock on the 9640. Essentially, most of the 9640s out there could be modified. When I say "modified," it may require DRAMs from 150 nanoseconds to 100 nanoseconds, that sort of thing. But most of them could be modified. We'll take a closer look at it.

## How much speed would be gained over the Geneve's 12 MHz clock speed?

Substantial increase. When you jump from 12 to 16 or 18 it's a big, noticeable difference. You won't reach 386 range, but you'll be knocking on the door. But at 12 MHz you're comparable to a 286 in performance.

## Can the Myarc 512K card be upgraded to 1.5 megabytes?

No. We had hoped to be able to put 1.5 meg on the bus in the PE Box but it is not doable for several reasons. First of all, the most RAM you can put directly on the bus is 512K. So the 512K card is going to be it directly on the bus. There are some other games you can play. You can produce a 1.5 meg card and have 1 meg of it as a RAM-disk like a Horizon and a half meg usable by the computer. Also, when you start talking about a 1.5 meg card, considering the cost of chips today, it is not an inexpensive card. I don't know if there's a lot of people out there willing to pay \$900-\$1000 for a

(See Page 26)

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### GRAPHICS

**ANIMATION 99' (52)** This is the one by Ray Kazmer that was featured in the July 88 Micropendium. See fantastic animation and also learn how it was done. This one is destined to be a classic.

**ANIMATED XMAS CARD (11)** This is the original animation by Ray Kazmer that made him an overnight superstar in the TI community. This classic is also referred to as "Woodstock" among TI'ers.

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### APPLICATIONS

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(continued)

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**ARTIFICIAL INTELLIGENCE (40)** This disk includes the famous computer program "Eliza" where the computer responds to your problems and questions in a manner that is almost human. Save a bundle on what you would pay a shrink for the same services. Also includes one of the better biorhythm programs so you can really take control of your emotional problems at one sitting.

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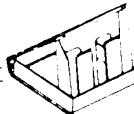


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A NOTE ABOUT DEMO DISKS: TEX-COMP's demo disks are a collection of disks containing unique and entertaining features which we believe will help you get more out of your TI-99/4A. Some if not all of them are in the public domain. However, in certain cases, the author requests a contribution if you use and enjoy it. While you are not legally obligated to do so, we at TEX-COMP encourage your assisting these talented programmers if you enjoy their work. That is why we offer these disks at such a low price.

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**TI DIAGNOSTICS (19)** This program released by TI loads into the TI Mini Memory module and then lets you test your system. Better than diagnostics on a disk since if your disk system was not working properly, you would not be able to use it. Complete with all documentation on a second disk side.

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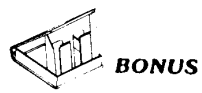
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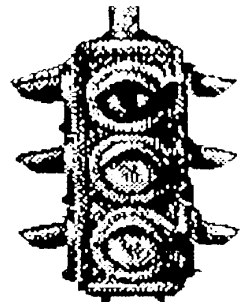
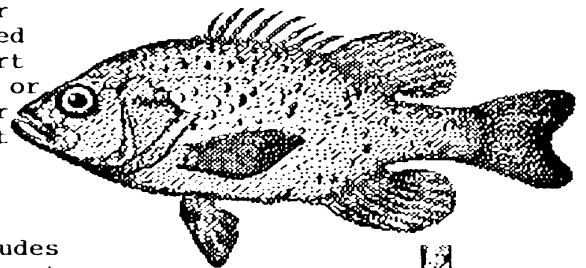
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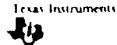
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## Geneve

# MDOS 1.14 features outlined

Here is a list of known fixes and additional commands included in MDOS V1.14. This does not include MDOS V1.14H, the hard disk version of MDOS.

- The autoexec file may be any name you wish and can be called from any file (i.e. batch or autoexec). Also, it may be called from the keyboard. However, the filename must be preceded by an ampersand when called. For example:

**A>&MPAUTO** where the filename is MPAUTO.

- Files may be listed, copied, and deleted by type with the command "type" (i.e. DV,IF,P, etc.). For example:

**A>DIR 'DV** will list only Display Variable files.

- The screen foreground and background colors while in MDOS may be changed with the command **MODE B\*** for background or **F\*** for foreground, where the asterisk is a value of 1 to 16. TI Extended BASIC color references are used. For example:

**A>MODE B2** will change the background color to black leaving the foreground color white.

- Pressing the Print Screen key will print a text screen to the current MDOS set printer. Pressing Alt-Print Screen will print it in double strike.

- Screen scrolling is speeded up.

- The GRAPHICS command no longer requires the GRAPHICS, only the printer

type (i.e. EPSON, GP550, OKIDATA, and PROWRITER) found on the GPL disk. These files are distributed with V1.14. For example:

Old command **A>GRAPHIC [printer] [/R]**

New command **A>[printer] [/R]**

- The WDS1 assign has been replaced with hdSI. For example:

**A>ASSIGN E=hdSI:** (E may be any letter you wish to use).

**A>E:**

**E>**

## GPL FIXES

Here are the changes made with GPL V1.04.

- A file may be specified from MDOS with the device and filename given after GPL.

**A>GPL B:EA** will load the file name EA from drive DSK2.

or

**A>GPL DSK2.EA**

- After the above file is loaded you are automatically advanced to the menu of GPL with the Editor/Assembler being the second item.

- The default speed of GPL is now 5

- Pressing the Control-Alternate-Delete keys simultaneously will take you to MDOS without reloading.

- TIMODE must be in an autoexec file before GPL may be loaded.

- The largest RAMdisk that may be partitioned if GPL is to be loaded is 120K unless a Myarc 512K Geneve memory upgrade card is in the PEB.

## MYARC Q&A—

(Continued from Page 21)

meg and a half.

Also, if you were going to do that, you could put up to 2 megabytes directly on the board 0 wait state and use 1 meg chips to do it. So, if you were going to do that, it would probably make more sense to redesign the DRAM section of the 9640, put a couple of 1 megabyte chips there and have 0 wait state, because it's not on the bus see. But that would be like creating a new card. There's been some preliminary work done to see if existing cards could be modified, and they could, but it isn't easy. So, for the immediate future at least, for the 9640, a half meg on the 9640 card and

a half meg on the bus is going to be it.

**Can any IBM compatible 1.44 megabyte, 3.5 inch drive be used with the HFDC?**

No, no more than *any* 1.44 megabyte drive can be used with any controller card in the IBM market. Each manufacturer does things a little different, and though you can get good compatibility with most you will never get 100 percent compatibility. And the same thing goes for hard drives. Hard drive controllers in the PC world are not 100 percent compatible with all hard drives. And the same with our hard and floppy disk controller. You can't use *any*, but you can use most.

## Hardware project

# Bypassing the 16 bit bus wait state defeat

By JOHN GUION

The following modification is for users who have added 32K of expansion RAM on the 16 bit bus in their consoles and would like the option of using that memory at regular speed. Since this modification only replaces the wait state eliminated by the conversion without defeating the multiplexing of the data lines, there is no need for an external memory expansion.

The reason for making this modification

is that it allows you to run those programs that are incompatible with the increased speed without having to swap consoles and add an external 32K to the system. The instructions given here are for consoles modified using Mike Ballmann's method as described by John Clulow. This is the same modification for which Bud Mills Services sells a kit.

Hardware modifications are done at the user's risk.

## PARTS NEEDED

You'll need one single-pole single-throw (SPST) toggle switch, one 74LS08 quad AND gate, a small knife, a couple of feet of wire-wrap wire, and soldering equipment. Be sure that the switch you use is not a center-off type. It should only have two positions. If you have modified your own console, you probably have all but the switch and 74LS08 on hand.

