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Volume 8 Number 2 March 1991 $2.50

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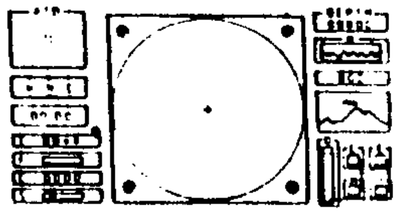

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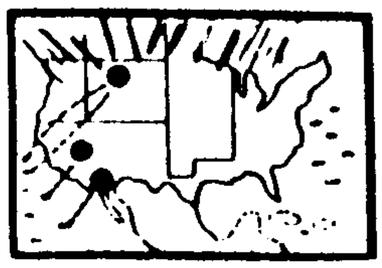

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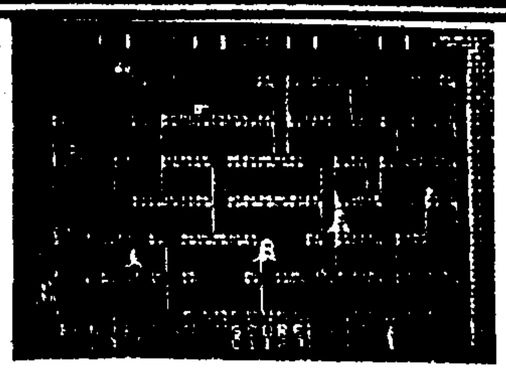

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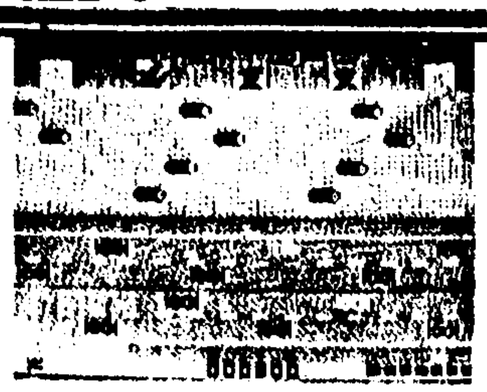

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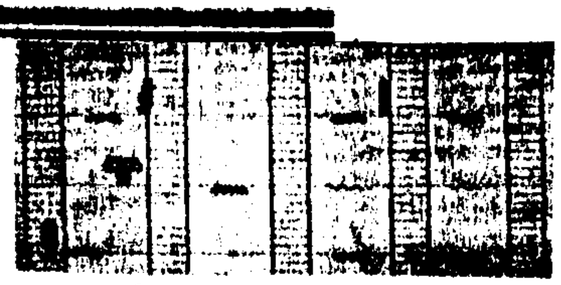

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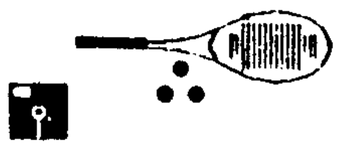

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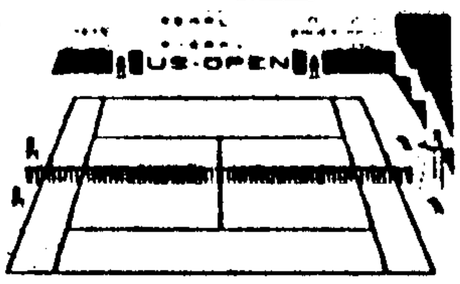

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*READ THIS

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 points 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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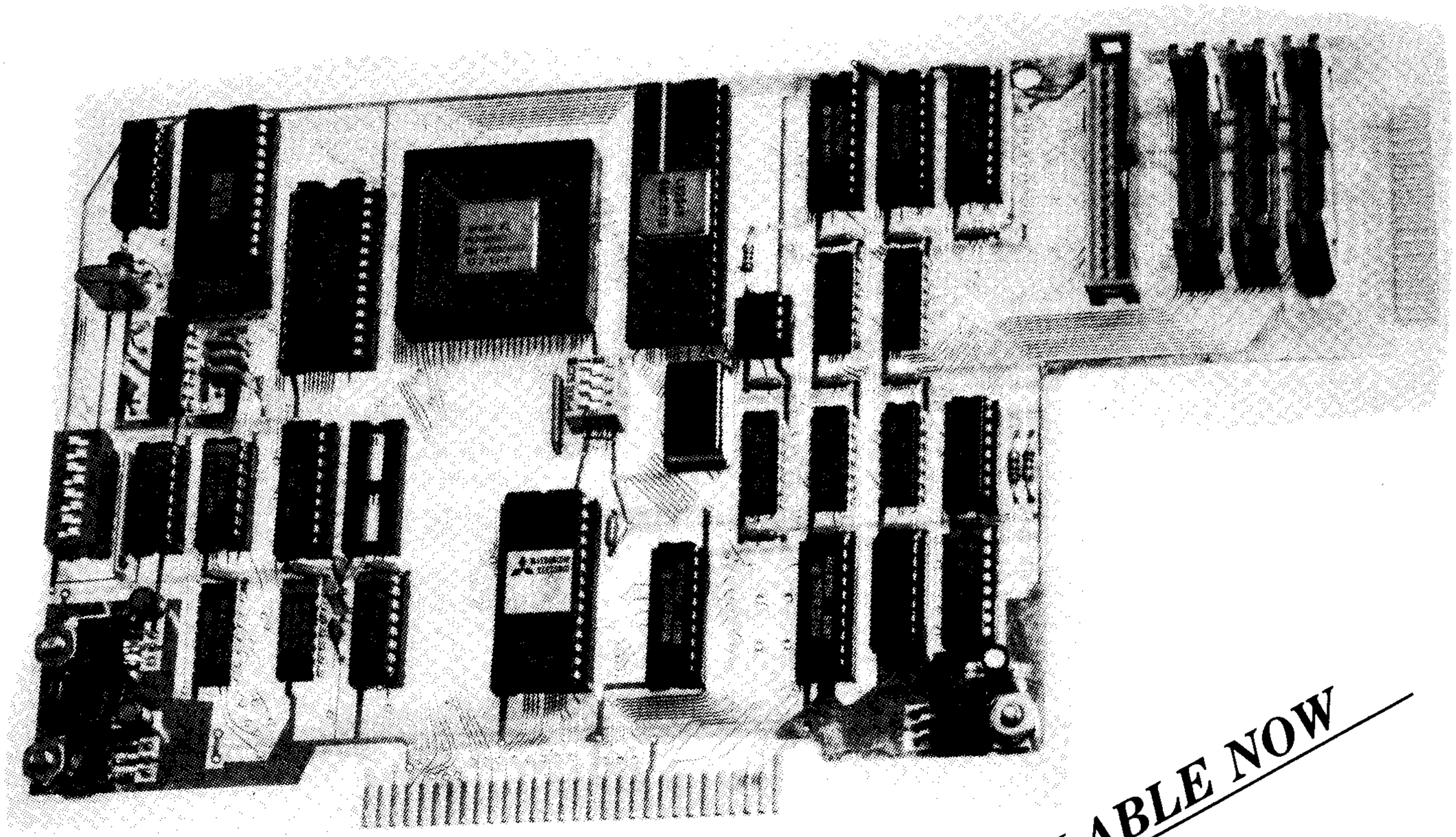

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Comments

Fest West success, MDOS flap

Fest West '91 appears to have been a tremendous success. The report in this month's edition as well as comments I've received from vendors indicate that buyers and vendors did a lot of business. That's a good sign.

MDOS UPDATES

It's funny what can happen when a dedicated Geneve user tries to do other users a favor. For example, Dr. Eric Bray, as dedicated to the Geneve as anyone I know, recently uploaded a version of MDOS labeled .98h onto CompuServe. It was subsequently uploaded to GEnie. Eric thought he was doing users a favor. So far, so good.

A matter of days later, several subscribers to Delphi asserted that Bray didn't have authorization from Myarc to upload .98h. It turns out that .98h isn't a final version and has some bugs in it that are apparently absent from the more stable — but by no means perfect — .97h version of MDOS. I spoke with Eric several weeks ago, and what he told me was that he found .98h to be more compatible with floppy and hard disk systems than .97h. The most stable version of MDOS, 1.14, doesn't work very well with hard disks while .97h doesn't work with Myarc's Disk Manager 5, which is Myarc's hard and floppy disk manager.

Now Eric is embroiled, unwittingly, in a skirmish between users who believe that there was nothing wrong with uploading the program and those who believe that doing so was tantamount to original sin.

The fact is, according to MDOS programmer Paul Charlton, that .98h is a beta test version of MDOS and not designed to replace .97h.

Still, the battle rages over who should be responsible for authorizing which software is provided to Geneve users and which isn't. Personally, I think Myarc and anyone else who has something to do with Geneve development, should post every version of system software that they have. Myarc owes it to the many buyers who are still patiently and impatiently waiting for the software they were promised years ago. I appreciate the fact that .97h works most of the time, but as far as I'm concerned the difference between it and .98h escapes me. .97h is, according to the canons of the computer world, little more than a beta test version in itself. Both of them have the disclaimer that neither is supported by the manufacturer, and as long as that is there I can see little to fuss about.

Eric, as far as I'm concerned, you did the right thing. You didn't say this was a final version and you provided it as a service to other users. Until the final version of the system software is available, the majority of users will continue to depend on the likes of Eric Bray to get their hands on the software they should have had all along.

—JK

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Feedback

VDP clarifications

A quick note to set the record straight about the 9938 Video Display Processor.

Lutz Winkler's commentary (Feedback, January 1991) requires an informed reply.

The V9938 processor *will* display 256x242x256 (horizontal, vertical, colors) and 512x424x16 in G6 and G7 modes.

Lutz noticed that setting the IL bit (bit 3) in VDP control register 9 only doubles the scan lines without doubling the resolution — an accurate assessment of one of the capabilities of the VDP chip. What he failed to notice is the EO bit (bit 2) in the VDP control register 9. The EO bit forces the 9938 to alternate even and odd fields with each 60-cycle interrupt, giving true 424 vertical pixel resolution in the graphics modes.

The process of configuring the 9938 for these high resolution modes is not very complicated. For operation in 512x424 mode you must set up two 512x212 screen buffers in VDP RAM, one starting at VDP address >0 0000, the other at VDP address >1 0000. You must then set control register 9 of the VDP chip with the EO and IL bits set to 1s.

There are a few idiosyncrasies for programmers dealing with the increased resolution modes.

You can't easily use the 9938's hardware graphics primitive operations in the 424-pixel vertical modes due to the way the 9938 addresses the pixels in the even and odd buffers. (The pixels in the even buffer have Y-coordinates from 0 to 256, the pixels in the odd buffer have Y-coordinates from 256 to 511.)

All the graphics commands require that the programmer provide code which draws in both screen buffers.

For further questions, I can be contacted on the Delphi communications service, ID "TI994A."

Paul Charlton
New Hyde Park, New York

Golf program praised

I agree with Bruce Harrison (Feedback, January 1991) that the "Golf Score Analyzer" did not get enough attention.

I am a golfer, and this program means a lot to me and a lot of golfers who want to keep track of their golf game, to have it analyzed hole by hole or any way we care to do so, to see exactly what your handicap is at the touch of a key. The program also has the latest method of calculating your handicap, which is known as the slope system, which is new to the golf world. All courses are changing to the slope method of handicapping. It is the most accurate program I have ever used. I am sure those who use this will agree with me on all points I have mentioned and some I have not.

I discovered Golf Score Analyzer by accident and wondered why such a great program was not publicized more. It has made my handicapping a lot easier than ever.

It would be a shame and a great loss to the TI community if we were to lose Harrison Software. We need these kinds of people to keep the TI going.

Nick Gramatikos
Monessen, Pennsylvania

Printing the calendar

Thank you for the "support" you showed to Notung Software on page 30 in your January 1991 issue. As you know, Notung Software is a fledgling company, struggling to succeed, but as long as this TI community has such a dedicated vanguard as MICROpendium, I have no doubt that our "orphans" will "live" for a long, *long* time to come! So, my sincere thanks go to you (even though you somehow managed to spell my name three different ways in three different places). Our TI community would be lost without your support.

In times of *war* there are many "unsung heroes." Personally, I feel *all* our "heroes" should be "*sung*," so please allow me to heap some due praise.

It's true (as you've reported) that my Star Trek (The Next Generation) Calendar can be printed perfectly with Pix-Pro and McCann's TPA and somewhat effectively via Macflix. But, I would *also* like to add, the Star Trek disks come with a customized printer Routine of their *own*, designed and written by none other than Jim Reiss (author of Pix-Pro) himself, and it is a complete, "ready-to-run" package, without the need for an outside printing program.

The 1991 Star Trek (TNG) Calendar is just one more example of how our TI community tends to "pull together" to reach a common goal. We even had the help of a British friend, Stephen Shaw, who kindly furnished the photos I used, to scan and digitize, to create "my" calendar. Ken Gilliland (owner of Notung Software) worked long and hard to put the package together. So it was *teamwork*, on an international scale, that made it all possible.

I have received several inquiries from 99ers wanting to know *how* the digitized scans were created. To explain the process in individual letters would be impractical, but I'll tell my "secrets" in MICROpendium if there is enough interest.

Ray Kazmer
Sunland, California

Program suggestions

I am a registered owner of Jim Reiss' Spell It! (V1.01) distributed by Asgard Software. (I haven't heard from Asgard whether update versions are available.) This has become one of my TI99/4A "frontline" utilities. Needless to say, I am extremely pleased with this program. However, I do have just one suggestion to offer.

It would be nice to have a menu option available for the user to select either a "full" Spell It! or a "quick" Spell It! The "quick" Spell It! would search the QUIK and USER dictionaries *only*, and bypass the A through Z dictionaries. This would speed up the operation considerably for short essays, but would make the individual A through Z dictionaries available if a "L)ookup" is needed.

I have accomplished this, to a certain extent, by creating null set A through Z D/V80 dictionary files for an abbreviated Spell It! This works fairly well, but Spell It! still searches the null set files, which still takes time. (Please be aware that, as of this time, I can neither afford nor justify either a hard disk or RAMdisk for my TI99/4A.) Therefore, I would appreciate a quicker, by user option, floppy disk version of Spell It!

I am also a happy owner of PC-Transfer (V1.0) by Mike Dodd, distributed by Genial Computerware *(Now JP Software — Ed.)* This utility has enabled me to communi-

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Feedback

(Continued from Page 8)

cate with the MS-DOS clones at work with a minimum of effort.

However, I do have one suggestion for PC-Transfer. It would be rather nice to be able to *delete* MS-DOS files with PC-Transfer. This is because PC-Transfer will not allow overwriting of existing MS-DOS files, and every so often I find it necessary to correct or update a file I have converted from TI format to MS-DOS.

I realize that all I have to do is either create another MS-DOS file name or save the edited file to another MS-DOS formatted disk, but this can lead to confusing file management. It would be much simpler to have a menu option to *delete* a MS-DOS file. If PC-Transfer can create a file, it shouldn't be too difficult to delete that file.

Glenn Bernasek
Strongsville, Ohio

XBASIC comments

I want to apologize to Jerry Stern. I was going through the September 1990 issue again when I noticed Jerry Stern's article about my mistake. The statement of line 470 SEG$(B$,LEN(B$)-2,3) was correct!

I went through the program and found my error in line 450 IF ABS(A)=5 THEN 480. I had ABS(A) as ASB(A), aha!

I'm afraid I've found a mistake in your BARCHART (October 1990).

It has something to do with lines 720-740, the bottom axis of the graph.

That line kept starting under the number 26 instead of underneath the start of the bar patterns, and fallen short which made 26.45 out in mid air.

I've worked on those lines 720-740 you don't know how many times and finally came to the conclusion that it wasn't those lines, but another line.

I went over that program over and over and over and I knew that it was keyed-in correctly and there were no mistakes.

I looked at lines 700 and 710 and decided to extend line 710 and see what happened and there was the mistake!

My prayers were answered!

All I had to do was change:

```
710 PRINT #2:TAB(30);AX$;
```

to

```
710 PRINT #2:TAB(40); AX$;
```

and it works beautifully!

By the way, Jerry; I've followed your directions to a T in the Ti-Writer for the program.

I must have, because it looks like the sample picture in the magazine.

I key-in most of your programs and I enjoy them very much, but I wish you would insert "demo" with them. You do on some but not all.

Arthur Dubeau
Woonsocket, Rhode Island

Hanging onto TI

I have been a TI99/4A owner since 1982. I have been slowly upgrading my system since then.

Although the TI is not technically "state of the art" in comparison to current IBM and Mac in terms of memory and current software, my system accomplishes pretty much everything I want it to do. Word processing, spreadsheet, artist programs and programming languages on the TI keep me satisfied most of the time. I recently window shopped for an IBM compatible. I found that, in order to be able to accomplish on an IBM compatible what I can on the TI, I would have to spend a minimum of $1,400 or more. I decided to hang onto my TI for a while longer.

Albert E. Hunter
Idleyld Park, Oregon

1991 TI FAIRS

FEBRUARY

Fest West 91, Feb. 16-17, Ramada Main Gate, Anaheim, California. Contact Fest West 91 Committee, c/o Bill Nelson, 11692 Puryear Lane, Garden Grove, CA 92640, or call Users Group of Orange County BBS, (714) 751-4332.

MARCH

Family Computer Exposition and Ham Radio Festival, (formerly TICOFF), March 9, Roselle Park High School, 185 West Webster Ave., Roselle Park NJ 07204. Sponsored by students of the high school and the Old Bridge Ham Radio Club. For information write the high school or call (201) 241-4550 or call the 24-hour informational BBS at (201) 241-8902.

APRIL

Northeast TI99/4A Home Computer Fair, April 6, Central Middle School, Waltham, Massachusetts. Contact Justin Dowling, The Boston Computer Society, One Center Plaza, Boston, MA 02108.

Canadian TI-Fest, April 27, Merivale High School, Nepean, Ontario, Canada. Contact Bill Gard, 3489 Paul Anka Dr., Ottawa, Ontario, Canada K1V 9K6 or (613) 523-9396 or Fax (819) 997-2194 Attn: DMES 2.

MAY

Multi User Group Conference, May 18, Reed Hall, Ohio State University Lima Campus. Contact the Lima User Group, P.O. Box 647, Venedocia, OH 45894, or phone Dave Szippl evenings, (419) 228-7109.

SEPTEMBER

Convention, weekend of Sept. 21, Tacoma, Washington. Contact Barb Wiederhold, (206) 546-1865 (BBS) or (206) 546-1205.

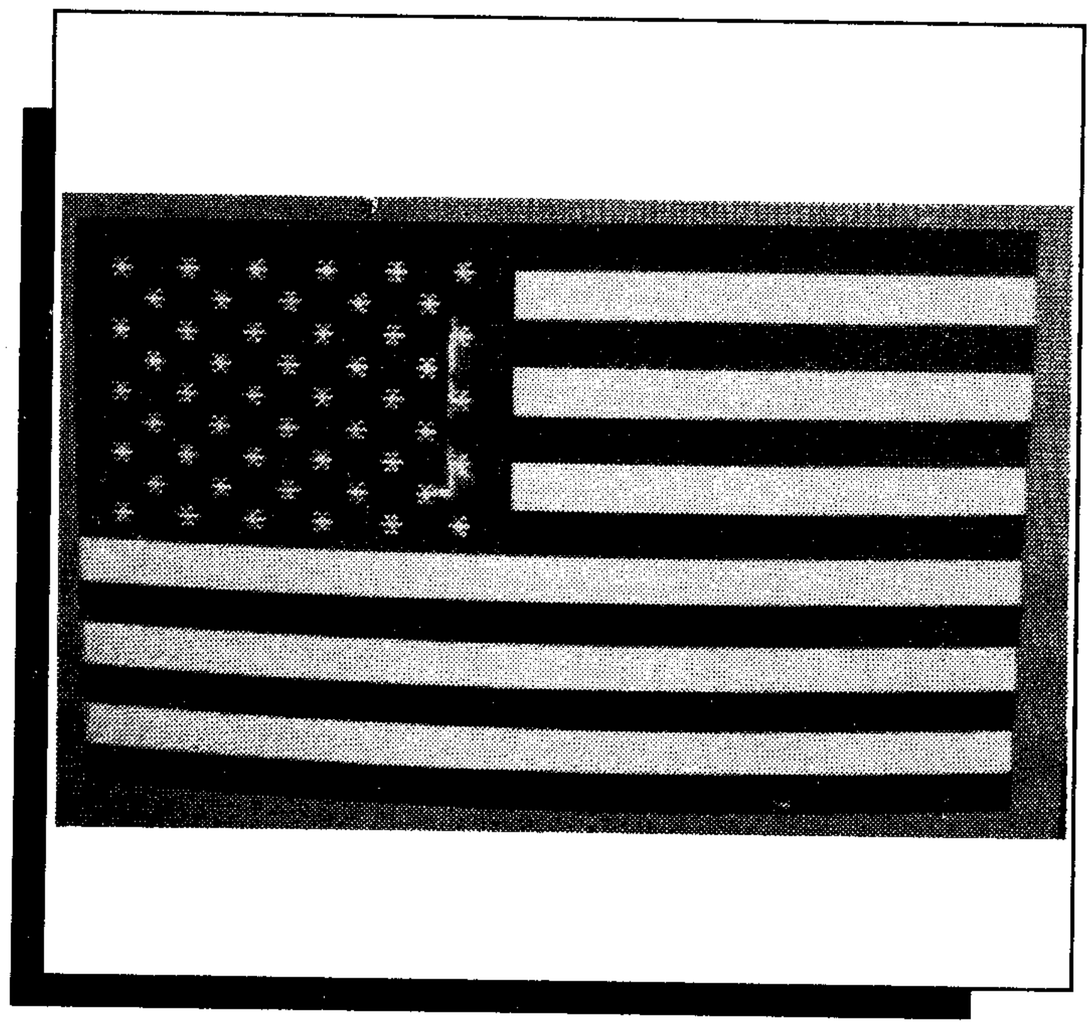
This TI event listing is a permanent feature of MICROpendium. User groups and others planning events for TI/Geneve users may send information for inclusion in this standing column. Send information to MICROpendium Fairs, P.O. Box 1343, Round Rock, TX 78680.

BASIC

Operation Desert Shield

By REGENA

Last August, Operation Desert Shield was started with trouble in the Middle East. My Air Force brother has been serving there since then, so we have watched the news daily. On Jan. 16, 1991, Operation Desert Storm took effect, and the conflict has touched many of our lives. This month's program is written in tribute to my brother, my cousin, my neighbor and all our men and women serving in the Persian Gulf.



As the computer plays "The Star-Spangled Banner," a map of Saudi Arabia with Iraq, Kuwait, Israel, the Persian Gulf and the surrounding area is drawn. The map is then replaced by the American flag. Press any key to stop the program at the end.

The map is a replica of the map on an Operation Desert Shield decal printed by the Armed Forces. I used a projector to enlarge the map onto graph paper. All of the land uses yellow Color 12, and the seas and country outlines are blue. Most of the color sets are defined with foreground 12 and background 5. Kuwait uses characters in Color Set 2 with foreground 7 (red) and background 12. The border characters are either yellow on cyan or blue on cyan.

Since there is a lot of detail in map drawing, I defined lots of characters, including characters in Sets 15 and 16, so this program must be run in TI BASIC and not TI Extended BASIC. However, you may type the program in Extended BASIC, then save it and switch back to BASIC to run it.

As in my other choreography program, I wrote all the CALL SOUND statements to play the music, then inserted the graphics commands. The first two phrases of music are used to define graphics characters, then the map is drawn by using PRINT statements and the redefined characters. The last step is defining the border characters and placing them on the screen.

After the map is shown, some string characters are defined for use in printing the flag. Each stripe in the flag is 1½ characters wide, so three lines are printed for each two stripes. The stars in the flag are simply the asterisk (Character 42) in white on blue. The plus symbol is a solid blue square. M$ and N$ print the stars and blue section of the flag. L$, W$ and A$ print the red and white stripes.

