Covering the TI99/4A and the Myarc 9640

MICROpendium

Volume 9 Number 9 October 1992 $2.50

Halloween in Chicago

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128K Memory System from Asgard

See Page 13

Chemical Elements ☐ Puzzles Pegged ☐ Sounds of the TI
News, Views and Reviews

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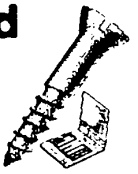

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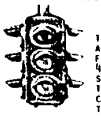

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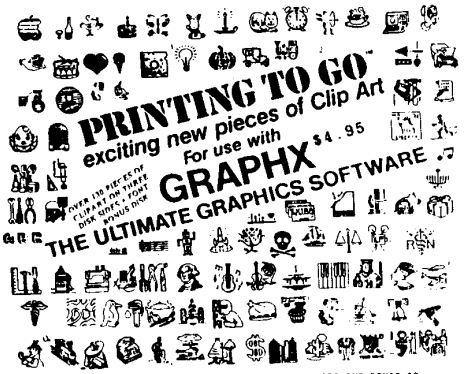

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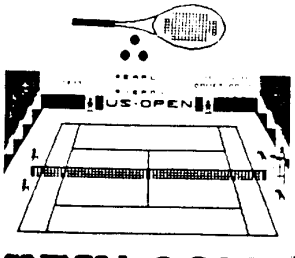

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*READ THIS

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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Comments

Why 32 pages?

This is a question that's been asked by a lot of our readers, and they deserve an answer.

First, our advertising revenue has dropped substantially between 1991 and 1992. Advertising is what allows magazines to large numbers of pages. Without it, the page count goes down. Advertising subsidizes subscriptions, it's as simple as that. And when the advertising drops, so does the subsidy for subscribers.

Second, circulation revenues have been declining, but not at the rate of our advertising revenues. We see a leveling off of this decline, but we don't see any increase.

Third, our per copy cost for bulk orders from user groups are only $1.25 per copy, including postage. During the fat years we were able to subsidize these orders, but now they are dragging us down.

WHAT CAN BE DONE?

We could raise our subscription rate from the current $25 per year in the hopes of generating enough revenue to increase the number of pages to 40 per issue. Our printer uses increments of eight pages, which makes 40 the next step up from 32. To do this, we would have to raise the rates enough to cover the cost of our writers, additional printing costs and additional postage costs. To make this work, the subscription rate would have to go up by $10 per year.

Also, user groups would have to pay more than half-price for the magazine, perhaps 75 percent of a full subscription.

Of course, subscribers would have to be willing to pay $35 per year for a subscription. User groups would have to be willing to pay 75 percent rather than 50 percent of the cost of the magazine. And we would need to have close to the current average level of advertising support. Given these things, we would be able to afford to print 40-page magazines again.

Obviously, I'd love to publish 40 pages. We've got tons of stuff that piles up waiting for space to be printed. This includes articles, programs, tutorials, you name it. But the decision isn't mine. It's yours. If you think a 40-page magazine is worth the extra cost, then let us know. Just as importantly, we'd also like to hear from those who would be opposed to a $35 annual subscription price. If there are a substantial number of those who would oppose it, we wouldn't do it. As I said, to make it work we have to have the support of all of our readers.

But have no fear. MICROpendium will continue publishing. The subject we're discussing today isn't about whether to publish or how long but how much. In the long run, you'll get what you're willing to pay for. Now, it's up to you to let us know.

—JK

BUGS & BYTES

PC Emulator project promoted down under

Never say that Mike Wright isn't willing to go far to get his PC emulator project, announced in the August 1992 MICROpendium, going. This summer Wright, who is a member of the Boston Computer Society, was in Brisbane, Australia, discussing the project at a meeting of a user group there. Wright's software project will allow a PC to emulate a TI.

Wright says he received 50 letters from people interested in the project. Although the number isn't very high, "people are sending much more money than I want. I don't want money, I want people." He and Mark Van Coppenole will show the emulator at the Chicago fair. He plans to release the software in three stages: I/O routines, video (for sprites), and sound and speech. He notes that "I would like to do this ... but it's got to be worthwhile doing it. By worthwhile, I mean there has to be a lot of (interested) people out there."

Wright says he'll be releasing his plan to those who wrote to him last month. At the show he intends to use the emulator software to reconfigure a PC into a TI99/4A or a TI99/4.

SCSI to run at Faire; Accelerator 'dead'

Though Horizon Computing and Western Horizon Technology's proposed SCSI interface still lacks software to bring it to the market, according to Bud Mills a prototype will be up and running by the Chicago TI International World's Faire.

Mills says the company's 4000 cards will be shipping by the time you read this.

However, the Accelerator "on hold" from Don O'Neil at Western Horizon was recently pronounced "dead" in a message by O'Neil on Delphi's TI-Net.

Where's OPA?

Several complaints have been received here and posted on computer bulletin boards regarding delays in delivery of products from Oasis Pensive Abacutors (OPA) in Canada.

First Draft

By Arthur Gibson

TI-99/4A owners use their computers for *word processing* more then anything else. Over the years, Asgard Software has tried, and usually succeeded in making word processing easier and more powerful. Our *Spell It!* spelling checker is the standard by which all others are measured, and our *Screen Preview* has helped many see what they have written before they print it.

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Feedback

Shortest way may not be user-friendliest

I have never written to the MICROpendium before, and perhaps I should be chastised for that, but the comments of Mr. Merle Vogt of Von Ormy, Texas, in the August User Notes may be an indication of what's wrong (if anything) with the TI community, and literally forces me to reply.

I don't know if Merle is related to my friend, Ed Machonis, father of Tinygrams, or not, but he seems to share a desire to shorten programs at the sacrifice of user friendliness, utility and other useful purposes.

I do not think anyone should complain about the "complexity" of a program that has user prompts and docs and other user friendliness, then go on to substitute another more complex problem (algorithm), which does less and actually takes more bytes, for the equivalent operational part. Arrays are not simple for most people.

If brevity is the soul of Mr. Vogt, then why not just the following?:

```
1 B=1
2 C=B+A :: A=B :: B=C :: PRINT C;
:: GOTO 2
```

Note that the above does not STOP at a mere 48 Fibonacci numbers. Notice, also, the better print format. I do not know why Merle chose that limit, since he did not choose to let the user pick the limit. I have very little use for authors who make such decisions for me. Like telling me which drive to put a disk in, instead of asking where it is.

Earl Raguse
Huntington Beach, California

Why 32 pages?

I've been wondering why MICROpendium has dropped down to 32 pages. It seems as if it has been like this for about the last six months.

I am not the only one who feels this way. Maybe you could answer this question in the next issue.

Joseph Stomiany
La Mirada, California

The amount of paid advertising, including classifieds, has dropped substantially in recent months, with the result that it is not cost-effective to publish a larger issue. The reason you can get fatter magazines on other computers (as well as on non-computer topics) for a lower subscription price is their greater advertising volume (and higher advertising rates) which would be unrealistic for the TI market. In some cases, these magazines also have economies of scale from being part of much larger publishing concerns, as well. — Ed.

Review gets response

Thank you for reviewing my new program, GENeric DIRectory, in the August 1992 issue. I really felt the cover of the issue was more appropriate than intended since you were helping me to teel the world that the TI99 now has GEN/DIR (pronounced "gender"). I would like to clear up a few minor points that might cause some confusion.

In your review, you stated that it would be possible to display the disk directory in 80 columns, i.e. with a Geneve. Actually the program is written for TIMODE on the Geneve, and no matter how it is run it will have a 40-column screen. The directory written as a file is 80 columns and will display on the 80-column screen with the appropriate editor.

Also, there is a slight misunderstanding in point 5, "Delete File With Bad Sectors." This is not to delete the file called "BADSECTORS"; this option deletes any user file that contains bad sectors, and keeps the bad sectors "in use."

It would be worthwhile to give a brief comment about who would be interested in these two independent programs and what they would do for them. The directory program and the disk cleanup program are written primarily for the people who like to experiment or who like to do systems projects or who like to write programs in any language. I also find it useful when using programs I am not familiar with, such as those from a club's library. I would like to try to give you an idea of what each program can do for you.

DISK DIRECTORY PROGRAM

This program started as a simple directory program that would provide the user with all the generic information about each file that I could manually (with some work) figure out by looking at sectors on the disk. Also a real need exists to be able to tell when a file is created or updated (old stuff on the Geneve). I then put the date and hour in the file completely compatible with the Geneve date/time so a user is able to date his files on the TI and have any Geneve see the same dates and vice versa; the dates of any files dated on the Geneve can be readily seen on a TI99 now.

Next I wanted to let the user describe each file for documentation. I discovered that DSKU already did that, so I attempted to make these file/entry descriptions as nearly compatible with DSKU as possible. the screen constraints I had limited my descriptions to 29 characters, while I believe DSKU allows 35 (I apologize for that inconsistancy). Of course, DSKU allows only one description per file. GEN/DIR allows a description for each entry name in an object file or one for each file that is not an object file. This is possible by having the descriptions both in the header sections and in a DV80 file on the disk.

The directory information allows the user to know whether an object file can be used in Extended BASIC or must be loaded with Editor/Assembler Opt. 3. When there is a PGM file, GEN/DIR tells the user whether it is an assembly program, a console BASIC or Extended BASIC program or data for another program (for example, TI-Artist pictures are DATA PGM files). A DV80 file of documentation about half the time needs to be printed by the FORMATTER. GEN/DIR tells the user if there are FORMATTER commands in the front of the file or not. It also displays on the screen a concise sector map showing which sectors each file is using.

The programmer information provides the user with memory requirements to run programs and object files, indicating whether they are absolute or relocatable loaded.

A year or so before I started writing GEN/DIR, I wanted to combine two programs into one, DISKFIXER and DISKO, and write a menu to select either. The work I went through to do this consisted in noting one was absolute addressed, the other

(See Page 9)

Feedback

Shortest way may not be user-friendliest

I have never written to the MICROpendium before, and perhaps I should be chastised for that, but the comments of Mr. Merle Vogt of Von Ormy, Texas, in the August User Notes may be an indication of what's wrong (if anything) with the TI community, and literally forces me to reply.

I don't know if Merle is related to my friend, Ed Machonis, father of Tinygrams, or not, but he seems to share a desire to shorten programs at the sacrifice of user friendliness, utility and other useful purposes.

I do not think anyone should complain about the "complexity" of a program that has user prompts and docs and other user friendliness, then go on to substitute another more complex problem (algorithm), which does less and actually takes more bytes, for the equivalent operational part. Arrays are not simple for most people.

If brevity is the soul of Mr. Vogt, then why not just the following?:

```
1 B=1
2 C=B+A :: A=B :: B=C :: PRINT C;
:: GOTO 2
```

Note that the above does not STOP at a mere 48 Fibonacci numbers. Notice, also, the better print format. I do not know why Merle chose that limit, since he did not choose to let the user pick the limit. I have very little use for authors who make such decisions for me. Like telling me which drive to put a disk in, instead of asking where it is.

Earl Raguse
Huntington Beach, California

Why 32 pages?

I've been wondering why MICROpendium has dropped down to 32 pages. It seems as if it has been like this for about the last six months.

I am not the only one who feels this way. Maybe you could answer this question in the next issue.

Joseph Stomiany
La Mirada, California

The amount of paid advertising, including classifieds, has dropped substantially in recent months, with the result that it is not cost-effective to publish a larger issue. The reason you can get fatter magazines on other computers (as well as on non-computer topics) for a lower subscription price is their greater advertising volume (and higher advertising rates) which would be unrealistic for the TI market. In some cases, these magazines also have economies of scale from being part of much larger publishing concerns, as well. — Ed.

Review gets response

Thank you for reviewing my new program, GENeric DIRectory, in the August 1992 issue. I really felt the cover of the issue was more appropriate than intended since you were helping me to teel the world that the TI99 now has GEN/DIR (pronounced "gender"). I would like to clear up a few minor points that might cause some confusion.

In your review, you stated that it would be possible to display the disk directory in 80 columns, i.e. with a Geneve. Actually the program is written for TIMODE on the Geneve, and no matter how it is run it will have a 40-column screen. The directory written as a file is 80 columns and will display on the 80-column screen with the appropriate editor.

Also, there is a slight misunderstanding in point 5, "Delete File With Bad Sectors." This is not to delete the file called "BADSECTORS"; this option deletes any user file that contains bad sectors, and keeps the bad sectors "in use."

It would be worthwhile to give a brief comment about who would be interested in these two independent programs and what they would do for them. The directory program and the disk cleanup program are written primarily for the people who like to experiment or who like to do systems projects or who like to write programs in any language. I also find it useful when using programs I am not familiar with, such as those from a club's library. I would like to try to give you an idea of what each program can do for you.

DISK DIRECTORY PROGRAM

This program started as a simple directory program that would provide the user with all the generic information about each file that I could manually (with some work) figure out by looking at sectors on the disk. Also a real need exists to be able to tell when a file is created or updated (old stuff on the Geneve). I then put the date and hour in the file completely compatible with the Geneve date/time so a user is able to date his files on the TI and have any Geneve see the same dates and vice versa; the dates of any files dated on the Geneve can be readily seen on a TI99 now.

Next I wanted to let the user describe each file for documentation. I discovered that DSKU already did that, so I attempted to make these file/entry descriptions as nearly compatible with DSKU as possible. the screen constraints I had limited my descriptions to 29 characters, while I believe DSKU allows 35 (I apologize for that inconsistancy). Of course, DSKU allows only one description per file. GEN/DIR allows a description for each entry name in an object file or one for each file that is not an object file. This is possible by having the descriptions both in the header sections and in a DV80 file on the disk.