(See Page 28)

# Super Savings

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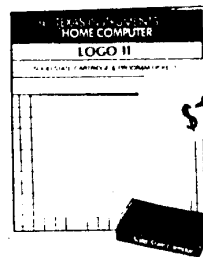
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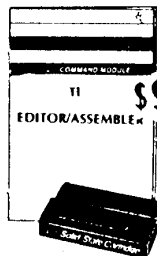
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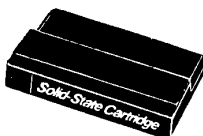
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#### Editor/Assembler

This is the complete version with manual, module, program disk and the disk version of Tombstone City as an example of assembly language programming. 32k and disk drive are required. This package will allow you to program the 99/4A in TMS 9900 Assembly Language and gives you access to all system features. Provides the fastest speed possible from the 16-bit processor!

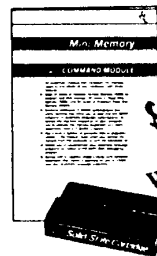


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## HARDWARE PROJECT—

(Continued from Page 26)

1. First, locate the 74LS153 that is stacked on top of the 74LS194 (U613). From pin 9 of the 74LS153, there should be a wire going to pin 13 of a 74LS32 (U605). Remove this wire.

2. Find a convenient place to mount the switch in the console. I've found that mounting the switch on the main board makes disassembly of the console easier and lessens the chances of breaking a connection. In one console, I have it mounted on the empty space right next to the screw nearest the power supply board. In another, I have mounted it at the back of the board near the center where a 1/2 inch hole exists in the board. A notch is cut in the case to allow the handle of the switch to stick through and the switch is affixed to the board with 5-Minute epoxy.

3. Use the wire-wrap wire to connect the center terminal on the switch to pin 13 of the 74LS32 where you removed the wire. Connect one of the outer terminals on the switch to pin 11 of the 74LS00 (U606) next to the 74LS32 (there should also be another added wire to that same pin). Connect the

other terminal on the switch to pin 9 on the added 74LS153 that you removed the wire from.

4. On the 74LS08, cut off pins 1, 2, 3, 4, 5, 6, 11, 12, and 13. Bend out pins 8 and 10. Next, locate U602 (a 74LS04). You'll find it at the end of the 9900 opposite of the RAM that was added earlier to the top of the console ROM. Place the 74LS08 on top of U602 with the notched ends lined up. Solder pins 7, 9, and 14 of the 74LS08 to the corresponding pins of U602 below it.

5. Solder a piece of wire-wrap wire from pin 8 of the piggy-backed 74LS08 to pin 5 of U603 (a 74LS00). U603 is near the center of the board near another 74LS00. It is the one nearest the keyboard connector. Solder a wire from pin 10 of the 74LS08 to pin 2 of the 74LS153 (on top of U613).

6. On the underside of the circuit board, locate pin 9 of U602 (the 74LS04 you just stacked the chip on) and solder a wire from that pin to pin 13 of U613. This is done on the bottom of the board because both chips involved have other chips stacked on top of them. Remember to start counting

pins from the other side since you are looking at the bottom of the board.

7. On the bottom of the board, locate the circuit trace going from pin 9 of U602 to pin 5 of U603. Double-check your pin numbering. Make two cuts across the trace about 1/16 of an inch apart and remove the trace between the cuts.

8. On the top of the board, locate the trace going from pin 4 of U606 (the 74LS00 next to U603) towards the piggy-backed 74LS153. Cut the trace near the chip using the same method as above.

Double-check all connections. Also look over the board carefully for loose pieces of solder or wire that may be lying on the board as these can cause short circuits and destroy your console, then re-assemble before testing. If you've done everything right, one position on the switch will allow use of the fast internal memory, and the other will use the internal memory at regular speed.

*Guion is a member of the Dallas TI Home Computer User Group.*

### 1989 Fairs

#### FEBRUARY

**TI-Fest West '89**, Feb. 18-19, Clarion Hotel at Balboa Park, San Diego, California. For information, write TI-Fest West c/o Southern California Computer Group, P.O. Box 21181, El Cajon, CA 92021 or call the SCCG BBS, (619) 278-7155, and leave a private message to the sysop with your full name and address.

#### MARCH

**West Coast Computer Fair**, March 17-19, Brooks Hall, San Francisco. San Francisco 99ers to be at Booth 733. For further information, write San Francisco 99ers, 24816 Mango St., Hayward CA 94545.

**TICOFF (TI Computer Owners Fun Faire)**, March 18, Roselle Park High School, Roselle Park, New Jersey. For information, write TICOFF '89 c/o Roselle Park High School, 185 West Webster Ave., Roselle Park, NJ 07204, or call Robert Guellnitz at (201) 241-4550 or (201) 382-5963 or the TICOFF BBS. (201) 241-8902.

#### MAY

**Multi User Group Conference** May 20, Reed Hall/Student Activities Building, Ohio State University, Lima, Ohio. For further information write Lima Users Group, P.O. Box 647, Venedocia, OH 45894, or call Dave Szippel evenings at (419) 228-7109.

This TI event listing is a permanent feature of MICROpendium. User groups and others planning events for TI/Geneve users may send information for inclusion in this standing column. Events will remain listed throughout the year.

### Reader to Reader

Henry J. (Hank) Gillis says he has recently become interested in ham radio and has purchased a third TI to use in that hobby. He writes, "I purchased software by Kantronics for this endeavor but this software is a module that plugs into the expansion system port and does not allow the use of anything but the console. This is inconvenient to say nothing of it being a dumb way to connect software."

He asks for anyone who has either written software or converted the Kantronics module so the expansion box can be used at the same time as the software to contact him at 1212 Laurel Ave., St. Paul, MN 55104. He adds that the use of the TI "has become a JOY" since he added the Rave keyboard.

Frank Ormonde says he has just used the mailing list function of TI-Writer for the first time and is having a problem getting the value file he created for the form letter to type mailing labels for him.

He writes, "It seems that TI-Writer will not allow me to create a document of only three lines of text and some blank lines (the blank lines for the spacing between the labels). When I print this file out, the printer form feeds to the next page after typing only one label, then it prints the second label, form feeds again, etc. If I could use the original value file I created to print labels, it would eliminate the need for me to type all the names and addresses again in a separate TI-Writer file."

Anyone who can help him may write him at 101 Marvin Court, Petaluma, CA 94952.

**Reader to Reader is a column designed to put MICROpendium readers in touch with each other. Anyone with a specific question or problem that may be answered by other readers is encouraged to submit at item. Be sure to address it to Reader to Reader, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.**

### Support MICROpendium advertisers

# FirstBase

Created by Warren Agee, FirstBase is the first full featured database program designed to truly meet the needs of the TI user. It offers the power of an IBM style program combined with the ease of use of a menu driven application. If you've tried other TI database programs and been dissatisfied because they weren't powerful enough for your needs, or were too difficult to work with, FirstBase is what you've been waiting for.

FirstBase's Browse program handles many standard database functions. Because a single FirstBase field may fill nearly an entire screen, a record may be split across as many display screens as necessary. You can perform a search based on a single field in the database. For more complex searches, you can use the Query program.

FirstBase offers a unique feature called "fixed fields." For a database of magazine articles, all of the July 1988 entires will have the same magazine and date fields. A field may be declared as "fixed" so that its contents are not cleared when entering a new record, saving considerable time.

The reason you put information into a database is to organize that information - to be able to find exactly what you are looking for with a minimum of effort. FirstBase's Query program performs this task.

Say we're working with a database of magazine articles with fields such as magazine name, article title, author, date, and page number. Any TI database will let you search on a single field. FirstBase takes you further. You can request all articles from the magazine "MICROpendium" written by "Dodd." You can specify that the search string can be at any position in the field. This flexibility is achieved through powerful wildcards like those found in IBM database programs. FirstBase has floating point numeric comparison capabilities as well. Search for all articles that appear after page 32 or between pages 40 and 50. Search for all article titles that contain the words "9640" or "Geneve." Imagine the convenience of being able to find exactly what you are looking for quickly and easily!