This program is nearly full memory, so if you have the disk system, be sure to use the following procedure before running the program.

```
CALL FILES (1)          (ENTER)
NEW                     (ENTER)
OLD DSK.IKUWAIT
```

If you wish to save typing effort, you may have a copy of this program by sending $4 to *REGENA, 918 Cedar Knolls West, Cedar City, UT 84720.* Be sure to specify that you need "Kuwait" for the TI and whether you want cassette or diskette.

KUWAIT

```
100 REM KUWAIT !175
110 REM BY REGENA !071
120 CALL CLEAR !209
130 CALL SCREEN(8)!153
140 T=600 !115
150 CALL SOUND(.75*T,311,2)!
157
160 CALL CHAR(40,"FF3F3F1F0F
070301")!066
170 CALL CHAR(48,"FFFFFFFFFF
FFFFFF")!020
180 CALL SOUND(.25*T,262,2)!
157
190 CALL SOUND(T,208,2)!122
200 CALL COLOR(2,7,12)!228
210 CALL CHAR(49,"F1EE9F7F7F
7FFFFF")!196
220 CALL CHAR(50,"EF0FEFEFEF
EFE7F9")!213
230 CALL SOUND(T,262,2,208,8
)!070
240 CALL CHAR(51,"FDFBF7E7DF
9F7F7F")!188
250 CALL CHAR(52,"FCFDFDFBF7
F7F7FB")!211
260 CALL CHAR(53,"FCFBE78F77
F7FBFB")!182
270 CALL CHAR(54,"F9FDFBF9FE
FFFFFF")!240
280 CALL SOUND(T,311,2,233,8
,196,10)!059
290 CALL CHAR(55,"FFFFFFFF7F
9FEFEF")!244
300 CALL CHAR(56,"F8F3CF7FFF
FF7F7F")!194
310 CALL CHAR(57,"FF0FF3FDFE
FFFFFF")!232
320 CALL CHAR(58,"FFFFFFFF7F
9FE1FE")!226
330 CALL SOUND(2*T,415,1,262
,6,175,8)!208
340 CALL CHAR(59,"EFEFE7F3FB
FBFBFC")!226
350 CALL CHAR(125,"FFFFFFFFF
FE70301")!221
360 CALL CHAR(60,"DDD3E7E7E9
EEEFEF")!195
```

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REGENA—

(Continued from Page 10)

```
370 CALL CHAR(61,"FCFDFDC1BF
BF7FFF")!217
380 CALL CHAR(62,"18E7FFFFFF
FFFFFF")!221
390 CALL CHAR(96,"")!167
400 CALL CHAR(124,"FFFF7F3F3
F3F3F3F")!210
410 CALL CHAR(97,"EFEFEF6761
2")!090
420 CALL SOUND(.75*T,523,1,1
96,8,165,10)!107
430 CALL CHAR(98,"FF7F7F7F7F
0F0F07")!140
440 CALL CHAR(64,"F8F8FCFFFF
FFFFFF")!243
450 CALL CHAR(65,"0000000080
EFEFEF")!060
460 CALL SOUND(.25*T,466,1,1
96,8,165,10)!108
470 CALL SOUND(T,415,2,262,8
,175,10)!063
480 CALL CHAR(66,"0000000307
8FFFFF")!052
490 CALL CHAR(67,"001038B8BC
BFBFBF")!120
500 CALL CHAR(120,"000000000
000C0F8")!013
510 CALL SOUND(T,262,2,208,8
,175,10)!063
520 CALL CHAR(99,"80808080C0
E0F8F8")!062
530 CALL CHAR(100,"070707070
1")!209
540 CALL CHAR(68,"EFE7F7F3FC
FFFFFF")!224
550 CALL CHAR(69,"FFFFFFFFFF
01FEFF")!235
560 CALL SOUND(T,294,2,233,6
,208,9)!020
570 CALL CHAR(70,"BF7F7F7F7F
7F7FBF")!173
580 CALL CHAR(101,"00FCFCFEF
EFEFEFE")!004
590 CALL CHAR(102,"FFFFFFFF3
F3F3F1F")!238
600 CALL CHAR(72,"FFFFFFFFFF
FEF9F3")!240
610 CALL SOUND(2*T,311,1,233
,5,196,8)!203
620 FOR S=3 TO 13 !120
630 CALL COLOR(S,12,5)!058
640 NEXT S !233
650 CALL CHAR(71,"BFBFBFBF7F
FFFFFF")!241
660 CALL CHAR(119,"FEFEFCFCF
8F0E0E")!185
670 CALL CHAR(103,"000000000
000C0E")!212
680 CALL CHAR(104,"01010101"
)!090
690 CALL CHAR(74,"FFFFFFFFFF
FCFDFD")!012
700 CALL SOUND(T/2,311,3)!05
3
710 CALL CHAR(118,"E0E0E0E08
08")!082
720 CALL CHAR(105,"F0F8FCFCF
08EBEBE")!230
730 CALL SOUND(T/2,311,2,156
,8)!002
740 CALL CHAR(106,"7F3F0F070
70301")!220
750 CALL CHAR(75,"FFFFFF9FA3
BCBFBF")!224
760 CALL SOUND(1.5*T,523,1,3
11,6,110,10)!078
770 CALL CHAR(76,"FFFFFFFFFF
0FF3FD")!234
780 CALL CHAR(77,"FFFFFFFFFF
FEFEF9")!007
790 CALL CHAR(78,"FFE0DFBF3F
FFFFFF")!231
800 CALL SOUND(T/2,466,1,311
,7,117,10)!249
810 CALL CHAR(79,"807CFEFFFF
FFFFFF")!225
820 CALL CHAR(80,"FFFFFF7F3F
BFBEDC")!224
830 CALL SOUND(T,415,1,208,7
,131,10)!053
840 CALL CHAR(117,"FCF8E0E0E
0C")!134
850 CALL CHAR(108,"3F3F3F3F3
F3F3F3F")!170
860 CALL CHAR(127,"FDFDFEFEF
FFFFFFF")!061
870 CALL CHAR(73,"F7EFDFDF3F
FFFFFF")!235
880 CALL SOUND(2*T,392,1,311
,6,233,8)!202
890 CALL CHAR(115,"FFFFFFFEF
CF8F")!089
900 CALL CHAR(116,"C08")!127
910 CALL CHAR(109,"008080C0E
0F0F0FC")!112
920 CALL CHAR(110,"3F1F1F0F0
F0F0F0F")!144
930 CALL CHAR(113,"FFFFFFFFF
FFEFC")!172
940 CALL CHAR(114,"FCF0E0C")
!141
950 CALL CHAR(111,"0780C0C08
0008")!142
960 CALL CHAR(112,"F06")!124
970 CALL SOUND(T/2,349,1,311
,7,139,8)!211
980 CALL CHAR(130,"E0F8FCFFF
FFFFFFF")!021
990 CALL CHAR(126,"00030FFFF
FFFFFF")!215
1000 CALL SOUND(T/2,392,1,31
1,8,139,10)!252
1010 CALL CHAR(90,"FFFFFFFFF
FFFF873")!225
1020 CALL CHAR(91,"FFFFFFFFC
03FFFFF")!230
1030 CALL SOUND(T,415,1,311,
6,131,10)!047
1040 CALL CHAR(92,"FFFFFF00F
FFFFEFC")!227
1050 CALL CHAR(81,"803FFFFFF
FFEFEFE")!215
1060 CALL CHAR(82,"8F9F5F5F5
F9F67F7")!137
1070 CALL CHAR(83,"FEFEFDFDF
DFDFBFB")!001
1080 CALL SOUND(T,415,0,208,
6)!066
1090 CALL CHAR(84,"EFDFBFBFB
FAEEDC3")!230
1100 CALL CHAR(85,"FFFFFFFFF
F7887DF")!217
1110 CALL CHAR(86,"FBF7F6EED
D1DDDDD")!206
1120 CALL CHAR(87,"BB7FFFFEF
9FDFEFF")!239
1130 CALL SOUND(T,311,1,156,
7)!065
1140 CALL CHAR(88,"DFEFEFEFE
FD3DDEE")!247
1150 CALL CHAR(89,"EEF2F8FEF
EFEFEFE")!240
1160 CALL CHAR(63,"00C0E0F0F
8F8F8F8")!103
1170 CALL CHAR(123,"1F01")!1
71
1180 CALL SOUND(T,262,1,131,
7)!063
1190 CALL CHAR(122,"FFFFFF")
!120
1200 CALL CHAR(121,"FFFF8303
0101")!129
1210 CALL CHAR(107,"E0F0F8FC
FCFCFEFE")!251
1220 CALL CHAR(93,"BEBFDFDFB
FDFEFEF")!255
1230 CALL SOUND(T,208,1)!121
1240 CALL CHAR(94,"38FCFCFCF
FFFFFFF")!235
1250 CALL CHAR(95,"FF7F7F780
7FFFFFF")!182
1260 CALL CHAR(131,"FFFFFF0F
F0FFFFFF")!018
1270 CALL CHAR(128,"FFFFFFFF
7F8FD7D8")!006
1280 CALL CHAR(129,"FFFFFFFF
FFFFE3D8")!033
1290 CALL SOUND(.75*T,311,2)
```

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REGENA—

(Continued from Page 11)

```
!157
1300 PRINT TAB(9);"0";CHR$(1
27);CHR$(128);CHR$(129);"v{"
 !056
1310 PRINT TAB(7);"0000]^g`_
";CHR$(131)!129
1320 CALL SOUND(.25*T,262,2)
!157
1330 PRINT "     0Z[\1200000
0" !216
1340 CALL SOUND(T,208,2)!122
1350 PRINT "    0QR030400000
00" !223
1360 PRINT "   00ST500670000
000" !047
1370 PRINT "  00UVW89:0;}000
000" !203
1380 CALL SOUND(T,262,2,208,
8)!070
1390 PRINT "  00X<=000>(`|00
0000" !218
1400 PRINT "  00Ya000000?{zy
0000" !094
1410 PRINT "  000`b000000@ABC
x{y0" !155
1420 CALL SOUND(T,311,2,233,
8,196,10)!059
1430 PRINT "  000cd000000DEF
0``j" !087
1440 PRINT "  000e`f000000HG
w```" !184
1450 PRINT "  0000gh00000JI0
v``" !046
1460 CALL SOUND(2*T,415,1,26
2,6,175,8)!208
1470 PRINT "   000i`jKLMNOPu
```" !255
1480 PRINT "   000k`l";CHR$
(127);"I0st```" !018
1490 PRINT TAB(6);"000mn0qr`
```" !137
1500 PRINT TAB(7);"000op````
`" !217
1510 PRINT TAB(9);"0";CHR$(1
30);"B~0k": : : :!183
1520 CALL SOUND(.75*T,523,1,
196,8,165,10)!107
1530 CALL COLOR(14,12,1)!018
1540 CALL COLOR(15,12,1)!019
1550 CALL COLOR(16,12,1)!020
1560 CALL COLOR(1,5,1)!174
1570 CALL SOUND(.25*T,466,1,
196,8,165,10)!108
1580 CALL SOUND(T,415,2,262,
8,175,10)!063
1590 CALL CHAR(144,"00030F3F
FFFFFFFF")!196
1600 CALL CHAR(145,"00000000
00030F3F")!021
1610 R=4 !013
1620 CALL HCHAR(R,9,145)!092
1630 CALL HCHAR(R,10,144)!13
2
1640 CALL SOUND(T,262,2,208,
8,175,10)!063
1650 CALL CHAR(159,"00C0F0FC
FFFFFFFF")!234
1660 CALL CHAR(158,"00000000
00C0F0FC")!057
1670 CALL HCHAR(R,17,159)!14
5
1680 CALL HCHAR(R,18,158)!14
5
1690 CALL SOUND(T,294,2,233,
6,208,9)!020
1700 CALL CHAR(146,"00010307
0F1F3F7F")!082
1710 CALL HCHAR(R+1,8,146)!0
23
1720 CALL CHAR(142,"0080C0E0
00F8FCFE")!130
1730 CALL SOUND(2*T,311,1,23
3,5,196,8)!203
1740 CALL HCHAR(R+1,19,142)!
070
1750 CALL HCHAR(R+2,7,146)!0
23
1760 CALL CHAR(143,"008080A0
70787C7E")!078
1770 CALL HCHAR(R+2,20,143)!
064
1780 CALL HCHAR(R+3,6,146)!0
23
1790 CALL CHAR(132,"FFFF00FF
FFFFFFFF")!019
1800 CALL HCHAR(R+3,7,132)!0
19
1810 CALL CHAR(139,"FEFEFEFE
FEFEFEFE")!062
1820 CALL HCHAR(R+3,19,139)!
078
1830 CALL CHAR(157,"0080C0E0
F0F8FCFE")!158
1840 CALL HCHAR(R+3,21,157)!
071
1850 CALL CHAR(147,"00000101
03030707")!251
1860 CALL HCHAR(R+4,5,147)!0
24
1870 CALL SOUND(T/2,311,3)!0
53
1880 CALL CHAR(148,"0F0F1F1F
3F3F007F")!143
1890 CALL HCHAR(R+5,5,148)!0
26
1900 CALL SOUND(T/2,311,2,15
6,8)!002
1910 CALL CHAR(156,"00008080
C0C0E0E")!020
1920 CALL HCHAR(R+4,22,156)!
072
1930 CALL SOUND(1.5*T,523,1,
311,6,110,10)!078
1940 CALL CHAR(140,"FEFEFEFE
FFFFFFFF")!058
1950 CALL HCHAR(R+4,19,140)!
071
1960 CALL HCHAR(R+4,20,58)!0
22
1970 CALL HCHAR(R+5,21,62)!0
19
1980 CALL CHAR(155,"00F0F8F8
FCFCFEFE")!222
1990 CALL HCHAR(R+5,22,155)!
072
2000 CALL SOUND(T/2,466,1,31
1,7,117,10)!249
2010 CALL CHAR(133,"FFFFFFFF
E11EFFFF")!020
2020 CALL HCHAR(R+5,6,133)!0
21
2030 CALL SOUND(T,415,1,208,
7,131,10)!053
2040 CALL CHAR(134,"FFFC718F
FFFFFFFF")!012
2050 CALL CHAR(135,"8F70FFFF
FFFFFFFF")!015
2060 CALL HCHAR(R+10,5,132)!
064
2070 CALL HCHAR(R+10,6,134)!
067
2080 CALL HCHAR(R+10,7,135)!
069
2090 CALL SOUND(2*T,392,1,31
1,6,233,8)!202
2100 CALL CHAR(149,"7F7F3F3F
1F1F0F0F")!173
2110 CALL CHAR(150,"07070303
0101")!049
2120 CALL HCHAR(R+11,5,149)!
073
2130 CALL HCHAR(R+12,5,150)!
066
2140 CALL CHAR(33,"FEFEFCFCF
8F8F0F")!141
2150 CALL CHAR(34,"E0E0C0C08
08")!026
2160 CALL HCHAR(R+11,22,33)!
064
2170 CALL HCHAR(R+12,22,34)!
066
2180 CALL CHAR(151,"7F3F1F0F
070301")!236
2190 CALL SOUND(T/2,349,1,31
1,7,139,8)!211
2200 CALL HCHAR(R+13,6,151)!
069
2210 CALL HCHAR(R+14,7,151)!
```

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```
071
2220 CALL SOUND(T/2,392,1,31
1,8,139,10)!252
2230 CALL CHAR(35,"FEFCF8F0E
0C08")!213
2240 CALL HCHAR(R+13,21,35)!
067
2250 CALL SOUND(T,415,1,311,
6,131,10)!047
2260 CALL HCHAR(R+14,20,35)!
067
2270 CALL HCHAR(R+15,19,35)!
076
2280 CALL CHAR(36,"FCF0C")!2
32
2290 CALL CHAR(37,"FFFFFFFFF
CF0C")!033
2300 CALL SOUND(T,415,0,208,
6)!066
2310 CALL HCHAR(R+16,18,36)!
077
2320 CALL HCHAR(R+16,17,37)!
077
2330 CALL CHAR(152,"7E3E1E0E
0602")!132
2340 CALL SOUND(T,311,1,156,
7)!065
2350 CALL HCHAR(R+15,8,152)!
074
2360 CALL CHAR(153,"3F0F03")
!042
2370 CALL CHAR(154,"FFFFFFFF
3F0F03")!099
2380 CALL SOUND(T,262,1,131,
7)!063
2390 CALL HCHAR(R+16,9,153)!
077
2400 CALL HCHAR(R+16,10,154)
!119
2410 CALL CHAR(136,"BFBF7FFF
FFFFFFFF")!044
2420 CALL CHAR(137,"FFFFFFFE
FDFDFDFD")!059
2430 CALL SOUND(T,208,1)!121
2440 CALL CHAR(138,"FDFDFEFE
FEFEFEFE")!059
2450 CALL HCHAR(R+13,9,136)!
075
2460 CALL HCHAR(R+13,8,137)!
075
2470 CALL HCHAR(R+14,8,138)!
077
2480 CALL SOUND(T/2,523,3,41
5,8,208,10)!252
2490 CALL SOUND(T/2,523,2,41
5,8,208,10)!251
2500 CALL SOUND(T,523,3,415,
6,208,8)!017
2510 CALL CHAR(43,"")!159
2520 CALL CHAR(45,"00000000F
FFFFFFF")!097
2530 CALL SOUND(T,554,3,466,
8,233,10)!069
2540 CALL SOUND(T,622,3,512,
6,262,10)!057
2550 L$="+*+*+*+*+*+" !212
2560 CALL SOUND(2*T,622,2,51
2,7,262,8)!205
2570 M$=L$&"*+" !117
2580 N$="+"&L$&"+" !246
2590 L$="````````````````" !1
64
2600 W$="bbbbbbbbbbbbbb" !2
05
2610 A$="aaaaaaaaaaaaaa" !1
68
2620 CALL SOUND(T/2,554,3,46
6,8,233,10)!004
2630 CALL SOUND(T/2,523,3,41
5,6,208,8)!208
2640 CALL SOUND(T,466,3,392,
7,196,9)!035
2650 CALL SOUND(T,523,3,415,
7,208,9)!019
2660 CALL SOUND(T,554,3,466,
7,233,9)!027
2670 CALL SOUND(2*T,554,2,46
6,6,233,8)!214
2680 CALL SOUND(T,554,3,311,
7,196,9)!024
2690 CALL SOUND(1.5*T,523,3,
311,6,208,10)!088
2700 CALL SOUND(T/2,466,3,31
1,7,117,9)!210
2710 CALL SOUND(T,415,3,311,
6,131,9)!008
2720 CALL SOUND(2*T,392,2,31
1,7,156,9)!209
2730 CALL SOUND(T/2,349,2,23
3,7,139,9)!216
2740 CALL SOUND(T/2,392,2,23
3,7,139,9)!214
2750 CALL SOUND(T,415,2,311,
6,131,9)!007
2760 CALL SOUND(T,262,2,208,
8,175,10)!063
2770 CALL SOUND(T,294,2,233,
8,208,10)!063
2780 CALL SOUND(2*T,311,2,23
3,7,196,9)!207
2790 CALL SOUND(T,311,2,156,
8)!067
2800 CALL CLEAR !209
2810 CALL COLOR(2,16,5)!230
2820 CALL COLOR(9,16,7)!239
2830 CALL SOUND(T,415,2,262,
8,208,10)!060
2840 CALL COLOR(10,7,1)!225
2850 CALL CHAR(97,"00000000F
FFFFFFF")!104
2860 CALL CHAR(98,"FFFFFFFFF
FFFFFFF")!025
2870 CALL SOUND(T,415,1,277,
8,117,10)!064
2880 CALL CHAR(104,"FFFFFFFF
")!006
2890 CALL SOUND(T/2,415,2,31
1,8,131,10)!241
2900 CALL SOUND(T/2,392,2,31
1,8,131,10)!245
2910 CALL SOUND(T,349,1,277,
8,208,10)!071
2920 PRINT "++++++++++++";L
$ !195
2930 PRINT M$;A$ !038
2940 CALL SOUND(T,349,2,277,
7,139,10)!074
2950 PRINT N$;W$;M$;L$ !134
2960 CALL SOUND(T,349,1,311,
7,131,10)!054
2970 PRINT N$;A$;M$;W$ !123
2980 CALL SOUND(T,466,2,277,
7,117,10)!070
2990 PRINT N$;L$;M$;A$ !112
3000 CALL SOUND(T/2,554,1,27
7,8,117,9)!218
3010 PRINT N$;W$ !061
3020 CALL SOUND(T/2,523,1,31
1,8,131,9)!199
3030 PRINT M$;L$ !049
3040 CALL SOUND(T/2,466,1,34
9,6,139,9)!222
3050 PRINT "------------";A
$ !210
3060 CALL SOUND(T/2,415,1,34
9,6,147,9)!215
3070 W$="bbbbbbbbbbbb"&W$ !
058
3080 CALL SOUND(T,415,2,311,
6,156,8)!013
3090 PRINT W$ !023
3100 L$="````````````"&L$ !
010
3110 CALL SOUND(2*T,392,2,31
1,6,233,8)!203
3120 PRINT L$ !012
3130 A$="aaaaaaaaaaaa"&A$ !
001
3140 PRINT A$;W$;L$;A$;W$;L$
 !192
3150 PRINT "hhhhhhhhhhhhhhh
hhhhhhhhhhh": :!073
3160 CALL SOUND(T/2,311,0,15
6,8)!000
3170 CALL SOUND(T/2,311,2,13
9,8)!003
3180 CALL SOUND(1.5*T,415,1,
311,6,131,8)!039
```

(See Page 14)

EXTENDED BASIC

Charting leagues, gills, rods, and furlongs

By JERRY STERN

O.K., I'll admit it. Even a superb version of BASIC like TI Extended BASIC has its limits. There are a few things that TI XB just cannot do in a reasonable fashion. Things like running an air traffic control radar system. Or maybe just accepting a formula in an INPUT statement, and making calculations based on that formula. Yes, with a very large program to interpret the formula, and a stock listing of standard formulas to use, a clever programmer could improvise a formula interpretation system, but why bother? Such a system would run as slowly as a Commodore 64 disk drive, and there are easier ways to accomplish the same results.

That result will be a table of numbers, calculated from a variety of formulas. This month's program, TABLE, is a generic table printing utility, setup for from one to nine formulas, printed with column headers, page titles, variable formatting, and variable looping for the data value. Although I've used a set of length conversion formulas as sample formulas, it is a simple step of changing just the formulas and column headers to convert TABLE into any other type of chart printer.

Rather than attempt that messy process of INPUTing formulas, and trying to think like Multiplan, each formula is stored in a DEF statement within the program. So to change the program over to another function, you'll need to edit the formulas and column headers in lines 150 to 360. More on that later; first, let's see what TABLE can do.

When TABLE is run, it will start by confirming the name of the printer. If you've changed the default printer name, listed in line 90, to match your system, you may just press ENTER to accept the printer name. Next, TABLE will ask for the name of the chart to print. That title will be repeated on each page. Finally, the last question: "From, To, Step?" Enter the first value to plug into the formula, a comma, the last value, a comma, and the size of the intermediate steps from one to the other, and press ENTER.

TABLE will accept just one value, or two, or three. If only one value is entered, the chart will be only one line long, and the formulas will only be calculated for that one value. Entering two values will create a normal chart, and TABLE will assume a step size of one. The third value, if entered, will be checked for reasonableness. A step size of zero will be converted to one, and the step size will be made positive or negative as necessary to complete the chart. So an entry of 5,-20, .2 would create a chart where the first column would read 5, 4.8, 4.6,... -20. An entry of 17, 30 would create a listing of 17, 18, 19,... 30; and the entry 22, 11 would lead to 22, 21, 20,... 11.

The "From, To, Step?" input is handled by the subprogram MACEPT, called from line 560.