The directory information allows the user to know whether an object file can be used in Extended BASIC or must be loaded with Editor/Assembler Opt. 3. When there is a PGM file, GEN/DIR tells the user whether it is an assembly program, a console BASIC or Extended BASIC program or data for another program (for example, TI-Artist pictures are DATA PGM files). A DV80 file of documentation about half the time needs to be printed by the FORMATTER. GEN/DIR tells the user if there are FORMATTER commands in the front of the file or not. It also displays on the screen a concise sector map showing which sectors each file is using.

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(See Page 9)

BASIC

Chemical elements

By REGENA

I have had several requests over the years for a program to memorize the symbols for chemical elements. I have resisted because I thought that if you have a copy of the periodic table there would be no need for memorization. However, teachers still seem to insist students learn symbols and test several times to make sure students know symbols and the corresponding chemical elements.

This month's program can help a student study for such a memorization test. There are several options in the program. First, you can simply see a list of all the chemical elements (as of mid-1992). It will list the atomic number, the chemical symbol, the name of the chemical element and the atomic weight (1992 sources of information).

There are two types of quizzes — first, given the symbol, the user needs to type the name of the chemical element; and second, the name of the element is given and the user needs to type the symbol.

The quiz may consist of the first three lines of the periodic table (elements 1-18), or 40 common elements, or all 110 elements.

The 40 common elements are from my son's current list of common elements he needed to study this year. You may change the list by some program editing. Line 150 defines NCE, the number of common elements. The DATA statements in Lines 170-410 list the elements in numeric order, and each element has the symbol, the name of the element, the atomic element, then a flag number 1 or 0. The flag number is 1 if the element is to be included in the list of common elements and 0 if it is not. To put in your own list, change Line 150, then look carefully at the DATA statements and put in the correct flag numbers.

Most chemistry books suggest a list of common elements, but that list has changed over the years — my old high school book had a list of 40 elements, but several of them were different from my son's book.

You may notice that I use CALL KEY(0,K,S). There are also instructions on the screen about whether the Alpha Lock key needs to be up or down. When you type the symbols, the Alpha Lock key needs to be up, and you need to use the Shift key for the capital letters. If you execute a CALL KEY (3,K,S), an INPUT statement will allow only capital letters. A CALL KEY (0,K,S) allows capital and small letters to be input.

I wasn't sure what type of scoring mechanism would be appropriate. I simply counted the number of guesses, and the number of correct elements and number of guesses is shown on the screen for each problem. At the end of the quiz, the total number of guesses is shown. The object would be to finish the quiz in a minimum number of guesses.

If an answer is incorrect, the correct answer is shown, and that element will appear again in the quiz. The quiz ends when all elements have been answered correctly.

Lines 560-600 are a subroutine to wait for the user to press the Enter key before the program continues.

Lines 610-680 are a subroutine to read in the data for the chemical elements. NJ is the number of elements. For the first three lines of the periodic table, NJ=18; for all the elements, NJ=110.

Lines 970-1220 are the subroutine for the quiz with the element given and the user needs to type the symbol.

Lines 1230-1320 are the subroutine to print the list of elements.

Lines 1330-1430 present the option for the type of quiz to be presented. Line 1440 branches for the number of elements in the quiz. Lines 1450-1480 are the programming for the quiz of the first three lines of the periodic table. Lines 1630-1660 are for the quiz of all the elements.

If you wish to save typing effort, you may receive 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 "CHEMICAL ELEMENTS" for the TI and whether you want cassette or diskette.

CHEMICAL ELEMENTS

```
100 REM CHEMICAL ELEMENTS !1
41
110 REM BY REGENA !071
120 CALL CLEAR !209
130 OPTION BASE 1 !137
140 DIM A$(110),N$(110),W$(1
10)!160
150 NCE=40 !194
160 PRINT "  ** CHEMICAL ELE
MENTS **": : : :!043
170 DATA H,HYDROGEN,1.0079,1
,He,HELIUM,4.00260,1,Li,LITH
IUM,6.941,1,Be,BERYLLIUM,9.0
1218,0,B,BORON,10.81,0 !171
180 DATA C,CARBON,12.011,1,N
,NITROGEN,14.0067,1,O,OXYGEN
,15.9994,1,F,FLUORINE,18.998
4,1,Ne,NEON,20.179,1 !187
190 DATA Na,SODIUM,22.9898,1
,Mg,MAGNESIUM,24.305,1,Al,AL
UMINUM,26.9815,1,Si,SILICON,
28.0855,1 !204
200 DATA P,PHOSPHORUS,30.973
8,1,S,SULFUR,32.06,1,Cl,CHLO
RINE,35.453,1,Ar,ARGON,39.94
8,1,K,POTASSIUM,39.0983,1 !2
26
210 DATA Ca,CALCIUM,40.08,1,
Sc,SCANDIUM,44.9559,0,Ti,TIT
ANIUM,47.88,0,V,VANADIUM,50.
9415,0 !237
220 DATA Cr,CHROMIUM,51.996,
1,Mn,MANGANESE,54.9380,1,Fe,
IRON,55.847,1,Co,COBALT,58.9
332,1,Ni,NICKEL,58.69,1 !050
230 DATA Cu,COPPER,63.546,1,
Zn,ZINC,65.39,1,Ga,GALLIUM,6
9.72,0,Ge,GERMANIUM,72.59,0,
As,ARSENIC,74.9216,0 !165
240 DATA Se,SELENIUM,78.96,0
,Br,BROMINE,79.904,1,Kr,KRY
TON,83.80,1,Rb,RUBIDIUM,85.4
678,0,Sr,STRONTIUM,87.62,1 !
255
```

(See Page 11)

REGENA ON BASIC—

(Continued from Page 10)

```
250 DATA Y,YTTRIUM,88.9059,0
,Zr,ZIRCONIUM,91.224,0,Nb,NI
OBIUM,92.9064,0,Mo,MOLYBDENU
M,95.94,0 !077
260 DATA Tc,TECHNETIUM,(98),
0,Ru,RUTHENIUM,101.07,0,Rh,R
HODIUM,102.906,0,Pd,PALLADIU
M,106.42,0 !094
270 DATA Ag,SILVER,107.868,1
,Cd,CADMIUM,112.41,0,In,INDI
UM,114.82,0,Sn,TIN,118.71,1,
Sb,ANTIMONY,121.75,0 !074
280 DATA Te,TELLURIUM,127.60
,0,I,IODINE,126.905,1,Xe,XEN
ON,131.29,0,Cs,CESIUM,132.90
5,0,Ba,BARIUM,137.33,1 !175
290 DATA La,LANTHANUM,138.90
55,0,Ce,CERIUM,140.12,0,Pr,P
RASEODYMIUM,140.908,0,Nd,NEO
DYMIUM,144.24,0 !123
300 DATA Pm,PROMETHIUM,(145)
,0,Sm,SAMARIUM,150.36,0,Eu,E
UROPIUM,151.96,0,Gd,GADOLINI
UM,157.25,0 !191
310 DATA Tb,TERBIUM,158.925,
0,Dy,DYSPROSIUM,162.50,0,Ho,
HOLMIUM,164.930,0,Er,ERBIUM,
167.26,0 !188
320 DATA Tm,THULIUM,168.934,
0,Yb,YTTERBIUM,173.04,0,Lu,L
UTETIUM,174.967,0,Hf,HAFNIUM
,178.49,0 !051
330 DATA Ta,TANTALUM,180.948
,0,W,TUNGSTEN,183.85,1,Re,RH
ENIUM,186.207,0,Os,OSMIUM,19
0.2,0,Ir,IRIDIUM,192.22,0 !0
18
340 DATA Pt,PLATINUM,195.08,
1,Au,GOLD,196.967,1,Hg,MERCU
RY,200.59,1,Tl,THALLIUM,204.
383,0,Pb,LEAD,207.2,1 !183
350 DATA Bi,BISMUTH,208.980,
0,Po,POLONIUM,(209),0,At,AST
ATINE,(210),0,Rn,RADON,(222)
,1,Fr,FRANCIUM,(223),0 !011
360 DATA Ra,RADIUM,226.025,1
,Ac,ACTINIUM,227.028,0,Th,TH
ORIUM,232.038,0,Pa,PROTACTIN
IUM,231.036,0 !192
370 DATA U,URANIUM,238.029,1
,Np,NEPTUNIUM,237.048,0,Pu,P
LUTONIUM,(244),0,Am,AMERICIU
M,(243),0 !012
380 DATA Cm,CURIUM,(247),0,B
k,BERKELIUM,(247),0,Cf,CALIF
ORNIUM,(251),0,Es,EINSTEINIU
M,(252),0,Fm,FERMIUM,(257),0
 !220
390 DATA Md,MENDELEVIUM,(258
),0,No,NOBELIUM,(259),0,Lr,L
AWRENCIUM,(260),0,Unq,UNNILQ
UADIUM,(261),0 !215
400 DATA Unp,UNNILPENTIUM,(2
62),0,Unh,UNNILHEXIUM,(263),
0,Uns,UNNILSEPTIUM,(262),0,U
no,UNNILOCTIUM,***,0 !168
410 DATA Une,UNNILENNIUM,***
,0,Uun,UNUNUNIUM,***,0 !188
420 CALL HCHAR(23,3,32,28)!2
28
430 PRINT "CHOOSE:" !101
440 PRINT :"1  LIST ELEMENTS
" !082
450 PRINT :"2  QUIZ, TOP 3 T
ABLE LINES" !162
460 PRINT :"3  QUIZ,";NCE;"C
OMMON ELEMENTS" !098
470 PRINT :"4  QUIZ, ALL ELE
MENTS" !140
480 PRINT :"5  END PROGRAM"
!170
490 CALL KEY(0,K,S)!187
500 IF (K<49)+(K>53)THEN 490
 !001
510 CALL CLEAR !209
520 C1=K-48 !117
530 ON C1 GOSUB 1230,1330,13
30,1330,1670 !082
540 CALL CLEAR !209
550 GOTO 430 !254
560 PRINT : :"PRESS <ENTER>
TO CONTINUE" !211
570 CALL KEY(0,K,S)!187
580 IF K<>13 THEN 570 !049
590 CALL CLEAR !209
600 RETURN !136
610 C$="" !236
620 FOR J=1 TO NJ !215
630 C$=C$&CHR$(J)!209
640 READ A$(J),N$(J),WT$,FL
!086
650 PRINT :A$(J);" ";N$(J)!2
30
660 NEXT J !224
670 CALL CLEAR !209
680 RETURN !136
690 ON CH GOTO 700,970 !124
700 PRINT "MAKE SURE THE <AL
PHA LOCK>  KEY IS DOWN." !18
9
710 PRINT :"A CHEMICAL SYMBO
L WILL BE   PRINTED.  TYPE I
N THE NAME  OF THE ELEMENT A
ND THEN     PRESS <ENTER>."
!218
720 PRINT : : : :!112
730 NG=0 !076
740 SC=0 !077
750 FOR J=1 TO NJ !215
760 PRINT SC;"ELEMENTS":"NUM
BER OF GUESSES: ";NG: : : :
:!138
770 RANDOMIZE !149
780 E=INT(RND*LEN(C$)+1)!061
790 R=ASC(SEG$(C$,E,1))!170
800 PRINT A$(R): : :!223
810 INPUT E$ !251
820 NG=NG+1 !163
830 IF E$=N$(R)THEN 870 !190
840 PRINT : :"THE CORRECT EL
EMENT FOR ";A$(R);" IS ";N$(
R): : :!128
850 GOSUB 560 !130
860 GOTO 760 !073
870 PRINT : :"CORRECT": : :!
005
880 C$=SEG$(C$,1,E-1)&SEG$(C
$,E+1,NJ)!148
890 SC=SC+1 !165
900 GOSUB 560 !130
910 NEXT J !224
920 CALL CLEAR !209
930 PRINT "THERE WERE";NJ;"E
LEMENTS." !147
940 PRINT "YOU GUESSED";NG;"
TIMES.": : : :!233
950 GOSUB 560 !130
960 RETURN !136
970 PRINT "RELEASE THE <ALPH
A LOCK> KEYSO IT IS 'UP'.":"
USE THE <SHIFT> KEY FOR":"CA
PITAL LETTERS." !225
980 PRINT :"THE NAME OF A CH
EMICAL":"ELEMENT WILL BE GIV
EN." !030
990 PRINT :"TYPE THE SYMBOL
THEN PRESS  <ENTER>.": : : :
!171
1000 NG=0 !076
1010 SC=0 !077
1020 FOR J=1 TO NJ !215
1030 PRINT SC;"ELEMENTS":" N
UMBER OF GUESSES =";NG: : :
```

(See Page 12)