The results of a query may be sent to the screen so you may review the data, to a new database, appended to an existing database, or to the Report Generator.

So that you can take full advantage of FirstBase's Query, the manual includes several detailed step by step examples of query commands to show exactly how FirstBase interprets your instructions. The FirstBase manual was written so that everyone can benefit from using these amazingly flexible features, not just programmers.

The Update program allows you to make systematic group changes. You to select the records to change using a query command in exactly the same powerful format used by the Query program. If you maintained a database of prices for products and prices, you could easily lower your prices by 5% for all programs that are written by "Smith."

Using Update you can also easily delete a group of records. If you keep all members of your user group in a database, you could easily delete all members who haven't paid their dues in the last year.

Update also performs full four function floating point math between fields. This allows you to perform calculations on the database contents! For example, if you keep sales records in a database, you could fill in the "Total Cost" field with the price multiplied by the quantity ordered.

FirstBase has a built in Macro capability which allows you to save frequently used commands for most operations to disk for quick recall.

Printing a report is a major concern for any database and FirstBase's Report Generator offers many unique capabilities. A report may be printed for the entire database, or for a group of records selected with Query. You control exactly how the output will look - FirstBase keeps track of things like word wrap and page numbering. There is even an option to make sure that a record will never be broken across a page break.

FirstBase has conversion routines which allow you to import your existing PR-Base files. It also gives you the ability to read and write delimited database files which are used on the IBM and Mac! For PC-Transfer owners a special conversion utility is included which allows you to read and write database files directly to/from IBM disks.

**The Numbers:** A record may have up to 75 fields. Each record may have a name of up to 20 characters. Fields may contain either text or numeric data. Fields may be from 1 to 720 characters long. Each record may contain up to 3000 total bytes of data. A database may contain up to 32 megabytes of data. Sorting may include from just 1 to all 75 fields. Query and Update operate on indexed fields for greater speed. Up to 246 characters may be indexed for each field. To allow for greater flexibility the index may be easily redefined at any time.

FirstBase is shipped on 3 disks and includes a sample database. The manual is over 115 full sized pages and includes a detailed table of contents, introduction to FirstBase, a full English description of each section of the system with detailed examples, a step by step tutorial to get you started, and appendices describing all error messages and file formats.

FirstBase runs on the TI-99/4a and 9640 computers. It requires one of the following: Editor/Assembler, Extended BASIC, or TI-Writer. FirstBase is available for only \$49.95.

**Genial Computerware**  
P.O. Box 183, Grafton, MA 01519

- To place an order, please send check or money order plus \$1 for shipping and handling.
- Credit Card orders (Visa, MC, AmEx) may be placed through Disk Only Software at 1-800-456-9272.

## FirstBase V1.0

# A big database that supports massive files

By BILL GASKILL

1988 may well go down as the year that brought 99/4A productivity out of the dark ages and into the 20th century. Among the most significant events:

- the return of mass storage capabilities with the HFDC from Myarc;
- Charles Earl creating TELCO, a telecommunications program for the 4/A that has no business looking and acting like it was written for an IBM, though it does;
- Dennis Faherty coming up with TI-Base, a data base manager with the flavor and power of dBase for the IBM world;
- promises of a Word Perfect-like document processor from Charles Earl;
- and an alarmingly simple yet elegantly crafted tool named Typewriter 99 from Jim Reiss, designed to turn the 99/4A into a typewriter, just like IBM owners have.

Veteran 99er and data base expert Warren Agee has also added his mark to this banner year with FirstBase, a data base program with support potential for massive data files far beyond what most 99ers thought possible.

FirstBase is a c99 coded "monster," written by Agee and distributed by Genial Computerware. It is a system of programs that consume three SS/SD disks for the programs and 126 pages of text for the documentation. System loading is accomplished with either Extended BASIC, Editor/Assembler or the TI-Writer module. At least one disk drive and a 32K memory are needed. A printer is not required but, of course, is necessary if hardcopy output is desired.

Like the first Agee file management offering, Total Filer, the FirstBase system is text oriented. It allows math to be performed in select program modules but does not support formatted output of numeric data. Regardless of data type though, the system is capable of 720-byte fields, 75 fields per record, 3,000 character long records and 32,767 records per file.

## OVERVIEW

FirstBase is a flat-file data base manager with a multitude of data manipulation features. Of the six or seven most common data base programs available in the TI community, only Acorn 99 and TI-Base

## Review

### Report Card

|                     |    |
|---------------------|----|
| Performance .....   | B+ |
| Ease of Use .....   | B  |
| Documentation ..... | B+ |
| Value .....         | B+ |
| Final Grade.....    | B+ |

**Cost: \$59.95**

**Manufacturer: Genial Computerware, P.O. Box 183, Grafton, MA 01519**

**Requirements: Expansion memory, X BASIC, Editor/Assembler or TI-Writer, floppy disk system, printer and hard disk system optional**

stand in the same field with it as far as number of features offered.

One of the first things you will notice is the clean design of the program. The screen displays are attractive and the menus well designed. The terms used on the menus to describe system options are generally well chosen. Access to any menu option is accomplished by pressing the number key positioned to the left of any option (program) listed. A single keypress is all that is required to make something happen.

If you are tied to a single disk drive you will find some disk swapping required, depending upon the program module you are trying to load. A SS/SD, one disk drive owner will experience the most disk swapping. There are just too many programs to the system for a 90K drive. To have a complete system on one disk you must have a DS/DD floppy or the Myarc HFDC card with a hard disk.

Because of the program's many features, you need to read the manual before jumping into this program. In fact, you will find that the manual is required for just about anything you do, at least the first few times around. Agee has patterned this program after a fairly full-featured IBM-type data base manager, so you won't find that you can get by on instinct. Unfortunately there are no help screens or tutor files in the program to reduce the learning curve.

### CONFIGURING THE SYSTEM

When installing FirstBase to match your hardware you can designate printer name, input disk drive (the primary data disk), output disk drive (where subfiles and temporary files will be written to), program drive (usually DSK1), multiple wildcard symbol (the default is an asterisk) and

(See Page 31)

### Features Supported

- Add and save data
- Create data files
- Create complex Query definitions to locate data
- Create subfiles
- Delete records
- Design custom reports
- Designate "fixed" fields for efficient data entry
- Edit records
- Find records sequentially
- Import and export from/to MS-DOS format files
- Import PR Base 2.0 and 2.1 data files
- Index fields
- Merge data files
- Perform global delete, replace and undelete operations
- Perform math functions
- Perform wildcard searches
- Print individual records
- Print reports
- Rebuild an index file
- Save keypresses as macros for later use
- Search by partial string data
- Search without regard to case
- Sort data strings in ascending or descending order

- Sort data by physical records or by indexed records
- Undelete records

### Features not supported

- Browse data by selected field(s)
- Catalog the contents of a disk
- Change screen colors
- Create custom screens
- Display the number of records in a file
- Edit existing macros or Query definitions
- Import non-PR Base data files (excluding IBM type)
- Manage multiple files
- Print reports in compressed mode
- Print out a file's structure
- Put input limiters on data input fields
- Recover damaged data
- Use graphic borders or windows

## FIRSTBASE V1.0 —

(Continued from Page 30)

single wildcard symbol (the default is the question mark). The defaults for each prompt appear under the cursor to help you decide on an appropriate response, which is nice. Although the disk drive defaults intimate that three drives should be used, you can designate DSK1 as the program, input and output drive. You just have to realize that some disk swapping is going to be required.