```
CALL MACEPT(16,1,L,M())
```

The first two numbers are the row and column that the input will take place at; L is a variable that MACEPT will return containing the number of replies, and M() is the array of replies. A detailed explanation of MACEPT was published in this column in May of 1990. TABLE uses the L variable to decide what to do; if L=0, TABLE assumes that you are finished, and ends the program. If L=1, TABLE prints the one-line chart for just one value. If L=2, TABLE assumes the step of one, and if more than three values were entered, TABLE assumes that something is wrong, and asks for the series of numbers again.

By including the formulas within the program, TABLE remains an extremely simple program. The formulas and column heads end at 360. The array of image strings for the PRINT USING statements are stored in the array IM$(1 to 10), in lines 380 to 470. The introductory steps of opening the printer file and confirming the values for the main loop are done in the lines ending at 620. LC, on 620, is the line counter variable that will break the chart into pages, and add a dividing line after every fourth chart line, for easier reading.

The main loop, from 630 to 780, calculates the values for each formula, prints them according to the requested format, checks for the end of the page, and goes on to the next line.

Extremely simple. The power of this program lies in the ability to customize both the formulas and the formatting, without having to experiment endlessly with column widths. TABLE allows thirteen characters for every column of numbers. Only the number of decimal places will vary with the choice of formats.

The sample chart of conversion lengths is a partial representation of just how messy traditional English measurements are. Of course, the English don't use these old English measurements any more; they've sensibly gone metric, or as it is now known, they use the System Interna

(See Page 15)

REGENA—

(Continued from Page 13)

```
3190 CALL SOUND(T/2,466,1,23
3,6,156,8)!212
3200 CALL SOUND(T/2,523,1,31
1,6,208,8)!201
3210 CALL SOUND(T/2,554,1,41
5,6,233,8)!208
3220 CALL SOUND(2*T,622,0,41
5,6,262,9)!205
3230 CALL SOUND(T/2,415,0,26
2,6,175,8)!208
3240 CALL SOUND(T/2,466,0,29
4,6,175,8)!219
3250 CALL SOUND(1.5*T,523,0,
311,6,156,8)!045
3260 CALL SOUND(T/2,554,0,34
9,6,156,10)!003
3270 CALL SOUND(T,466,0,277,
6,156,8)!028
3280 CALL SOUND(2*T,415,0,26
2,6,208,10)!246
3290 CALL KEY(3,K,S)!190
3300 IF S<1 THEN 3290 !239
3310 CALL CLEAR !209
3320 END !139
```

EXTENDED BASIC—

(Continued from Page 14)

tional, or SI measurements. The U.S. Federal Government must, under the Trade Act of 1988, convert to metrics by the end of 1992. In the meantime, we still have to deal with fathoms, leagues, rods, and survey chains. Try running TABLE with the values 5280, 307000, 5280 for a one page chart of different lengths.

The formulas and headings begin on 190. The first formula converts feet to inches, or just multiplies by twelve. The format is set for zero places past the decimal point. Notice that the formula is always first, then the DATA statement containing the format choice and the column header. Every formula begins with DEF A(X)= using the formula letters A through I, and every DATA statement must use a single digit format code, a comma, and the column heading. The format codes may be the numbers zero to seven, for up to seven positions past the decimal point, or a capital E for scientific notation, or a dollar sign for currency format. The column headings may be up to twelve characters long. A blank column head can be printed by using " " for the header in the DATA statement.

Here is how to modify TABLE to print any other charts that can be expressed as a series of numbers calculated in a loop. First, on line 150, set the variable CT equal to the count of how many formulas to print. Up to nine columns of formulas may be used, and all of these will fit on a standard width printer in compressed print. If you are using a daisy wheel printer, or any other printer that cannot print past 80 columns, then delete line 530, and use a value for CT of no more than five.

Next, on line 160, enter the format for the first column, a comma, and the title for the first column. This is the column that will not use a formula; these numbers will be calculated by the FOR/TO/NEXT statement on 630. In the sample data, the format is 0 and the column heading is "Feet." The zero tells TABLE to use zero places to the right of the decimal point, so the first format string, IM$(1) will be used when printing this column.

There is another way to modify TABLE for a new set of formulas. Prepare a disk file, in MERGE format, of lines 150 to 360, containing just the formulas and DATA statements for the chart. What? Too tough? Well, not really, but O.K., I'll do the first few sets for you, but then you're on your own. There are three sample data sets to try. To convert TABLE for comparisons of the traditional American (awkward) volume measurements, begin by loading TABLE into memory, and then merge in the smaller file:

OLD DSKx.TABLE
MERGE DSKx.VOLUME

Let's see, since there are four gills to a pint, and three teaspoons to the tablespoon, how many servings are there in a fluid ounce? That's too complicated for me. There are two more samples to play with. Merge them into TABLE the same way. CELSIUS does temperature conversions, and LOGS prints the natural and base ten logarithms of the first column values. Each file does not have to use all nine formulas. Setting the variable CT to the number of formulas to use is enough to set the printout for that print run, and it is not necessary to delete any unused DEF statements.

Calculating formula results in a chart format is about as simple a program as can be written. Only the variable multi-column format makes it into a worthwhile project. But next month's program will be more complex, even though it won't quite be at the level of radar control software. By the way, if anyone DOES manage to run an air traffic control radar system with Extended BASIC, I'd like to hear about it. Uh ... before my next flight, please.

TABLE

```
90 PR$="RS232.DA=8.BA=4800"
! DEFAULT PRINTER !103
100 ! TABLE !011
110 ! MULTI-FUNCTION CHARTMA
KER; JLS 3/91;TIXB !101
120 ! Each label may be up t
o 12 characters. !123
130 DIM T(9),IM$(10),DC(9)!2
51
140 CR$=CHR$(13):: LF$=CHR$(
10):: FF$=CHR$(12)!172
150 CT=9 ! COUNT OF FORMULAS
 !193
160 DATA 0,Feet !143
170 ! Each data set includes
, in order, formula, precisi
on, and label. !055
180 ! Precision is number of
 decimals to print 0 to 7, o
r $ or E (scientific notatio
n) !058
190 DEF A(X)=X*12 !149
200 DATA 0,Inches !103
210 DEF B(X)=X/3 !102
220 DATA 2,Yards !017
230 DEF C(X)=X/5280 !006
240 DATA 3,Miles !009
250 DEF D(X)=X/16.5 !002
260 DATA 2,Rods !165
270 DEF E(X)=X/660 !212
280 DATA 3,Furlongs !098
290 DEF F(X)=X/15840 !061
300 DATA 3,Leagues !215
310 DEF G(X)=X/6076.11549 !0
70
320 DATA 3,NauticalMile !206
330 DEF H(X)=X/66 !166
340 DATA 2,Survey Chain !166
350 DEF I(X)=X*.0003048 !205
360 DATA 3,Kilometers !051
370 CALL BLUE :: CALL TITLE
!255
380 IM$(1)="##########. " !
 zero decimals !071
390 IM$(2)="##########.# " !
131
400 IM$(3)="#########.## " !
132
410 IM$(4)="########.### " !
133
420 IM$(5)="#######.#### " !
134
430 IM$(6)="######.##### " !
135
440 IM$(7)="#####.###### " !
136
450 IM$(8)="####.####### " !
137
460 IM$(9)="$########.## " !
Currency Format !226
470 IM$(10)="########^^^^ "
! Scientific notation !196
480 FOR L=0 TO CT :: READ K$
 :: DC(L)=POS("01234567$E",K
$,1)!202
490 READ K$ :: TL$=TL$&SEG$(
RPT$(" ",12)&K$,LEN(K$)+1,12
)&" " :: NEXT L !011
500 CALL KEY(3,L,L):: DISPLA
Y AT(9,1):"Printer Name?":PR
$ !176
510 ACCEPT AT(10,1)SIZE(-28)
VALIDATE("RSBANDPIOLFC.=/",D
IGIT):PR$ !144
520 OPEN #1:PR$&".CRLF",DISP
```

(See Page 16)

EXTENDED BASIC—

(Continued from Page 15)

```
LAY ,VARIABLE 132 !070
530 PRINT #1:CHR$(15)! CONDE
NSED PRINT !158
540 DISPLAY AT(12,1):"Title
of Chart?" :: ACCEPT AT(13,1
):TL2$ !181
550 PRINT #1:TL2$;CR$;LF$;LF
$ !127
560 DISPLAY AT(15,1):"From,
To, Step?" :: CALL MACEPT(16
,1,L,M())!143
570 ON L+1 GOTO 800,580,590,
600,560,560,560 !130
580 M(2)=M(1)!039
590 M(3)=1 !110
600 M(3)=ABS(M(3))*SGN(M(2)-
M(1)):: IF M(3)=0 THEN M(3)=
1 !031
610 PRINT #1:TL$;CR$;LF$;RPT
$("=",LEN(TL$));CR$;LF$;!046
620 LC=0 ! LINE COUNTER !081
630 FOR L=M(1)TO M(2)STEP M(
3)!024
640 ON CT GOTO 730,720,710,7
00,690,680,670,660,650 !181
650 T(9)=I(L)!131
660 T(8)=H(L)!129
670 T(7)=G(L)!127
680 T(6)=F(L)!125
690 T(5)=E(L)!123
700 T(4)=D(L)!121
710 T(3)=C(L)!119
720 T(2)=B(L)!117
730 T(1)=A(L)!115
740 T(0)=L !196
750 LC=LC+1 :: FOR L2=0 TO C
T :: PRINT #1,USING IM$(DC(L
2)):T(L2);:: NEXT L2 !174
760 IF LC=58 THEN PRINT #1:C
R$;FF$;TL2$;CR$;LF$;LF$;TL$;
CR$;LF$;RPT$("=",LEN(TL$));C
R$;LF$;:: LC=0 :: GOTO 780 !
074
770 IF LC=INT(LC/4)*4 THEN P
RINT #1:CR$;RPT$("_",LEN(TL$
));CR$;LF$ ELSE PRINT #1:CR$
;LF$ !115
780 NEXT L !226
790 GOTO 530 !099
800 CLOSE #1 :: STOP !177
29505 SUB BLUE !149
29510 ! SWITCHES DISPLAY TO
WHITE ON BLUE; JLS 7/88 !230
29515 CALL SCREEN(5):: FOR L
=0 TO 14 :: CALL COLOR(L,16,
1):: NEXT L :: SUBEND !202
30215 SUB MACEPT(R,C,N,X())!
087
30220 ! MACEPT(ROW,COLUMN,NU
```

LENGTH MEASURES

Feet	Inches	Yards	Miles	Rods	Furlongs	Leagues	NauticalMile	Survey Chain	Kilometers
5280.	63360.	1760.00	1.000	320.00	8.000	.333	.869	80.00	1.609
10560.	126720.	3520.00	2.000	640.00	16.000	.667	1.738	160.00	3.219
15840.	190080.	5280.00	3.000	960.00	24.000	1.000	2.607	240.00	4.828
21120.	253440.	7040.00	4.000	1280.00	32.000	1.333	3.476	320.00	6.437
26400.	316800.	8800.00	5.000	1600.00	40.000	1.667	4.345	400.00	8.047
31680.	380160.	10560.00	6.000	1920.00	48.000	2.000	5.214	480.00	9.656
36960.	443520.	12320.00	7.000	2240.00	56.000	2.333	6.083	560.00	11.265
42240.	506880.	14080.00	8.000	2560.00	64.000	2.667	6.952	640.00	12.875
47520.	570240.	15840.00	9.000	2880.00	72.000	3.000	7.821	720.00	14.484

```
MBER OF INPUTS RETURNED,ARRA
Y OF INPUTS) !057
30225 DISPLAY AT(R,C):!252
30230 ON ERROR 30275 !194
30235 ACCEPT AT(R,C)VALIDATE
("1234567890E+-.,")SIZE(-28)
:X$ :: N=1 :: P1=0 :: IF X$=
"" THEN N=0 :: GOTO 30277 !1
51
30240 P2=POS(X$,",",P1+1)::
IF P2=0 THEN 30255 !245
30245 IF P2-P1=1 THEN X(N)=0
 :: N=N+1 :: P1=P2 :: GOTO 3
0240 !188
30250 X(N)=VAL(SEG$(X$,P1+1,
P2-P1-1)):: N=N+1 :: P1=P2 :
: GOTO 30240 !061
30255 IF N=1 THEN X$=X$&" "
!144
30260 IF P1=LEN(X$)THEN X(N)
=0 :: GOTO 30270 !128
30265 X(N)=VAL(SEG$(X$,P1+1,
LEN(X$)-P1))!124
30270 GOTO 30277 !010
30275 CALL SOUND(90,-1,0)::
CALL SOUND(400,-3,0):: RETUR
N 30230 !107
30277 ON ERROR STOP !216
30280 SUBEND !168
31530 SUB TITLE !240
31540 DISPLAY AT(1,11)ERASE
ALL:"TABLE" :: CALL CHAR(95,
"00FF00FF"):: CALL HCHAR(2,1
3,95,5)!219
31545 DISPLAY AT(4,2):"Multi
-Column Chart Printer" !252
31550 DISPLAY AT(6,4):"3/`91
  Jerry L. Stern" !125
31560 SUBEND !168
```

VOLUME

```
145 ! VOLUME: Mergable data
file for TABLE; jls 3/91 !23
7
150 CT=9 ! COUNT OF FORMULAS
 !193
160 DATA 1,Liters !129
190 DEF A(X)=X/.946 !006
200 DATA 2,Liquid Quart !170
210 DEF B(X)=X/1.101 !040
220 DATA 2,Dry Quarts !226
230 DEF C(X)=X/3.785 !061
240 DATA 2,U.S. Gallons !009
250 DEF D(X)=X/4.546 !058
260 DATA 2,Imperial Gal !124
270 DEF E(X)=X/.029573 !164
280 DATA 1,US Fluid Oz. !231
290 DEF F(X)=X/.118 !002
300 DATA 1,Gills !008
310 DEF G(X)=X/8.810 !059
320 DATA 3,Pecks !005
330 DEF H(X)=X/.0147865 !221
340 DATA 0,Tablespoons !156
350 DEF I(X)=X/.0049288333 !
122
360 DATA 0,Teaspoons !204
```

CELSIUS

```
145 ! CELSIUS Mergable data
file for TABLE; jls 3/91 !24
3
150 CT=2 ! COUNT OF FORMULAS
 !186
160 DATA 1,Fahrenheit !016
190 DEF A(X)=(X-32)/9*5 !138
200 DATA 2,Celsius !232
210 DEF B(X)=(X-32)/9*5+273.
15 !074
220 DATA 2,Kelvin !120
```

LOGS

```
145 ! LOGS: Mergable data fi
le for TABLE; jls 3/91 !074
150 CT=2 ! COUNT OF FORMULAS
 !186
160 DATA 7," " !046
190 DEF A(X)=LOG(X)!226
200 DATA E,Natural Log !064
210 DEF B(X)=LOG(X)/2.302585
093 !173
220 DATA E,Common Log !209
```

BASIC Assembly

GRAPHICOMP 1.5 Is Here!

By BARRY TRAVER

With the XB code included in this issue of MICROpendium (combined with the code published in the previous two issues), you now have the full GRAPHICOMP 1.5, a GRAPHIcs COMPiler which can convert normal graphics commands into assembly source code for routines that can be accessed from TI Extended BASIC with a CALL LINK. Since graphics commands can often be very s-l-o-w in XB, I hope that you will find GRAPHICOMP a significant help in improving the speed of your screen displays in XB.

If you don't know anything about assembly language, GRAPHICOMP will write the source code for the assembly routines for you. And, if you are in fact interested in learning assembly language, you can learn a lot by comparing carefully the original XB statements with the equivalent assembly source code produced by GRAPHICOMP. My aim in writing GRAPHICOMP was two-fold: to produce (1) a useful utility and (2) a helpful tutorial aid.

In previous months, we created a GRAPHICOMP that was able to handle the following XB statements: CALL CHAR, CALL CLEAR, CALL COLOR (for character sets), CALL HCHAR, CALL SCREEN, CALL VCHAR, and DISPLAY AT (with possible ERASE ALL and/or semicolon). This month we complete GRAPHICOMP by adding various sprite statements: CALL COLOR (for sprites), CALL DELSPRITE (with possible ALL), CALL LOCATE, CALL MAGNIFY, CALL MOTION, CALL PATTERN, and CALL SPRITE.

If you're typing in this month's listing for GC/1-4BM, you should save it to disk in this way:

SAVE DSK1.GC/1-5M,MERGE

To make GRAPHICOMP 1.5, here's what you need to do:

OLD DSK1.GC/1-4A (from MICROpendium two months ago)

MERGE DSK1.GC/1-4BM (from last month's issue)

MERGE DSK1.GC/1-5 (from this month's issue)

SAVE DSK1.GRAPHICOMP

That's all there is to it!

The program listing takes up so much space that I'll postpone my comments on the now-complete GRAPHICOMP 1.5 (and on handling sprites in assembly) 'til next month (after which we can move on to something entirely new, e.g., file handling in assembly, if there appears to be interest in that topic). In the meantime, I hope you will experiment with GRAPHICOMP, which I think you will find is a very friendly program. (While experimenting, remember to make use of GC/TESTER, included in last month's MICROpendium.)

If you don't want to do all the typing for GRAPHICOMP 1.5 (the full program takes up 90 sectors!), there are at least two ways to obtain a ready-made copy: (1) subscribe to the appropriate monthly disks from MICROpendium (highly recommended!) or (2) send a check for $4 to Barry Traver, 835 Green Valley Drive, Philadelphia, PA 19128 (being sure to specify that you are a current subscriber to MICROpendium and would like me to send you on disk GRAPHICOMP 1.5).

Traver publishes a diskazine for TI users called Genial TRAVelER.

GRAPHICOMP 1.5

```
20 AA,AA$,AB,AB$,AC,AC$,AD,A
D$,AE,AE$,AF,AF$,AG,AG$,AH,A
I,AJ,AK,AL,AM,AO,AP,AQ,AR,AS
,AU,AV,AW,AX,AY,AZ,B,BA,BB,B
C,BD,C,C$,D,D$,E,E$,EP$,F$
30 G,G$,H,H$,I,I$,J,J$,K,K$,
L,L$,M,M$,N,N$,O,O$,P,P$,Q,Q
$,R,R$,S,S$,T,T$,U$,V,V$,W,W
$,X,X$,Y,Z,Z$,ZZ
40 CALL ACCKEY :: CALL CHAR
:: CALL CLS :: CALL DECHEX :
: CALL DELAY :: CALL END ::
CALL EQWS :: CALL FB :: CALL
 GS :: CALL HDG :: CALL ML
50 CALL PAUSE :: CALL PN ::
CALL SCREEN :: CALL START ::
 CALL WS :: CALL WTSU
110 CALL FB(2,12):: DISPLAY
AT(1,10):"GRAPHICOMP": :"
     Version 1.5": :"      f
or MICROpendium"
170 DISPLAY AT(1,1)ERASE ALL
:"    Here are the XB comman
dsGRAPHICOMP can handle:":""
:" CALL CHAR(A,B$)":" CALL C
LEAR":" CALL COLOR(#A,B)"
180 DISPLAY AT(7,1):" CALL C
OLOR(A,B,C)":" CALL COLOR(A,
B,C,D,E,F,...)":" CALL DELSP
RITE(#A)":" CALL DELSPRITE(A
LL)"
190 DISPLAY AT(11,1):" CALL
HCHAR(A,B,C[,D])":" CALL LOC
ATE(#A,B,C)":" CALL MAGNIFY(
A)":" CALL MOTION(#A,B,C)":"
 CALL PATTERN(#A,B)"
200 DISPLAY AT(16,1):" CALL
SCREEN(A)":" CALL SPRITE(#A,
B,C,D,E)":" CALL SPRITE(#A,B
,C,D,E,F,G)":" CALL VCHAR(A,
B,C[,D])"
210 DISPLAY AT(20,1):" DISPL
AY AT(A,B):C$[;]":" DISPLAY
AT(A,B)ERASE ALL:C$":"(REM,
!, & GOTO ARE IGNORED)" :: C
ALL PAUSE
220 I$=CHR$(255)&CHR$(255)::
 D,K,L,M,W,V,AR,BD=0 :: CALL
 FB(2,4):: DISPLAY AT(2,1)ER
ASE ALL:"Here are your choic
es:"
410 IF POS(T$,CHR$(157),1)<>
0 OR POS(T$,CHR$(162),1)<>0
OR POS(T$,CHR$(131),1)<>0 OR
 POS(T$,CHR$(154),1)<>0 THEN
 X=1 ELSE X=0
420 IF X THEN PRINT " DV163
MERGE FILE": :ELSE PRINT " D
V80 TEXT LISTING": :
430 GOTO 450
450 IF X=0 THEN IF LEN(T$)=8
0 THEN LINPUT #2:X$ :: T$=T$
&X$ ! DV80 BAND-AID
460 IF T$=I$ THEN 670
470 IF X THEN CALL ML(T$)
500 AF=POS(T$,"(#",1):: IF A
F=0 THEN 530
510 AG=POS(T$,",",AF):: IF A
G=0 THEN AG=POS(T$,")",AF)
520 AY=VAL(SEG$(T$,AF+2,AG-A
F-2)):: W=MAX(W,AY)
560 IF POS(T$,"CALL DELSPRIT
E(#",1)<>0 THEN AR=(AR OR 2)
:: BD=(BD OR 1):: GOTO 440
570 IF POS(T$,"CALL DELSPRIT
E(ALL)",1)<>0 THEN AR=(AR OR
 1):: BD=(BD OR 1):: GOTO 44
0
600 IF POS(T$,"CALL LOCATE",
```

(See Page 18)

BASIC/Assembly—

(Continued from Page 17)