REGENA ON BASIC —

(Continued from Page 11)

```
:!249
1040 RANDOMIZE !149
1050 E=INT(RND*LEN(C$)+1)!06
1
1060 R=ASC(SEG$(C$,E,1))!170
1070 PRINT N$(R): : :!236
1080 INPUT "SYMBOL = ":S$ !2
25
1090 NG=NG+1 !163
1100 IF S$=A$(R)THEN 1140 !2
06
1110 PRINT : :"THE SYMBOL FO
R ";N$(R);" IS ";A$(R): : :!
017
1120 GOSUB 560 !130
1130 GOTO 1030 !089
1140 PRINT : :"CORRECT": : :
!005
1150 SC=SC+1 !165
1160 C$=SEG$(C$,1,E-1)&SEG$(
C$,E+1,NJ)!148
1170 GOSUB 560 !130
1180 NEXT J !224
1190 PRINT "THERE WERE";NJ;"
ELEMENTS." !147
1200 PRINT :"NUMBER OF GUESS
ES =";NG: : :!173
1210 GOSUB 560 !130
1220 RETURN !136
1230 PRINT "CHEMICAL ELEMENT
S": :!145
1240 RESTORE !148
1250 FOR J=1 TO 11 !107
1260 FOR K=10*(J-1)+1 TO 10*
(J-1)+10 !175
1270 READ A2$,N2$,W2$,FL2 !0
92
1280 PRINT :K;A2$;" ";N2$;"
 ";W2$ !249
1290 NEXT K !225
1300 GOSUB 560 !130
1310 NEXT J !224
1320 RETURN !136
1330 PRINT "QUIZ OF CHEMICAL
 ELEMENTS" !077
1340 PRINT : :"CHOOSE:" !207
1350 PRINT :"1  GIVEN SYMBOL
, WRITE NAME" !043
1360 PRINT :"2  GIVEN NAME,
WRITE SYMBOL" !044
1370 PRINT :"3  END PROGRAM"
 !168
1380 CALL KEY(0,K,S)!187
1390 IF (K<48)+(K>51)THEN 13
80 !124
1400 IF K=51 THEN 1670 !194
1410 CH=K-48 !140
1420 RESTORE !148
1430 PRINT : : :"... LOADING
 INFORMATION ..." !085
1440 ON C1-1 GOTO 1450,1490,
1630 !252
1450 NJ=18 !137
1460 GOSUB 610 !180
1470 GOSUB 690 !004
1480 RETURN !136
1490 NJ=0 !079
1500 C$="" !236
1510 FOR J=1 TO 110 !156
1520 READ A1$,N1$,WT$,FL !07
4
1530 IF FL=0 THEN 1590 !130
1540 NJ=NJ+1 !169
1550 A$(NJ)=A1$ !190
1560 N$(NJ)=N1$ !216
1570 PRINT :A1$;" ";N1$ !218
1580 C$=C$&CHR$(NJ)!031
1590 NEXT J !224
1600 CALL CLEAR !209
1610 GOSUB 690 !004
1620 RETURN !136
1630 NJ=110 !179
1640 GOSUB 610 !180
1650 GOSUB 690 !004
1660 RETURN !136
1670 CALL CLEAR !209
1680 END !139
```

LGMA releases Backup Miser for Geneve

LGMA (Little Green Men Associates) Products has released Backup Miser, a hard disk backup utility for the Geneve 9640. The price is $20.

Backup Miser runs under MDOS .97H and later versions of MDOS, and provides compressed backups of a hard disk to one or more floppy disks, according to the manufacturer.

Backup Miser utilizes the same type of LZW compression as ARC, the manufacturer says, and will compress any file that will fit on a floppy in compressed format.

According to the manufacturer, with Backup Miser a user can:

- Back up an entire hard disk to floppies in compressed format.
- Back up any directory or set of subdirectories to any number of floppies in compressed format.
- Back up a hard disk based on files that have changed since a certain date and time.
- Back up any files that match a wild-card pattern (e.g., all __C files).
- Set up six "ignore" patterns (e.g., skip all __X files).
- Back up to any floppy drive.

According to the manufacturer, Backup Miser provides extensive restoration options including:

- Completely restore a hard disk from floppies, including creating subdirectories.
- Restore a set of files to a temporary directory.
- Wild-card restorations (e.g. restore all __C files).
- Restore from any floppy drive.

Backup Miser supports all four floppy drive types, according to the manufacturer: single-sided, single density; double-sided, single density (normal TI controller); double-sided, double density; and double-sided, quad density.

Backup Miser is a GenBench Shell application and contains the same user interface as GenBench Shell.

The manufacturer says Backup Miser "remembers" file types and original directories for file restorations. Backup Miser supports the "pre-clean" method to gain optimal file compression, the manufacturer says, and provides on-line help capability.

System requirements are Geneve 9640 (no MEMEX required), Myarc Hard and Floppy Disk Controller and at least one floppy disk and one hard disk.

To order write LGMA Products, 5618 AppleButter Hill Rd., Coopersburg, PA 18036.

Asgard offers new memory system

Provides 128K of program memory

Asgard Software has released the Asgard 128K Memory System, which the company describes as the first advanced memory system for the TI99/4A designed to be used exclusively as memory for programs and data.

The company has also released a new invoice management program and updated several of its older programs.

The AMS functions as a 32K card with standard 4A software when installed in the Peripheral Expansion Box, according to the company. The company says it will not conflict with any hard or floppy disk controllers and is compatible with some RAMdisks. The card does not need to be configured and uses little power, according to Asgard.

Chris Bobbitt of Asgard says programs designed to work with the card can access up to 128K of CPU memory "simply and with a minium of restrictions on program designs. Memory can be banked in 4K increments, within a few clock cycles, anywhere within the standard 32K memory space available to TI99/4A programs."

He says the design used by AMS is similar to that used in the TI99/8 computer and is accessible to programs written in assembly and GPL.

Example programs with source code as well as documentation are included with the device. The materials were prepared by software designers, Bobbitt notes. He says Asgard will provide necessary information for programming for any software developers who want to take advantage of the AMS' features.

Bobbitt says Asgard will provide "reasonably priced upgrades and even trade-in options" and will work to insure compatibility of software written for AMS with future developments.

The AMS requires a TI99/4A with a Peripheral Expansion Box and a disk systems. It is compatible with all disk controllers, all video cards, and some RAMdisks and memory cards, as well as virtually all other cards for the 4A, Bobbitt says. It is not guaranteed to function with the Myarc or CorComp RAMdisks or the TI, CorComp or Myarc 32K cards. No problems have been encountered with Horizon RAMdisks, Bobbitt says.

To order, send a check or money order for $119.95 (plus $10 shipping and handling in North America, $20 elsewhere for air mail). Allow 4-6 weeks for delivery. Programmers may receive a free packet containing programming information by sending a postcard to Asgard.

INVOICE MANAGEMENT

Asgard has released Invoice Management by Larry Tippett in its Asgard Business Software Series. The program, said to use a "what-you-see-is-what-you-get" approach, allows the user to enter mailing and payment information as well as information for retrieving the invoice later. Once entered, invoices can be stored and recalled singly or in groups. Invoice Management does all calculations, including sales tax and has a built-in four-function calculator, according to the manufacturer.

Invoices can be printed individually or in batches on pre-printed TOPS invoice forms, as Page Pro 99 files or as TI-Writer Formatter files. An option allows printing an envelope for the invoice. A tracking report may be printed for the user.

Invoice Management allows the user to use names and addresses stored in databases created with Asgard's Mail Room, as well as product codes and descriptions from Asgard's scheduled Inventory Management package. The program may be used on its own as well, the manufacturer says.

Invoice Management requires a TI99/4A or Myarc Geneve 9640, a disk system, expanded memory and Extended BASIC. Both 40- and 80-column versions are included. The 80-column version is compatible with both the Geneve and 80-column equipped 4As. A printer is recommended. Suggested retail price is $14.95.

Asgard has released Tris-2 by Jim Reiss, a new version of Tetris for the TI99/4A and Myarc Geneve which the manufacturer says features improved graphics and "mutant" blocks. Mutant blocks are irregularly shaped and change their pattern as they rotate and fall.

Tris 2 is available in cartridge for the TI99/4A of $19.95 or on disk for the Geneve 9640 for $9.95. Owners of the previous version of the cartridge can obtain an update for $8 ($5 with the return of their old cartridge.) Disk users can receive the update for $4.

CLIPIX AND GOFER REVISED

Asgard has released revisions for Clipix and Gofer. Clipix, by Dan Gazsy, is a utility included with Pix Pro, Gofer and Page Pro Composer allowing the user to load Page Pro 99 pictures of any side and "clip" any portion and save it as another picture. It may also be purchased by itself for $7.95. Gofer, also by Gazsy, features a version of Page Pro 99's Columnizer; utilities to modify "page format" files, perform batch conversions of TI-Artist instances to Page Pro 99 format and vice versa; and a batch converter for converting IBM PC PCX-format picture files into Page Pro 99 format. It sells for $14.95. The revisions of Clipix and Gofer correct compatibility problems with the HFDC. HFDC users with prior versions of these prograqms may receive the updated versions by returning their program disks.

For information or to order, write Asgard Software, P.O. Box 10306, Rockville, MD 20859-0306. Add $3 for shipping and handling on all software orders.

MIDI music offered to TI users groups

Harrison Software offers a 45-minute cassette of MIDI music for $2 for the cost of materials and handling to any TI users group, according to Bruce Harrison of the company.

Harrison notes that the tape can be used for "demo" purposes to show off MIDI capabilities to the membership. The music on the cassette is all J.S. Bach music programmed by Dolores P. Werths and made on a MIDI instrument.

Officers of users groups may send $2 for the cassette to Harrison Software, 5705 40th Place, Hyattsville, MD 20781.

THE ART OF ASSEMBLY — PART 20

The sounds of the TI

By BRUCE HARRISON
©1992, Harrison Software

One of the precious "free" gifts included in our beloved TI is the sound chip. This little jewel, with its three main voices and its "noise" generator, makes a wide variety of sound effects possible without any additional hardware required. Only two PC manufacturers have seen fit to include such capability: IBM in the now orphaned PCjr, and Tandy in their 1000 series of PCs. Both of those chose to use the exact same TI chip that's in the 99/4A.

On the TI, one can make some very good sounds, and of course even music, from BASIC or Extended BASIC. Even though the sound is made in durations of 1/60 second, some really good music has been produced that way. (On the above-mentioned PCs, sounds in basic are timed in increments of 1/18.2 second, making decent music virtually impossible.)

In the Assembly realm, we have considerably more flexibility available than in the BASIC and XB realms. Here, we can choose not only what sounds we want, but can choose to time their durations in many ways, and even produce simulated "instrument" effects, like harpsichord, flute, snare drum, and so on. The techniques we've used to produce instrument effects could fill more than one installment of this series by themselves, and we'll get to that one day, but for today we'll concentrate on simpler uses for the "sound chip."

THE SOUND LIST METHOD

Let's start with a rather simple application, in which we want a noise or a series of musical notes to occur while something else is happening. TI provided an automatic sound processing capability in the VDP so that one could "have his cake and eat it too". The VDP can be given a list of sounds to produce, and told to start making those, then the computer can go on with other business, looking for keystrokes from the keyboard, or looking for joystick inputs, sprite coincidences, and so on, while the sound list executes "on background". That's certainly a handy feature. It does require the instructions LIMI 2 and LIMI 0 to let the VDP continue its sound processing on an interrupt basis, but that's a small price to pay for the capabilities that it gives us.

Sound lists may be placed in VDP Ram at the beginning of a program, and then activated when needed, without needing to be re-loaded.

The first part of today's sidebar shows one such application, in which the sound lists for three different effects are pre-loaded early in a program and then activated when the program needs them. These particular lists are from the game Scud Busters. In that case, the "in flight" sound can be interrupted at any time by one of the "explosions" depending on what happens to the sprites that are in motion on the screen. The interruption process is very simple. Note that we need not stop the "in flight" effect, but just put the right addresses in place to start the explosion, and processing of the "in flight" effect stops. This will not always be the case, depending which generators were being used by the first sound being processed. There are a couple of "safe" ways of dealing with that possibility. Perhaps the easiest is to put a "shut up" sound at the beginning of each sound list, with a duration of 1. That will shut down all four of the generators for 1/60th of a second before the new sound starts. You can also put "silence" bytes in your first "note" for the new sound to shut off any generators not used by that sound effect, and that will make an "instant" interruption of the previous sound effect. That's the method used in our sidebar source code.

The explosion sound effects are allowed to run for their full duration in all cases, and serve thereby as timers to allow the user time to see the explosion screen display. We mentioned back in number 18 the potential use of sound lists as timers, and here is a practical example of that use.

Each sound list should end with a "zero duration" sound so that it will end without leaving a generator "hanging" when the intended sound ends. You'll notice that each of the sound lists shown ends that way. The content part of a sound list is outlined well enough in the E/A book itself, but you will see some tricks used in our implementation that are not covered in the book. The list beginning at ENDSND, for example, includes a note for generator 3 in the bytes >C2 and >0E, but then sets that generator's volume at silence by >DF. It then sets the noise generator to produce a noise subharmonic of the generator 3 note at maximun volume by sending >E3 and >F0 bytes. During the rest of the list, it alternates the noise generator's response by sending bytes of >F5 and >F3 in successive "notes". Also, the volume of the noise is decayed by changing the noise generator's volume from >F0 down to >FA before the final line in the list, at which all generators are set to silence. This alternation of the "note" and decaying of volume creates a kind of "pulsing" explosion sound with two distinct noises heard while the volume decays. Of course this particular list was the result of a good deal of experimenting to get just the effect we wanted. The byte >E3 is equivalent to BASIC's-4 sound, while the >E5 is equivalent to the BASIC-6 sound. Knowing that can let you use BASIC or XB to experiment with sounds before you try them in a sound list.

Of course if you're going to do that, you must also bear in mind the relationship between durations in BASIC and Assembly sound lists. In this case, the BASIC and Extended BASIC books have lied to you. Those books indicate that you can specify sound durations in milliseconds. This is just not true. Any number of milliseconds you indicate up to and including 16 will produce exactly the same duration of sound, namely 1/60th of a second. Indicating 17 will get you 2/60ths, as will 18, 19, 25, or 30 millseconds. The crossover point from one actual duration to the next is every 16.666... (sixes all the way across the page if you like) milliseconds. We'll leave the math to you, but you can successfully experiment with your sounds in BASIC or XB as long as you remember that the real durations are in 1/60ths of a second, and translate into "milliseconds" for BASIC. We never said this would be easy!

(See Page 15)

THE ART OF ASSEMBLY—

(Continued from Page 14)

As it happens, the examples we've shown all involve use of the noise generator, not the musical voices of generators 1 through 3, but that shouldn't hinder your efforts if you understand the principles involved.