The wildcard search symbols are alterable, I assume, for when you have to change the default wildcards so they do not conflict with data in any of your records. One missing feature is the ability to alter display colors. FirstBase offers white text on a blue background only. I like having the ability to set display colors.

### CREATING A FILE

FirstBase does not support graphics, windows, borders and the like, nor does it allow custom screen layouts to be designed. When data fields have been defined the input screen lists a field name on one line left justified, and the input for that field is accepted on the line directly beneath the field name. FirstBase does permit more than one screen to be used to display all the fields in a record. In fact, it requires it.

The CREATE screen prompts you for Field Name, Field Length, Index This Field, Number Of Bytes To Index, Fixed Field, Text Or Numeric.

A field name may be up to 20 characters long. The length of the input for any field may be up to 720 characters. When creating a data base you are asked if the field being defined is to be indexed. Up to 246 bytes per record may be indexed, and that amount may be apportioned among the available fields in any manner desired.

Indexing is important in FirstBase since only indexed fields can be used for searches and sorts. Sorts are allowed only on Text fields, though, so don't waste a lot of the 246 bytes on numeric fields unless you have a lot of searching of numbers to do. Also, unless you read the manual closely, you may miss the fact that any QUERY searches you do later are limited to the number of bytes indexed in any field, because queries and sorts can be done only on indexed fields. So it is important both to use the number of available indexing bytes judiciously and to plan your file struc-

ture for all possible future data access needs.

Designating a field as a FIXED FIELD allows the data from the previous record to be displayed in the next record being added to the data base, thus saving you typing time when you have repeat information to include in multiple records. The downside to the fixed field concept is that you have to erase or type over the data in a fixed field before entering the current data, if the last record's data is not appropriate. A more practical implementation of the idea might have been to offer a "repeat" key to allow the user to decide on the fly if the data for a particular field from the last record should be "inserted" in the current one.

Text or Numeric fields are the only type of input delimiters supported in FirstBase. I suspect this is linked to the fact that FirstBase is written in c99, which is basically a text-oriented programming language (with no support for floating point arithmetic). It may also be linked to the lack of more available memory, since the code generated in assembling a c99 file is not necessarily optimized. If you catalog the FirstBase disks you will see that there is a tremendous amount of compiled code to the programs.

When you are done defining the first field in a file the cursor pops up at the top of the screen again, waiting for the next field name to be entered. It does so without clearing the previous field's name. This was no doubt designed to be a convenient method of determining which fields have already been defined. I found it annoying at first because shorter field names required that I space over or use FCTN 1 to delete each excess character from the last field defined. That is until I discovered that FCTN 4 (CLEAR) would erase the previous field name. I discovered the fact hidden in the tutorial section, 61 pages after the section dealing with file creation. A curious place to put it, but at least the information was there. I also found it under a section entitled "Mini-Wordprocessor" that says FCTN 3 deletes a line and FCTN 4 clears from the cursor to the end of the line. But it appears that this information was aimed at the data entry function, not the CREATE function. It would be nice to have had the appropriate keystroke infor-

mation displayed on the screen though, or lacking that, it would have been nice to have FCTN 3 (ERASE) do the job. I think most 99ers instinctively use FCTN 3 to erase data and FCTN 4 to break operations. Staying with logical keystrokes makes a program easier to use.

When you think you are done defining fields you can press F9 at the FieldName prompt and then LIST your file's definition. A neat and compact display appears on screen that shows each field's LENGTH, Index status, whether or not it is a Fixed field and whether it is a Text or Numeric input field. The display is, unfortunately, not printable, a shortcoming that haunts you later on. It's too bad that the entire CREATE process could not be done in the format that LIST shows the results, all at once. It would be a lot easier, it would avoid the hassle of having to blank out previous field names and it would provide more of a "what you see is what you get" effect.

Besides LIST, you also have the option to ADD, CHANGE and DELETE fields before the file is written to disk with the SAVE command. You can also go back and alter the structure of a file after data has been entered, but the existing data will be destroyed.

**BROWSE:** This is a catch-all mode for adding data to a file, searching through the file by a single field, deleting records, editing records, undeleting records and printing data. When BROWSE is selected it displays the first record in the file. If none, the ADD mode is entered by default. When a record is displayed each field that is indexed is denoted by the greater than symbol.

Searches in the Browse mode are fast, efficient and simple. You can search by only one field at a time and it must be an indexed field. You must also remember to include wildcard delimiters in your search criteria or no data will be found. Once a record is located it is displayed on screen and can be printed out by pressing P to print. The output on the page emulates what you see on the screen.

A couple of things that I found disconcerting about Browse — when adding records to a file three keystrokes are required to write the record to disk and

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bring up another entry screen. You must press S to save the record just entered, Y to confirm that you really want to save it and then A to add another record to the file. Although one can become quite adept at this procedure, during long sessions of data entry it seems really cumbersome.

The next concern I have appears to be a bug in the program. Each time I exited the Browse mode after a data entry session the main menu would return, but I could not access any other programs from it. When I pressed the key for one of the options all I got was an error message that told me that the program disk was not in the program drive, even though no attempt to read any disk drive took place. This forced me to quit the program and reload it to clear the error so that I could do anything with the data just entered.

## BROWSE SCREEN:

```

-----+-----+
|<J> Display                               Page: 1 of 1|
|>Subject:                                |
| 9640 DEMOS AT CHICAGO FAIRE             |
|>Source:                                  |
| MICROPENDIUM                             |
|>Type:                                    |
| ARTICLE                                   |
|>Date:                                    |
| NOV86                                     |
|>Page:                                    |
| 030                                       |
|>Car, Rd, Bk, T, L, I, Add, Ed, Sv, D, U, Key, P, Q|
-----+-----+

```

**QUERIES:** FirstBase has an excellent Query Editor akin to the best I have seen in MS-DOS data base managers. It does not support query by example or SOUNDex, but neither do many of the most popular IBM type data managers. What it does is allow you almost total flexibility in creating a set of search parameters designed to get as broad or as narrow as you want in locating data. Wildcards are permitted, which is an advanced feature, as are a full range of relational operators (=, <, >, >=, <= etc.). Logical operators are limited to ANDs and ORs, but should suffice for most situations. The limitations to QUERY are that the field(s) being searched must be indexed fields and only the indexed portion of the field can be searched through. Thus, if you declared the first 10 bytes in a 40-character field as the indexed portion of that field, only the first 10 bytes can be searched for the information you want to find.

Query output may be directed to the screen, to a new file, to the end of an existing file or to a report. It is obvious that Warren Agee either has used a lot of data base managers or teaches data base programming on the college level. Either way, we win.

The FirstBase manual crows about the MACRO capabilities in

the program as being the feature that sets it apart from the pack. Maybe so, but having superb access capabilities to the information I have on file carries more weight with me than saving keystrokes. I'll save keystrokes in my word processing. Give me this kind of query power first, any day. Adding to the power of the Query feature is the ability to save it for future use as a MACRO. Detracting from it are the facts that macros cannot be edited and that query results outputted to a report are pretty disappointing due to the weak report generator.

**GLOBAL OPERATIONS:** What FirstBase refers to as "batch processing" I call global operations, meaning the program has the ability to perform some function to all eligible data through a single operation — an absolute must for large data files. Through the use of a QUERY to locate eligible data and an UPDATE command to make some change, you can perform global deletes, global replacements, global undeletes and math functions such as summing or multiplying numbers for new totals. Only one field can be updated at a time and math functions are only supported through the UPDATE mode. You cannot, for example, keep running balances in a file that is updated as new records are entered. What is not clear in the manual is whether the UPDATE operations will work on the non-indexed portion of a string. Search and Sort will not. Update may.