```
1)<>0 THEN BD=(BD OR 1):: GO
TO 440
610 IF POS(T$,"CALL MAGNIFY"
,1)<>0 THEN BD=(BD OR 4):: G
OTO 440
620 IF POS(T$,"CALL MOTION",
1)<>0 THEN BD=(BD OR 1):: GO
TO 440
630 IF POS(T$,"CALL PATTERN"
,1)<>0 THEN BD=(BD OR 2):: G
OTO 440
650 IF POS(T$,"CALL SPRITE",
1)<>0 THEN AR=(AR OR 1):: BD
=(BD OR 1):: GOTO 440 ! SPRI
TE
780 IF POS(T$,"CALL COLOR(#"
,1)<>0 THEN GOSUB 3000 :: GO
TO 910
800 IF POS(T$,"CALL DELSPRIT
E",1)<>0 THEN GOSUB 5000 ::
GOTO 910
830 IF POS(T$,"CALL LOCATE",
1)<>0 THEN GOSUB 8000 :: GOT
O 910
840 IF POS(T$,"CALL MAGNIFY"
,1)<>0 THEN GOSUB 9000 :: GO
TO 910
850 IF POS(T$,"CALL MOTION",
1)<>0 THEN GOSUB 10000 :: GO
TO 910
860 IF POS(T$,"CALL PATTERN"
,1)<>0 THEN GOSUB 11000 :: G
OTO 910
880 IF POS(T$,"CALL SPRITE",
1)<>0 THEN GOSUB 13000 :: GO
TO 910
3000 ! COLOR FOR SPRITE
3010 AE=POS(T$,"CALL COLOR",
1)
3020 IF SEG$(T$,LEN(T$),1)<>
")" THEN T$=SEG$(T$,1,LEN(T$
)-1):: GOTO 3020
3030 AF=POS(T$,"(#",1)+1 ::
AG=POS(T$,",",AF+1):: AH=POS
(T$,")",AG+1):: AZ=VAL(SEG$(
T$,AF+1,AG-AF-1)):: AU=VAL(S
EG$(T$,AG+1,AH-AG-1))
3040 CALL START(E,AB,S$,T$)
3050 IF E=1 THEN CALL EQWS(1
0)
3060 FOR R=0 TO 1 :: PRINT #
R:"* SPRITE COLOR DATA":""
3070 NEXT R :: K$=STR$(AU-1)
:: CALL DECHEX(K$,2):: FOR R
=0 TO 1 :: PRINT #R:"C"&Q$&"
BYTE >"&K$:"        EVEN":""
3080 NEXT R :: CALL PN(E,S$,
Z$):: FOR R=0 TO 1 :: PRINT
#R:"* WRITE SPRITE COLOR":""
3090 NEXT R :: K$=STR$(768+4
*(AZ-1)+3):: CALL DECHEX(K$,
4):: K$=">"&K$ :: FOR R=0 TO
 1
3100 PRINT #R:Z$;TAB(8);"LI
  R0,"&K$:"        MOVB @C"&S
$&",R1":"        BLWP @VSBW":
""
3110 NEXT R :: IF E=1 THEN C
ALL END(27,"")ELSE IF E=2 TH
EN CALL END(5,"")
3120 RETURN
5000 ! DELSPRITE
5010 B=0 :: AF=POS(T$,"CALL
DELSPRITE(",1)+14 :: AG=POS(
T$,")",AF+1):: AE$=SEG$(T$,A
F+1,AG-AF-1)
5020 IF SEG$(AE$,1,1)="#" TH
EN AE$=SEG$(AE$,2,LEN(AE$)-1
)
5030 IF AE$="ALL" THEN B=1 E
LSE B=0
5040 CALL START(E,AB,S$,T$):
: IF E=1 THEN CALL EQWS(1)EL
SE 5080
5050 FOR R=0 TO 1 :: IF B TH
EN PRINT #R:"* DATA TO DELET
E SPRITES":"" ELSE PRINT #R:
"*DATA TO HIDE SPRITE":""
5060 IF B THEN PRINT #R:"DEL
SPR DATA >D000":"" ELSE PRIN
T #R:"HIDSPR DATA >C0C0":""
5070 NEXT R :: IF E=1 THEN C
ALL WS
5080 CALL PN(E,S$,Z$):: FOR
R=0 TO 1 :: IF B THEN PRINT
#R:"* DELETE ALL SPRITES":""
 ELSE PRINT #R:"* ""DELETE""
 (HIDE) SPRITE":""
5090 NEXT R :: IF B THEN 513
0 ELSE AY=VAL(AE$)
5100 K$=STR$(768+4*(AY-1)):
 CALL DECHEX(K$,4):: K$=">"&
K$ :: FOR R=0 TO 1
5110 PRINT #R:Z$;TAB(8);"LI
  R0,"&K$:"        LI   R1,HI
DSPR":"        LI   R2,2":"
     BLWP @VMBW":""
5120 NEXT R :: GOTO 5150
5130 FOR R=0 TO 1 :: PRINT #
R:Z$;TAB(8);"LI   R0,>0300":
"        LI   R1,DELSPR":"
    LI   R2,2":"        BLWP
@VMBW":""
5140 NEXT R
5150 IF E=1 THEN CALL END(27
,"")ELSE IF E=2 THEN CALL EN
D(5,"")
5160 RETURN
8000 ! LOCATE
8010 AF=POS(T$,"CALL LOCATE
#",1)+12 :: AG=POS(T$,",",AF
+1):: AH=POS(T$,",",AG+1)::
AI=POS(T$,")",AH+1)
8020 AY=VAL(SEG$(T$,AF+1,AG-
AF-1)):: BB=VAL(SEG$(T$,AG+1
,AH-AG-1)):: ZZ=VAL(SEG$(T$,
AH+1,AI-AH-1)):: CALL START(
E,AB,S$,T$)
8030 IF E=1 THEN CALL EQWS(9
)
8040 FOR R=0 TO 1 :: PRINT #
R:"* DATA FOR LOCATION":""
8050 NEXT R :: L$=STR$(BB)::
 CALL DECHEX(L$,2):: M$=STR$
(ZZ):: CALL DECHEX(M$,2):: F
OR R=0 TO 1 :: PRINT #R:"P"&
Q$&"DATA >"&L$&M$:""
8060 NEXT R :: CALL PN(E,S$,
Z$):: FOR R=0 TO 1 :: PRINT
#R:"* CHANGE SPRITE LOCATION
":""
8070 NEXT R :: L$=STR$(768+4
*(AY-1)):: CALL DECHEX(L$,4)
:: L$=">"&L$ :: FOR R=0 TO 1
8080 PRINT #R:Z$;TAB(8);"LI
  R0,"&L$:"        LI   R1,P"
&S$:"        LI   R2,2":"
   BLWP @VMBW":""
8090 NEXT R :: IF E=1 THEN C
ALL END(27,"")ELSE IF E=2 TH
EN CALL END(5,"")
8100 RETURN
9000 ! MAGNIFY
9010 AF=POS(T$,"CALL MAGNIFY
(",1)+12 :: AG=POS(T$,")",AF
+1):: AX=VAL(SEG$(T$,AF+1,AG
-AF-1)):: CALL START(E,AB,S$
,T$)
9020 IF E=1 THEN CALL EQWS(1
2)
9030 CALL PN(E,S$,Z$):: FOR
R=0 TO 1 :: PRINT #R:"* CHAN
GE MAGNIFICATION":""
9040 PRINT #R:Z$;TAB(8);"LI
  R0,>01E"&STR$(AX-1):"
  BLWP @VWTR":"        SWPB R
0":"        MOVB R0,@>83D4":"
"
9050 NEXT R :: IF E=1 THEN C
ALL END(27,"")ELSE IF E=2 TH
EN CALL END(5,"")
9060 RETURN
10000 ! MOTION
10010 AF=POS(T$,"CALL MOTION
(#",1)+12 :: AG=POS(T$,",",A
F+1):: AH=POS(T$,",",AG+1)::
 AI=POS(T$,")",AH+1)
10020 AY=VAL(SEG$(T$,AF+1,AG
```

(See Page 19)

BASIC/Assembly—

(Continued from Page 18)

```
-AF-1)):: BC=VAL(SEG$(T$,AG+
1,AH-AG-1)):: AV=VAL(SEG$(T$
,AH+1,AI-AH-1)):: IF BC<>0 O
R BA<>0 THEN V=MAX(V,AY)
10030 CALL START(E,AB,S$,T$)
:: IF E=1 THEN CALL EQWS(9)
10040 FOR R=0 TO 1 :: PRINT
#R:"* VELOCITY DATA FOR SPRI
TE":""
10050 NEXT R :: L$=STR$(BC):
: CALL DECHEX(L$,2):: M$=STR
$(AV):: CALL DECHEX(M$,2)::
FOR R=0 TO 1
10060 PRINT #R:"V"&Q$&"DATA
>"&L$&M$&",>0000":""
10070 NEXT R :: CALL PN(E,S$
,Z$):: FOR R=0 TO 1 :: PRINT
 #R:"* HOW MANY MOVING SPRIT
ES?":"":Z$;TAB(8);"CLR  R0":
"       MOVB @>837A,R0"
10080 NEXT R :: U$=STR$(V)::
 CALL DECHEX(U$,2):: U$=">"&
U$&"00" :: FOR R=0 TO 1
10090 PRINT #R:"       LI
R1,"&U$:"       CB   R0,R1":
"       JGT  C"&S$:"       M
OVB R1,@>837A":"":"* START S
PRITE MOTION":""
10100 NEXT R :: L$=STR$(1920
+4*(AY-1)):: CALL DECHEX(L$,
4):: L$=">"&L$ :: FOR R=0 TO
 1
10110 PRINT #R:"C"&S$;TAB(8)
;"LI   R0,"&L$:"       LI
R1,V"&S$:"       LI   R2,4":
"       BLWP @VMBW":"":"
   LIMI 2":"       LIMI 0"
10120 PRINT #R:"" :: NEXT R
:: IF E=1 THEN CALL END(27,"
")ELSE IF E=2 THEN CALL END(
5,"")
10130 RETURN
11000 ! PATTERN
11010 AF=POS(T$,"CALL PATTER
N(#",1)+13 :: AG=POS(T$,",",
AF+1):: AH=POS(T$,")",AG+1):
: AY=VAL(SEG$(T$,AF+1,AG-AF-
1))
11020 AS=VAL(SEG$(T$,AG+1,AH
-AG-1)):: CALL START(E,AB,S$
,T$)
11030 IF E=1 THEN CALL EQWS(
10)
11040 FOR R=0 TO 1 :: PRINT
#R:"* DATA FOR SPRITE":""
11050 NEXT R :: K$=STR$(AS+9
6):: CALL DECHEX(K$,2):: FOR
 R=0 TO 1 :: PRINT #R:"P"&Q$
&"BYTE >"&K$:"       EVEN":"
"
11060 NEXT R :: CALL PN(E,S$
,Z$):: FOR R=0 TO 1 :: PRINT
 #R:"* WRITE SPRITE PATTERN"
:""
11070 NEXT R :: K$=STR$(768+
4*(AY-1)+2):: CALL DECHEX(K$
,4):: K$=">"&K$ :: FOR R=0 T
O 1
11080 PRINT #R:Z$;TAB(8);"LI
   R0,"&K$:"       MOVB @P"&
S$&",R1":"       BLWP @VSBW"
:""
11090 NEXT R :: IF E=1 THEN
CALL END(27,"")ELSE IF E=2 T
HEN CALL END(5,"")
11100 RETURN
13000 ! SPRITE
13010 AF=POS(T$,"CALL SPRITE
(#",1)+12 :: AG=POS(T$,",",A
F+1):: AH=POS(T$,",",AG+1)::
 AI=POS(T$,",",AH+1):: AJ=PO
S(T$,",",AI+1)
13020 AK=POS(T$,",",AJ+1)::
IF AK<>0 THEN AL=POS(T$,",",
AK+1):: AM=POS(T$,")",AL+1):
: Y=1 ELSE AK=POS(T$,")",AJ+
1):: Y=0
13030 AY=VAL(SEG$(T$,AF+1,AG
-AF-1)):: AE$=STR$(AY):: CAL
L DECHEX(AE$,2)
13040 AS=VAL(SEG$(T$,AG+1,AH
-AG-1)):: AW=VAL(SEG$(T$,AH+
1,AI-AH-1)):: BB=VAL(SEG$(T$
,AI+1,AJ-AI-1)):: ZZ=VAL(SEG
$(T$,AJ+1,AK-AJ-1))
13050 IF Y THEN BC=VAL(SEG$(
T$,AK+1,AL-AK-1)):: AV=VAL(S
EG$(T$,AL+1,AM-AL-1))ELSE BC
=0 :: AV=0
13060 CALL START(E,AB,S$,T$)
:: IF E=1 THEN CALL EQWS(9)
13070 FOR R=0 TO 1 :: PRINT
#R:"* DATA FOR SPRITE":""
13080 NEXT R :: L$=STR$(BB):
: CALL DECHEX(L$,2):: M$=STR
$(ZZ):: CALL DECHEX(M$,2)::
N$=STR$(AS+96):: CALL DECHEX
(N$,2):: O$=STR$(AW-1)
13090 CALL DECHEX(O$,2):: FO
R R=0 TO 1
13100 PRINT #R:"A"&Q$&"DATA
>"&L$&M$&",>"&N$&O$
13110 NEXT R :: IF BC=0 AND
AV=0 THEN Z=0 :: GOTO 13140
ELSE Z=1
13120 L$=STR$(BC):: CALL DEC
HEX(L$,2):: M$=STR$(AV):: CA
LL DECHEX(M$,2):: FOR R=0 TO
 1 :: PRINT #R:"V"&Q$&"DATA
>"&L$&M$&",>0000"
13130 NEXT R
13140 IF E>1 OR W>27 THEN 13
170
13150 FOR R=0 TO 1 :: PRINT
#R:"DELSPR DATA >D000"
13160 NEXT R
13170 FOR R=0 TO 1 :: PRINT
#R:"" :: NEXT R :: CALL PN(E
,S$,Z$):: FOR R=0 TO 1 :: PR
INT #R:"* WRITE SPRITE ATTRI
BUTES":""
13180 NEXT R :: L$=STR$(768+
4*(AY-1)):: CALL DECHEX(L$,4
):: L$=">"&L$ :: FOR R=0 TO
1
13190 PRINT #R:Z$;TAB(8);"LI
   R0,"&L$:"       LI   R1,A
"&S$:"       LI   R2,4":"
    BLWP @VMBW":""
13200 NEXT R :: IF W>27 THEN
 13220 ELSE L$=STR$(768+4*(W
)):: CALL DECHEX(L$,4):: L$=
">"&L$
13210 FOR R=0 TO 1 :: PRINT
#R:"       LI   R0,"&L$:"
    LI   R1,DELSPR":"
LI   R2,2":"       BLWP @VMB
W":"" :: NEXT R
13220 IF Z=0 THEN 13300
13230 FOR R=0 TO 1 :: PRINT
#R:"* HOW MANY MOVING SPRITE
S?":"":"       CLR  R0":"
    MOVB @>837A,R0"
13240 NEXT R :: U$=STR$(AY):
: CALL DECHEX(U$,2):: U$=">"
&U$&"00" :: FOR R=0 TO 11325
0 PRINT #R:"       LI   R1,"
&U$:"       CB   R0,R1":"
    JGT  C"&S$:"       MOVB
R1,@>837A":""
13260 NEXT R :: FOR R=0 TO 1
 :: PRINT #R:"* START SPRITE
 MOTION":""
13270 NEXT R :: L$=STR$(1920
+4*(AY-1)):: CALL DECHEX(L$,
4):: L$=">"&L$ :: FOR R=0 TO
 1
13280 PRINT #R:"C"&S$;TAB(8)
;"LI   R0,"&L$:"       LI
R1,V"&S$:"       LI   R2,4":
"       BLWP @VMBW":"":"
   LIMI 2":"       LIMI 0"
13290 PRINT #R:"" :: NEXT R
13300 IF E=1 THEN CALL END(2
7,"")ELSE IF E=2 THEN CALL E
ND(5,"")
13310 RETURN
30060 SUB ML(A$):: B$=CHR$(1
```

(See Page 25)

TEX-COMP
Celebrating Our Tenth Year

FREEWARE••

•• Public Domain and Shareware for the Texas Instruments TI-99/4A Computer.

ONLY $4.95 Per Disk

Public Domain and Shareware Programs to Meet Your Every Computing Need.

BONUS

FREE DELUXE DISK STORAGE CASE WITH EACH ORDER OF FOUR OR MORE DISKS!!!

#22. ASTROLOGY
This one is as good as anything you will see in an arcade. Great color graphics and displays of the Zodiac. Enter your birthdate and learn about your sign, your lucky days and famous events in history on your birthday. Even prints out a report. Can be used as a great moneymaker at a charity event. Help guide your spouse's career.

#23. WILL WRITER
Enter your answers to a group of computer asked questions and this program then writes you a last will and testament. Now you can leave your TI-99/4A to your favorite nephew. Works with any printer. Appears legal in all states but better check that out!

#24. ENGINEERING CALCULATIONS
A two sided computer handbood of dozens of the most often used engineering and technical formulas. A real time saver. Does conversions, calculations and even designs electrical circuits. A must for anyone whose profession or hobby involves scientific calculations. Even has medical and communications applications.

#25. MEDICAL ALERT
This disk contains many menu accessible files covering most everyday medical emergencies. A good "what to do until the doctor or paramedic comes" guide. Well written and organized. Could very easily save a life!

#26. R RATED GAME
It was bound to happen. A talented (but demented) programmmer in Germany wrote an Invaders type game but with most unusual guns and targets. Definitely not what you would find at your neighborhood arcade. Not only a great party game but some great programming. You must be over 18 to order this one!!

#27. KIDS LEARNING
An educator in Georgia put this two sided disk collection of educational programs together. Contains great material. Math, geography, reading improvement, and even IQ testing. All high quality programs for kids of all ages.

#28. LOADERS AND CATALOGERS
We put together a collection of the best programs that catalog and load a group of programs on a disk. Just try them, pick the one you like and transfer it to another disk with the file name LOAD and you are in business.

#29. LABEL MAKER I
Two great programs for making custom labels for disks, addresses video tapes or any other application. Even contains a graphic display of the TI-99/4A console. Now you can create custom labels of any number by just typing in the lines as you want them. Uses standard tractor labels.

#30. HOUSEHOLD BUDGET PRINTOUT
With this disk you print out the data you have stored with the TI HBM Module. HBM is a great module that can be used for many home and small business applications but TI forgot to include a printout function. This program comes with full instructions and we are sure that your HBM Module will now start being used. Fantastic programming job.

#31. MORSE CODE TRAINER DISK
This disk has everything you need to learn and practice Morse Code for the various FCC license exams. It also is great for scout groups and school "ham" clubs for group training and merit badge qualification. Professional quality.

#32. EXBASIC XMAS MUSIC
Two disk sides full of high quality xmas music that can be played throughout the holiday season and then used as a learning tool since it contains wonderful arrangements and graphics. Autoloading and menu driven.

#33. CHECKERS & BACKGAMMON
A collection of great checkers and backgammon games for the TI-99/4A. These are professional in quality and will keep you busy for hours.

#34. SOLITAIRE & SCRABBLE
Another collection of classic games for the TI-99/4A. Exbasic & 32K req.

#35. PROGRAMMING AIDS & UTILITIES I
A collection of some unusual programs of interest to programmers. One program shows a group of opening title displays, another is a cross reference program as good as any of the commercial ones, plus a great disk management utility.

#36. STRICTLY BUSINESS
A collection of various programs for evaluating loans, calculating interest, and other financial items such as return on investment and security performance. Two disk sides filled with financial and business related programs.

#37. LAPD COOKBOOK
This unofficial police cookbook was put together by one of our boys in blue who is also a gourmet chef. (Yes, it contains jailhouse chili) Over 50 great receipes from soup to nuts on two disk sides and each separate side can be called up on screen or printer in exbasic from a menu. As good as any of the new PC computer cookbooks we have seen.

#38. GREAT 99/4A GAMES VOL. I
A collection of professional games in assembly and exbasic that all load from a menu in exbasic. Includes a great ski game where you dodge the trees in a fast downhill run. We have included only the best.

#39. GREAT 99/4A GAMES VOL. II
Still more of the great ones from all over the world. The quality, graphics and speed of many of these games will make you wonder why they were never released commercially.

#40. ARTIFICIAL INTELLIGENCE
This disk contains the famouse computer program "Eliza" where you type in a question or a problem you are having and "Eliza" helps you find the solution. Also contains one of the better bio-rhythm programs so you can analyze all your emotional problems at one sitting.

#41. VIDEO GRAPHS MODULE BACKUP DISK
This disk is a backup of the discontinued Video Graphs Module from TI. For legal reasons, it can only be purchased for backup use by owners of the original module. Do not order UNLESS you have the original module and intend to use this disk only for backup purposes. Exbasic autoload...

#42. FUNNELWEB FARM UTILITY
You heard about this one. now direct from Australia is the latest version of this fantastic utility that puts everything at your command. From one program you can access word processing, editor assembler, telecommunications and just about everything else. A freeware program complete with documentation on a second disk side.

#43. BEST OF BRITAIN, VOL I
Now for the first time, a collection of the best 99/4A games Britain has to offer including the famous "Billy Ball" series of arcade games. Great graphics, action and excitement.

#44. LABEL MAKER I GRAPHICS
A disk filled with graphics for the Label Maker I disk (#29). Dozens of great graphics for custom labels!

#45. BEST OF BRITAIN, VOL II
This disk contains an outstanding 3-D graphics adventure game for the TI-99/4A. Carfax Abbey lets you actually move through a four story mansion complete with bats and vampires. You actually are placed in each room and go up and down stairs and through secret panels. Legend of Zelda...look out!

#46. SUPER TRIVIA 99
A great trivia game for 1 to 4 players with great questions and capability to add your own and print out the files. This one is a real challenge.

#47. INFOCOM RAPID LOADER
If you have Infocom games this is for you. Loads all TI Infocom games in only 28 seconds and permits new screen colors and improved text display. Comes with all documentation on disk.

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ONLY $4.95 Per Disk

Public Domain and Shareware Programs to Meet Your Every Computing Need.

BONUS

FREE DELUXE DISK STORAGE CASE WITH EACH ORDER OF FOUR OR MORE DISKS!!!

#48. GHOSTMAN (from England)
This Pacman/Munchman type game starts at a slow pace and slowly speeds up to a break-neck pace. A totally new experience.

#49. DEMON DESTROYER (from France)
This great assembly game starts where Invaders leaves off. Add features like descending aliens and closing walls. Hours of great arcade action.

#50. OH MUMMY (from Germany)
Move through the chambers of a Pyramid in search of hidden treasure. Fantastic graphics and great entertainment.

#51. BERLIN WALL (from Canada)
This game requires a mine field to be crossed before escaping from E. Berlin. Good graphics and a real challenge.

#52. ANIMATION 99 (from Germany)
THIS IS THE ONE!!! A demo disk filled with computer animation routines like you have never seen before on any computer. See famous cartoon figures move with more realism that on Sat. morning TV. This disk received a standing ovation when previewed at a local users group. We have even included instructions how to do it yourself on the second disk side. This one is a show stopper!!!

#53. HACKER/CRACKER
A collection of disk copying programs that copy TI disks by tracks. If one of these can't copy a protected disk nothing will. We included a collection of the very best ones including both TI and CorComp compatible. These programs require 2 disk drives and 32K of memory.

#54. ASTRONOMY
This program from Australia plots the heavens and teaches you about the solar system. A great learning and reference tool. Exbasic and 32K required. Don't confuse this one with our Astrology demo. They are not the same...ask Nancy!

#55. SCREEN DUMP
This program allows you to dump disk and even module programs to a Star/Epson compatible printer. Comes with easy to follow plans to build a load interrupt switch which is needed to dump module programs. This dump program by Danny Michael is considered the best of the bunch! Complete with documentation.

#56. SPREAD SHEET
OK, it's not Multiplan but it works great and handles many spread sheet applications. A great way to learn to use spread sheet software. Comes with full instructions and documentation.

#57. TELCO
Considered one of the best data communications programs for the TI-99/4A. Complete with documentation.

#58. PR BASE
The alltime most popular and widely used data base program for the TI-99/4A. A freeware program that is widely supported and updated.

#59. GRAPH MAKER
A collection of the best programs for producing graphs and charts from your data. Exbasic and printer.

#60. FREDDY
A fantastic game where you guide the hero through underground passages filled with danger. Nintendo quality, great graphics and fast action. One of the best we have ever seen!!!

#61. THE MINE
A fast action game from F.R.G. that will keep you going for hours. Many screens and skills required.

#62. DISK MANAGER II MODULE BACKUP
The complete TI Disk Manager II on Disk. For legal reasons it is only available to owners of the original module for backup use.

#63. ASTROBLITZ/MAZOG
A pair of great games that continue where Parsec and Munchman leave off. Imagine Parsec with enemy space craft coming from in front and in back of your ship!!!

#64. MAJOR TOM/SPACE STATION PHETA
A pair of great space games. These two are going to keep you in front of the 99/4A for hours. Great!

#65. PERFECT PUSH
An all new space game where you assemble and launch a rocket ship in outer space while avoiding a space monster. This one is professional in very way..graphics, speed and action!!!

#66. HEBREW TYPEWRITER
This program converts your TI-99/4A keyboard into a typewriter that displays Hebrew letters on the screen. Can also be printed when used in conjunction with screen dump program (included). Great for religious training or making your copy of the dead sea scrolls or ten commandments!

#67. GENEALOGY
Now you can set up your family tree and store or print out the records. Great for keeping track of family relationships and records.

#68. CHESS
The original computer chess game Sargon has been reprogrammed for the TI-99/4A. Now play chess with your computer. Documentation included. Exbasic autoload.

#69. COMPUTER PLAYER PIANO/KEY-BOARD CHORD ANALYSIS
A unique music program which displays a piano on the screen and actually plays your selections.

#70. TI RUNNER II
The very latest (and best) "runner" game based on TI Runner and Star Runner. Great action, graphics and entertainment.

#71. KIDS LEARNING II
Two more disk sides loaded with the best in educational programs. Kids improve their math, spelling and comprehension skills while having fun.

#72. CERBERUS
Fantastic space game from Germany. Pilot your ship through narrow and crooked channels in space without colliding. Great graphics and music.

#73. CRYPTO (gram)
One of the best word games we have seen for any computer. Set up like a TV game show with great screen displays.

#74. LABEL MAKER II
Make labels for holidays and special events. You compose the text and select the resident graphics for the occasion.

#75. DISK CATALOGER
Now you can organize your disk files with this great utility. Files, sorts, and prints your records. Easy to use.

#76. PROGRAMMING AIDS AND UTILITIES II
A collection of very useful material. Includes a program to convert basic to exbasic so your old basic programs will load & run in exbasic, even with graphics. Also includes two on screen diagnostic programs to test your keyboard and processor. A great merge utility is also on this disk.

#77. MICROdex 99
A database program by Bill Gaskill which files and retrieves data such as magazine articles. A sample database is included.

#78. ARTCON+ BY RAY KAZMER
ATTENTION GRAPHX AND TI ARTIST USERS!!!
This program lets you convert Exbasic graphics to TI Artist and Graphx pictures. Also contains a new MAC-RLE (2) for converting from Artist to Graphx.

#79. DM1000 V3.5
One of the most popular disk managers for the TI-99/4A. Originally a rip-off of the CorComp manager, it has been improved and refined by talented users all over the world. This version is deemed the most reliable to date and is far advanced over the TI Disk Manager II. Distributed by permission from CorComp.

#80. BIRDWELL DISK UTILITY
A must if you are junto programming and software development. Besides being a great disk manager, it has provision for copying sectors, comparing files and is menu driven. Complete with documentation.

#81. HOME ACCOUNTING SYSTEM
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This program from Australia creates a different puzzle each time you run it. Self contained with definitions and vocabulary taken from a leading crossword dictionary. Great crossword fun.

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A pair of great commercial quality games from EB Software of TI Runner fame. Galactic Battle is a space "trek" type strategy game for one or more players. Spy Adventure is an adventure game that will keep you guessing for hours.

#85. AUTOBOOT UTILITY
This utility which can be installed on a disk loads and runs or displays most files. Now you can have a disk with exbasic programs, Editor Assembler programs and TI Writer files and run or display them all from exbasic.

#86. COLUMN TEXT III V3.2
A very useful utility for printing TI Writer and 99 Writer II files in separate spaced columns. Saves hours in producing a newsletter. Complete with documentation.

#87. ARCHIVER III
This utility allows you to "pack" or combine several files into one for space utilization. A number of boards are sending files packed to save transmission costs. This utility will let you pack and/or unpack these files.

#88. AUSSIE GAMES VOL 1
A collection of games from our friends down under. Includes a great card game and board game. Hours of fun and entertainment. Includes Matchmaker & TILO.

#89. PROCALC
This is an on screen calculator for decimal/hexidecimal conversions and much more. A must for the serious programmer.

 # 90. JET CHECKBOOK MANAGER
This checkbook manager is considered the ultimate with every feature you can think of for keeping track of your checking account and keeping records of your spending for budget and tax purposes. Complete with documentation.

#91. "THE MAZE OF GROG"(St. Valentine)
Ray Kazmer has created a great maze game with fantastic graphics and the characters from his now legendary "Woodstock" disk. Fun for all!!!

#92. HOUSEHOLD INVENTORY
Written by 99/4 programming great Charles Ehninger, this prize winner originally sold for $59.95. Keeps track of household, business or personal items by category and provides automatic updating for inflation etc. A must for tax and insurance records!

#93. THE 1991 KBGB GIRLIE CALENDAR
This latest offering from programming master Ken Gilliland prints out a jumbo 12 month calendar with a knockout centerfold pinup for each month. If you like our #14 Figure Study disk, you will flip over this one. For Adults Only!! Exbasic & d/m printer.

#94. GREAT 99/4A GAMES VOL. 111
If you have seen vols. 1 & 2 of this series you know we only provide the very best. This latest volumn is also filled with a collection of great ones!

#95. WEATHER FORECASTER
The weather predictions are amazingly reliable and accurate! A great game "Lawnmower" and a mini database are also included to make this disk a fantastic value.

#96. STATISTICS & SORTING
Two great assembly utilities by John Clulow. STAT is a set of statistic routines for use in exbasic. SORT allows sorting by two separate fields and a choice of two types of sorts.

#97. MEMORY MANIPULATOR
This powerful utility lets you explore the entire memory in your 99/4A system and take apart what you find. User friendly!

#98. DAYS OF EDEN & DOORS OF EDEN
Two bible games)non-fiction) that work with the TI Adventure Module.

#99. GREAT 99/4A GAMES VOL. IV
This disk features the works of J. Peter Hoddie. All of these games are of commercial qualaity and well worth the donation requested!

#100. ASSULT THE CITY (T. of DOOM)
An exciting game for use with the Tunnels of Doom module. Several Exbasic bonus games are included.

#101. ENCHANCED DISPLAY PACKAGE
This screen enhancement utility lets you do 40 columns, windowing, reverse scrolling, clock/alarm, and a whole host of other great tricks in exbasic. Fully documented.

#102. COLOSSAL CAVES ADVENTURE
This classic adventure now available for the 99/4A is what led to the Zork series. Hours of text adventuring.

#103. SORGAN, THE 99/4A ORGAN
This program which is currently selling for big bucks on module turns your 99/4A into an electronic organ. Sound effects, different instruments and voices, chord forms, color graphics with complete control of all.

#104. C99 COMPILER AND LIBRARY
This two-sided (flippy) disk gets you into C programming with your 99/4A. Comes with a great collection of utilities such as text & graphics. (E/A)

#105. KING'S CASTLE+
A great arcade style assembly game formerly offered on module. Also includes an EB "Trek" game and a collection of sprite & graphics from Tigercub's Jim Peterson.

#106. QUEST (Dungeons & Dragons)
One of the best D&D games around! You must destroy the Dark Lord to free your homeland! Complete with documentation on disk.

#107. STAR TREK MUSIC ALBUM
Ken Gilliand's music and graphics version of the TV theme and the three motion pictures. (Exbasic)

#108. FUNLPLUS BY JACK SUGHRUE
Fantastic disk packed with Funnelweb (#42) templates, utilities and prog. to augment and configure Funnelweb. Unbeliveable collection of fantastic aids to make the best even better!

#109. TI-WRITER MINI MANUAL
This disk prints out a five page TI Writer manual with everything you need to know to use TI Writer or the many clones such as 99Writer II. Additional aids for using this powerful word processor are included.

#110. DISK + AID
A powerful disk sector editor formerly sold for $20. Menu Driven and easy to use.

#111. POP MUSIC & GRAPHICS
This exciting disk from Germany features music/graphics written in 100% assembly and what comes from the TI sound chip is sure to astound you.

#112. INVOICE PACK
An excellent invoice preparation and printing program with instructions on how to modify it for your own business.

#113. LABEL MAKER 3
A collection of label programs to create mailing and disk envelopes, disk labels and much more!

#114. PANORAMA
A drawing and illustration program that compliments Graphx and TI Artist. A must for the serious 99/4A artist!

#115. GRAPHICS DESIGN SYSTEM
A complete system for creating graphic screens in full color for your programs by J. Peter Hoddie. Fully documented.

#116. FOURTH TUTORIAL
A lesson in FORTH programming on how to create graphics.

#117. UNIVERSAL DISASSEMBLER
This powerful utility written in Forth allows disassembly of programs off disk in any format, in memory, and even off of P-Box cards. Very complete with some very unique features.

#118. FAST TERM
One of the most popular and recommended of the 99/4A terminal emulator programs. Supports TE-II, ASC11, and X-Modem transfers, print spooling and more. Loads from Exbasic or E/A.

#119. RAG LINKER
A utility for converting DIS/FIX 80 assembly object code files to PROGRAM image. This allows files to load faster and take up less space on disk. Full Doc

#120. BITMAC
The original BITMAC is now available at $4.95 with all original documentation. A powerful graphics program for the 4A which lets you print where you want..even over pre-existing text. Create great graphics in 16 colors, print text sideways, mirror image, upside down etc. etc. A **must** for anyone into 99/4A graphics. Comes with second bonus disk with utilities such as sign & banner makers. Even can computer generate your own signature!

#121. SUPER YAHTZEE & WHEEL II
If you like Yahtzee this disk is for you. A great version written in high speed assembly. Also included is another version of Wheel of Fortune which also lets you create your own puzzles with a puzzle edit program included.

#122. ADULT ADVENTURE
A trily adult adventure for use with the TI Adventure Module. Also included is a bonus adventure (not adult) "LOST GOLD" which is one of the better ones we have seen recently.

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BASIC/Assembly—

(Continued from Page 19)