All of the above presupposes that you have an area of the VDP Ram memory that can remain available for the duration of your program. In this case, we simply assigned small blocks of VDP Ram at addresses >2050, >2100, and >2200 for our sound lists, then left those areas untouched during execution of the program. If our program had disturbed those areas, we would have had to reload our sound lists each time we wanted to use them. In most cases you'll find any address above >1000 will do, so long as you don't go beyond >37D7.

There will be cases where the sound list method won't do the job, and for that reason we'll now show at least one more method for "doing sound". Let's start with the assumption that you are using VDP Ram for some purpose that will preclude setting any of it aside for sound lists. You can still use them, but in a different manner. Unfortunately, these methods will not permit a true "background" process for sound, but will require timing loops of some kind in your own code.

DIRECT TO THE GENERATOR

You can send sound defining bytes directly to the sound chip at address >8400, then use your own method to time the durations. For openers, we'll consider a method that uses the exact same sound list as shown in the previous example, but will not load the sound list into VDP Ram. This method will still time the sounds in 1/60th second increments using the VDP Interrupt timer, but will do that timing in the "foreground" program.

As shown in the sidebar starting at label METH2, you'll need a pointer set to the beginning of the sound list. We've used R9 here, but any register that's handy will do. The first byte in the sound list is the number of bytes that constitute the "note" being sent. We take that first byte into R4 and then use R4 as a counter. Each of "count" bytes is then sent to the sound chip at address >8400. The byte immediately after the last "generator" byte is the duration, and here we've put that byte in R4, then right justifed this number in that register. If that number is zero, we are at the end of the sound list, so we simply jump out of the sound section of code. Otherwise, we clear the VDP Interrupt counter, then simply start looping with a LIMI 2 and LIMI 0, and a comparison between R4 and the VDP Interrupt counter. As long as R4 is greater than the value in the counter, we keep repeating the loop. Once the counter gets equal to or more than R4, the sound "note" is finished, so we jump back to process the next "note" in the list. We have used the expression "note" here to mean a set of instructions passed to the sound chip, which includes both note values for the generators and volume val-

(See Page 18)

SIDEBAR 20

```
* TWO METHODS FOR USING SOUND LIST DATA TO PRODUCE SOUND EFFECTS
* FIRST CAN ALLOW SOUNDS TO PROCESS IN BACKGROUND WHILE THE PROGRAM
* PERFORMS OTHER ACTIONS
* CODE BY B. HARRISON
* PUBLIC DOMAIN
*
* THE FOLLOWING HAPPENS AT THE BEGINNING OF THE PGM, TO PRELOAD THE
* SOUND LISTS INTO THE VDP RAM AREAS
*
       LI   R0,>2050      POINT AT FIRST LIST AREA
       LI   R1,SNDDAT     BEGINNING OF FIRST SOUND LIST
       LI   R2,ENDSND-SNDDAT LENGTH OF FIRST SOUND LIST
       BLWP @VMBW         WRITE THAT TO VDP RAM
       A    R2,R1         ADD LENGTH OF FIRST LIST
       LI   R0,>2100      POINT TO VDP RAM AREA FOR SECOND LIST
       LI   R2,LSOUND-ENDSND  LOAD R2 WITH LENGTH OF SECOND LIST
       BLWP @VMBW         WRITE THAT
       A    R2,R1         ADD LENGTH OF SECOND LIST
       LI   R0,>2200      POINT AT ADDRESS FOR THIRD LIST
       LI   R2,BLANK-LSOUND  LENGTH OF THIRD LIST
       BLWP @VMBW         WRITE THAT TO VDP RAM
* PROGRAM CONTINUES
*
* FOLLOWING CODE SECTION STARTS THE "IN FLIGHT" SOUND EFFECT FOR
THE PATRIOT
* WHEN THE PATRIOT MISSILE IS LAUNCHED
*
INFLT  LI   R10,>2200     POINT AT "IN FLIGHT" SOUND LIST
       MOV  R10,@>83CC    MOVE THAT ADDRESS TO >83CC
       SOCB @ONE,@>83FD   TURN ON
       MOVB @ONE,@>83CE   VDP SOUND PROCESSING
COINC  LIMI 2             ALLOW INTERRUPTS
       LIMI 0             THEN SHUT THEM OFF
* A LOOP HERE LOOKS FOR SPRITE COINCIDENCE
* AND FOR THE SCUD TO REACH BOTTOM OF SCREEN
* DEPENDING WHICH HAPPENS, PROGRAM JUMPS TO EITHER CRASH OR CRASH2
*
CRASH
*
* CODE THAT PLACES GRND BURST EXPLOSION EFFECT ON SCREEN GOES HERE
*
       LI   R10,>2100     POINT AT VDP ADDRESS FOR "GROUND BURST"
EFFECT
       JMP  CRASH1        THEN JUMP
CRASH2
*
* CODE THAT MAKES AN AIR BURST ON SCREEN GOES HERE
*
       LI   R10,>2050     POINT AT VDP ADDRESS FOR "AIR BURST"
EFFECT
CRASH1 LIMI 0             STOP INTERRUPTS FOR NOW
       MOV  R10,@>83CC    PLACE SOUND LIST ADDRESS AT >83CC
       SOCB @ONE,@>83FD   THEN START
       MOVB @ONE,@>83CE   VDP SOUND PROCESSING
       LIMI 2             PERMIT INTERRUPTS
SNDLOP MOVB @>83CE,R10    TIMING LOOP FOR THE SOUND
       JNE  SNDLOP        CONTINUES LOOPING UNTIL SOUND LIST HAS
FINISHED
       LIMI 0             DISCONTINUE INTERRUPTS
* PROGRAM CONTINUES WHEN EXPLOSION SOUND ENDS
*
* SECOND METHOD, USES "SOUND LIST" IN MAIN MEMORY, DOES NOT REQUIRE
USE OF
* VDP RAM FOR THE SOUND LIST
*
SOUND  EQU  >8400         DEFINE THE SOUND CHIP ADDRESS
*
*
METH2
       LI   R9,SNDDAT     POINT AT "SOUND LIST" IN RAM
NXTNOT
```

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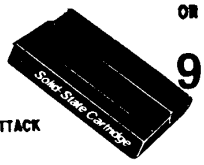

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THE ART OF ASSEMBLY—

(Continued from Page 15)

ues for those generators. As we've mentioned before in this series, the duration here for any one note may not exceed 255, or >FF, which makes a note last 4 1/4 seconds.

There is one trick required to use the direct method. We'll pass that along without knowing why it's so: At the very beginning of the program, before loading your own workspace, you must execute a MOV R11,@ANYWRD instruction. ANYWRD here means just that. You can move R11 to >8300, for example, or to some word location in your own data section. You won't need it again, but if you don't execute that MOV instruction before loading your own workspace, the direct method will not work properly. Please don't ask why this is so. It just is!

Since this method uses the VDP Interrupt counter to time the durations of the notes, the same duration values that were used when we placed the sound list in VDP Ram will work. As before, the last "note" must have a duration of zero to signal that we're at the end of a sound list. We recommend a "note" like this be the last in the list:

BYTE 4,>9F,>BF,>DF,>FF,0

That will "shut down" all four generators in the chip by setting each to a silent volume level.

The code shown for this method can also be set up as a subroutine starting at label NXTNOT, with an RT instruction at label SNDEX. Then one could play different sound lists by:

```
LI    R9,SNDLST
BL    @NXTNOT
```

The subroutine will modify the values in R9 and R4, but will leave all others alone.

MORE EXOTIC METHODS

There are other ways to do the sounds, and once you've crossed the bridge into sending bytes directly to the sound chip, you can do things that were impossible in the "sound list" method. We'll just touch on those today.

First, let's suppose that 1/60th second is too long a duration for you. You want a succession of very swift notes to play, like the strumming of a guitar or lute, or you want some noise like automatic weapons firing in rapid succession. These cases are where the real power of the "direct" method comes into play. Instead of timing durations with the VDP Interrupt timer, you can construct a simple delay loop of your own, and use a word value instead of a byte to do the timing. This way, you can make incredibly short sounds and incredibly long ones without strain, since the "duration" can run from 1 through 65,535, and the amount of time each loop takes can be tailored to your own needs by inserting "time wasters" into the loop. One of our favorites is to do a DIV operation within the timing loop. That wastes time very nicely, and can be used for other purposes related to the sound you're creating. The SRC instruction can also be used for this purpose, and it will serve well.

We of course have used this third method for our "Assembly Music" products, and have been able to fine tune the response of the generators to simulate musical instruments of various kinds. We made changes to the volumes and notes on the generators while a "note" was playing. Thus an instrument like a piano or harpsichord could be simulated by using an exponential decay in volume during each note played. Barry Boone has carried that concept even farther with his SOUND F/X product, to produce spectacular effects and even spoken words in a recognizable voice without a speech synthesiser.

Next month we'll go on with this subject, revealing some of our "trade secrets" used in the Assembly Music that we are known for. That will include at least one of our most advanced "instrument" subroutines.

```
        MOVB  *R9+,R4       GET THE "COUNT" BYTE INTO R4
        SRL   R4,8          RIGHT JUSTIFY IN R4
        JEQ   SNDEX         IF ZERO, GET OUT OF PROCESS
MOVSND
        MOVB  *R9+,@SOUND   MOVE A SOUND DEFINING BYTE TO THE CHIP
        DEC   R4            DECREMENT COUNT OF BYTES IN THIS NOTE
        JNE   MOVSND        IF NOT ZERO, REPEAT PROCESS
        MOVB  *R9+,R4       ELSE GET THE "DURATION" BYTE INTO R4
        SRL   R4,8          RIGHT JUSTIFY IN R4
        JEQ   SNDEX         IF ZERO, THIS IS END OF SOUND LIST, SO GET
OUT
        CLR   @>8378        ELSE CLEAR THE VDP INTERRUPT COUNTER
SNDLOP
        LIMI  2             ALLOW INTERRUPTS BRIEFLY
        LIMI  0             THEN SHUT THEM OFF
        C     R4,@>8378     COMPARE R4 TO VDP INTERRUPT COUNT
        JGT   SNDLOP        IF R4 IS GREATER, WE'RE NOT FINISHED WITH
THIS NOTE
        JMP   NXTNOT        ELSE WE ARE FINISHED, GO BACK FOR NEXT
NOTE
SNDEX
* PROGRAM CONTINUES HERE

*
* IN DATA SECTION, THREE SOUND LISTS
* FIRST MAKES "AIR BURST", SECOND "GROUND BURST", THIRD IS "IN
FLIGHT"
*
SNDDAT
        BYTE 5,>9F,>BF,>DF,>E5,>F2,3
        BYTE 2,>E5,>F0,9
        BYTE 2,>E5,>F2,8
        BYTE 2,>E5,>F4,6
        BYTE 2,>E5,>F6,4
        BYTE 2,>E5,>F8,2
        BYTE 2,>E5,>FA,1
        BYTE 1,>FF,0
ENDSND
        BYTE 7,>9F,>BF,>C2,>0E,>DF,>E3,>F0,3
        BYTE 2,>E5,>F0,15
        BYTE 2,>E3,>F2,3
        BYTE 2,>E5,>F2,12
        BYTE 2,>E3,>F4,2
        BYTE 2,>E5,>F4,10
        BYTE 2,>E3,>F6,2
        BYTE 2,>E5,>F6,8
        BYTE 2,>E3,>F8,1
        BYTE 2,>E5,>FA,6
        BYTE 4,>FF,>DF,>BF,>9F,0
LSOUND  BYTE 5,>E4,>F0,>9F,>BF,>DF,12
        BYTE 1,>F1,10
        BYTE 1,>F3,8
        BYTE 1,>F5,7
        BYTE 1,>F8,6
        BYTE 1,>FC,5
        BYTE 1,>FF,0
BLANK   DATA 0              DATA SECTION CONTINUES HERE
```

EXTENDED BASIC (plus)

Puzzles pegged

By BARRY TRAVER
©1992 by Barry Traver

I'm back! It's your puzzle-peg pal with some solutions for you. If last month's peg-puzzle program has been driving you crazy, making you lose your marbles (or pegs?) so to speak, you'll be glad to hear that this month's column has the answers for you. Actually, we'll be adding two types of solutions to last month's program.

First, you'll find puzzle solutions to the specific puzzles contained in the program. If you didn't find solutions of your own, here are solutions to the English puzzles: traditional (including traditional, square, pinwheel, and wall endings), Latin cross, Greek cross, square, pinwheel, wall, fireplace, pyramid of Chefren, pyramid of Cheops, Tiffany lamp, tilted square, pentagon, and Davis jump. And likewise there are solutions to the French puzzles: traditional (including twelve guards, apostles, letter E, final score, lonely cross, and world endings), double-cross, five crosses, octagram, and corner to opposite corner.

Second, you'll find assembly solutions to the slow displays of the earlier version of the program. The file JUMPPEG/S, which provides assembly language versions for the BDDEF, BOARD, ENGLSH, FRENCH, GRAB, and MARK Extended BASIC subprograms in last month's version. I think you'll be impressed by the speed improvement as a result of our extending our XB by substituting these CALL LINKs for the earlier CALLs.

By the way, if you had trouble with "The World" puzzle, it wasn't your fault. A minor bug found its way into the code: line 980 should have read C$,E$=WO$ rather than C$,E$=W$. You may want to fix that error in last month's program. (It will automatically be repaired in this month's program, since I have included a corrected line 980 in the JUMPPEG/M MERGE file.

Next month, I hope to explain what I regard as some interesting features of the code, but for this month, I'll content myself with explaining what you should do to make the new improved version of the program. (If you subscribe to the MICROpendium disks, all the work will have been done for you!)