**REPORTS:** FirstBase supports custom report definition, but it is a cumbersome process that the manual covers poorly. The only salvation on report definition is found in the tutorial section at the back of the manual, but even it is something you will want to run from when you first see it. One good thing about the REPORT feature is the ability to save a successful definition so you don't have to go through the process more than once.

When defining a report you are basically blind. While FirstBase lets you define both page and record layout, you need information on field names and field lengths to determine positioning on the page. But since you can't see the results of what you have just done with one field when trying to determine where to put the next, you have to either draw things out by hand ahead of time or be a superb conceptualizer with a good memory. It would be nice to have your file's structure in front of you during this process but, since FirstBase will not let you print it out, you would have had to write it out previously, a bore and not what I expect from a professional piece of software.

What the process amounts to is entering row and column numbers for the starting position of each field's data on the printed page and then declaring how many characters in each field you want to print. You must remember to figure in spaces between field data as visual separators as well as remember the length of each field so there is no overlap in the printed output. Headers, footers and page numbering are supported, as are top, bottom, left and right margins. But nowhere in the manual could I find information on support for printer control codes, compressed printing, selection of special modes or fonts or any other control over your printer. I must assume that nothing but normal sized, draft quality print is available. I find REPORT to be a primitive system at best, clearly the weakest module in the FirstBase program.

**SORTING:** Sorting is a real dilemma. While FirstBase purports (See Page 33)



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to have the ability to sort either the entire (actual) data base or any of the index files built on key fields, I could not get SORT to work because it never created a file I could call up and view or print after the sort was done. In fact, it destroyed my data file the first time around because I elected to sort and rewrite the actual existing data base. But each time I sorted a file and then went to use it, I received an error message stating that some support file for my sorted data base could not be found. I even tried using the REINDEX utility to rebuild the sorted file, but with no luck. If I was doing something wrong, it escapes me. If so, I apologize to Mr. Agee. I just could not make SORT work.

**MACROS:** Warren Agee's idea and use of "macros" is a little different from what I am used to, but even in the IBM world there is not always a concrete definition of the term. Generally, macros allow you to save a series of keystrokes or input responses as a reusable file. The file is usually callable with a single keypress. In FirstBase, the term macro is used to identify a file that "remembers" past actions performed in either the QUERY, UPDATE or SORT modules so you may call them up by file name.

To create a MACRO, select the SAVE MACRO option from whatever menu you are in after exiting a just completed operation. Give the macro a name and you are done. Any key strokes made in the last series of operations are saved in a macro file. To re-use the macro you simply enter a percent sign followed by the macro name at the first prompt in whatever module the macro was originally saved from. Pretty simple. I could not find any reference to the maximum number of bytes any one macro could hold, but I would suspect that 255 is probably a realistic number.

**EXTRAS:** FirstBase contains 12 pages of tutorial information at the back of the manual covering database creation, the Browse mode, using Query, defining a report and printing a report. In a rather unusual twist of documentation organization, you will discover that the tutorial section is the only place that some information is found in the manual. For instance, in the front of the manual there are seven pages of information on how to create a

data base but, as I mentioned, nowhere does it tell you that you can press FCTN 4 (CLEAR) to erase a previous field name during the definition process.

Other extras include a sample data base that is the Boston Computer Society's TI catalog (or at least a portion of it), absolutely the best error message explanations I have seen in a TI application, an explanation of how FirstBase uses file formats to save data and overhead information and a section on FirstBase Utilities. The utilities include tools to convert PR Base 2.0 and 2.1 to FirstBase files, an IBM file importer/exporter and a program called a Reindexer, which rebuilds FirstBase index files.

The PR Base conversion is the only TI-to-TI file conversion supported and requires two disk drives to use, a requirement necessitated by PR Base's disk storage format rather than FirstBase's design. The IBM file format import program can be used only with delimited ASCII type files and requires that you first get the raw data onto a TI disk. That is accomplished either by using an XMODEM transfer protocol (which means you must have a modem and RS-232 or at least a cable running between the PC RS-232 and your TI RS-232) or by using PC Transfer, which means your TI drives must be DS/DD.

**SUMMARY**

A tremendous amount of thought, programming effort and talent has gone into FirstBase. When placed up against ANY other TI DBMS except Acorn 99 or TI-Base, there simply is no comparison. It would be like comparing toys to tools.

FirstBase is a good product that appears to have a couple of bugs, but may only really have one (the lockout after exiting the BROWSE mode). The other, in the SORT program, may be my misunderstanding of how the program module is supposed to be used. But if the user doesn't get the drift of what the author is trying to say in a program then the results are the same, lack of performance.

The basic tenets of a data management application are storage and retrieval of information. FirstBase needs to have a couple of procedures changed to make storage easier and it needs to improve the printed output on retrieved data. Given the fact that it is in V1.0, which is obviously going to

be the one with the most glitches, FirstBase is a credible program. It certainly fits into a niche that no one else has addressed, that of massive data file handling where both the file itself and the size of the data base can exceed anything else available. With the proper support from the TI community and from the author, FirstBase will find a comfortable place in the TI market and in your software library. It deserves your support.

**Performance:** In my opinion FirstBase lives up to its advertised claims, as far as the general features offered. Error trapping is superior and program flexibility is in the advanced range, though only as a flat-file data base manager. It does not support relational data base processing, meaning it does not truly allow interaction between multiple files. The Browse Mode lockout knocks performance down to some degree, but will surely be fixed in a maintenance release. Program speed is acceptable as far as I can tell though I have not yet had the chance to work with any really large data files.

**Ease of Use:** FirstBase is a complex program requiring close attention to the manual, at least initially. It lacks any kind of on-screen help or tutorial information and is plagued by one, two or three letter abbreviations for some of the operations. This means the user must refer to the manual to find out what the abbreviations mean and what they do.

The best example of this is found at the Browse Prompt, which sports the following command line:

Cur,Fd,Bk,T,L,I,Add,Ed,Sv,D,U,Key,P,Q?

When adding data to a file FirstBase requires too many keystrokes to save a record. I found that inconvenient and even annoying. You will recall that I was not very tactful in my dislike of the report definition process and report output either. It's weak to say the least. The definition process needs to be laid out differently or simplified if possible and the report generation module needs to provide more control over available printer attributes.

**Documentation:** A tremendous amount of effort has gone into the manual for FirstBase with credible results. While it

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## Picture\_\_It

# For the creative but lazy person

By KEN GILLILAND

I've always been a lazy one when it comes to graphics for programs. I hem and haw about the endless sheets of graph paper I'm going to have to use and how it takes all the fun out of the "art aspect" of graphics. I have endless projects waiting to be released "as soon as the graphics are finished." So, when Rodger Merritt released his second program in the "It" series called "Picture\_\_It," I immediately purchased it.

What "It" exactly does is take TI-ARTIST Instances and converts them to hex code and even writes a program to run them in merge format! "PICTURE—IT" will also write the Instances into a sprite format and even into transliterate codes for TI-Writer. It has a Banner program, too. Now, creative but lazy people like myself can draw their graphics with TI-ARTIST, then save them to Instances, convert them to a program format, then merge them into our programs. Wow! Truly an answer to my prayers.

The Banner program allows you to print and save small instances in a Banner format (FILENAME\_\_B). Saving is a somewhat slow process, averaging about 5 minutes. But once saved the image is printed in less than 30 seconds (at least on my FX 80).