```
62)&CHR$(240):: C$=CHR$(239)
&CHR$(236):: A=ASC(SEG$(A$,1
,1)):: B=ASC(SEG$(A$,2,1))::
 C=256*A+B :: D$=STR$(C)
30070 D=POS(A$,CHR$(201),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&STR$(256*ASC(SEG$(A$,D+
1,1))+ASC(SEG$(A$,D+2,1)))
30080 A$=SEG$(A$,3,LEN(A$)-2
)
30090 D=POS(A$,CHR$(134),1):
: IF D<>0 AND POS(A$,B$,1)=0
 THEN A$=SEG$(A$,1,D-1)&"GOT
O "&SEG$(A$,D+1,LEN(A$)-D)::
 GOTO 30270
30100 D=POS(A$,CHR$(131),1):
: IF D=1 THEN A$=SEG$(A$,1,D
-1)&"! "&SEG$(A$,D+2,LEN(A$)
-D-1):: GOTO 30270
30110 D=POS(A$,CHR$(154),1):
: IF D=1 THEN A$=SEG$(A$,1,D
-1)&"REM "&SEG$(A$,D+2,LEN(A
$)-D-1):: GOTO 30270
30120 D=POS(A$,B$,1):: IF D<
>0 THEN A$=SEG$(A$,1,D-1)&"D
ISPLAY AT"&SEG$(A$,D+2,LEN(A
$)-D-1)
30130 D=POS(A$,C$,1):: IF D<
>0 THEN A$=SEG$(A$,1,D-1)&"E
RASE ALL"&SEG$(A$,D+2,LEN(A$
)-D-1)
30140 D=POS(A$,CHR$(199),1):
: IF D=0 THEN 30170 ELSE E=P
OS(A$,"CHAR",1)
30150 IF E=0 THEN A$=SEG$(A$
,1,D-1)&""""&SEG$(A$,D+2,LEN
(A$)-D-2)&""""&CHR$(0):: GOT
O 30170
30160 A$=SEG$(A$,1,D-1)&""""
&SEG$(A$,D+2,LEN(A$)-D-3)&""
")"&CHR$(0)
30170 D=POS(A$,CHR$(200),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&SEG$(A$,D+2,LEN(A$)-D-1
):: GOTO 30170
30180 D=POS(A$,CHR$(157),1):
: IF D=1 THEN A$=SEG$(A$,1,D
-1)&"CALL "&SEG$(A$,D+1,LEN(
A$)-D)
30190 D=POS(A$,CHR$(180),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&"";"&SEG$(A$,D+2,LEN(A
$)-D-1)
30200 D=POS(A$,CHR$(183),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&"("&SEG$(A$,D+1,LEN(A$)
-D)
30210 D=POS(A$,CHR$(253),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&"#"&SEG$(A$,D+1,LEN(A$)
-D)
30220 D=POS(A$,CHR$(179),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&","&SEG$(A$,D+1,LEN(A$)
-D):: GOTO 30220
30230 D=POS(A$,CHR$(181),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&":"&SEG$(A$,D+1,LEN(A$)
-D)
30240 D=POS(A$,CHR$(182),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&")"&SEG$(A$,D+1,LEN(A$)
-D)
30250 D=POS(A$,CHR$(236),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&"ALL"&SEG$(A$,D+1,LEN(A
$)-D)
30260 D=POS(A$,CHR$(194),1):
: IF D<>0 THEN A$=SEG$(A$,1,
D-1)&"-"&SEG$(A$,D+1,LEN(A$)
-D):: GOTO 30260
30270 D=POS(A$,CHR$(0),1)::
IF D<>0 THEN A$=SEG$(A$,1,D-
1)
30280 A$=D$&" "&A$ :: SUBEND
30770 SUB HDG :: PRINT #1:"*
 THIS ASSEMBLY SOURCE CODE":
"*      WAS CREATED BY":"*
GRAPHICOMP (VERS. 1.5),":"*
 AN XB GRAPHICS COMPILER"
30780 PRINT #1:"*    BY BARR
Y A. TRAVER":"*  835 GREEN V
ALLEY DRIVE":"*  PHILADELPHI
A, PA 19128":"*  (PHONE:  21
5/483-1379)":"" :: SUBEND
```

MY-BASIC

MYPAINT compatible with CSGD graphics

By JIM UZZELL
©1991 DDI Software

MYPAINT is a program that allows you to draw in color a GRAFIX(CSGD) size picture or you can use CSGD GRAPHICS as a template and paint them.

The opening menu includes the following options: F1, Load; F2, Draw; ESC.

F1 LOAD — includes the following sub-menus;

1 COLOR -CR (This option allows you to load a MYPAINT picture for viewing and editing.)

2 NO COLOR /GR (This option allows you to load a CSGD(Grafix) graphic and paint it.)

Do not include -CR or /GR as part of a filename. The program will add it.

F2 DRAW — Allows you to draw in color freehand. You create your own picture.

MAIN MENU

The main menu includes the following options: F1, Save; F2 Mix colors; F3 Color; ESC; C Paint; F6 Page up; F7 Page down; Arrow keys.

F1 Save — Saves picture in MYPAINT format. Maximum 7-character filename.

F2 Mix Color — Allows you to mix the standard palette to any color you want. Any change in the color becomes the default color and, if you re-mix a color, all occurrences will change to new mix. If you want different shades of the same color, use a color you don't plan to use and mix it.

The following is the default palette(may not be the same as Myarc's):

COLOR	RED	GREEN	BLUE
2	1	1	1
3	1	7	1
4	3	8	3
5	1	1	8
6	2	3	8
7	6	1	1
8	2	7	8
9	8	1	1

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MY-BASIC—

(Continued from Page 25)

10	8	3	3
11	7	7	1
12	7	7	4
13	1	5	1
14	7	2	6
15	6	6	6
16	8	8	8

The above list will appear on screen when this option is selected. Note that any MYPAINT picture loaded which has a mixed palette will alter this list to the mix you used when you painted the picture.

F3 Color — This is the first option you will use. Pressing this key will allow you to select from the on-screen color chart which color you wish to use to start painting.

C Paint — This is the key to color the paint tablet based on the position of the cursor in the color selected. This program paints each pixel.

F6 Page Up; F7 Page Down — Since your drawing tablet is larger than one screen, these keys are used to page between the top and bottom of picture. Page Up and Page Down keys are active also.

Arrow Keys — Use these to move cursor around the drawing tablet.

ESC — To exit program or select another picture.

The default colors of the drawing tablet are white (16) on blue (6).

PAINTSEE, a companion program, will be published next month. As its name suggests, PAINTSEE allows you to view MYPAINT pictures in four sizes.

For those who subscribe to MICROpendium disks, a template called PAINTOVER, for 12-key keyboards is included. Use the MY-Word formatter to print. Also included are sample pictures which can be viewed from PAINTSEE or from MYPAINT using (F1 LOAD 1 COLOR -CR DSKx.FILENAME).

For those of you who use TIPS graphics — yes, there is a TIPS version that is almost complete.

MY-PAINT

```
100 REM DDI SOFTWARE (C)1990

110 REM 2004B LEEANN  AUSTIN
, TX. 78758-2504
120 REM MYPAINT
130 CALL RESETPLT
140 CALL GRAPHICS(3,3)
150 KEY OFF
160 PD=1 :: PE=41 :: D=1 ::
E=256 :: CO1=40 :: WR=104 ::
 MM=1
170 CLS :: CALL CHAR(124,"C0
A0D81418E040E0")
180 CALL CHAR(128,"FFFFFFFFF
FFFFFFF") :: CALL CHAR(131,"
103070F0703010")
190 CALL CHAR(250,"202020502
0202020") :: CALL CHAR(132,"
040404FC04040404")
200 FOR X=1 TO 10 :: KEY(X)=
"" :: NEXT X
210 DIM MY$(200),J(1600),PC(
16),PR(16),PG(16),PB(16),J$(
41) :: M=1 :: RO1=0 :: TWC=0
220 CALL TCOLOR(16,6) :: DIS
PLAY AT(1,1):" " :: CALL ECO
LOR(6)
230 CALL CLEAR
240 GOSUB 2190
250 FOR C=2 TO 16
260 CALL TCOLOR(16,C) :: DIS
PLAY AT(C,36):"  "; :: IF C<
10 THEN 270 ELSE 280
270 DISPLAY AT(C,34):C;" ";
:: GOTO 290
280 DISPLAY AT(C,34):C;
290 NEXT C
300 CALL TCOLOR(5,16) :: DIS
PLAY AT(16,34):C-1; :: CALL
TCOLOR(16,6)
310 CALL SPRITE(#4,132,16,10
1,182) :: CALL SPRITE(#3,131
,16,94,182)
320 C1=1 :: C=16
330 CALL DCOLOR(C,6)
340 CALL HCHAR(25,1,32,80)
350 CALL HCHAR(25,2,70) :: C
ALL HCHAR(25,3,49) :: CALL H
CHAR(25,10,70) :: CALL HCHAR
(25,11,50)
360 FOR X=1 TO 10 :: KEY(X)=
"" :: NEXT X
370 KEY(1)="LOAD" :: KEY(2)=
"DRAW" :: KEY(3)="" :: KEY(4
)="" :: KEY(5)="ESC" :: KEY(
6)="  |" :: FOR X=7 TO 10 ::
 KEY(X)="" :: NEXT X
380 KEY ON
390 CALL KEY(5,K,S) :: IF S=
0 THEN 390
400 IF K=3 THEN 440
410 IF K=4 THEN GOSUB 1260 :
: PK1=0 :: GOSUB 1250 :: GOS
UB 450
420 IF K=4 THEN DISPLAY AT(1
4,10):"TO PAINT" :: PK=1 ::
PK1=1 :: CALL MEMSET(J(),6)
:: GOTO 820
430 IF K=155 THEN 1130 ELSE
390
440 GOSUB 1260 :: GOTO 470
450 CALL CHAR(130,"909090909
0909090") :: CALL VCHAR(1,40
,130,24)
460 CALL MARGINS(41,80,1,24)
 :: RETURN
470 DISPLAY AT(20,1):"1 COLO
R -CR  2 NO COLOR /GR"; :: G
OSUB 1250
480 DISPLAY AT(22,1):"    *L
OAD* DSK";
490 ACCEPT AT(20,29)SIZE(-1)
:TC
500 ACCEPT AT(22,15)SIZE(-9)
:TC$
510 DISPLAY AT(20,1):" " ::
DISPLAY AT(22,1):" "
520 IF TC=1 THEN 1790
530 OPEN #1:"DSK"&TC$&"/GR",
INTERNAL,SEQUENTIAL,INPUT ,V
ARIABLE 254
540 INPUT #1:H,TII,TJJ,TAA$
:: CLOSE #1
550 CALL INIT
560 CALL LOAD(-8352,66,73,78
,32,32,32,37,60)
570 CALL LOAD(8194,37,156,22
3,96)
580 CALL LOAD(9460,0,0,48,49
,0,1,8,8,0,0,0,0,203,20,203,
53,203,78,203,231,204,71)
590 CALL LOAD(9482,204,150,2
04,228,205,29,205,75,205,96,
33,131,35,253,38,184,40,183,
41,182,42,195)
600 CALL LOAD(9504,43,193,44
,179,45,194,47,196,58,181,59
,180,60,191,61,190,62,192,94
,197,255,58)
610 CALL LOAD(9526,58,130,65
,84,240,71,200,11,36,244,2,2
24,37,28,4,192,2,1,0,1,4,32)
620 CALL LOAD(9548,32,12,4,3
2,32,24,18,184,2,0,0,8,192,9
6,131,74,10,129,2,8,0,0)
630 CALL LOAD(9570,208,224,3
6,246,5,136,10,17,23,2,2,35,
1,0,218,3,36,252,6,0,22,245)
640 CALL LOAD(9592,195,32,36
```

(See Page 27)

MY-BASIC—

(Continued from Page 26)

```
,248,216,32,36,250,36,252,19
2,12,2,1,0,2,2,2,36,252,4,32
)
650 CALL LOAD(9614,32,16,4,1
92,4,224,131,124,194,224,36,
244,4,91,78,224)
660 CALL CHAR(130,"909090909
0909090") :: CALL VCHAR(1,40
,130,24)
670 CALL MARGINS(41,80,1,24)
680 IF TC=1 THEN TN=3 :: U=1
 :: DP=24 :: DD=185 :: WWR=8
1 :: PD=1 :: PE=41 :: GOTO 1
230
690 E=256 :: CO1=40 :: U=1 :
: DP=24 :: DD=185 :: WWR=81
700 D=1 :: S=1 :: TWW=0 :: F
OR TN=1 TO 5 :: FOR TM=1 TO
5
710 TZ=1 :: FOR TX=1 TO 8 ::
 TA(TZ)=VALHEX(HEX$ (ASC(SEG
$(TAA$,TX+TWW,2)))) :: TZ=TZ
+1 :: NEXT TX
720 FOR TZ=1 TO 8
730 MY$(1)="" :: CALL LINK("
BIN",TA(TZ),MY$())
740 XX$(TZ)=MY$(1) :: MY$(1)
="" :: NEXT TZ :: GOTO 750
750 FOR Y=1 TO 8 :: FOR X=1
TO 8 :: XM$(Y)=XM$(Y)&SEG$(X
X$(X),Y,1) :: NEXT X
760 NEXT Y
770 FOR Y=1 TO 8 :: FOR X=1
TO 8 :: Y$=SEG$(XM$(Y),X,1)
:: YM$=YM$&Y$ :: NEXT X :: M
Y$(M)=YM$ :: GOSUB 1150 :: M
=M+1 :: YM$=""
780 NEXT Y :: CALL MEMSET(XM
$(),"")
790 TWW=TWW+8 :: TWC=TWC+8 :
: NEXT TM :: RO1=RO1+8 :: TW
C=0 :: NEXT TN
800 GOSUB 2050
810 GOSUB 1250 :: GOTO 830
820 DISPLAY AT(15,10):"PRESS
.......F6          ";
830 RW2=81 :: CW2=137 :: RW=
104
840 CALL SPRITE(#2,250,2,D,E
)
850 CALL KEY(0,B,S) :: IF S=
0 THEN 850
860 IF B=3 THEN K=0 :: GOTO
1650
870 IF B=67 THEN 1620
880 IF B=7 THEN 1540
890 IF B=4 THEN 1360
900 IF B=10 THEN D=D+8 :: IF
 D>DD THEN D=DD
910 IF B=10 THEN PD=PD+1 ::
IF PD>DP THEN PD=DP
920 IF B=10 THEN RW2=RW2+1 :
: IF RW2>WR THEN RW2=WR :: G
OTO 840 ELSE 840
930 IF B=11 THEN D=D-8 :: IF
 D<1 THEN D=1
940 IF B=11 THEN PD=PD-1 ::
IF PD<1 THEN PD=1
950 IF B=11 THEN RW2=RW2-1 :
: IF RW2<WWR THEN RW2=WWR ::
 GOTO 840 ELSE 840
960 IF B=9 THEN E=E+6 :: IF
E>490 THEN E=490
970 IF B=9 THEN PE=PE+1 :: I
F PE>80 THEN PE=80
980 IF B=9 THEN CW2=CW2+1 ::
 IF CW2>176 THEN CW2=176 ::
GOTO 840 ELSE 840
990 IF B=8 THEN E=E-6 :: IF
E<256 THEN E=256
1000 IF B=8 THEN PE=PE-1 ::
IF PE<41 THEN PE=41
```

(See Page 28)

MY-BASIC—

(Continued from Page 27)