I'll assume that you saved last month's program as JUMP-A-PEG. This month you should (in Extended BASIC) enter the code for JUMPPEG/M, and save it to disk like this:

(See Page 20)

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EXTENDED BASIC PLUS—

(Continued from Page 19)

SAVE DSK1.JUMPPEG/M, MERGE

Next enter the following three commands:

OLD DSK1.JUMP-A-PEG
MERGE DSK1.JUMPPEG/M
SAVE DSK1.JUMPPEG/M2

Next you should (in the Editor/Assembler) enter the code for JUMPPEG/S and assemble it to create the file JUMPPEG/O. (Important: be sure not to choose the "C" option, because Extended BASIC can work only with UNcompressed object code.) After you have done that, make sure that ALSAVE (from a previous issue of MICROpendium) is also on your main disk in drive one, and then enter the following commands in Extended BASIC:

```
NEW
CALL INIT
CALL LOAD("DSK1.JUMPPEG/O")
CALL LOAD("DSK1.ALSAVE")
CALL LINK("SAVE")
100 REM
```

MERGE DSK1.JUMPPEG/M2
SAVE DSK1.JUMPAPEG2

The result will be a new, improved version of the peg puzzle program with some embedded source code for faster display routines plus data for the solutions to specific puzzles. Until next month, enjoy!

JUMPPEG/M

```
1 CALL CLEAR :: CALL SCREEN(
15):: GOTO 10
2 DATA
5 M$,M1$,M2$,N,N$,O,O$,P$,Q,
Q$,R,R$,S,S$,T$,TC,U,U$,V,V$
,W,W$,WO$,X,X$,Y,Y$,Z,Z$
6 CALL GCHAR :: CALL HCHAR :
: CALL INIT :: CALL KEY :: C
ALL LINK :: CALL LOAD
10 CALL INIT :: CALL LOAD(81
96,63,248):: CALL LOAD(16376
,65,32,32,32,32,255,48)::
 CALL LINK("A")
150 DISPLAY AT(18,1):"CENTER
 OF THE BOARD.":"   IF A PEG
 JUMPS OVER MORE":"THAN ONE
 PEG DURING A TURN,":"THAT SE
QUENCE OF JUMPS IS"
580 CALL CLEAR :: CALL LINK(
"BDDEF"):: CALL LINK("BOARD"
)):: X=K-64 :: IF K=80 THEN Z
=0 :: GOTO 610
790 CALL KEY(3,K,S):: IF S<1
 THEN 790 ELSE IF K<65 OR K>
69 THEN 790 ELSE CALL CLEAR
:: CALL LINK("BDDEF"):: CALL
 LINK("BOARD")
870 DISPLAY AT(24,1):"" :: C
$=H$ :: Y=1 :: GOSUB 1830 ::
 CALL LINK("MARK",C$):: GOTO
 1040
910 CALL KEY(3,K,S):: IF S<1
 OR K<65 OR K>71 THEN 910 EL
SE CALL CLEAR :: CALL LINK("
BDDEF"):: CALL LINK("BOARD")
:: CALL LINK("FRENCH")
980 E=6 :: B$="THE,WORLD" ::
 C$,E$=WO$ :: GOSUB 1700 ::
GOTO 990
1010 DISPLAY AT(24,1):"" ::
```

(See Page 21)

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EXTENDED BASIC PLUS—

(Continued from Page 20)

```
C$=H$ :: Y=1 :: GOSUB 1850 :
: CALL LINK("MARK",C$):: GOT
O 1040
1030 CALL LINK("MARK",E$)::
DISPLAY AT(23,1):" HERE'S WH
AT YOU'RE AFTER!" :: GOSUB 2
030 :: DISPLAY AT(23,1):"":"
" :: CALL LINK("MARK",C$)
1050 DISPLAY AT(24,1):"SHOW
A SOLUTION? (Y/N)  N" :: R=2
4 :: C=25 :: GOSUB 1930 :: D
ISPLAY AT(24,1):"" :: IF N T
HEN 520
1060 IF CHR$(K)="N" THEN V=0
 :: GOTO 1310 ELSE V=1
1070 IF C$=X$ AND E$=R$ THEN
 RESTORE 3010 ELSE IF E$=S$
THEN RESTORE 3040 ELSE IF E$
=Z$ THEN RESTORE 3070 ELSE I
F E$=W$ THEN RESTORE 4000
1110 IF C$=LT$ THEN RESTORE
4020 ELSE IF C$=G$ THEN REST
ORE 4040 ELSE IF C$=FP$ THEN
 RESTORE 4060 ELSE IF C$=J$
THEN RESTORE 4080
1150 IF C$=K$ THEN RESTORE 5
000 ELSE IF C$=LM$ THEN REST
ORE 5020 ELSE IF C$=U$ THEN
RESTORE 5040 ELSE IF C$=P$ T
HEN RESTORE 6010
1190 IF C$=D$ THEN RESTORE 6
030 ELSE IF E$=V$ THEN RESTO
RE 7010 ELSE IF E$=A$ THEN R
ESTORE 7040 ELSE IF E$=LE$ T
HEN RESTORE 8000
1230 IF E$=FS$ THEN RESTORE
8030 ELSE IF E$=LO$ THEN RES
TORE 8050 ELSE IF E$=WO$ THE
N RESTORE 9000 ELSE IF C$=Q$
 THEN RESTORE 9020
1270 IF C$=FX$ THEN RESTORE
9040 ELSE IF C$=O$ THEN REST
ORE 9060 ELSE IF C$=L$ THEN
RESTORE 9090
1300 READ M$ :: M$="    "&M$
1400 ! This line is not need
ed.
1410 IF A=24 AND U=7 THEN U=
17 :: GOTO 1350
1600 CALL LINK("GRAB",T$)::
IF F<>L THEN M=M+1
1710 IF Z=0 THEN IF C$=X$ TH
EN GOSUB 1850 :: CALL LINK("
ENGLSH")ELSE IF C$=F$ THEN G
OSUB 1830 :: CALL LINK("FREN
CH")
1720 IF Z THEN IF X<11 THEN
CALL LINK("ENGLSH")ELSE CALL
 LINK("FRENCH")
1730 CALL HCHAR(3-2*FR,3,32,
11):: CALL HCHAR(5-2*FR,3,32
,11):: CALL LINK("MARK",C$):
: IF Z OR Y THEN RETURN
2999 ! DATA FOR SOLUTIONS
3000 ! ENGLISH TRADITIONAL
3010 DATA 46-44,65-45,57-55,
54-56,52-54,73-53,43-63,75-7
3-53,35-55,15-35,23-43-63-65
-45-25,37-57-55-53,31-33,34-
32,51-31-33,13-15-35
3020 DATA 36-34-32-52-54-34,
24-44
3030 ! ENGLISH SQUARE
3040 DATA 46-44,25-45,37-35,
34-36,57-37-35,45-25,43-45,6
4-44,56-54,44-64,23-43,31-33
,43-23,63-43,51-53,43-63,41-
43,15-35,14-34
3050 DATA 13-33,75-55,74-54,
73-53
3060 ! ENGLISH PINWHEEL
3070 DATA 42-44,23-43,44-42,
24-44,36-34,44-24,46-44,65-4
5,44-46,64-44,52-54,44-64,31
-33,51-31,15-35,13-15,57-55,
37-57,73-53
3080 DATA 75-73
3090 ! ENGLISH WALL
4000 DATA 46-44,43-45,41-43,
64-44-42,24-44,45-43-41,999
4010 ! LATIN
4020 DATA 45-25,43-45,55-35,
25-45,46-44
4030 ! GREEK
4040 DATA 54-74,34-54,42-44-
64,46-44,74-54-34,24-44
4050 ! FIREPLACE
4060 DATA 45-25,37-35,34-36,
57-37-35,25-45,46-44-64,56-5
4,64-44
4070 ! CHEFREN
4080 DATA 53-55-35,33-53,63-
43,44-42,35-33,23-43,42-44
4090 ! CHEOPS
5000 DATA 54-74,45-65,44-42,
34-32-52-54,13-33,73-75-55-5
3,63-43-23-25-45,46-44
5010 ! LAMP
5020 DATA 36-34,56-54,51-53-
33-35-55,65-45,41-43,31-33-5
3-55-35,47-45,44-46,25-45,46
-44
5030 ! TILTED
5040 DATA 55-75,35-55,42-44,
63-43-45-65,33-35-37-57-55-5
3-51-31-33-13-15-35,75-55,74
-54-56-36-34,24-44
6000 ! PENTAGON
6010 DATA 53-51,32-52,51-53,
44-42,23-43,42-44,63-43,25-2
3,45-25,43-45,55-35-33-13-15
-35-37-57-55-53,74-54,53-55,
65-45,46-44
6020 ! DAVIS
6030 DATA 57-55,54-56,52-54,
73-53,43-63,37-57-55-53,35-5
5,15-35,23-43-45-25,13-15-35
,31-33,36-56-54-52-32,75-73-
53,65-63-43-23-25-45
6040 DATA 51-31-33-35-55,999
7000 ! FRENCH TWELVE
7010 DATA 46-44,25-45,44-46,
47-45,26-46,24-44,32-34,44-2
4,14-34,22-24,64-44,56-54,44
-64,74-54,66-64,42-44,63-43,
44-42,41-43
7020 DATA 62-42,43-41,34-14,
45-47,54-74
7030 ! FRENCH APOSTLES
7040 DATA 42-44,63-43,51-53,
31-51,33-31,53-33,23-43,35-3
3-53,14-34,44-24,46-44,26-46
,24-26,47-45,66-46,54-56,46-
66,74-54
7050 DATA 75-55,45-65,53-55,
55-75
7060 ! FRENCH LETTER E
8000 DATA 42-44,62-42,54-52,
73-53,52-54,41-43,22-42,43-4
1,34-32,54-34,56-54,75-55,54
-56,74-54,46-44,26-46,34-36,
13-33,14-34
8010 DATA 15-35,47-45,66-46,
45-47
8020 ! FRENCH FINAL
8030 DATA 64-44,52-54,33-53,
54-52,66-64,46-66,44-46,24-4
4,26-24,46-26,14-34,22-24,34
-14,42-22,62-42,64-62
8040 ! FRENCH LONELY
8050 DATA 24-44,36-34,55-35,
25-45,33-35,53-33,23-43,56-3
6-34,73-53,65-63,53-73,51-53
```

(See Page 22)

MY-BASIC

WHILE...WEND and more

By JIM UZZELL
©1992 DDI Software

This month's demos are based on the proverb "A picture is worth a thousand words."

Even though WHILE...WEND is a simple program, it allows a new routine that isn't available to TIers. The routine displays on-screen what happens when you use PRINT using a comma — PRINT X$,.

The second demo displays information about designing characters in the graphic modes of MY-BASIC and provides formulae for determinig the pixel location that equates to DISPLAY AT or HCHAR or VCHAR when using the drawing commands, such as CALL POINT.

The third demo is a routine that can be added to a program to display a perpetual calendar (through 1999).

All of these programs were created using MY-BASIC V2.99A, MDOS .97H and a Magnavox (8CM515) analog monitor in RGB mode.

WHILE...WEND

```
1 !WHILE..WEND
100 CALL GRAPHICS(3,3)
110 CALL TCOLOR(4,14)
120 DISPLAY AT(13,10):" USIN
G WHILE....WEND TO ILLUSTRAT
E PRINT WITH A COMMA ";
130 CALL TCOLOR(15,0)
140 FOR D=1 TO 7 :: READ D$(
D)
150 IF D=3 THEN CALL TCOLOR(
4,14)
160 DISPLAY AT(15+D,15):D$(D
);
170 IF D=6 THEN CALL TCOLOR(
15,0)
180 NEXT D
190 X=0 :: A=1 :: DIM B$(0,1
6)
200 WHILE X<17
210 READ B$(I,X) :: PRINT B$
(I,X),
220 CALL TCOLOR(15,X) :: X=A
+X
230 WEND
240 CALL TCOLOR(16,6) :: END
250 DATA "100 CALL GRAPHICS(
3,3) :: CALL TCOLOR(15,0)"
260 DATA "110 X=0 :: A=1 ::
DIM B$(0,16)"
270 DATA "120 WHILE X<17"
280 DATA "130 READ B$(I,X) :
: PRINT B$(I,X),"
290 DATA "140 CALL TCOLOR(15
,X) :: X=A+X"
300 DATA "150 WEND "
310 DATA "160 CALL TCOLOR(16
,6) :: END "
320 DATA "USE OF PRINT ","WI
TH A COMMA ","CAUSES A TAB "
,"OF 15 CHARS  ","BUT ONLY
  ","ALLOWS 13 ","CHAR STRI
NG  ","EXCEPT FOR  ","6th T
AB WHICH"
330 DATA "IS 10 CHARS  ","12
34567890123","1234567890","o
r 14x5+10=80","total chars",
,,,
 0  917  1313  1239  5025  1
238  1653  1965  1708  1967
 604  1546  839  1924 1803
515  1674  3116  2104  1407
 2493  2373  1077  2237  469
8  4030  4644 439 TOTAL  545
48
```

CHR DESIGN

```
1 !CHR DESIGN
100 CALL GRAPHICS(3,3)
110 CALL TCOLOR(12,12) :: CL
S
111 CALL CHAR(97,"00007C405C
5050500000FC00DC5050500000FC
00FC000000")
112 CALL CHAR(100,"0000F010D
050505050505C407C0000005050D
C00FC000000")
113 CALL CHAR(103,"505050505
05050505050D010F000000050505
C405C505050")
114 CALL CHAR(106,"5050DC00D
C5050505050D010D0505050")
120 CALL TCOLOR(2,12) :: DIS
PLAY AT(22,23):"acccccccccccc
ccccccccccccccccccccd"; ::
DISPLAY AT(23,23):"g"; :: DI
SPLAY AT(23,56):"g"; :: CALL
 TCOLOR(9,12)
122 DISPLAY AT(23,24):"UNDER
```

(See Page 23)