The Banner menu allows you to save an Instance into Banner format, Print a Banner Instance and, of course, print Banner text. The printer dump is fast and clean. Its default uses the # symbol, but you can select any other symbol you want. PICTURE\_\_IT also comes with a font disk in which, from what I can figure, every letter was saved as an Instance. Then they

## Review

### Report Card

Performance.....A—  
Ease of Use.....A  
Value.....A+  
Final Grade.....A

Cost: \$13

Manufacturer: Rodger Merritt, 1949  
Evergreen Avenue, Fullerton, CA 92635  
Requirements: Disk system, expansion  
memory, Extended BASIC, printer optional,  
TI-ARTIST recommended

were converted to a "\_\_B" file. I think it would be easy to create more font type for the Banner program.

Another feature of PICTURE—IT allows you to view an Instance, which is interesting, but the following item on the menu does the same thing and more. PICTURE—IT's most useful item is its ability to convert Instances into program format for use with Extended BASIC. Even more amazing is that it does it quickly and efficiently. The menu allows you to chose between a sprite format and normal character definition. There's even two programs — MINI\_\_MOVER and MAXI\_\_MOVER — that, when merged in with your saved sprite definitions, allows simultaneous sprite movement back and forth across the screen.

The only problem I've experienced with the program is when defining several instances in the same session. The preceding Instances sometimes contain errors. I quickly solved this problem by turning off

my console and P-Box between conversions, or by just doing one at a time. It's a small complaint.

Almost as amazing as the Instance to XB conversion is the Instance to TI-Writer conversion option on the menu. This feature allows you to convert an Instance into Transliterate Codes, with even (.CO) Comments — meaning that if you have a printer that doesn't understand Epson, you can figure out what to change. Writing the Instance to a TI-Writer (FILENAME\_\_W) is a little slow. It took approximately 5 minutes (though the prompt on the screen said it would take 7.2 minutes) to write a 9x10 Instance to the 10 sector "\_\_W" file. But, again, once the image is saved in that format, the TI-Writer Formatter had it printed out in no time. It also allows you to save the image to print in double-density. After trying this feature several times, it became clear to me that this feature makes excellent letterheads and would provide much need graphics in D/V 80 documentation.

The last option of PICTURE\_\_IT is a disk directory. The directory is pretty standard fare, but there is an option that allows separate cataloging of the "\_\_I", "\_\_B" and "\_\_W," which is quite handy.

Overall, I think PICTURE—IT is a wonderful program and well worth the money spent to add it to your software collection. It's fast, clean and offers both artists and non-artists alike an easy way to provide graphics for programs and documentation, not to mention a "Happy Birthday" banner when the occasion arises.

## Memorial established for George Steffen

The "George Steffan Memorial 99/4A Center" has been established at The Special Awareness Center, a nonprofit organization in Simi Valley, California, providing computer training to handicapped and learning disabled children.

Tex-Comp donated two TI99/4A systems with color monitors, software and books for individual use along with computer software in Steffan's honor. Jerry Price, Tex-Comp vice president, said he

had been seeking a way to honor Steffan, co-founder of the LA 99ers, who died Sept. 29 of cancer.

Price says the Beanstalk Adventure marketed by Tex-Comp was originally an Apple freeware program which he asked Steffan to convert to Extended BASIC.

The center approached Price for a donation after one of its members demonstrated the use of the TI99/4A to the staff.

Steffan's name will be on a plaque af-

fixed to the computer desk, Price says, noting that local TI users Ray Kazmer and Steve Mehr have agreed to lend assistance and CorComp, DataBioTics and Head Computer Products have donated products.

Tex-Comp plans a formal spring dedication. Software or products can be sent to The Special Awareness Computer Center, c/o Simi Valley Adventist Hospital, Simi Valley, CA 93062. Gifts are tax deductible and will be acknowledged.

# Newsbytes

## Changes made to BBS

The Southern California Computer Group BBS has changed from TIBBS to the 99 BBS system by Hoogedorn, Davis and Hatheway, according to Lutz Winkler, sysop.

The BBS now runs at 300/1200/2400 (8NI), 24 hours a day. Former user IDs from TIBBS are no longer valid, Winkler says, and users must log on as NEW.

The SCCG BBS is co-sponsored by DIJIT Systems of San Diego, manufacturers of the Advanced Video Processor Chip, and downloads of AVPC programs are available, as is the latest information about the coming TI-FEST WEST in San Diego, Winkler says. Telephone number remains the same, (619) 278-8166.

## Bob and Bill's board running in Maryland

Mark Georges of Waldorf, Maryland, reports that Bob and Bill's Bulletin Board is running in Clinton, Maryland, on a TI99/4A with a Myarc hard and floppy disk controller, with separate message bases for the TI99/4A and the Geneve 9640.

Phone number is (301) 292-1482 (PC Pursuit users should use 202 for Washington, D.C.).

## Label printing disk available

A disk of 20 label printing programs, including a revised version of the Print A Tag program published in the December 1987 MICROpendium is available from programmer Ed Machonis.

He says the program includes some his son Michael's programs, including Print Strip and QD Banner, which were previously published in MICROpendium. All programs are coded for Epson printers.

The programs can be obtained by sending \$3 to Ed Machonis, 82-23 261st St., Floral Park, NY 11004. Specify that the order is for MAC-LABELS V2.0.

## 80-column Funnelweb released for AVPC

Tony and Will McGovern of Australia have sent the first working version of Fun-

nelweb 4.13 with an 80-column editor to DIJIT Systems of San Diego, California, according to Thomas Spillane of DIJIT.

The new Funnelweb features an 80-column work screen and an 80-column Show Directory screen while retaining the qualities TI users have become familiar with in previous versions, Spillane says. Both screens may be displayed in up to four colors simultaneously. The work screen now contains a ruler line and moving column marker tracking the cursor to aid in adjusting tab settings and margins.

The Show Directory screen has three windows, the largest of which may display up to 20 file names at a time. While on the screen the files may be marked, protected or unprotected and ACSII files viewed directly without entry into the editor. A smaller window denotes disk and file status.

Tony McGovern says the editor is intended for use on TI99/4A systems enhanced with a V9938 processor and was developed using DIJIT's Advanced Video Processor Chip. He says it is specifically intended for 99/4A systems using that card.

Spillane says the new Funnelweb will be available on bulletin boards around the United States as well as the DIJIT Systems BBS, (619) 278-8155. DIJIT Systems will also distribute the 80-column Funnelweb with the AVPC as a fairware program.

DIJIT Systems is at 4345 Hortensia St., San Diego, CA 92103. Phone number is (619) 295-3301

## Florida BBS running

Lee Stillwell and Gary Perusse are sysops of TBE of Lake Worth in Florida.

Stillwell says the board, at (407) 533-5167, has been running for about eight months, and has five online games, 13 message bases (three adult), and upload and download section, weekly adult bedtime stories, a magazine section with articles and a separate base with lists of all local boards.

He says only persons over age 18 who display a mature attitude are allowed on the board.

TBE ("The Big Experiment") was written by Kevin McAleavey of Selkirk, New York. Stillwell says he and Perusse have had the board in beta testing, but it has recently been released to the public. For in-

formation on obtaining a TBE system, contact McAleavey at RD 4, Box 120, Selkirk, NY 12158-9711, or (518) 767-3316.

## '9640 News' available on disk for users

The "9640 News," a disk-based publication for Myarc Geneve 9640 users, is available for \$25 for five issues, U.S.; \$30, foreign surface mail; and \$38, foreign air mail.

Beery Miller, who publishes the 9640 News, says a sample issue is \$5 in the U.S. and \$7 elsewhere.

Subscriptions or samples may be ordered from Miller at 5455 Marina Cove #1, Memphis, TN 38115.

## HRD 3000 RAMdisk now available

Bud Mills Services is marketing a new RAMdisk constructed on what the company calls the new Horizon RAMdisk 3000 board. It uses the HRD+ circuit with Hitachi 32K CMOS chips, equivalent NEC chips or the latest 128x8 HM66204 and HM628128 chips.