```
1010 IF B=8 THEN CW2=CW2-1 :
: IF CW2<137 THEN CW2=137 ::
 GOTO 840 ELSE 840
1020 IF B=2 THEN M=121 :: MM
=2 :: RW2=105 :: WWR=105 ::
WR=120 :: TN=2 :: DP=16 :: D
D=121 :: D=1 :: E=256 :: PD=
1 :: PE=41 :: CW2=137 :: U=9
61
1030 IF B=2 THEN CALL SPRITE
(#3,131,16,109,182)
1040 IF B=2 AND PK1=1 THEN 1
220
1050 IF B=2 THEN 1920
1060 IF B=12 THEN M=1 :: RW2
=81 :: WWR=81 :: WR=104 :: T
N=3 :: DP=24 :: DD=185 :: PD
=1 :: PE=41 :: D=1 :: E=256
:: CW2=137 :: U=1
1070 IF B=12 THEN CALL SPRIT
E(#3,131,16,94,182) :: GOTO
1920
1080 IF B=155 THEN 1090 ELSE
 840
1090 CALL MARGINS(1,80,1,24)
 :: CALL RESETPLT :: TC$=""
1100 CALL MEMSET(J(),0) :: C
LS :: CALL DELSPRITE(ALL)
1110 DISPLAY AT(20,1):"ANOTH
ER  Y/N"
1120 RESTORE :: ACCEPT AT(20
,14)SIZE(1):YN$ :: IF YN$="Y
" THEN 140
1130 CALL HCHAR(25,1,32,80)
:: CALL HCHAR(26,1,32,80)
1140 CLS :: END
1150 RO=72+(TN*8) :: CO=128+
(TM*8)
1160 CALL CHAR(128,"FFFFFFFF
FFFFFFFF")
1170 FOR N=1 TO 8
1180 IF SEG$(MY$(M),N,1)="0"
 THEN 1200
1190 CALL POINT(1,RO+Y,CO+N)
1200 NEXT N :: YM$="" :: RET
URN
1210 CLS :: GOTO 840
1220 CLS :: PK1=0 :: GOSUB 1
250 :: GOTO 840
1230 IF MM=2 THEN GOSUB 1250
 :: GOTO 840
1240 IF TC=1 THEN GOSUB 1250
 :: CALL TCOLOR(16,6) :: GOT
O 830
1250 FOR A=12 TO 13 :: CALL
SOUND(100,110*A,0) :: NEXT A
 :: RETURN
1260 CALL HCHAR(26,1,32,79)
:: CALL HCHAR(25,19,70) :: C
ALL HCHAR(25,20,51)
1270 CALL HCHAR(25,50,67) ::
 CALL HCHAR(25,58,70) :: CAL
L HCHAR(25,59,54) :: CALL HC
HAR(25,66,70) :: CALL HCHAR(
25,67,52)
1280 KEY(1)="SAVE" :: KEY(2)
="MIX CLR" :: KEY(3)=" COLOR
" :: KEY(4)=""
1290 KEY(7)="PAINT" :: KEY(8
)="PG UP" :: KEY(9)="PG DWN"
1300 CALL CHAR(177,"002064E0
60240000") :: CALL CHAR(178,
"40E0F00000F0E040") :: CALL
CHAR(179,"0080C0E0C080")
1310 CALL HCHAR(26,73,177) :
: CALL HCHAR(26,74,178) :: C
ALL HCHAR(26,75,179)
1320 CALL CHAR(180,"0000ECA8
ECA8A8") :: CALL CHAR(181,"0
00030A830A8A8") :: CALL CHAR
(182,"0000E8A8A8A8E8") :: CA
LL CHAR(183,"00008080808080"
)
1330 CALL HCHAR(26,76,180) :
: CALL HCHAR(26,77,181) :: C
ALL HCHAR(26,78,182) :: CALL
 HCHAR(26,79,183)
1340 CALL CHAR(176,"80C0E0F0
E0C080") :: CALL HCHAR(C,32,
176) :: CLR=16
1350 RETURN
1360 CALL MARGINS(1,20,1,24)
1370 DISPLAY AT(1,7):"DEFAUL
T";
1380 FOR X=2 TO 16 :: DISPLA
Y AT(X,1):PC(X);"  ";PR(X);"
  ";PG(X);"  ";PB(X); :: NEX
T X
1390 DISPLAY AT(17,1):"COLOR
 RED GREEN BLUE";
1400 DISPLAY AT(20,1):"COLOR
";
1410 DISPLAY AT(21,1):"RED";
1420 DISPLAY AT(22,1):"GREEN
";
1430 DISPLAY AT(23,1):"BLUE"
;
1440 ACCEPT AT(20,8)SIZE(-2)
:C :: ACCEPT AT(21,8)SIZE(-1
):R :: ACCEPT AT(22,8)SIZE(-
1):G :: ACCEPT AT(23,8)SIZE(
-1):B
1450 PC(C)=C :: PR(C)=R :: P
G(C)=G :: PB(C)=B
1460 CALL PALETTE(C,R,G,B)
1470 CALL DCOLOR(C,5)
1480 DISPLAY AT(21,10):"X=EX
IT";
1490 DISPLAY AT(22,10):"R=RE
DO";
1500 CALL KEY(5,K,S) :: IF S
=0 THEN 1500
1510 IF K=88 THEN 1520 ELSE
IF K=82 THEN 1400 ELSE 1500
1520 CLS
1530 CALL MARGINS(41,80,1,24
) :: GOTO 850
1540 CALL MARGINS(1,20,1,24)
1550 DISPLAY AT(17,1):"WHAT
COLOR?"
1560 CALL HCHAR(CLR,32,32)
1570 ACCEPT AT(17,13)SIZE(-2
):C
1580 CLR=C
1590 CALL HCHAR(C,32,176)
1600 CALL DCOLOR(C,5)
1610 CLS :: CALL MARGINS(41,
80,1,24) :: GOTO 850
1620 CALL TCOLOR(C,6) :: CAL
L DCOLOR(C,6)
1630 DISPLAY AT(PD,PE):CHR$(
128); :: CALL POINT(1,RW2,CW
2)
1640 CALL TCOLOR(16,6) :: GO
TO 840
1650 CALL MARGINS(1,20,1,24)
1660 DISPLAY AT(20,1):"*SAVE
* DSK";TC$; :: ACCEPT AT(20,
11)SIZE(-7):TD$
1670 DISPLAY AT(20,1):" " ::
 OPEN #1:"DSK"&TD$&"-CR",INT
ERNAL,OUTPUT,VARIABLE 128
1680 U=1 :: J$(U)=""
1690 FOR X=2 TO 16 :: PRINT
#1:PC(X)
1700 PRINT #1:PR(X) :: PRINT
 #1:PG(X) :: PRINT #1:PB(X)
:: NEXT X
1710 FOR RW=1 TO 40 :: FOR C
W=1 TO 40
1720 RW1=80+RW :: CW1=136+CW
1730 CALL GPOINT(RW1,CW1,J(U
))
1740 J$(U)=J$(U)&SEG$(HEX$ (
J(U)),3,4)
1750 NEXT CW :: PRINT #1:J$(
U) :: U=U+1 :: J$(U)="" :: N
EXT RW
1760 CLOSE #1
1770 CALL MARGINS(1,80,1,24)
1780 GOTO 1090
1790 OPEN #1:"DSK"&TC$&"-CR"
,INTERNAL,INPUT ,VARIABLE 12
8
1800 U=1
1810 FOR X=2 TO 16 :: INPUT
#1:PC(X)
1820 INPUT #1:PR(X) :: INPUT
```

(See Page 29)

MY-BASIC—

(Continued from Page 28)

```
 #1:PG(X) :: INPUT #1:PB(X)
1830 CALL PALETTE(PC(X),PR(X
),PG(X),PB(X)) :: NEXT X
1840 FOR X=1 TO 40 :: INPUT
#1:J$(X) :: NEXT X :: CLOSE
#1
1850 FOR X=1 TO 40 :: M=0 ::
 FOR Y=1 TO 80 STEP 2
1860 RW1=80+X :: CW1=136+Y-M
1870 J(U)=VALHEX(SEG$(J$(X),
Y,2))
1880 CALL DCOLOR(J(U),6)
1890 CALL POINT(1,RW1,CW1)
1900 M=M+1 :: U=U+1 :: NEXT
Y :: NEXT X
1910 TN=24 :: U=1 :: CALL MA
RGINS(41,80,1,24) :: GOSUB 2
100 :: GOTO 660
1920 IF PK=1 THEN PK=0 :: GO
TO 1210
1930 CALL MARGINS(1,20,1,24)
1940 KP=1 :: DISPLAY AT(20,1
):"PLEASE WAIT WHILE":"I REV
EIW YOUR WORK"; :: GOTO 1990
1950 DISPLAY AT(20,1):" ":"
" :: KP=0 :: CALL MARGINS(41
,80,1,24)
1960 IF B=12 THEN U=1 :: TN=
24
1970 IF B=2 THEN U=961 :: TN
=16
1980 GOSUB 2100 :: GOTO 1230
1990 IF B=2 THEN 2140
2000 FOR X=1 TO 24 :: FOR Y=
1 TO 40
2010 RW1=80+X :: CW1=136+Y
2020 CALL GPOINT(RW1,CW1,J(U
)) :: U=U+1
2030 NEXT Y :: NEXT X
2040 GOTO 1950
2050 U=1 :: DISPLAY AT(20,1)
:"PLEASE WAIT WHILE I":"SETU
P PAINT TABLET"
2060 FOR X=1 TO 40 :: FOR Y=
1 TO 40
2070 RW1=80+X :: CW1=136+Y
2080 CALL GPOINT(RW1,CW1,J(U
)) :: U=U+1
2090 NEXT Y :: NEXT X :: U=1
 :: TN=24
2100 CLS :: MTX=40 :: TCM=0
:: FOR NT=1 TO TN :: FOR N=1
 TO 40
2110 CALL TCOLOR(J(U),6) ::
DISPLAY AT(TCM+NT,MTX+N):CHR
$(128);
2120 U=U+1 :: NEXT N :: NEXT
 NT
2130 CALL TCOLOR(16,6) :: RE
TURN
2140 FOR X=25 TO 40 :: FOR Y
=1 TO 40
2150 RW1=80+X :: CW1=136+Y
2160 CALL GPOINT(RW1,CW1,J(U
)) :: U=U+1
2170 NEXT Y :: NEXT X
2180 GOTO 1950
2190 FOR MX=2 TO 16 :: READ
PC(MX) :: NEXT MX
2200 FOR MX=2 TO 16 :: READ
PR(MX) :: NEXT MX
2210 FOR MX=2 TO 16 :: READ
PG(MX) :: NEXT MX
2220 FOR MX=2 TO 16 :: READ
PB(MX) :: NEXT MX
2230 RETURN
2240 DATA 2,3,4,5,6,7,8,9,10
,11,12,13,14,15,16
2250 DATA 1,1,3,1,2,6,2,8,8,
7,7,1,7,6,8
2260 DATA 1,7,8,1,3,1,7,1,3,
7,7,5,2,6,8
2270 DATA 1,1,3,8,8,1,8,1,3,
1,4,1,6,6,8
```

0 1752 2614 1337 1123 1317 698 3296 2428 4095 3881 2293 4240 263 3604 856 802 954 4317 2218 1380 605 3992 3691 818 1195 1427 4463 757 2300 4365 2986 641 2187 1061 3566 4740 818 1730 1481 3448 2292 3795 2120 1831 1864 2654 1195 4234 2345 810 2315 1787 4039 41 4099 890 4133 802 4064 186 4053 4053 196 4072 238 3694 3451 1603 4529 393 3017 3270 4797 1120 1015 2586 3074 4444 629 4620 2564 2061 4356 799 1481 2509 1731 1655 2175 1823 1170 1118 1116 2500 2838 4363 2330 2644 4541 2510 2720 4247 2512 2746 4273 4468 3333 2638 1734 1153 4482 2639 3375 1776 3215 3213 2147 3891 2898 883 1867 2302 967 2063 1723 1859 1135 2425 2334 3575 3839 4147 4457 2287 3962 3237 4239 1540 4231 4383 3282 4404 1215 3893 745 1590 1881 4482 471 2778 1784 1622 1774 1703 4674 2152 2502 1577 1248 1921 1901 2271 3122 490 2329 1590 2140 1506 1795 591 1408 1243 2734 2455 3512 1981 1592 4156 4810 56 1019 2099 3890 2136 1624 1846 2036 3557 728 1601 787 3478 428 2096 3283 3193 3347 2795 1605 1924 1427 1591 2283 4001 2028 1593 4991 211 3580 1708 1772 1576 1161 1985 1471 2342 1288 782 4431 1989 1477 2348 2174 3622 3863 1854 1987 2042 1476 2347 1293 787 2690 2697 2687 2683 743 2290 1951 1951 1945
TOTAL 569257

MICROpendium Index

Index covers first half of 1990

By ELTON SCHOOLING

The MICROpendium index is for use with Extended BASIC and now covers the years 1984 through 1990. Much of the early material is severely abbreviated in order to keep down the volume, and in order to print two columns on a page. The program ABBREV is intended to supply a list of these abbreviations, although it is not exhaustive. These programs have been through several versions; this latest uses an assembly language sort for considerably more speed.

I figure that an index should be a good deal. For those of us who have all the back issues of MICROpendium (surely no one could have thrown them away!) it should save some time, and for those who don't, it's a good reason to get 'em — if only to find out what on earth is a 'TIBOING'! (see1986 index).

I've made it useful for both those with printers and those who must read the info off the screen; the latter can approach a good buddy with a printer for a hard copy if they like. It's a personal index — I don't have a lot of interest in opinions, so I haven't listed all the letters in "Feedback", but I have listed some: I find that some of the letters are as good as a "User's Note" (and better than some). You won't find every announcement of coming events, pregnant though they may be with fascinating conjecture and suspense. Yesterday's fascination may well be today's cold spaghetti. I figure we need all we can get on the various languages and other technical subjects, and have indexed and cross-referenced accordingly.

The [illegible]ter instructions should suffice for any [illegible]l printer. For those who will read the sc[illegible] the display scrolls more slowly when t[illegible]elay" number is larger — see the early "REM" statements in the

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MICROPENDIUM INDEX90A—

(Continued from Page 29)

program.

The program "FRONTPAGE" is for those who print out a hard copy: it produces a convenient cover for a stapled-up index, with a table of contents. The disk is in the public domain; please don't send me any Fairware fees. The disk can be obtained from MICROpendium Magazine. I plan to keep them up to date.

Should I have made info-obstructing errors, almost anybody can alter a data statement. Man is prone to error, even I.

The assembly language sort routine is by David Romer and John Clulow; I obtained it from the Boston Computer Society TI99/4A User Group, and it works well. I much appreciate the chance to use an assembly language sort, the program needed it.

I have probably made many errors, and I can lay no claim to elegance. I've not been particularly consistent; I began with the idea that I would have to be very miserly with computer memory in order to get everything in the same program. Then, when it became obvious that I wasn't going to be able to do that, (the 'stack' memory wouldn't handle the large array I needed) I reworked it so as to cross-reference where it seemed a good idea. I notice that I have at least once used the same abbreviation for two words, rep=repair and rep=report. I left it that way — I have every confidence that our brainy folks will be able to tell what is meant in each case.

About the 1988 and later indexes: because of the many entries, which would overload the sort routine, I have divided these years into parts A and B. And Robert Neal, with the help of some of his user group, has amplified the indexes, using PRBase, to include authors and other information for which there was no room in a 40-character line. For a copy, talk to Bob.

My main thought is that everybody should have increased access to the fine work that John Koloen and Laura Burns and the many contributors have done and continue to do in MICROpendium magazine.

The sort routine mentioned above, as well as other programs that utilize the index data, were published in MICROpendium. These materials and the index itself have appeared in the following issues: April, June, October, November and December of 1988; January, February, March, April and September 1989; and February 1990. All of these programs, including the index for the years 1984 through 1990, are available on two SS/SD disks from MICROpendium. The cost is $6.—Ed.

INDEX90A

```
10 REM INDEX90A MICROpendium
 INDEX for 1990, Jan to Jun,
 Publisher John Koloen, edit
or Laura Burns. !128
20 REM Compiled by Elton Sch
ooling, 4014 57th St., Sacra
mento, CA 95820 !173
30 REM Sort routine by David
 Romer and John Clulow. Ob-
tained from Boston Computer
Soc., TI994/A User Group. Fo
r use with printer or with !
254
32 REM screen display. !126
35 REM Because of many entri
es the '90 index is divided
into '90A, Jan. to June, and
 '90B, July to Dec. !101
40 REM For your printer you
may need to change line 160.
 !202
50 REM For longer dwell time
 on screen increase the DELA
Y number in line 330. !210
52 CALL INIT !157
54 CALL CLEAR !209
56 CALL LOAD("DSK1.SORT")!07
9
60 OPTION BASE 1 !137
70 CALL CLEAR !209
80 DIM N$(149)!210
90 INPUT "OUTPUT TO PRINTER?
(Y/N)":P$ !247
100 CALL CLEAR !209
110 PRINT "WORKING" !139
120 FOR I=1 TO 139 :: READ N
$(I):: NEXT I !072
130 CALL LINK("SORT",N$(),13
9)!196
140 CALL CLEAR !209
150 IF P$="Y" THEN 160 ELSE
290 !093
160 OPEN #1:"PIO" !253
170 PRINT #1:TAB(24);"MICROp
endium INDEX, 1990A, Jan to
Jun" !154
180 PRINT #1: : : :!103
190 FOR J=1 TO 139 :: IF J=1
05 THEN 200 ELSE 220 !125
200 PRINT #1: : : : :: PRI
 #1:TAB(35);"PAGE 22" :: PRI
NT #1: : : : : : : : : :: :
GOTO 220 !195
210 PRINT #1: : : : : :: PRI
NT #1:TAB(31);"PAGE 23, INDE
X '90A" :: PRINT #1: : : : :
 : : : : :!137
220 IF J/2=INT(J/2)THEN 240
!249
230 PRINT #1:N$(J);:: GOTO 2
50 !240
240 PRINT #1:TAB(40);N$(J)!1
88
250 NEXT J !224
280 GOTO 360 !184
290 CALL CLEAR !209
300 CALL SOUND(500,110,0,131
,0,196,0)!005
310 PRINT TAB(7);"MICROpendi
um INDEX, 1990A" :: PRINT :
: :!058
320 PRINT "DATE AND PAGE NO.
 ARE LISTED TOGETHER. JAN 85
 p.16 BECOMES 1/85/16.": : :
!005
330 FOR J=1 TO 139 :: PRINT
N$(J):: FOR DELAY=1 TO 200 :
: NEXT DELAY :: NEXT J !026
340 PRINT : :!006
350 PRINT "DATE AND PAGE NO.
 ARE LISTED TOGETHER. JAN 85
 p.16 BECOMES 1/85/16." :: G
OTO 390 !062
360 PRINT #1: : :!178
370 PRINT #1:"DATE AND PAGE
NO. ARE LISTED TOGETHER. JAN
 85 p.16 BECOMES 1/85/16." !
146
375 PRINT #1: : : : : : : :
: : : :: PRINT #1:TAB(23);"M
ICROpendium Index, 1990A, Pa
ge 23" !139
380 CLOSE #1 !151
390 END !139
400 DATA BASIC TUCSON TOUR 1
/90/10,XBASIC 4A/PC TRANSFER
 1/90/16,C99 SEG$ FUNCTION 1
/90/18 !213
410 DATA 4A-PC TRANSFER XBAS
IC 1/90/16,TUCSON TOUR BASIC
 1/90/10 !096
420 DATA GARDEN PLANNER 1/90
/28,HARRISON MUSIC 1/90/31,M
USIC HARRISON 1/90/31,TRAFFI
C COP GA 1/90/34 !181
430 DATA TRIS GA REV 1/90/36
```

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MICROPENDIUM INDEX90A—

(Continued from Page 30)