EXTENDED BASIC PLUS—

(Continued from Page 21)

```
,32-52,53-51
8060 ! FRENCH WORLD
9000 DATA 42-44,22-42,24-22,
63-43,33-53,65-63,62-64,42-6
2,26-24,46-26,34-36,55-35,36
-34,53-55,56-54
9010 ! DOUBLEX
9020 DATA 54-52-32,22-42,33-
53,41-43-63,74-54,62-64,45-6
5,54-74,66-64,74-54,35-33,54
-34,33-35,47-45-25,14-34,26-
24-44
9030 ! FIVEX
9040 DATA 64-62,44-64,74-54,
46-66-64-44-46,47-45,24-26-4
6-44-24,14-34,42-22-24-44-42
,41-43,62-42-44
9050 ! OCTAGRAM
9060 DATA 53-51,32-52,51-53,
54-52,74-54,44-42,52-32,22-4
2,41-43,24-22,43-23,22-24,62
-64-44,34-54,14-34,66-64-44,
56-54,35-33,54-34
9070 DATA 33-35-55,47-45,55-
35,25-45,26-46-44
9080 ! CORNER
9090 DATA 57-37,45-47,55-57,
75-55,26-46,34-36,37-35,32-3
4-36,54-56,57-55,52-54-56,15
-35,14-34,13-33,74-54,73-53,
34-32-52,62-42
9100 DATA 54-52,51-53,36-34-
54-52-32,47-45,66-46-44-42,4
1-43,22-42,43-41,31-51
```

MY-BASIC—

(Continued from Page 22)

```
STANDING GRAPHIC CHARACTERS"
;
125 CALL TCOLOR(2,12) :: DIS
PLAY AT(24,23):"ecccccccccc
ccccccccccccccccccch"; ::
CALL TCOLOR(6,16) :: DISPLAY
 AT(24,63):" DDI SOFTWARE ";
130 FOR X=3 TO 9 :: CALL TCO
LOR(4,14) :: DISPLAY AT(X,6)
:"o";
140 CALL TCOLOR(16,6) :: DIS
PLAY AT(X,7):"ooooo";
150 CALL TCOLOR(16,7) :: DIS
PLAY AT(X,12):"xx";
160 NEXT X
170 CALL TCOLOR(4,14) :: DIS
PLAY AT(10,6):"oooooo";
180 CALL TCOLOR(16,7) :: DIS
PLAY AT(10,12):"xx";
190 CALL TCOLOR(4,14) :: DIS
PLAY AT(3,15):"o"; :: CALL T
COLOR(16,13) :: DISPLAY AT(3
,17):"=THE SPACE BETWEEN CHA
RS BOTH VERT AND HORIZ IN GR
APHICS MODE";
200 CALL TCOLOR(16,6) :: DIS
PLAY AT(5,15):"o"; :: CALL T
COLOR(16,13) :: DISPLAY AT(5
,17):"=SPACE TO DESIGN A NOR
MAL CHAR & SPACE USED BY DEF
AULT CHAR SET";
210 CALL TCOLOR(16,7) :: DIS
PLAY AT(7,15):"x"; :: CALL T
COLOR(16,13) :: DISPLAY AT(7
,17):"=SPACE NOT AVAILABLE U
NDER ANY CIRCUMSTANCE IN GRA
PHICS MODE";
220 CALL TCOLOR(4,14) :: DIS
PLAY AT(9,15):"o"; :: CALL T
COLOR(16,6) :: DISPLAY AT(9,
16):"o";
230 CALL TCOLOR(16,13) :: DI
SPLAY AT(9,18):"=SPACE AVAIL
ABLE FOR GRAPHIC DESIGNS";
240 CALL TCOLOR(12,12) :: CA
LL VCHAR(3,6,32,7) :: CALL H
CHAR(10,6,32,6)
250 R=12 :: C=10 :: CALL TCO
LOR(2,9) :: DISPLAY AT(R,C):
"O"; :: CALL DCOLOR(16,13)
260 RO=(R*8)-7 :: CO=((C-1)*
6)+18 :: CALL POINT(1,RO,CO)
270 REM FORMULA FOR GRAPHICS
(1,2)    RO=(ROW*8)-7   CO=(
(COL-1)*8)+18
280 REM FORMULA FOR GRAPHICS
(2,2)    RO=(ROW*8)-7   CO=(
(COL-1)*6)+10
290 CALL TCOLOR(16,2) :: DIS
PLAY AT(12,12):"THE CHAR O I
LLUSTRATES SPACE BETWEEN AND
 BELOW EACH CHAR ";
300 DISPLAY AT(13,28)INVERT
:"PRESS ANY KEY TO CONTINUE"
;
310 CALL KEY(0,K,S) :: IF S=
0 THEN 130
320 CALL HCHAR(3,7,32) :: CA
LL TCOLOR(12,12) :: CALL HCH
AR(13,28,32,25)
330 FOR X=3 TO 9 :: CALL TCO
LOR(4,14) :: DISPLAY AT(X,6)
:"o"; :: NEXT X
340 CALL TCOLOR(4,14) :: DIS
PLAY AT(10,6):"oooooo";
350 DISPLAY AT(14,12):"THE D
OT IN THE TOP LEFT CORNER OF
 THE CHAR O IS THE    ";
360 DISPLAY AT(15,12):"CALL
POINT COMMAND USING THIS FOR
MULA TO PLACE A PIXEL ";
370 DISPLAY AT(16,12):"THE E
QUIVALENT OF A DISPLAY AT OR
 HCHAR, VCHAR          ";
380 CALL TCOLOR(16,6) :: DIS
PLAY AT(3,7):"o"; :: CALL TC
OLOR(4,14)
390 DISPLAY AT(17,12):"RO=(R
OW*8)-7 :: CO=((COL-1)*6)+18
  GRAPHICS MODE 3,3    ";
400 DISPLAY AT(18,28)INVERT
:"PRESS ANY KEY TO CONTINUE"
;
410 CALL KEY(0,K,S) :: IF S=
0 THEN 320
420 CALL TCOLOR(12,12) :: CA
LL HCHAR(18,28,32,25) :: CAL
L TCOLOR(16,9)
430 DISPLAY AT(18,19):"AND C
AN BE USED TO HIGHLIGHT A CH
ARACTER.";
440 CALL DCOLOR(9,13) :: RO=
(12*8)-7 :: C=21 :: FOR R=12
 TO 19 :: CO=((C-1)*6+17) ::
 CALL POINT(1,RO,CO) :: RO=R
O+1 :: NEXT R
450 FOR C=137 TO 142 :: CALL
 POINT(1,96,C) :: NEXT C
460 FOR R=90 TO 94 :: FOR C=
139 TO 141 :: CALL POINT(1,R
,C) :: NEXT C :: NEXT R
470 DISPLAY AT(19,28):"PRESS
 ANY KEY TO EXIT";
480 CALL KEY(0,K,S) :: IF S=
0 THEN 480 :: CALL TCOLOR(12
,12) :: CALL HCHAR(19,28,32,
21)
490 CALL TCOLOR(16,6) :: END
 0  841  1313  1722  3636  3
636  3598  2833  6007  4270
 3701  6022  3581  3626  314
9  2880  622  3267  2892  47
53  4741  4751  4739  4764
4729  4772  665  5026  93  4
003  4641  92  3136  4091  4
051  5054  1400  3680  2166
 3994  4247  3266  4872  512
7  4780  3915  4530  3686  2
168  4018  4095  4350  2724
 2993  4606  2891  4618  329
  1681 TOTAL  201833
```

CALENDAR

```
1 !CALENDAR
100 CALL CLEAR
110 CALL GRAPHICS(2,2)
120 DIM DA(12),MO$(12),TB(12
)
130 RESTORE 140 :: FOR I=1 T
O 12 :: READ DA(I),MO$(I) ::
 TB(I)=TB(I-1)+DA(I) :: NEXT
 I
140 DATA 31,JANUARY,28,FEBRU
ARY,31,MARCH,30,APRIL,31,MAY
,30,JUNE
150 DATA 31,JULY,31,AUGUST,3
0,SEPTEMBER,31,OCTOBER,30,NO
VEMBER,31,DECEMBER
160 M1=VAL(SEG$(DATE$ ,1,2))
 :: YB=1900+VAL(SEG$(DATE$ ,
7,2)) :: DAY=VAL(SEG$(DATE$
,4,2))
170 IF INT(YB/4)*4=YB AND NO
T (INT(YB/100)*100=YB AND IN
T(YB/400)*400<>YB) THEN DA(2
)=29
180 DI=(YB-1501)+INT((YB-150
1)/4)+INT((YB-1)/400)-INT((Y
B-1)/100) :: DAY1=DI+1-(INT(
DI/7)*7)
190 FDM=TB(M1-1)+DAY1 :: DTD
=TB(M1-1)+1 :: IF M1>2 AND D
```

(See Page 24)

Vendor display space sets record at Oct. 31 Chicago Faire

More vendor space has been requested than ever this year for the TI International World Faire Weekend Oct. 31, according to Hal Shanafield of the Chicago Users Group.

The Chicago Users Group sponsors the Faire, scheduled for the Holiday Inn Elk Grove at 1000 Busse Rd. (Rt. 83) in Elk Grove Village, Illinois.

Admission to the Faire, held from 9 a.m. to 6 p.m., is $4. A social mixer will be held from 8 p.m. to midnight Oct. 30, with an admission charge of $5.

Following the Faire, a cocktail party will be held poolside 6:30-7:30 p.m., with dinner from 7:30 to 10:30 p.m., admission $15. Since the Faire will be on Halloween, organizers say participants may attend in costume, and they suggest that attendees come as their favorite TI software. Reservations for the cocktail party/dinner are requested. To make reservations, call (708) 864-8644.

A partial list of vendors includes 9640 News, Competition Computer Solutions, Harrison Software, Bud Mills Services/Western Horizon Technology, Ramcharged Computers, CaDD Electronics, MICROpendium, Genial TRAVelER, Oasis Pensive Abacutors, MS Express Software, L.L. Conner Enterprises, Crystal Software, D. Wright Stuff, Rave 99 and Disk 'N Dat.

Shanafield says he expects more vendors, but notes that some "always wait until the last minute."

A double or single room at the hotel is $50 (includes breakfast). Tracking code for the Faire is I.W.F. Telephone number for the Holiday Inn Elk Grove is (708) 437-6010.

For further information, call (708) 864-8644 (voice) or (708) 862-0182 (BBS, 300-2400 baud, msg to I62), or write Hal Shanafield, 2515 Marcy, Evanston, IL 60201.

The Chicago fair will be followed by Milwaukee's fair 9 a.m. to 5 p.m. Nov. 1 at the Quality Inn at 5311 Howell Ave., Milwaukee, Wisconsin. Admission is $2, or $1 in advance. For information, write W99CC, P.O. Box 2723, Appleton, WI 45911, or call (414) 535-0133.

Newsbytes

HUG TIBBS off the air

Richard Lumpkin of the Houston Users Group says that the group's HUG TIBBS is "off the air" at (713) 495-7868 because of the sysop's new job.

"We may not put it back up," Lumpkin adds.

The group may be contacted c/o Lumpkin at 11610 Inga Lane, Houston, TX 77064.

VAST UG gets new mailing address

The VAST (VAlley of the Sun TI User Group) has a new mailing address, P.O. Box 25576, Tempe, AZ 85285-5576.

BBS number for the group is (602) 233-0790.

TI BBS operates 24 hrs in Oklahoma

The Orphanage BBS, (918) 288-6708, operates 24 hours a day on a TI99/4A with four 5.25-inch floppies, a Horizon RAM

(See Page 26)

MY-BASIC—

(Continued from Page 22)

```
A(2)=29 THEN FDM=FDM+1 :: DT
D=DTD+1
200 IF FDM>7 THEN FDM=FDM-7
:: GOTO 200
210 CALL TCOLOR(4,14) :: DIS
PLAY AT(10,6):" CALENDAR
                ": :: CALL T
COLOR(2,15)
220 FOR H=1 TO 8 :: CALL HCH
AR(10+H,6,32,29) :: NEXT H
230 MOY$=MO$(M1)&" "&STR$(YB
) :: DISPLAY AT(11,20-(LEN(M
OY$)/2)):" ";MOY$;" "; :: DI
SPLAY AT(12,6):" Su  Mo  Tu
 We  Th  Fr  Sa ";
240 FOR H=1 TO DA(M1)
250 IF FDM>7 THEN FDM=1 :: W
1=W1+1
260 IF H=DAY THEN CALL TCOLO
R(4,14) :: DISPLAY AT(13+W1,
(8-LEN(STR$(H)))+(FDM-1)*4)S
IZE(LEN(STR$(H))+1):H :: FDM
=FDM+1 :: CALL TCOLOR(2,15)
:: GOTO 280
270 DISPLAY AT(13+W1,(8-LEN(
STR$(H)))+(FDM-1)*4)SIZE(LEN
(STR$(H))+1):H :: FDM=FDM+1
280 NEXT H
290 CALL TCOLOR(16,6) :: END
 0  716  852  1312  1532  44
87  424  4005  4753  4557  4
93  4709  432  4402  697  45
71  683  2314  4150  928  30
52  4449  3045  1194  1987
4757  4177  4709  169  609
1679 TOTAL  75844
```

MICROpendium

DISK SALE

If you've been waiting for a sale on MICROpendium program disks, this is it! For a limited time (through Nov.15, 1992) Series 1, 2, 3 4 and 5 disks are available for a special price. (Series 5 disks are mailed monthly starting with the November 1992 edition, programs from April 1992 through October 1992 will be mailed as soon as the order is placed.)