The board allows the use of these newer memory chips without stacking the control chips or the addition of wiring or resistors. Without stacking of memory, it can accommodate up to 1.536 megabytes. Mills says it is also easier for users to build than other Horizon RAMdisk kits.

Existing 32x8 memory chips can be used in the card but will require piggybacking and soldering of control leads for sizes larger than 384K.

Another feature of the card is a switch used to disable and "hide" the RAMdisk in the event of a computer lockup. The switch allows the console and PEB to be powered-up and the Horizon operating system to be reloaded without losing any files in the RAMdisk. This feature can be added to any existing Horizon RAMdisk.

The new card can be purchased ready-made with a 90-day warranty in the following sizes: 800K (Geneve); 512K, 384K, 192K and 96K.

For more information, contact the company at 166 Dartmouth Dr., Toledo, OH 43614.

# User Notes

## Accessing large Artist fonts

This comes from Ken Gilliland, of Tunjunga, California. He writes:

I'm sure that most people who use TI-ARTIST Version 2.0 have come across a curious problem when loading fonts larger than 45 sectors with the enhancement feature. Although there is no error message, the problem is not all of the font was loaded. Forty-five is the largest number of sectors that TI-ARTIST can load at one time.

So what do you do? Try not to use words that have XYZ's in them? No. Here are several solutions.

The easiest solution is to use Genial Computerware's "BIGTYPE" program found on its font disks or "Graphic Expander." This program will allow you to load an ARTIST picture and type over it, just like TI-ARTIST does. But's there's a

|                       |                                             |
|-----------------------|---------------------------------------------|
| A                     | (That's the letter being defined)           |
| 2,2,12                | (The A is roughly 2x2 and 12 pixels across) |
| 0,0,65,68,45,88,65,0  | (This is the data to create the "A")        |
| 0,0,33,65,65,77,65,0  | ( " " " " " " " " )                         |
| 0,65,44,65,65,66,99,0 | ( " " " " " " " " )                         |
| 0,0,0,0,0,0,0,0       | ( " " " " " " " " )                         |
| B                     | (Here's the next letter to define)          |
| 2,2,19                | (e(r...)                                    |

catch, it's currently incompatible with the CorComp Disk Controller Card. It works fine with the Myarc and TI.

Another possibility is to use Asgard Software's "Fontwriter II" using an undocumented secret. Type "CALL FILES(2)" before loading the program. The obvious fallback would be not being able to type over a TI-ARTIST picture. But, at least you can use the whole font!

Finally there's the poor man's method, and the one I use the most. It's a little bit of a hassle, but your font will load into TI-ARTIST and it doesn't cost anything but

a little time. This process involves splitting up the font into sections, such as file No. 1 containing A-Z, file No. 2 a-z, and file No. 3, numbers and punctuation.

First, load your TI-ARTIST font into TI-Writer or writer clone. For example, the file is "DSK1.BIGFONT\_F". Once loaded, remove Word Wrap (CTRL 0). The start of the file will look something like Fig. 1.

Okay, now use FCTN 4 a little and page down to the space character definition. This will have a blank line for its character symbol. Usually it is found after the "Z" or at the start of the file. It should look something like this:

```
0,0,33,65,65,77,65,0
0,65,44,65,65,66,99,0
0,0,0,0,0,0,0,0
(Here's the Blank!)
2,2,10
0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0
0,0,0,0,0,0,0,0
a
1,2,8
```

Depending on the size, you can break up the Font into A-Z, a-z, etc, as I have previously suggested. There are several items you should take into account. First, if you don't have a "blank" defined in your file, you won't be able to use one in TI-ARTIST. The same goes for punctuation, no hyphen or comma in that file. You'll have to load another in order to use that character.

What I'm trying to say is that each file should contain a blank space definition and the punctuation you use the most. With my files, space permitting, I have in DSK1.BIGFNT/A\_F (capitols, a space and the following punctuation: .,'"'), in DSK1.BIGFNT/B\_F (Lowercase, a space and all the punctuation). Sometimes it's

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## FIRSTBASE V1.0 —

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can't compete with the superb manual provided with Acorn 99, in content it is well above average. It needs a little more detail in some areas and would be easier to use if it came in a size smaller than the 8½x11 inch pages it is printed on. I prefer 9x6 inch manuals as they seem to fit on my workspace better. It also contains a couple of inaccurate references, such as the index on page 42 pointing you to page 48 for an explanation of record editing, when the correct page is 47. It would also be nice if the pages were bound some way rather than loose in an envelope. For another couple of dollars invested in a binder Genial could make a lot of points with many users.

**Value:** Because of its \$59.95 price, value is an open-ended question with FirstBase. There is not much to compare it against except the Acorn 99 or Navarone Data Base managers, both of which were similarly priced at their introduction. I will say that there is a lot of programming effort offered for the user's dollar, but the packaging isn't what one would call "pretty." The disk labels are matrix printed mailing label stock. Not really impressive. While some will argue that this is meaningless, I would

disagree. First impressions are important marketing tools and packaging is perhaps the best way to set the tone for a product. Navarone's packaging was impressive. Acorn's mediocre. FirstBase falls about even with Acorn 99 in this area except that the Acorn manual came with a binder.

While I am aware that advertising, packaging and printing costs for a product are the most expensive part of getting it out the door, a \$59.95 price tag does provide a little more margin than usually found in products for the 99/4A market.

**Final Grade:** I like FirstBase for its ability to handle large record sizes and massive data files and I think it deserves serious consideration for your software dollars if you have those kinds of needs. I have no regrets about purchasing the program and I look forward to FirstBase growing and becoming more sophisticated along with the TI community. I think we are becoming more educated in what personal productivity is all about and how computers can help us attain productivity objectives. We need tools like FirstBase to get those jobs done and to help us better realize the potential of our machines.

# User Notes

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better to sacrifice a "Z" or "J" or other less used letters in favor of a space or comma.

When resaving these files, it is important that you follow the following procedure, or you'll get an error message in TI-ARTIST. Instead of using the "SF" command use "PF," then add a "C" before the diskname: For example: "CDSK1.BIGFNT/A\_F".

The "C" clears all control codes in the TI-Writer file. After the file is saved do a "SD" (Show Directory) and determine if it falls under the 45-sector limit. If not, remove more letters until it does. Continue this process with "BIGFNT/B\_F", "BIGFNT/C\_F", etc... until you have saved all the characters in the font file "BIGFONT\_F".

This method isn't the most convenient, but it does solve the problem of not being able to use TI-ARTIST with large fonts. Hopefully, in a TI-ARTIST update, a larger character buffer will be installed.

## Program searches for variables, etc.

The following programs, by Steven Karasek, author of SuperBasic, appeared several years ago and turned up this summer in Steven Shaw's Rambles column in the British TI\*MES newsletter. They are well worth entering for those who want to be able to locate occurrences of variables, keywords, strings and line numbers in BASIC or Extended BASIC programs. It will list up to 100 occurrences of the specified item.

The accompanying Extended BASIC program should be saved in MERGE format. To use it, MERGE it into the BASIC or X BASIC program and enter in line 32000 the variable, string or keyword you'd like to find. Here are some examples:

```
32000 AS
32000 CALL LOAD
32000 DSK
32000 GOSUB
32000 100
```

Exceptions are GOTO — enter GOTO GOTO if searching for all occurrences of GOTO, or GOTO GOTO linenumbr if search for a specific line number with GOTO.

If you enter:

```
32000 100
it will find occurrences of the number 100 but not line number 100. To locate a reference to line number 100, (for example, GOTO, GOSUB, IF, etc.), use this:
32000 GOTO 100
```

If GOTO 100 exists, the line number where it is located will appear.

The source code of the program should be entered through the Editor/Assembler, assembled and saved as FIND/OB.