```
,PRINTER'S APPRENT GENEVE RE
V 1/90/37,FUNNELWEB VIDEO RE
V 1/90/39 !042
440 DATA TI-TAX REV 1/90/39,
TI-BASE MAILING LIST/INDEX R
EV 1/90/39,TIPS TI PRINT SHO
P REV 1/90/40 !022
450 DATA NETHERWORLDS WAR GA
 REV 1/90/41,DISK DRIVE WEAR
/TEAR USNO 1/90/43,MAGNETIC
MEDIA STABILITY USNO 1/90/43
 !103
460 DATA DAYTONA USER GROUP
USNO 1/90/43,RIGHT JUSTIFIED
 TEXT USNO 1/90/44,PLUS! FIX
 USNO 1/90/44 !135
470 DATA C99 CORRECTION USNO
 1/90/44,PATH IN MDOS USNO 1
/90/45,CONSOLE LOCKUP CURE U
SNO 1/90/45 !170
480 DATA HEATHKIT PRINTER BU
FFER USNO 1/90/46,PRINTER BU
FFER HEATHKIT USNO 1/90/46,P
D SOFTWARE GENEVE USNO 1/90/
46 !070
490 DATA GENEVE SOFTWARE USN
O 1/90/46,MDOS PATH USNO 1/9
0/45,EXPAND SYSTEM DISK DRIV
E 1/90/21 !090
500 DATA BASIC GEOGRAPHY OF
AFRICA 2/90/10,XBASIC TELECO
MMUTING 2/90/12,AFRICAN GEOG
RAPHY BASIC 2/90/10 !179
510 DATA INDEX MICROPENDIUM
2/90/18,TI'S UNRELEASED LEGE
NDS 2/90/28 !121
520 DATA FORTH HIGH RESOLUTI
ON GRAPHICS 2/90/29,WAR GAME
S GA 2/90/32,XHI 80 COLUMN
GRAPHICS  REV 2/90/35 !214
530 DATA HACKERS/TIWR USERS
REV 2/90/37,SPREADSHEET REV
2/90/38,SCREEN FONTS COLLECT
ION REV 2/90/38 !049
540 DATA GENIAL TRAVELER REV
 2/90/38,BRIDGE CONTRACT REV
 2/90/39,USER GROUP UPDATE 2
/90/41 !112
550 DATA REPT WITH MULTIPLAN
 USNO 2/90/42,NOTEPAD SCREEN
 EDITOR USNO 2/90/42,GENEVE
PATH USNO 2/90/45 !160
560 DATA GENEVE=9640,9640=GE
NEVE,DISK FORMATS MYARC USNO
 2/90/45,GRAPHICS HEADER STA
NDARD USNO 2/90/45 !022
570 DATA MDOS CAUTION USNO 2
/90/46,DATA EXCHANGE TI/PC 2
/90/12,EXPAND SYSTEM PRINTER
S 2/90/16 !069
580 DATA CASSETTE TO DISK FE
EDB 3/90/9,YACHT GA BASIC 3/
90/10,BASIC YACHT GA 3/90/10
,XBASIC LAZY PROGRAMMING 3/9
0/14 !159
590 DATA P-SYSTEM FILER COMM
AND 3/90/17,C99 STANDARD DEV
IATION 3/90/18,FEST WEST 90
REPORT 3/90/22 !065
600 DATA TIBBS LIST 3/90/28,
BBS LIST 3/90/28,EXPAND SYST
EM MODEM 3/90/30,GROM BOX CA
RT DEBUG 3/90/34 !147
610 DATA 24 PIN PRNTR PANASO
N KX-P1124 3/90/35,PRNTR 24
PIN PANASON KX-P1124 3/90/35
 !218
620 DATA BRIDGE CONTRACT REV
 3/90/36,BOOT DISK CHANGE RE
V 3/90/37,MULTIPLAN UPGRADE
REV 3/90/37 !165
630 DATA CLIPBOARD REV 3/90/
37,CRYPTOGRAMS REV 3/90/38,C
HECKBOOK BALANCER 3/90/40,TE
TRIS BELLS/WHISTLES USNO 3/9
0/44 !151
640 DATA MDOS ASSIGN USNO 3/
90/45,TIWR PAPER SAVE USNO 3
/90/46,DISK CONTROLLER USNO
3/90/46 !239
650 DATA BASIC PYRAMID SOLIT
AIRE 4/90/10,XBASIC MORSE CO
DE TRAINER 4/90/15,C99 CALCU
LUS DERIVATIVE 4/90/19 !170
660 DATA EXPAND SYSTEM GROM
BOXES 4/90/24,PEB MODIFY POW
ER SUPPLY 4/90/26,HARD DISK
POWER SUPPLY IN PEB 4/90/26
!066
670 DATA RAVE 99 MEMORY CARD
 REV 4/90/28,PAGE PRO 99 PIC
-CAT REV 4/90/29,POWERCOST R
EV 4/90/29 !214
680 DATA TI-KENO GA REV 4/90
/29,CSHELL 99 TI WINDOWS/ICO
NS REV 4/90/30,REV VIDEO FOR
 PRINTING USNO 4/90/38 !110
690 DATA MULTICOL CONTROL CO
DES USNO 4/90/38,TI-COUNT ON
 HARD DISK USNO 4/90/34,P-SY
STEM BOOT USNO 4/90/34 !241
700 DATA CHECKBOOK REGISTER
USNO 4/90/35,PC TO TI TEXT F
ILES USNO 4/90/35,DRIVE LIMI
T HARDWARE USNO 4/90/36 !010
710 DATA DISK CATALOGER USNO
 4/90/36,STAR NX1000 FIX USN
O 4/90/37,FUNNELWEB FORMATTE
R FIX USNO 4/90/37 !143
720 DATA FUNCTION QUIT RECOV
ER USNO 4/90/38,USER GROUP U
PDATE 4/90/38,BULLETIN BOARD
S TI 4/90/27 !096
740 DATA BASIC PLANE GEOMETR
Y 5/90/10,XBASIC FOREIGN XB
TO TI XB 5/90/15,EEPROMS AND
 THE TI 5/90/19 !080
750 DATA BULLETIN BOARDS TI
5/90/14,TANK COMMANDER GA 5/
90/25,MY-BASIC CHECKSUMS/ASC
II VALUES 5/90/30 !052
760 DATA VCR TAPE EDITING 5/
90/31,FORTH HI-RES GRAPHICS
5/90/33,EXPAND SYSTEM/RAM DI
SKS 5/90/35 !178
770 DATA RAMDISKS/SYSTEM EXP
AND 5/90/35,BUSINESS GRAPHIN
G/CHARTS REV 5/90/37,P-GRAM
CARD UPDATE REV 5/90/40 !056
780 DATA 80-COLUMN CARD REV
5/90/40,AIRTAXI REV 5/90/41,
QUIT RECOVER USNO 5/90/43,PE
B POWER BEEF-UP USNO 5/90/43
 !203
790 DATA POWER SUPPLY BEEF-U
P PEB USNO 5/90/43,ADDRESS D
ATABASE USNO 5/90/44,GENEVE
ADV BASIC BUGS USNO 5/90/45
!232
810 DATA BASIC LEARNING TO R
EAD 6/90/9,BASIC SPEECH SYNT
HESIZER 6/90/9,XBASIC DOS-LI
KE DIRECTORY 6/90/14 !086
820 DATA MY-BASIC MY-MENU 6/
90/17,BASIC ASSEMBLY 6/90/24
,TI-BASE LOADING TIMES 6/90/
28 !015
830 DATA EXPAND SYSTEM KEYB/
80 COL 6/90/29,LIMA FAIR REP
ORT 6/90/30,RAMDISK QUEST RD
200 REV 6/90/31 !074
840 DATA ARTOONS GRAPHICS RE
V 6/90/32,80 COLUMN FUNNELWE
B REV 6/90/32,CONEY GAMES RE
V 6/90/33 !015
850 DATA MULTIPLAN EXERCISES
 REV 6/90/33,RAMDISK FOUNDAT
ION 512K 6/90/34,MISSING LIN
K TIP USNO 6/90/35 !197
860 DATA FUNCTION QUIT RECOV
ER USNO 6/90/35,REPAYMENT SC
HEDULE USNO 6/90/35,PAINT-A-
MAZE GA USNO 6/90/36 !122
870 DATA INVERSE VIDEO USNO
6/90/37 !020
```

Fest West '91

The happiest fest on Earth

By JIM SWEDLOW

Fest West '91 can now be added to the record book as another in a series of highly successful Fest Wests. Attendance exceeded expectations at over 250. Everyone seemed to have a great time. Many major TI software and hardware dealers and authors were represented along with TI owners from across the country.

The Fest, hosted by the User Group of Orange County (UGOC) and Pomona User Group, was held at the Ramada Maingate, just across the street from Disneyland. Included in the Fest guide was a map of all the attractions, restaurants and other facilities that were within walking distance. This was very helpful to visitors from out-of-town.

The Fest honored the tenth anniversary of the TI with banners, balloons and a special retrospective written by Bill Gaskill.

SOFTWARE AND HARDWARE DEALERS

There were representatives from 9640 News, Asgard, Bill Gaskill, Bud Mills Services, Comprodine, Genial Computerware, JP Software, Ken Hamai Hardware, LA Marketplace, MS Express, Notung Software, Pomona User Group, Rave 99, Regena, Southwest 99ers, T & J Software, TAPE, Tex-Comp, TI-Tax, and UGOC.

There was a wealth of items to purchase and many happy 4A owners walked out with new merchandise or with something from the overflowing consignment table.

MAJOR WINNERS

There were three types of drawings at Fest West '91. Hourly drawings included items contributed by the dealers present. The winners were too numerous to name. Two major winners, however, deserve mention:

- Ted Whomsley won the free night at the Ramada Maingate.
- Mary Phillips, a member of the Ozarks User Group in Missouri, won a fully assembled and tested Horizon RAMdisk, that the Fest West committee purchased from Bud Mills Services.
- H. R. Jeffery won the door prize, an Asgard Mouse.

THE BEST OF TI

To honor the tenth anniversary of the TI, everyone who came was asked to vote for the "Best of TI". Ballots were collected on noon Sunday and the winners announced at the Fest. They were:

- **HARDWARE:** Bud Mills Services and RAVE 99 tied as the best sources of hardware.
- **PUBLICATION:** Far and away, the clear winner of the best TI publication was MICROpendium.
- **WRITER**: Regena was picked as the best TI writer of all time. Honorable mention went to Barry Traver and Beery Miller.
- **SOFTWARE:** There was no winner in the software category because so many fine items were mentioned.

During the Fest, Club 99 of Covina, California presented Jerry Price of Tex-Comp with a plaque to recognize his service to the TI community over the years. Jerry was surprised and touched.

SPEAKERS

Many luminaries in the TI community spoke at the Fest. They included: Ken Hamai on disk drives; Berry Miller on 9640 programming; Ken Gilliland on new items from Notung Software; Bud Mills on RAMdisks and new offerings from Bud Mills Services and OPA; Regena on programming in BASIC; Bill Gaskill on TI-Base; Bill Chavanne on Multiplan and TI-Tax; Barry Traver on programming; John McDevitt on new items from RAVE 99; Rodger Merritt on graphics and new items from Comprodine.

Theese sessions were well attended.

There are so many people and organizations that helped make Fest West '91 successful that the list could go on and on. Among these were: The Riverside User Group (RUG), Southern California Computer Group (SCCG) and the Pomona User Group, all of California, helped some TI notables attend by partially defraying their expenses; the dealers who contributed merchandise and discounts for the drawings; MICROpendium, which sent magazines for free distribution; Southwest 99ers, which ran the registration process; Southern California Computer Group, which provided major assistance in running the consignment table; Cris Van Allen, who created the giant Fest poster, made the vendor banners, designed the official Fest West '91 T-shirt, and served as official photographer; TM Direct, the newest TI vendor, sent catalogs and items for drawings; special thanks also to Gloria Anders, Stan Corbin, George Dearmin, Eugene Gibson, Daniel Hatheway, Steve Luest, Howard McDonald, Erwin Metz, Bill Mooney, Earl Raguse, Janice Shafer and Shirley Swedlow.

FEST WEST '91 COMMITTEE

A recap of Fest West '91 cannot be complete without mention of the Organizing Committee which spent a year bringing this event from concept to reality: Siles Bazerman coordinated the speakers and the Friday night get-together; Gene Bohot took care of promotions, printing and keeping us on track; Bill Harms was in charge of user group relations, the tenth anniversary celebration and running the front table; Bill Nelson did the outstanding graphics, coordinated with the hotel and hosted the uncounted planning meeting; Jerry Rash served as the treasurer and organized volunteers and loaner systems; Jim Swedlow coordinated with vendors, served as secretary and announced all of the drawings.

Truly, Fest West 91 lived up to its slogan as the Happiest Fest on Earth!

Canada TI-Fest planned April 27

The Ottawa Users Group's Canadian TI-Fest is scheduled from 10 a.m. to 4 p.m. April 27 at the Merivale High School, 1755 Merivale Rd., Nepean, Ontario, Canada.

According to Bill Gard of the group, there will be no charge for tables at the Fest.

Gard notes that the group has received confirmations and positive response from vendors and possible attendees.

For further information, contact Gard at 3489 Paul Anka Dr., Ottawa, Ontario, Canada K1V 9K6 or (613) 523-9396 or Fax (819) 997-2194 Attn: DMES 2.

MICRO-REVIEWS

MAC Labels, Page Pro Line Fonts, Son of Disk of Dinosaurs, Page Pro Effects

By HARRY BRASHEAR

Ratings for the products reviewed in this column are based on a star system as follows:

★ Leave it alone, back to the drawing board.

★★ Needs improvements, but workable.

★★★ A good program, worth trying.

★★★★ Send your money and buy it.

★ ★ ★

MAC LABELS V2.6

Ed MAChonis is the creator of this handy set of label utilities. (Notice the MAC in the name) According to him, he had a box of 5,000 labels sitting around collecting dust and decided to come up with some uses for them. He did, and some of those uses are pretty ingenious. Not only that, but there is also a program included for printing out console strips. There are fifteen strip data files on the disk for existing programs as well.

The main emphasis is on labels, though, so I'll give you an idea of some of the unique ones.

- Print four return address labels on one 3½x1-inch label in subscript. Includes cut lines.
- An automobile maintenance label (oil changes).
- A two color "I love my TI" label.
- A disk catalog label that prints from the disk directory.
- Bordered address labels.
- A ten line label maker. Etc., etc.

There is also a utility for printing out any D/V80 file, and another that will print out a mailing list full of labels.

All of the label programs are accessible from an Extended BASIC menu, and all of them function quickly. My only concern was that I wished for a return to the main menu from the programs. Maybe that's coming at a later date.

Ed is asking only $4 for this disk full of nifty utilities so "Harry's Rules" apply; send a disk and postage!

Edward S. Machonis, 82-23 261st Street, Floral Park, NY 11004

Previous owners of Mac Labels can upgrade to V2.6 for $2, but you must be registered with him.

★ ★ ★

PAGE PRO LINE FONTS

There's a new set of line fonts from Asgard for borders and text frames. So what new, you ask? It seems like every week there is something new for Page Pro! That's true, because this program has found acceptance in the community that rivals that of TI-Artist. Because of it's versatility and the tools that have been created for it, there's just no stopping the library of materials available.

Shirley Slicer, the author of Line Fonts, is one of the better graphics people we have but for some reason her efforts have been overlooked. This package should remedy that.

First of all, the title is a bit misleading. Although the format is for Line Fonts, (__LN) a big percentage of the package is for special symbols that couldn't be put into the small font files of PagePro Fonts I and II. They are for foreign printing, money denominations, fractions etc. Note the examples included on this page.

The fonts included are: Block1, Block2, Bold, Data1, Data2, Galaxy1, Gothic1, Gothic2, Italic1, Italic2, Ledger1, Ledger2, Outline1, Outline2, Plain1, Plain2, and Scrpt1.

Next there is a font for characters that would be needed around the office or for forms, such as checks, check boxes, and special effects. There is one new set included for borders also.

The most interesting set is the design set shown at the bottom of the example picture. This consists of 30 little designs that can be put together for borders, special effects, underscores and things of that nature. Actually, I can't imagine how many different things they might come in handy for. They're just neat!

The disk also contains full page example sheets that can be printed out via Page Pro. That's why it only got three stars; I think the disk space could have been better utilized. Nonetheless the package is a good value at $7.95, plus $1.50 shipping.

It's from Asgard, P.O. Box 10306, Rockville, Md 20849.

★ ★ ★ ★

SON OF DISK OF DINOSAURS

Can you believe that name?! It's true! The VERY best selling Disk Of Dinosaurs that came out a couple of years ago has proliferated itself! I have no idea what it bred with, (could have been Ken Gilliland) but it has begotten a son.

This set of two disks is even better than the last set because this really leans toward the education of the little ones.

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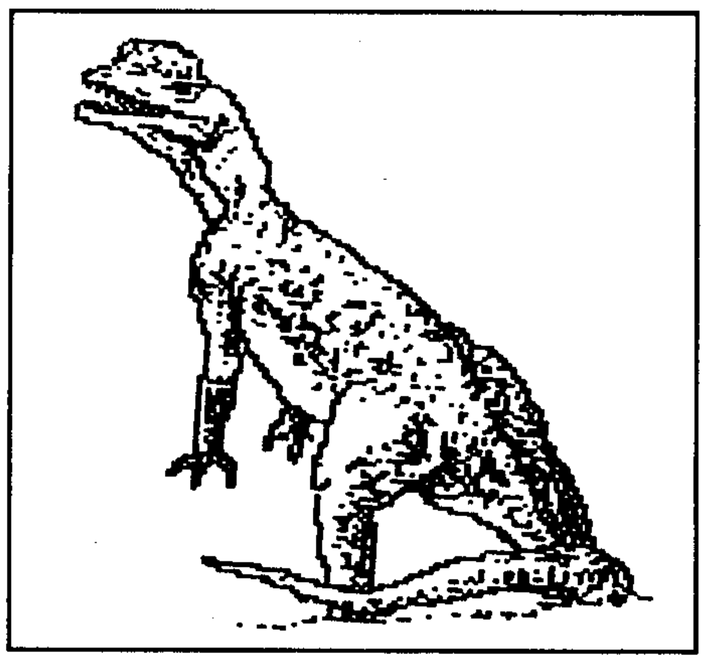
MICRO-REVIEWS—

(Continued from Page 33)

For Artist Instance format there are 16 new, realistic dinosaurs and a new scene to "paste" them into. As you can see in the example pictures, Ken hasn't spared the artistic talent on these instances, but he really out did himself in the education department this time.



On the second disk, there are text files concerning all of the dinosaurs and their history. The text files use the 40-column text loader created by Peter Hoddie so they look about as good as it gets on the TI.

After you have read up on dinosaur facts, there is a super neat question game where each right answer places a bone on the screen. Enough right answers complete a dinosaur skeleton.

Also included on the disk is an animated cartoon similar to the original Disk of Dinosaurs.

It comes from NOTUNG Software at a cost of $12 plus $1 shipping.

If you liked the first one, by all means, grab this one from: Notung Software, 7647 McGroarty Street, Tujunga, CA 91042.

★ ★ ★ ★

PAGE PRO EFFECTS UPDATE

It was originally called Page Pro Utilities by Paul Scheidemantle. It had the capability of enlarging, reducing, ghosting and flipping. It still does all those things, but now it does them in about five percent of the time and the capability has been upgraded tremendously.

The enlarge/reduce function is now based on a "zoom" method — no more restrictions of just doubling. If your picture doesn't fit by one or two characters, reduce it by only that much in either or both directions. That's the sublime, the ridiculous is that you could reduce something that was 20x30 characters down to 2x3 characters. (Of course, it would only be a blob.) This holds true for enlargement as well.

Another upgrade is that two things can happen at once. You could, for instance, reduce a picture 25 percent and ghost it at the same time.

The best part is that Paul's extended basic routines have been changed over to assembly. I re-flipped a picture that originally took 45 minutes in the old utility package and it only required 7 minutes to do the same job.

If you are serious about Page Pro, you have to get this package, or upgrade your old one. For first time buyers, the package price is $17.95. If you're a registered user of Page Pro Utilities, the upgrade cost is $7. It's worth it! Include $1.50 for postage.

It's from Asgard, P.O. Box 10306, Rockville, Md 20849.

If you would like me to review your software in this column, please send it to Harry Brashear, 2753 Main St., Newfane, NY 14108. If you would like it returned, include an SASE.

READER TO READER

Gary Moore, 1103 South Lafayette, Neosho, MO 64850, writes:

I have a Star Micronics Printer Model NX-1001, Epson compatible. All the DIP switches are set for Epson mode, but I get garbage like this out of it: ((((&*UyoMnI(((((($5555, etc. I tried listing a program to it, but still get the same stuff. I also have a double-sided CDC drive that I need to know how to set up for drives No. 1 and 2.

A reader has asked for information concerning the connection of a 1084S-D1 Commodore monitor to a Geneve card. She says she gets several overlapping images when trying to run it and thinks there is a problem with the sync. She seeks a pinout to verify her cabling. Send responses to MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Reader to Reader is a column to put TI99/4A and Geneve 9640 users in contact with other users. Be sure to address your questions to Reader to Reader, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Newsbytes

Library of 2-Liners offered on disk

Glenn Bernasek of TI-CHIPS is offering a disk containing a complete library of his 2-Liners programs. Two of these routines, TEXT/COPY and TINY/LIB, appeared in the October and November 1990 User Notes.

"The 2-Liners started out as a personal challenge to see how many instructions I could pack into two lines of Extended BASIC," he writes. "Well, It's just like eating peanuts. Once I got into it, I found I just couldn't stop! Eventually the routines became more complex and, to my satisfaction, self-supporting utilities. Many of my 2-Liners have found a home in my master utility disk for quick call-up."

To receive the disk with documentation, send a 5-inch disk with mailer and postage to Bernasek at TI-CHIPS, 13246 Harper Rd., Strongsville, OH 44136.

Boston fair table prices reduced

Prices have been reduced for vendor tables for the Northeast TI99/4A Computer Fair April 6.

According to Ronnie Williams of the fair's table sales commitee, the dealer tables will be $25 for the first three tables, and $17.50 per table beyond that number. All vendors who have paid the $35 price per table will be credited accordingly, Williams says.

The location for the fair is the Central Middle School, Waltham, Massachusetts.

BBS changes

The TI-BBS in Whittier, California, previously operated by Roger Davis, ha moved and has a new sysop.

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User Notes

Installing a one-chip 32K expansion RAM in the 4A console

The following hardware project is by Col Christensen of Deception Bay, Queensland, Australia. Readers who undertake the project do so at their own risk.

Materials needed are:

1 TMS62256L-10 SRAM or similar

3 1k resistors

8 1N914 silicon diodes or similar

Some fine insulated wire, preferably the type used in wire-wrapping.

A fine tipped soldering iron.

Light gauge solder

The console modification outlined here is NOT for the novice solderer as some delicate soldering is required. The author takes no responsibility for the consequences of any person's attempting these modifications. The author and a number of others have carried out the modification successfully.

Having all necessary materials on hand, open the console, remove the motherboard and remove its metal shells to reveal the bare board. Refer to Fig 6 to help locate the ROM (Read Only Memory) chip with the number CD3227A marked on it. Its on the top of this chip that the RAM (Random Access Memory) chip will be installed. Some computers have ROMs with a different numbering system but go by Figure 6 to locate the one to buitd onto.

The RAM chip can be affected by static electricity so take care when handling it. Before you start, touch some large metal object to bleed any build up of static charges from yourself.

Remember to double check your work AS YOU GO ALONG and be on the lookout for poor solder joints or for solder spreading and bridging across to some other nearby point.

1. On the RAM chip, bend out to 45 degrees or more pins 1, 2, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26 and 27.

2. Snip off the thin part of all RAM pins bent out to 45 degrees.

3. Cut off 4 wires each about 50mm (2ins) long and solder one end of each to ROM chip pins 22, 23, 1 and 18 so that the wires stand vertically. They can be cut to correct length later.

4. Place the RAM on top of the ROM as in Figure 1 making sure that the RAM is facing the same direction as the ROM chip and that one pin at either end of the RAM overhangs the ends of the ROM. The small indent in the top surface helps in locating pin 1 and the indents on both the ROM and the RAM must point in the same direction.

5. Solder RAM pins 3 through 9 to ROM pins 2 through 8.

6. Bend RAM(14) sideways to meet ROM(12) and solder (GND).

7. Bend RAM(28) sideways to meet ROM(24) and solder (+5v).

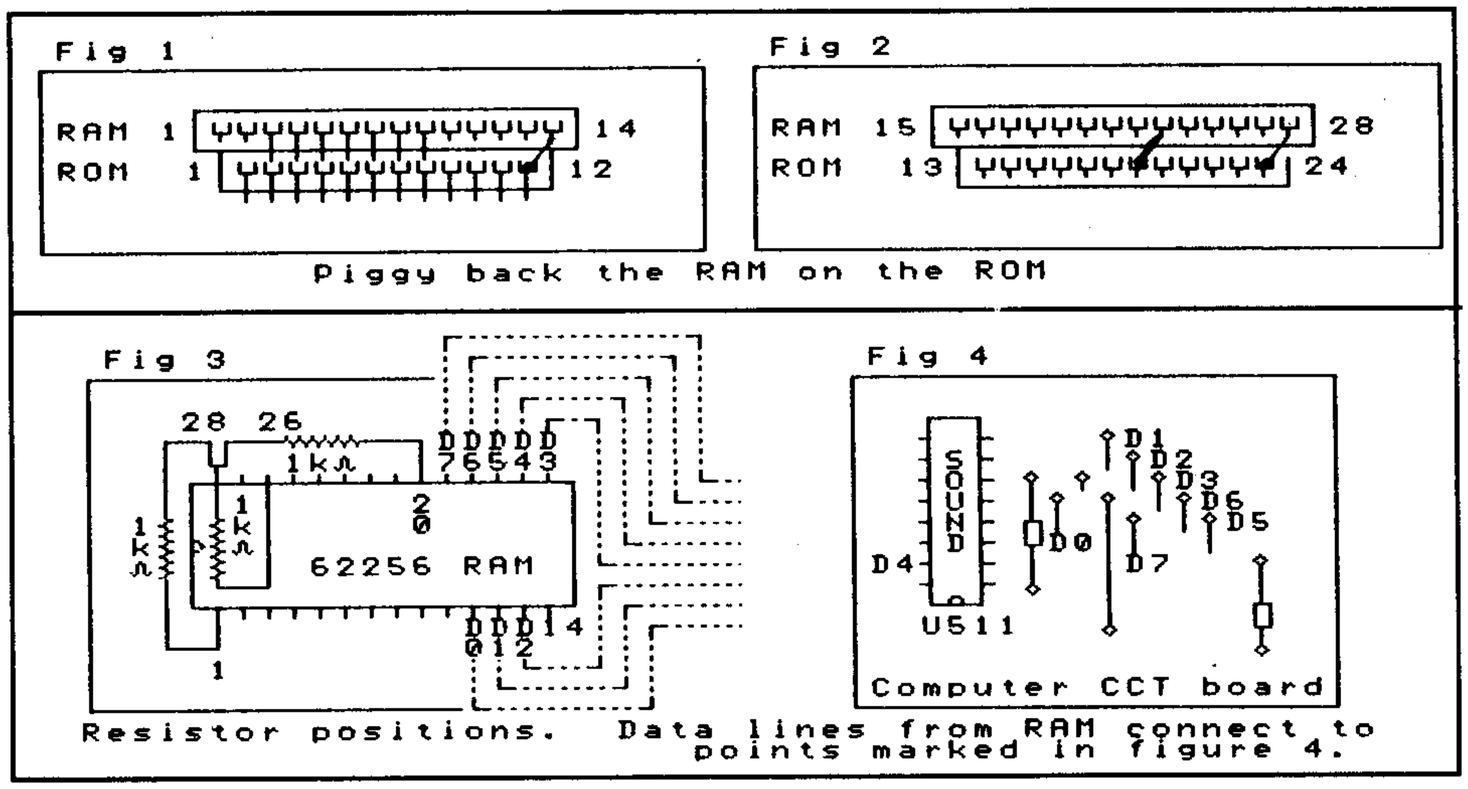
8. Bend RAM(23) sideways to meet ROM(19) and solder (A11).

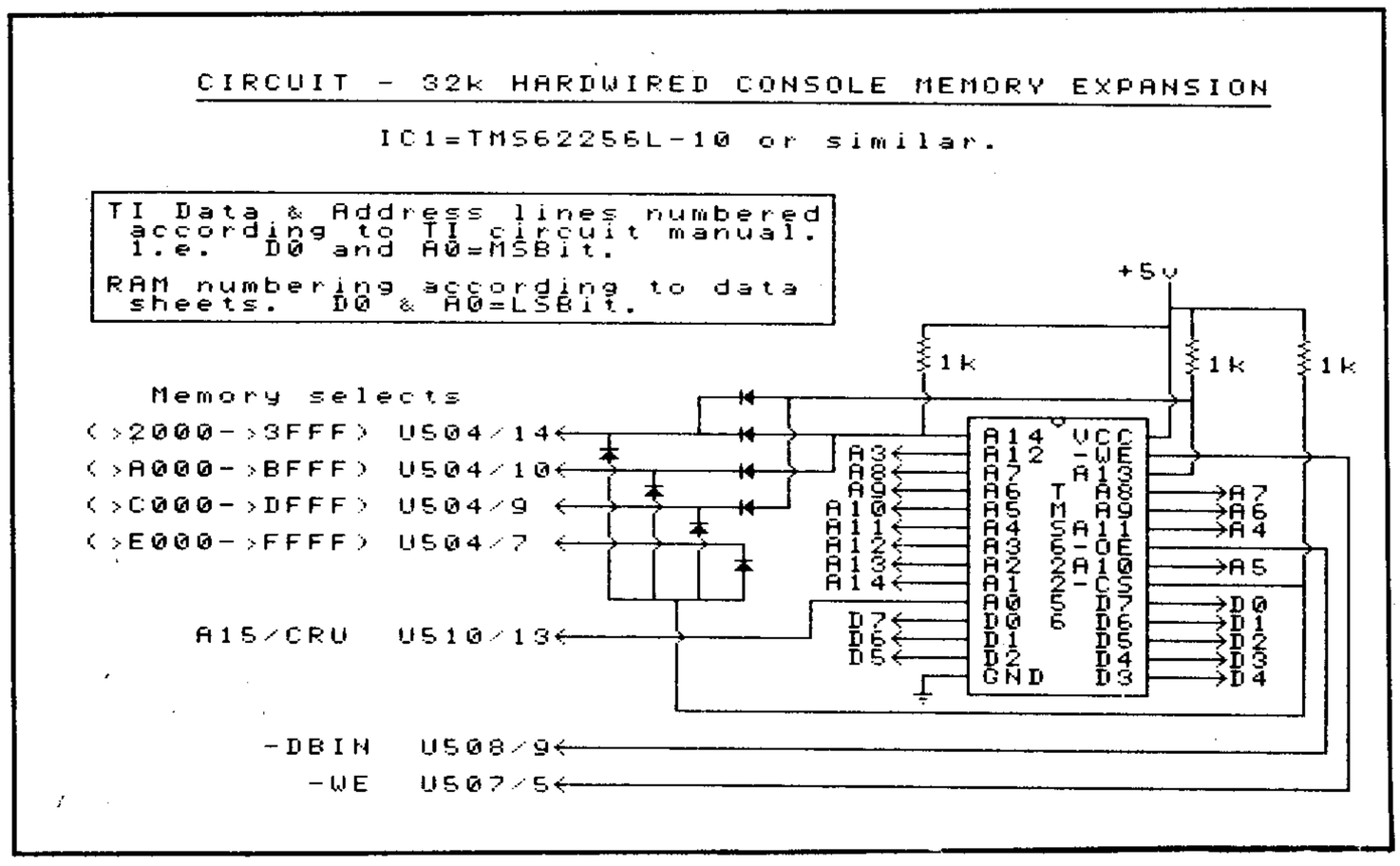
9. Connect the wire from ROM(22) to RAM(21) (A10).

10. Connect the wire from ROM(23) to RAM(24) (A9).

11. Connect the wire from ROM(1)

(See Page 36)





Newsbytes

(Continued from Page 34)

Now the Club99 of Covina CA BBS, the board operates at 300, 1200 and 2400 baud, 8N1, at (818) 339-1134. Sysop is Larry Hoffman, whose voice phone is (818) 339-6061. Co-sysop is Paul Shippnick. According to Hoffman, the board serves TI99/4A and Geneve computers, and downloads are allowed at the time of first logon.

User Notes

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over the top to RAM(25) (A8).

12. Connect the wire from ROM(18) over the top to RAM(2) (A12).

13. Solder a 1k resistor between RAM(20) and RAM(28). See Figure 3.

14. Solder a 1k resistor between RAM(26) and RAM(28) with the resistor on top of the RAM chip. See Figure 3.

15. Solder a 1k resistor between RAM(1) and RAM(28) with the resistor round the end of the RAM or beside the second resistor. See Figure 3.

16. The next to be connected are the data lines as in Figures 3 and 4. Referring to figure 6, find on the motherboard between the GROM adaptor port and the socketed SOUND chip the plated through holes as in figure 4. Connect wires from the data pins, D0 to D7, on the RAM chip to the plated through holes and pin 15 of the sound chip. It does NOT matter at all which is connected to which. Keep the wires tidy, weaving around any chips on the way and lying as flat as possible on the motherboard.

17. Take the 8 diodes and cut the wire at the "black" end of the glass body to a length of no more than 6mm (1/4"). These short ends are to be soldered to pins on U504.

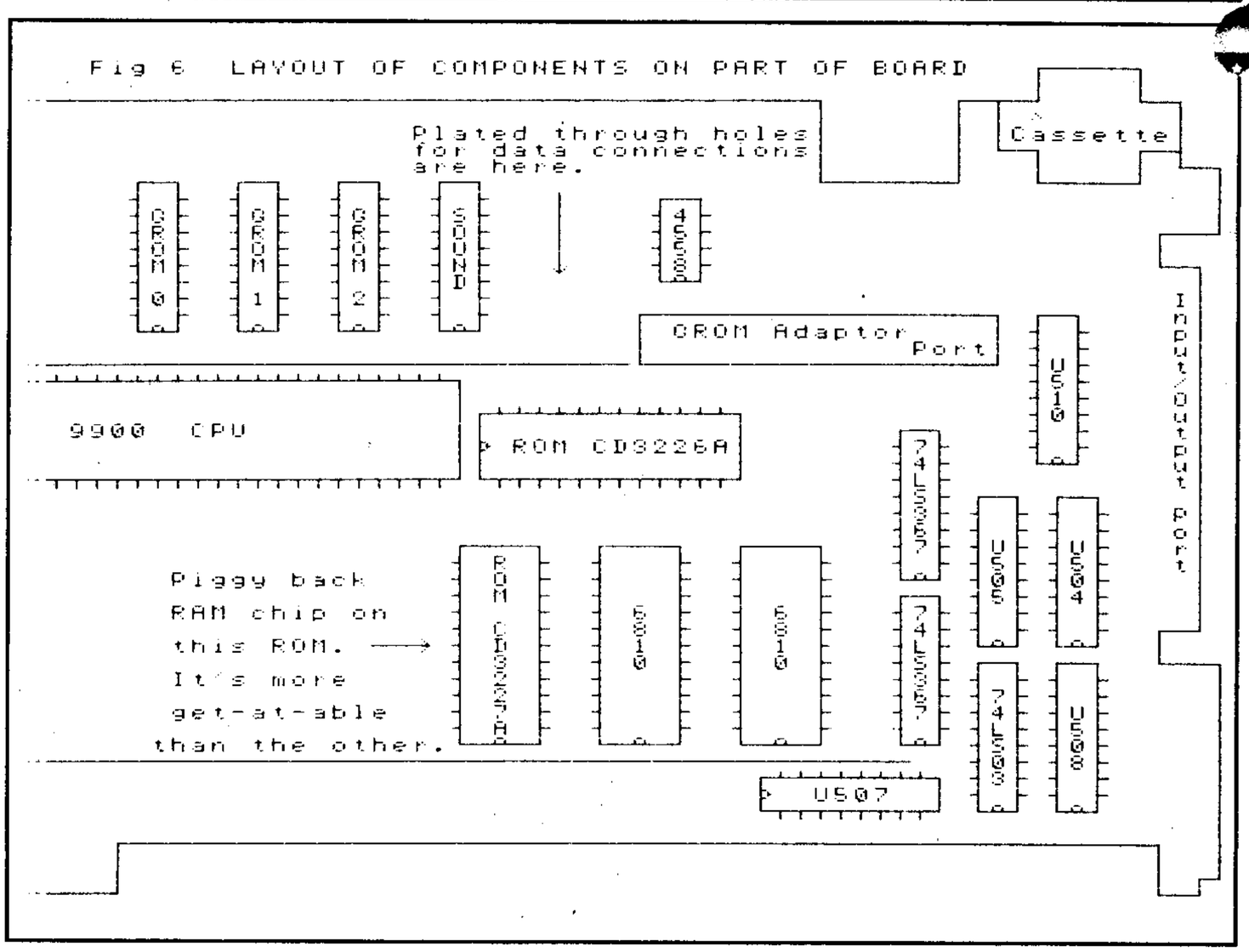
18. Locate U504 and U505 on the motherboard. See Fig 6. They are both marked 74LS138 and the only ones in that area. See Fig 5 and make sure you can find the correct pin numbers on the chips. Once again, go by the small indent at one end on the top surface.

Read the next 6 paragraphs before starting on the diodes.

19. Solder the short ends of two diodes to U504(10) and two diodes to U504(14). The diodes should now be standing vertically, so bend over one from each pair so that the long ends on each intersect in midair over about the middle of U505. Solder the intersection and snip off closely the waste wire. Solder a wire from this junction to RAM(1) (A14).

20. Solder the short ends of two diodes to U504(9). Bend over one of this pair and the remaining one from U504(14) so that their long ends intersect in midair at about the far side of U505. Solder the intersection and snip off closely the waste ends.

Fig 6 LAYOUT OF COMPONENTS ON PART OF BOARD



21. Solder a wire from this junction to RAM(26) (A13).

22. Solder one diode vertically to U504(7). Solder the last diode horizontally so that its long ends project past pin 1 of U504. Bend over the three vertical ones so that all four long ends intersect in midair above pin 1 of the same chip, U540. Solder the intersection and snip off the waste wires.

23. Solder a wire from the junction to RAM(20) (-CS).

24. Solder a wire from U508(9) to RAM(22) (-DBIN).

25. Solder a wire from U507(5) to RAM(27) (-WE).

26.older a wire from U510(13) to RAM(10) (A15/CRU)

And that's it. Now treble check your work and also ensure that the resistors and diodes are lying as low as possible and will not contact the metal shell when it is installed. If you are satisfied that all is OK, reassemble the computer. When you switch on and choose extended basic from the option screen, Type SIZE. If all is well, the screen should report:
13928 BYTES OF STACK FREE (11840 if you have an expansion box connected.)
24488 BYTES OF PROGRAM SPACE FREE

Converting a D/V80 file into a runnable MERGE program

The following program by John Hamilton of the Central Iowa 99/4A User Group, appeared in the Cleveland Area TI99/4A User Group newsletter. The item was written by Bruce Rodenkirch of the Northcoast User Group.

I recently found a handy program by John Hamilton that will convert a BASIC or XBASIC program written on an editor to a runnable program. It reads the D/V80 file and writes it to disk as a D/V163 file (MERGE format) which can then be merged to program format. So what, you ask, is the value of that?

Some people might like to be able to write their BASIC or XB programs using an editor, such as the one in Editor/Assembler or Funnelweb (TI-Writer).It is much easier to edit a program in that mode. The Find String, Replace String and Move line commands are quite useful. It is also easier to read with a 40-character screen width, or more if you have 80 columns.

Another use is for tutorial disks which have programs to be typed in. These programs can be loaded into an editor. The text can be stripped out leaving only the program, and then converted to a runnable

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User Notes

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gram. Jim Peterson of Tigercub Software and some of the other authors have programs written in a D/V80 format and, if you want to try out the program, you could save yourself some typing (and correcting) by using the handy-dandy little converter program shown below.

Recently I have found another use for it when I was trying to run a program from the from the group library. It was an Extended BASIC program and it would crash unexpectedly. Listing the program revealed several program lines that were messed up. When I tried to edit them, other lines disappeared or were rewritten by the computer. This is often a sign of a program that has been revised too often. When a program is first written, the lines of commands are put into a "stack," similar to an "in basket" with the last entry on top. If a line is revised, the original line is deleted and the new one goes on top of the stack. If there is too much editing, the program lines are stacked in a helter-skelter order. The computer will find all the lines and use em in the proper order, but if the sorder is too extreme errors will occur. One way to take care of this kind of problem is to save the program in MERGE format and then merge the program back to the computer, which puts the program lines back in order. The program will then run faster and will be less prone to errors.

This procedure would not work with the program I was trying to fix, so I decided to use the converter on it. It worked like a champ and the result was a program that worked as the author intended. The name of the program was Moonvasion, just in case you may have wrestled with it.

I added a few embellishments to Hamilton's program, such as instructions on its use. Line 200 prints the program line to screen so you can follow the read/write routine. After the program has been listed to disk as a D/V80 file be sure to have a line number at the beginning of each program line. Some XB programs will have lines that are longer than 80 characters, and the word wrap feature will create a line with no line number. All you have to do is put the next line number in sequence at the head of the line. Be careful not to change the number of a line used ina GOSUB or GOTO statement. This is not hard to do, but a warning might save some grief.