MICROpendium disks

SERIES #	REGULAR PRICE	SALE PRICE	YOU SAVE	DISCOUNT
Series 1 (Apr. '88-Mar. '89)	$25.00	**$15.00**	*$10.00*	*40%*
Series 2 (Apr. '89-Mar. '90)	$25.00	**$15.00**	*$10.00*	*40%*
Series 3 (Apr. '90-Mar. '91)	$25.00	**$15.00**	*$10.00*	*40%*
Series 4 (Apr. '91-Mar. '92)	$25.00	**$15.00**	*$15.00*	*40%*
Series 5 (Apr. 92-Mar. 93)	$40.00	**$25.00**	*$15.00*	38%

But that's not all, if you order more than one series, you get an additional discount.

Series 1-4	$100.00	**$50.00 for all four**	*$50.00*	*50%*
Any 3 from Series 1-4	$75.00	**$37.50 for three**	*$37.50*	*50%*
Any 2 from Series 1-4	$50.00	**$25.00 for two**	*$25.00*	*50%*
Any 1 from Series 1-4 + Series 5	$65.00	**$32.50.00 for two**	*$32.50*	*50%*
Any 2 from Series 1-4 + Series 5	$90.00	**$45.00 for three**	*$45.00*	*50%*
Any 3 from Series 1-4 + Series 5	$115.00	**$57.50.00 for four**	*$57.50*	*50%*
Series 1-4 + Series 5	$140.00	**$70.00 for all five**	*$67.00*	*50%*

(Circle the items you want to order)

ACT NOW — THIS SALE ENDS NOV. 15, 1992

Customer information

Name _____

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Please circle the items above and return this entire page (or a copy of it) with a check or money order in payment.

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Disk shipping information

Postage is included for any disk sales to U.S. addresses. **Canadian delivery**: add $2.00 for each series of disks for airmail delivery, $1.50 for surface. **Overseas delivery**: add $3.50 for each series of disks for airmail delivery; add $2.00 for each series for surface

FOR CREDIT CARD ORDERS

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Credit Card: MC Visa (Circle One) **Exp. Date** _____

Signature _____
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MICRO-REVIEWS

Football '92, Address ~ Labels and Stor Mor

By STAN KRAJEWSKI

Ratings for the software reviewed in this column are based on the Star system that follows.

★ Leave it alone, back to the drawing board.

★★ Needs improvements, but workable.

★★★ A good program, worth trying.

★★★★ Send your money and buy it.

NOTE: If the Geneve 9640 is NOT specifically mentioned in system requirements of any column I write, the program is TI99/4A compatible only.

★★★★

TOUCHDOWN-92

Just about everyone wants to be able to predict the future at one time or another. This program helps make that possible in one of the most popular sports in the USA. System requirements are Geneve 9640 or TI99/4A, 32K RAM, disk system, Extended BASIC and a printer (optional).

Contrary to its name, Touchdown-92 is not for 1992 only. This program has a wide range of options making it very versatile. To start with, the initial startup screen lets you change drives and use batch or single file types plus other options. After your hardware changes you have the choice of running the program or choosing the documentation. The documentation option is well done because you can just use the screen or use the printer option. Default is PIO but another device can be used by entering it. Once into the running program the main menu displays: Load Ratings, Update Ratings, Save Ratings, Predictions, File Options, Conference Standings, Ratings Ranking, Names & Abbreviations, Initialize Data. Keypresses are kept simple by just pressing the first letter of each option. I unconsciously do this with most programs anyway and wished others would incorporate this option. Also the cursor has been redesigned to resemble a football. Even after quitting the program you may keep the football cursor in BASIC as long as you don't reboot.

At any time from the main menu you may change the disk or data filename before each option. The load ratings are already initialized for 1992. You update this file weekly. It contains the date, week number and teams' win/loss records. Ratings are calculated to such factors as home and away, momentum, win/loss records and the seasons' total points scored.

Conference Standings displays the entire league by the various divisions and shows win/loss record. Names & Abbreviations will list all abbreviations and the team names beside it. Both American and National Conference will be displayed. A print-out option at this point is also available.

This programs' features are too numerous to continue and contains features I would have liked to see in POLLSTER. Touchdown-92 comes on a SS/SD disk and sells for $10 including S&H. Although you can initialize the Ratings file prior to a new season, annual updates will also be made available by the author each year for $5. Send to: Gene Hitz, Program Innovators, 4122 Glenway, Wauwatosa, WI 53222.

★★★

ADDRESS~ LABELS

Yet another address label maker. This is a down and dirty label maker anyone can run. It is being offered as Fairware, making it very affordable.

(See Page 27)

Newsbytes

(Continued from Page 24)

card (1.2 megs) and Packard-Bell 2400 plus modem, according to Harold May, sysop.

The Sperry, Oklahoma, board has been on line almost two years and uses S&T software, written by Scott Stasiowski and Tim Tesch, Mayo says.

He says the board supports "all the popular transfer protocols" as well as Mass-Transfer multiple downloads. It has a gameroom with five games, including Murder Motel.

Mayo says he has more than 500 files for downloading, but only four drives.

"After I get my hard drive, they will all be on line," he says. "If you don't see what you want, just ask for it."

He notes that the board supports 40 and 80 columns.

Regena to welcome Fest West visitors

According to the newsletter of the TI SLAVes (Salt Lake and Valley) and Ogden TI Users Groups, MICROpendium BASIC columnist Regena will hold an open house Feb. 11 and 12 at her home in Cedar City, 250 miles south of the Fest West site in Salt Lake City. Fest West "North" '93 is scheduled for Feb 13 and 14 at the Howard Johnson Hotel, 122 West S. Temple, Salt Lake City, UT 84101.

She invites fairgoers to stop in on either open house date and says, "If it's cold, snowy weather, a crock pot of soup will be ready for you."

She says she can assist with skiing plans at Brian Head. For details, write Regena, 918 Cedar Knolls West, Cedar City, UT 84720.

The Howard Johnson Hotel has rates of $55 for two persons and $62.50 for three or four persons. Fair organizers say to state you are calling for reservations for Fest West "North." Phone numbers for the hotel are (801) 521-0130; toll-free, 1-800-366-3684; fax, (801) 322-5057.

For further information, write the Fest West "North" 93 Committee, 1396 Lincoln, Apt. B, Ogden, UT 84404, or call the Salt Flats BBS, (801) 394-0064, 24 hours, 300, 1200 or 2400 baud.

MICRO-REVIEWS—

(Continued from Page 26)

System requirements are Geneve 9640 or TI99/4A, 32K RAM, Extended BASIC and a printer. This program also requires the small 2x7/16-inch labels that are four across on the sheet.

As you autoload this program from XB you will see the first menu. 1-Address Labels 2-Documentation. The docs are brief as this program does not need much documentation. By pressing 1 you will enter the main menu. Pressing 1 again will let you input data for the label. There are three lines. On line 1, enter your name. On line 2, enter your address. On line 3, enter your city, state and Zip. After you enter your data, press enter and "Y" for the Input Correct prompt. This takes you to the printer selection. Press 1 for Epson, Star or Gemini, 2 for Panasonic KX-P1090. After that you have a choice of Print Labels or Label Alignment. Label Alignment will print three rows of characters four across, as the label would appear. You are then ready to print your labels. Next it will ask you "Number of Rows." A row in this case is four labels printed across the sheet.

This program operates easily and uses simple number keypresses. You should print all the labels you need the first time as this program does not save your data. You can print up to 396 labels at a time by keying in the maximum 99-line limit. You may also contact the author regarding any problems, or with suggestions for enhancements.

For Address Labels on a SS/SD disk, send to Ron Prewitt, 6429 South Fife, Tacoma, WA 98409. A Fairware contribution of $5 is recommended.

★ ★ ★

STOR MOR

System requirements are Geneve 9640 or TI99/4A, 32K RAM, disk drives and Extended BASIC.

Extended BASIC users will find this utility invaluable. Stor Mor can take available bytes from XB "program" space and make available more "stack" space or vice versa. Now your program strings do not need just the "stack" VDP RAM space for storage. You can now bring in an unlimited number of strings from a disk file. Included are programs to utilize both low and high memory and to pre-load the assembly routines for the program to free up Extended BASIC.

Once the assembly routines are installed, moving strings is as easy as a Call Link to initiate. Call Link("SETHI",x) tells the routine how many strings you want to stash into high memory. Other Call Links are SETLO, PUTHI, PUTLO, GETHI and GETLO. You can see by the first three letters of the command, that you set, place and recall strings by these Call Links. The last two letters are the memory you're going to call, high or low. Two other Call Links can be used to look up how many bytes you have open.

There is virtually no limit to the number of strings you can stash. Source code is included on disk for those who are interested in the workings of this utility. There is an ALSAVE process that when MERGEd will bring along the assembly routine and place it in low memory when you load your Extended BASIC program. Error handling covers everything from crashing the computer to overwriting.

The cost of this SS/SD disk is $6, available from Harrison Software, 5705 40th Place, Hyattsville, MD 20781.

If you would like your software or hardware reviewed in this column, you may send it to: Stan Krajewski, Route 6, Box 568-15, Live Oak, FL 32060. If you would like it returned, please include postage. If you need to call me for any reason, you may reach me at (904) 364-7897 E.S.T.

Drawing Master V1.3

Unusual features make this fairware program a four-star bargain

By STAN KRAJEWSKI

The following review was originally submitted for MICRO-Reviews but is being published separately because of its length. The grading system is the same used in MICRO-Reviews.—Ed.

★ ★ ★ ★

THE DRAWING MASTER V1.3

This is a new program from France, by a member of the FANATI '99 user group, calling himself King Turambar. Originally created in April 1991 with Version 1.2, it was last updated in September 1991 with Version 1.3. Because he wanted to share his program with as much of the TI world as possible, he used a French-to-English dictionary to create this American version. I have to compliment him, as the documentation is very understandable.

System requirements are Geneve 9640 or TI99/4A, 32K RAM, disk drive and the Editor/Assembler, Mini-Memory or TI-Writer cartridge. Do you need joysticks or a mouse? Not with this one. Your lines will be drawn for you by using the predefined options within this program.

If you have a Geneve or TI with RGB capability, it will greatly enhance this program. This program first starts off with an explosion of colorful dots on a black screen, which swirl around to form the author's name, then a colorful title of the program. While the title words are on screen they are continually moving with different shades of the same colors. And we thought the TI only had 16 colors! While this is going on, a real-time sideways scroll from

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DRAWING MASTER—

(Continued from Page 27)

right to left is thanking the author's support people for their help on creating this program. This is a demo you have to see. You can leave this demo at any time by pressing the space bar.

Another loading program on disk called HURRY bypasses the demo which loads the program. Some other fine features are: The arrow cursor changes color as it moves with each key press so you can see it, no matter what color you're working on. FCTN E and X can be used to modify the arrow cursor speed without having to return to the window. You may even save the files in a compacted format.

Upon entering the program, you are looking at the main menu using a 64-character screen. Pressing either Functions, Peripherals or Colors will bring up windows with the function or modes for either of these sections. It isn't marked, but you press the 1, 2 or 3 key for this.

This program's many functions make it a useful tool, and it is compatible with TI Artist if you load and save it according to the documentation. So far I seen it load only files with a __P or __C suffix. The entire program loads into memory, making the functions and windows display at lightning speed. Pressing FCTN 9 brings you back to the Main selection at any time. Pressing Enter after each selection selects your choice and erases the window. Using a function in changing parameters, it then returns to the original window for further selections.

The functions used by each selection are as follows:

1. FUNCTIONS:

Mode — selects Draw or Erase.

Invert — Inverts on and off dots on a rectangular area.

Dots — creates dots.

Lines — creates another window with:

Segments — lets you create the two points for your line to be drawn.

Vertical Axis — Draws a vertical line.

Horizontal Axis — Draws a Horizontal line.

2-Axis — Draws both lines, using your arrow as a center.

Continuous Segments — Draws a continuous line.

Fixed Origin Segments — You give the center, and then the extremities (same as in the Rays command in TI-Artist).

Bit O Axis — Draws vertical axis in the 0 byte of the screen(to avoid the bleeding of colors).

Beeps — turns on and off.

Rectangles — Creates them.

Confirmations — Enables/disables the ask for confirmation after every function.

Arrow Speed — select one of five speeds.

Parameters — Displays the modes you have selected.

Next — Brings up the rest of the window with Zoom, Triangle, Letters (small, big, 64 columns), Surface Erase, Surface Move, Surface Copy, Magnify, Reduce, Define Brush, Put Brush, Predefine Characters, Redefine Characters, Coordinates, Size of Dots(1 to 64 pixels), Surface fill, Curves.

2. PERIPHERALS — Lets you save, load or catalog a disk.

3. COLORS include: Change Foreground Color, Background Color, Border, Swap 2-Colors, Replace 1-Color, Set Foreground, Set Background, Clear Points Color, Light Background Color.

Because this is a new program (one year old), some features I mentioned in the Next menu are not finished yet. The program will not crash, but simply return you to the main menu. I thoroughly recommend that we show this author some interest so he will be inspired to complete everything in the Functions Menu, maybe even program a Instance feature. I have experienced only minor problems. When loading a picture file, I had to load one of the compressed picture files first. If I didn't do this first, the picture file would be hidden under the background. I would ask for the one of the compressed I/V254 files when ordering. There are 51 sectors free so a file for this purpose would fit. You can also create a screen and save it in compressed format for this purpose. Another way is to load a __P and a __C Artist file. Also I kept wanting to press the first letter of the functions in the menu, instead of 1, 2 or 3. I also did not see a function for a hard copy.

As you can tell, I am pretty excited about this program, and want to tell you all its fantastic features. When I first received this program in the mail, I was wondering, "another artist program?" But this one is a breed unto itself. I was able to load Picture files I had, create color with the Set Foreground and Set Background feature to any part of the picture I wanted, and resave it.

The author states, "Even if this program doesn't seem to be very good, it allows very surprising effects when used and understood."