Briefly, to do this, load the Editor/Assembler editor, type the program and save it as FIND/OB1. Exit the editor and load the assembler and enter DSKx.FIND/OB1 as the source name, DSKx.FIND/OB as the object name and enter R in the option field. It should assemble quickly.

Notice that the Extended BASIC MERGE program looks for FIND/OB in DSK1. Change line 32100 if you are using a different drive number.

Note that the program you are going to use the CALL FIND program on should not have !@p+ in it.

The utility uses the on-board tokenisation facilities on line 32000 and compares the tokenised form to the entire program in memory.

Repeated use of this program alternating with running of your XB program is possible by removing lines 1 and 32000 to run your program, and by re-inserting lines 1 and 32000 to again use the utility. The CALL LOAD will not be repeated provided your program does not have a CALL IN-IT in it. This will save on the frustrations of the speed of MERGEing.

```
1 CALL FIND :: !@p+ !076
32000 !!131
32010 !@p+ !032
32020 SUB FIND !142
32030 ! SEARCH FOR CONTENT O
F LINE 32000 !173
32040 DIM A(100) !148
32050 ON ERROR 32000 :: CALL
LINK("FIND",A()) :: ON ERROR
STOP !003
32060 FOR I=1 TO 100 :: IF A
(I)=0 THEN STOP !150
32070 PRINT A(I) :: NEXT I :
: STOP !194
32080 CALL ERR(B,C) :: IF B B
4 THEN PRINT "ERROR: DESERV
```

```
PATTERN IN 32000" :: STOP !0
64
32090 IF B=57 THEN RETURN 32
050 ! SUBSCRIPT ERROR !128
32100 IF B=14 OR B=135 THEN
CALL, INIT :: CALL, LOAD("DSK1
.FIND/OB") :: RETURN 32050 !0
13
32110 RETURN !136
32120 SUBEND !168
```

This is the source code which should be assembled into the file FIND/OB:

```
DEF FIND
START EQU >8330 * START OF LINE NO TABLR
FINISH EQU >8332 * END OF LINE NO TABLR
XLINKR EQU >2018 * FOR RX BAS USE !!!
NUMASC EQU >2000
PAC EQU >834A
GOTO BYTK 134,0 * Filter GOTO
FIND HLP @FIND1
RT
FIND1 DATA FINDMS,FIND2
FINDMS R5S 32
FIND2 MOV @START,R1
GETPAT R1, @MOVX
CI R6,32000 * PATTERN IN LINK 32000
JRC GETPAT
JL ERROR
AI R1,4
JMP GETPAT
ERROR LT R0,>2100 * DATA ERROR
BLNE @>2034
GETPAT INGT R1
R1, @MOVX
MOV R1,R8
MOV R6,R9
DRC R9
CLR R10
MOVV *R9+,R10 * PATTERN LENGTH TO R10
SWPB R10
CB *R9,@GOTO * GOTO FILTER
JNR NO
JNC P9
JRC R10
NO MOV @FINISH,R2
DRC R2
CLR R0
LOOP C R2,R8
JRC DONE
MOV R2,R1
BL, @MOVX
MOV R6,R3
DRC R3
CLR R15
MOVV *R3+,R15
```

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# User Notes

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```

SWPB R15
LOOP2 DRC R15
      JRQ NONTCH
      MOV R3,R4
      MOV R9,R5
      MOV R10,R12
LOOP3 DRC R12
      JRQ MATCH
      CB *R5+,*R4+
      JRQ LOOP3
      INC R3
      JMP LOOP2
MATCH MOV R2,R1
      DRC R1
      RL @MOVK *LINE NO TO R6
      MOV R6,@RAC * TO F/PT ACCUM
      BLMP @XMLINK * TO F/POINT NUMBER
      DATA >20
      INC R0
      LJ R1,1
      BLMP @NUMASG * LINE NO TO BASIC ARRAY
NONTCH AT R2,4
      JMP LOOP
NONE RTWP
MOVE INC R1
      MOVB *R1,R6
      SWPB R6
      DRC R1
      MOVB *R1,R6
      RT
      END

```

## Converter changes

This comes from John Lewis, of Livermore, California. He writes:

In response to John Birdwell's CHARA1 file converter program (November 1988, MICROpendium), I found that four changes were necessary to get the program into machine image format with the save utility. They are changes to the following lines:

```

0014          DEF  START,SFIRST,SLAST,SLOAD
0014a  SLOAD
0014b  SFIRST  B    @START
0247  SLAST   END

```

Note that lines 14a and 14b are inserted before line 15. The last line is changed to add a label and eliminate the START.

## Print wheels are adaptable

This comes from Enrico Gasperini, of Towaco, New Jersey. He writes:

The daisy wheel printer is not used too much in business any more due to the great improvement in the new dot matrix printers. As a result of this there are many good bargains in daisy wheelers.

I use a Silver Reed which uses ASCII sequence print wheels. Unfortunately, there are not too many font styles available for the Silver Reed, but there are many styles available for the office machines which use the (WP) sequence. I came across a few used wheels of this type and devised a way to use them on my Silver Reed.

Both wheels will fit my printer, but because the character sequence is different it will print illegible words. I compared each wheel to find the difference in character location and used the (.TL) command in TI-Writer to redefine them so they would print the character entered from the keyboard.

I have made a file that can be included in my documents with the (.IF) command and when run through the formatter will print it with any WP type wheel I wish. These wheels are available at most office supply mail order companies for about \$3 or \$3 and have a selection of many styles from Script to Old English. The file I have listed below will work with most wheels and printer. By using the (.DP) command I am able to stop the printer at any point and change the wheel so I am able to print a document which includes several types of fonts. This file is by no means complete, but it has all the characters necessary to print most documents.

Here is the transliteration file.

```

.TL 98:117
.TL 117:98
.TL 106:108
.TL 108:45
.TL 110:111
.TL 111:110
.TL 118:57
.TL 120:118
.TL 57:125
.TL 43:63
.TL 63:43
.TL 35:64
.TL 33:96
.TL 64:38
.TL 38:126
.TL 34:33
.TL 47:92

```

```

.TL 45:39
.TL 94:59
.TL 91:94
.TL 39:124

```

## Index changes

Elton Schooling of Sacramento, California, writes us about his index to MICROpendium, which we began publishing in April 1988. He writes:

In the comment before the October installment the reader was advised that since the early program lines for each year were the same, each installment would begin with line 370, and lines 10 to 360 of the '84 index were to be appended to each subsequent year's index as it was published. There is a rift in the lute: at least five of that early set of lines must be changed. These are the lines to do with the arrays I used to contain the data statements. Change the following lines to:

```

80 DIM N$(XXX)
120 FOR I=1 TO XXX :: READ N$(I)
: NEXT I
130 CALL LONGSHELL(XXX,N$( ))
190 FOR J=1 TO XXX ::IF J=105
THEN 200 ELSE 210
310 FOR J=1 TO XXX ::PRINT N$(J)
:: FOR DELAY=1 TO 200 ::NEXT
DELAY :: NEXT J

```

These XXX's must agree, and be the total number of data statements in the respective year's index. For '84 it is 210, for '85 it is 226, for '86 it is 259 and for '87, 303. (Encouraging to have that number grow!)

The problem is that if these array numbers are smaller than the number of data statements, the array gets filled before all the statements are included, and one or more are left out of the list of index items. On the other hand, if there are fewer data items than array room, then the array is not filled and the program crashes, with an error statement, "DATA ERROR IN 120."

## Correction

A line was left out of Quality 99 Software's advertisement in the December 1988 issue. As a result, the ad did not mention the \$4 per order shipping and handling charge. MICROpendium regrets the error.

MICROpendium pays \$10 each for User Notes that are used in the column.

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