```
100 ! CONVERTER WILL READ A
PROGRAM WRITTEN AS A D/V80 F
ILE AND REWRITE IT AS A D/V1
63 FILE WHICH CAN BE MERGED
AS A RUNNING PROGRAM !211
101 CALL CLEAR :: CALL SCREE
N(4)!232
110 PRINT "To revise an exis
ting pgm., LIST it to disk a
s a D/V80  file. (LIST ""DSK
X.TXT"")" !207
120 PRINT "Load into TIW or
an editor. Delete the first
line, whichis blank. Make su
re there  is a line number
at the " !208
130 PRINT "beginning of each
 line.     Re-format if need
 be to     create shorter pr
ogram      lines. Use a temp
orary CR   at the end of " !
180
140 PRINT "the line before u
sing the   reformat key. Tak
e care not to change existin
g line     numbers if they a
re used in" !158
150 PRINT "GOTO or GOSUBs. T
hen RUN    this program and
after it   has run MERGE the
 D/V163    file with no prog
ram in     memory." !223
160 PRINT "then delete one o
f the      blank spaces afte
r the line number before run
ning the   program. Press an
y key." !250
170 CALL KEY(3,K,S):: IF S=0
 THEN 170 !241
180 CALL CLEAR :: OPEN #1:"D
SK2.PGM1",INPUT
190 OPEN #2:"DSK2.PGM",OUTPU
T,VARIABLE 163 :: ON ERROR 2
60 !134
200 LINPUT #1:L$ :: S=POS(L$
," ",1):: PRINT L$ :: IF S=0
 THEN 240 !094
210 N=VAL(SEG$(L$,1,S)):: A=
INT(N/256)!242
220 B=N-A6 :: PRINT #2:CHR$(
A)&CHR$(B)&SEG$(L$,S,80)&CHR
$(0)!095
230 IF EOF(1)=0 THEN 200 !17
3
240 PRINT #2:CHR$(255);CHR$(
255)!081
250 CLOSE #1 :: CLOSE #2 ::
END !190
260 DISPLAY "`TXT' FILE BAD
- TAKE A LOOK" :: RETURN 240
 !062
```

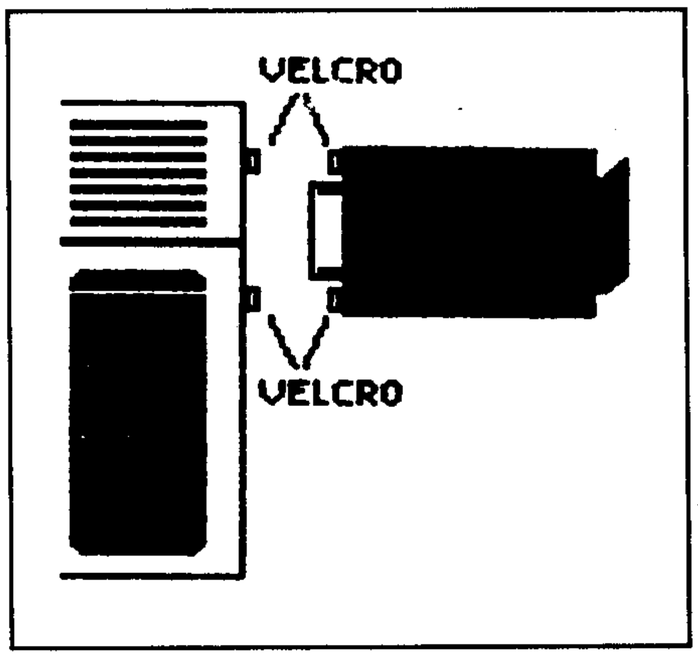
Velcro to the rescue

This item is by Steve Burns of the Bluegrass 99ers User Group. We saw it in the Spirit of 99, the newsletter of the Central Ohio Ninety-Niners.

Sometimes a simple, straightforward solution is the best. Here are two examples of quite different problems that I solved in similar ways. Both took only seconds and have worked quite well.

The first problem was one that is common to nearly everyone who owns a TI and expansion box. The heavy connector and "firehose" cable that plugs into the side of the console frequently comes loose when the console is moved. This fix requires only a small piece of adhesive-backed Velcro. Cut two small strips to fit on either side of the connector and place them as shown in the illustration. The Velcro will help prevent the firehose from pulling loose, even when the console is scooted all over the desk. This is cheap, easy and makes no permanent modification to either console or cable.

Another problem I had was using pinfeed labels with my NX-1000 printer. Although the printer should have handled them with no trouble, they kept jumping



off the pins and jamming. The NX-1000 depends on little plastic covers to hold the labels on the pins. I took some adhesive-backed sponge rubber (such as is used for weatherstripping) and placed it on top of the plastic pin covers so that when the rear printer cover is snapped in place, it prevents the little pinfeed covers from flipping

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User Notes

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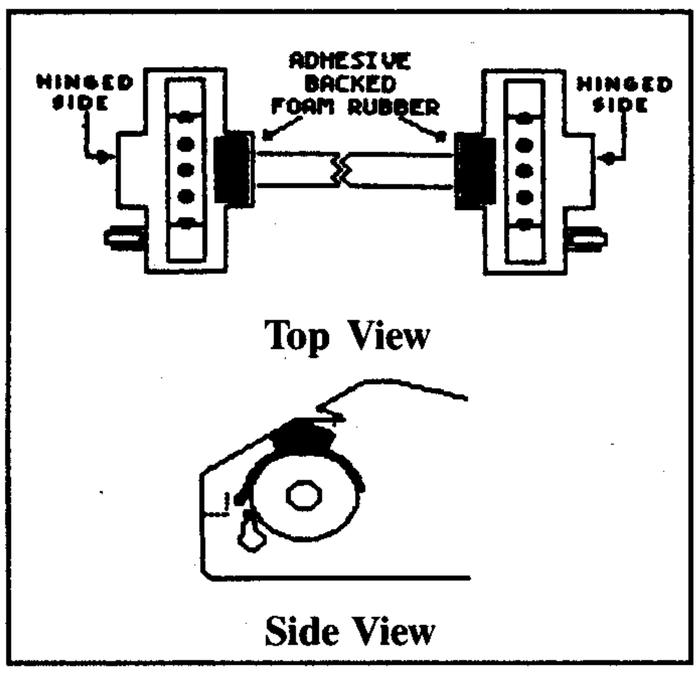
up as the labels advance through. The labels now feed through flawlessly.

Roanoke UG address

The Roanoke Valley 99er Users Group has a new mailing address. Write the group at 18 Benbow Circle, Roanoake VA 24012.



Saving paper with TI-Writer

This item appeared in the LA99ers Top-Ics newsletter. The newsletter credits it to the North Country 99ers.

If you wish to prevent the form feed at the end of printing when using the TI-Writer Formatter, make the last line of your text ".PL1". This will suppress the form feed, but do not forget to reset the .PL if you have another document to print.

Tips to make things a little easier

These items appeared in the Spirit of 99ers newsletter.

• In Extended BASIC, instead of entering OLD CS1 when loading a program from a cassette, enter RUN "CS1". After it is finished loading, the program will automatically execute.

• To speed up the loading of Infocom games, do not use Extended BASIC. Use the Mini-Memory Module or Editor/Assembler instead. To use these, select the LOAD and RUN option and type DSK1.BOOT. When this had finished loading, press Enter until you get the program name, then type START. With Mini-Memory you will get an error after BOOT loads but keep pressing Enter and proceed as above.

• If you have Extended BASIC and 32K, type the following in as the last line of your program: CALL INIT :: CALL PEEK(2,A,B) :: CALL LOAD(-31804,A ,B). This will return you to the title screen when the program has ended.

• To disable the QUIT key (FCTN=) type in CALL INIT :: CALL LOAD(-31806,16) and hit Enter. You must have Extended BASIC and 32K to do this.

Characters you can use in filenames

The following article appeared in ROM, the newsletter of the User Group of Orange County California. The information is by Jim Swedlow. We found it in TI*mes, the newsletter of the TI99/4A User's Group of the United Kingdom. The item was edited by Stephen Shaw.

The disk controller book says that TI filenames can contain any character between ASCII 32 and 95, except space and period. Having seen other characters used, I decided to test this. I wrote a simple program to open a file, print something, close the file, open it again, read the text, close it and then delete the file. Here is the program:

```
100 FOR I=0 TO 255 :: ON ERR
OR 190
110 OPEN #1:"DSK1."&CHR$(I)
120 PRINT #1:STR$(I)
130 CLOSE #1
140 OPEN #1:"DSK1."&CHR$(I)
150 INPUT #1:A$
160 IF A$<>STR$(I)THEN PRINT
 "BAD READ IN";I
170 CLOSE #1:DELETE
180 NEXT I :: STOP
190 ON ERROR 210
200 CLOSE #1:DELETE
210 PRINT "FILE ERROR IN";I
220 RETURN 180
```

Note line 170 — CLOSE #1:DELETE. The DELETE command causes your disk controller to delete the file after it is closed. This was necessary as your TI will allow only 127 files per disk and if I didn't delete the files, the limit would have been reached.

So what were the unacceptable filenames? Everything over ASCII 12. bombed out, as did zero, 32 (space) and 46 (period). Everything else worked, including lowercase.

This information is valid for a TI and CorComp controller but was not tested using a Myarc controller.

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