Now for the best news: Drawing Master is released as Fairware. Everyone may copy it and freely keep one or several copies, without informing the author. Users are asked to send the author anything they want as a contribution. Just to see the Demo alone would be worth sending for it. From reading the docs and reading the scroll in the demo, I see that King Turambar has a good sense of humor. As he states in the docs, "Did you really think my name was King Turambar?"

This program is available from Laurent Peron, "La Feuillade" No. 10, St Front de Pradoux, 24400 Mussidan France.

User Notes

Using model paint makes disk ID easier

This comes from Michael Zinkovich, of Orange City, Florida. He writes:

I have found a way to write directly on the 5.25-inch disk sleeve. The stick on label sthat came with the disks either peeled off or rolled on the corners. The writing on the labels seemed so small that it was hardly worth the trouble.

Here's what you can do to improve things:

Buy yourself a Gloss Paint Marker by Testors. They specialize in the paint for plastic models. My best color is silver, but gold has also been tried with similar success. Red and blue are not reflective enough. They cannot be seen on the black background. I have not tried white. The

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User Notes

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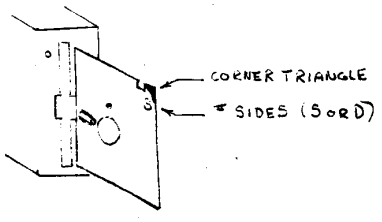
first color I bought I found at Toys-R-Us. The second I found at Wal-Mart. Look in the model paint area.

Paint a triangle on the corner of the disk that faces you when placing the disk in the drive. Then you will always know the disk is facing the right way.

Lastly, you may wish to put a "S" or a "D" next to the painted traingle. You will then know at a glance whether the disk is single- or double-sided.



What sprites can do

This comes from W.L. Shepard of Liverpool, New York. He writes:

I wrote this program for a friend to show the many commands that can be used by sprites. It has no practical use, but I thought it may be of interest to others.

Lines 240-270 set 16 sprites in random motion

Line 290 stops a sprite and determines its location.

Line 300 calculates its location in respect to another spot.

Line 310 sets the sprite in motion toward that spot.

Line 320 loops until the sprite is near the spot.

Line 330 stops the sprite and moves it to the precise spot.

Line 350 loops for the first four sprites.

Lines 360-390 repeat this process for the next 12 sprites.

The result sets the 16 sprites in a pattern.

```
100 !********************* !
245
110 !*                    * !
055
120 !*   RANDOM MOTION    * !
078
130 !*         BY         * !
146
140 !*    W.L. Shepard    * !
157
150 !*                    * !
055
160 !********************* !
245
170 !This is a useless progr
am that is fun to watch. Try
 it,you will like it !241
180 GOTO 220 :: CL,HIT,I,K,L
X,LY,MX,MY,N,N2,NX,S,SN,SW,T
OT,X,Y,Y2,Z :: CALL KEY :: C
ALL LOCATE !246
190 CALL CLEAR :: CALL SCREE
N(5):: FOR I=1 TO 12 :: CALL
 COLOR(I,16,5):: NEXT I !237
200 CALL KEY :: CALL LOCATE
:: CALL MOTION :: CALL POSIT
ION :: CALL SCREEN :: CALL S
OUND :: CALL SPRITE :: CALL
MAGNIFY !252
210 CALL CHARSET :: CALL DEL
SPRITE :: CALL COINC :: CALL
 VCHAR :: CALL COLOR :: CALL
 CHAR :: CALL CHARPAT :: CAL
L CLEAR :: !@P- !068
220 CALL CLEAR :: CALL SCREE
N(2):: FOR I=1 TO 8 :: CALL
COLOR(I,16,2):: NEXT I !187
230 CALL CHAR(64,"FFFF00FFFF
F00FFF"):: CALL MAGNIFY(2)!0
27
240 CL=3 :: RANDOMIZE :: FOR
 I=1 TO 16 :: CALL SPRITE(#I
,64,CL,193,INT(RND*20)+1,RND
*120-20,RND*120-20)!174
250 CL=CL+1 !151
260 IF CL>15 THEN 420 !033
270 NEXT I !223
280 LY=50 :: LX=75 :: SN=131
 :: FOR I=1 TO 4 !170
290 CALL MOTION(#I,0,0):: CA
LL POSITION(#I,Y,X)!122
300 MY=LY-Y :: MX=LX-X :: TO
T=MAX(1,ABS(MY)+ABS(MX))!115
310 CALL MOTION(#I,MY*50/TOT
,MX*50/TOT)!255
320 CALL COINC(#I,LY,LX,20,H
IT):: IF HIT=0 THEN 320 !011
330 CALL MOTION(#I,0,0):: LY
=LY+0 :: LX=LX+15 :: CALL LO
CATE(#I,LY,LX)!016
340 CALL SOUND(-100,SN,0)!12
6
350 SN=SN+34 :: NEXT I !083
360 IF NX=1 THEN 380 ELSE IF
 NX=2 THEN 390 ELSE IF NX=3
THEN 400 !171
370 NX=1 :: LY=66 :: LX=75 :
: FOR I=5 TO 8 :: GOTO 290 !
076
380 NX=2 :: LY=82 :: LX=75 :
: FOR I=9 TO 12 :: GOTO 290
!123
390 NX=3 :: LY=98 :: LX=75 :
: CL=4 :: FOR I=13 TO 16 ::
GOTO 290 !127
400 DISPLAY AT(24,8):"REPEAT
?(Y/N)" !146
410 CALL KEY(0,K,S):: IF K=8
9 THEN 450 ELSE IF K=78 THEN
 430 ELSE 410 !149
420 CL=3 :: GOTO 270 !041
430 CALL CLEAR :: END !222
440 @P+!081
450 CALL DELSPRITE(ALL):: CA
LL CLEAR :: NX=0 :: GOTO 220
 !082
```

Error caught

This comes from Don Shorock, of Great Bend, Kansas. He writes:

Jack Sughrue caught an error on my MIS.EDUC.03 disk in the program called STATES50. It is easy to fix, so I'd appre-

(See Page 30)

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User Notes

(Continued from Page 29)

ciate it if you'd tell all of your readers how to do it.

The problem is that the adjacency of Massachusetts and New Hampshire was left out (in one direction, at least).

The fix is on line 350. It reads:

350 DATA Maine,B6s8u3,New Hampshire,C6A2s8u3,Vermont, etc.

The error is in the data element between New Hampshire and Vermont. Insert D4 and make it read:

350 DATA Maine,B6s8u3,New Hampshire,C6A2s8u3D4,Vermont. The program still takes only 14 sectors. That's good as there are no blank sectors on this disk.

Although I am currently working on getting an AIRTAXI out to the Apple world, I haven't forgotten the TI and will soon be releasing a disk full of material that is currently in use at the Central States Scout Museum in Larned, Kansas. There is one program for that disk that is incomplete, but when it is finished I'll be putting it out for the whole TI community. There will be one catch. All proceeds will be going to the museum and not to me. I think it should be of interest to everyone, though, because of the programming. The museum's TI is locked in a wooden cabinet and all access is through joysticks only!

Solution to Geneve heat problems

This comes from I.J. Atrill of North Vancourver, British Columbia. He writes:

You have had a number of articles dealing with heat-related lockups on the Geneve. Not too long ago I started to experience problems of this nature myself. More obvious, however, was the fact that I would be returned to the title swan after booting, could not load GPL and my clock was "running amuck." It took a little while to notice, but I eventually found that whenever I had problems, the 999r, 9938, EPROM, lowever D&V RAM and regulators were very hot. My first theories were that a regulator had gone bad, or that the heat from the regulators, due to their close proximity, were "baking" the other components. Wrong!

After much testing, replacing the regulators and swapping several of the components, it was eventually discovered that the problem was not originating on the board at all. The culprit turned out to be overvoltage coming out of the wall. After repeated testing over a week, I recorded a low of 127 to a high of 137 volts. Doesn't sound like much, does it?

Well, as a matter of fact, that 10+ volt rise was enough to increase the bus voltages in excess of 50 percent. That's why the regulators were getting so hot and the regulators were in turn baking the other components, whether that had anything to do with the other symptoms or not. A request that the power company correct the problem brought a solution at that point.

The question which remained was — how does one guard against this sort of thing? Your computer could be melting away and you wouldn't even know you had a problem. Oh, sure, if you have a volt-

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1992 TI FAIRS

MARCH

T.I.C.O.F.F. (TI Computer Owners' Fun Faire — The IBM & Clone Owners' Fun Faire), 9 a.m.-4 p.m., March 14, Roselle Park High School, Roselle Park, New Jersey, $5. Contact Robert Guellnitz, Roselle Park Public Schools, 185 West Webster Ave., Roselle Park, NJ 07204, (908) 241-4550 (voice) or (908) 241-8902 (BBS).

APRIL

Northeast Computer Fair, April 4, Waltham High School, Waltham, Massachusetts, sponsored by TI99/4A User Group of the Boston Computer Society. Contact Ron Williams, 14 East St., Avon, MA 02322.

Dutch Annual TI-Fair, April 25, Utrecht, The Netherlands, sponsored by Dutch TI-Usergroup. Contact Drs. Erik C. van Wette, Hanninkhoek 39, 7546 AD Enschede, The Netherlands, phone: 31-53-778723.

Ottawa TI Fest, 10 a.m.-4 p.m., April 25, Merivale High School, 1755 Merivale Rd., Nepean, Ontario, Canada. Contact Ottawa Users Group c/o Bill Gard, 3489 Paul Anka Dr., Ottawa, Ontario, Canada K1V 9K6; (613) 523-9396 (home); (819) 994-8856 (work); (819) 994-8873 (work, attn. DSE 2).

MAY

TI Orphan Reunion, 10 a.m.-5 p.m. May 9, Innisfail Lions' Hall, Innisfail, Alberta, Canada. Contact Fred Kessler, Box 20, Sundre, Alberta, Canada, T0M 1X0, (403) 638-3916.

TI99/4A Users Group, UK, Annual Meeting, May 16, Princess Anne Training Centre, 10 Trinity St., Derby (Derbyshire, England). Contact Stephen Shaw, 10 Alstone Rd., Stockport, Cheshire England SK4 5H.

Multi User Group Conference, May 15-16, Ohio State University Lima Campus. Contact Lima 99/4A Users Group, P.O. Box 647, Venedocia, OH 45894 or phone Dave Szippl (419) 228-7109 or Charles Good (419) 667-3131 evenings.

SEPTEMBER

State of Washington TI Convention, Sept. 19, South End Pool Center, 402 E. 56th, Tacoma, Washington. Contact Jim Tomkins, (206) 756-0934.

OCTOBER

7th Internationale TI-Computer-Treffen, Oct. 9-11, Wiesbaden, Germany. Contact Horst Wiese, Eleonorenstr. 6, DW-6200, Wiesbaden, Germany. Please enclose International Reply Coupons (can be bought at U.S. Post Office).

Chicago International World Faire, Oct. 30-31, Elk Grove Holiday Inn, Elk Grove Village, Illinois. Contact Chicago Users Group, c/o Hal Shanafield Jr., 2515 Marcy Lane, Evanston, IL 60201-1111, or (708) 864-8644.

NOVEMBER

Milwaukee TI Faire, Nov. 1, Quality Inn, 5311 Howell Ave., Milwaukee, Wisconsin. Contact W99CC, P.O. Box 2723, Appleton, WI 54911 or (414) 535-0133.

TI-Faire, Nov. 28-29, Ashfield Boys High School Hall (next to Western Suburbs Leagues Club), Liverpool Road, Ashfield, NSW, Australia. Contact TIsHUG (Australia) Limited, P.O. Box 1089, Strawberry Hills, NSW 2012, Australia.

1993 TI FAIRS

FEBRUARY

Fest West "North" 93, Feb. 13-14, Howard Johnson Hotel, Salt Lake City, Utah. Contact Fest West "North" 93 Committee, 1396 Lincoln Apt. B, Ogden, UT 84404 or Salt Flats BBS, (308) 394-0064.

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.

User Notes

(Continued from Page 30)

meter you could check the voltage each time you fire it up. But I needed a better solution. And I think I found it.

What I did was to completely remove the regulators from the board. These were remounted inside the PEB, on top of the power supply, under the lid. The idea was place them so that they would have no effect on the Geneve board no matter how hot they got. All that metal above the PEB power supply makes one heck of a heat sink. Also, as the heat dissipates directly through the metal to the fan, you can feel the increase in heat being exhausted.

To re-connect the regulators to the board, I made a detachable harness, in two pieces. I used 90 degree header pins on the board itself and brought the wires up to a 12-pin header plug. This I epoxied behind where the battery mounts. Once the regulators were mounted over the power supply, I made up the other half of the harness. This has the wires attached directly to the regulators, but the other end goes to a 12-pin header. This fits into the header plug I added to the Geneve card. After covering the harness with shrink tubing and trimming the clamshell to clear the header plug, it looks like a factory installation.

How well does it work? I can actually feel how much more heat gets thrown out of the PEB. I can demonstrate it by covering the fan with one hand while touching the metal next to the regulators. Within a minute or two you can feel the metal start to heat up. Remove the hand blocking the fan and in less than a minute the heat dissipates. Nothing e4lse in the box gets cooled that effectively. What's more, even if the regulators did get hot, that heat won't be transferred to the Geneve circuit board.

Why a "harness?" I didn't want to get the wires mixed up and I wanted it neat as well. I also decided that a two-piece harness (and plug) was a good idea because I didn't want to have to keep un-bolting regulators everytime I wanted to remove the card from the PEB. By using the 90 degree header pins I also made it a simple matter to remove the harness from the Geneve card. That means that whenever I want to work on the card I won't have any wires, regulators or heat sinks in my way.

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