Covering the TI99/4A and the Myarc 9640

MICROpendium

Volume 8 Number 1 February 1991 $2.50

A tale by Edgar Allan Poe
and other authors you should know
See pages 12, 10

and we have Yet Another Sleeve.
This time it's one for the Geneve.
See page 27

And have we got a deal for you!
Just build a TI-Base menu.
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See pages 32 and 33

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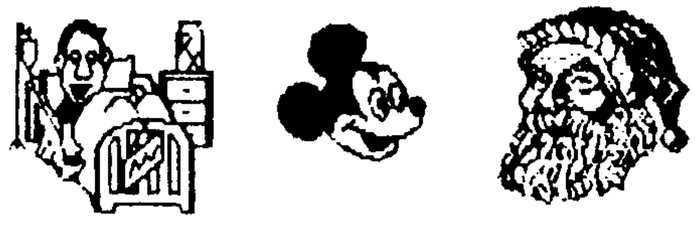

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*READ THIS

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

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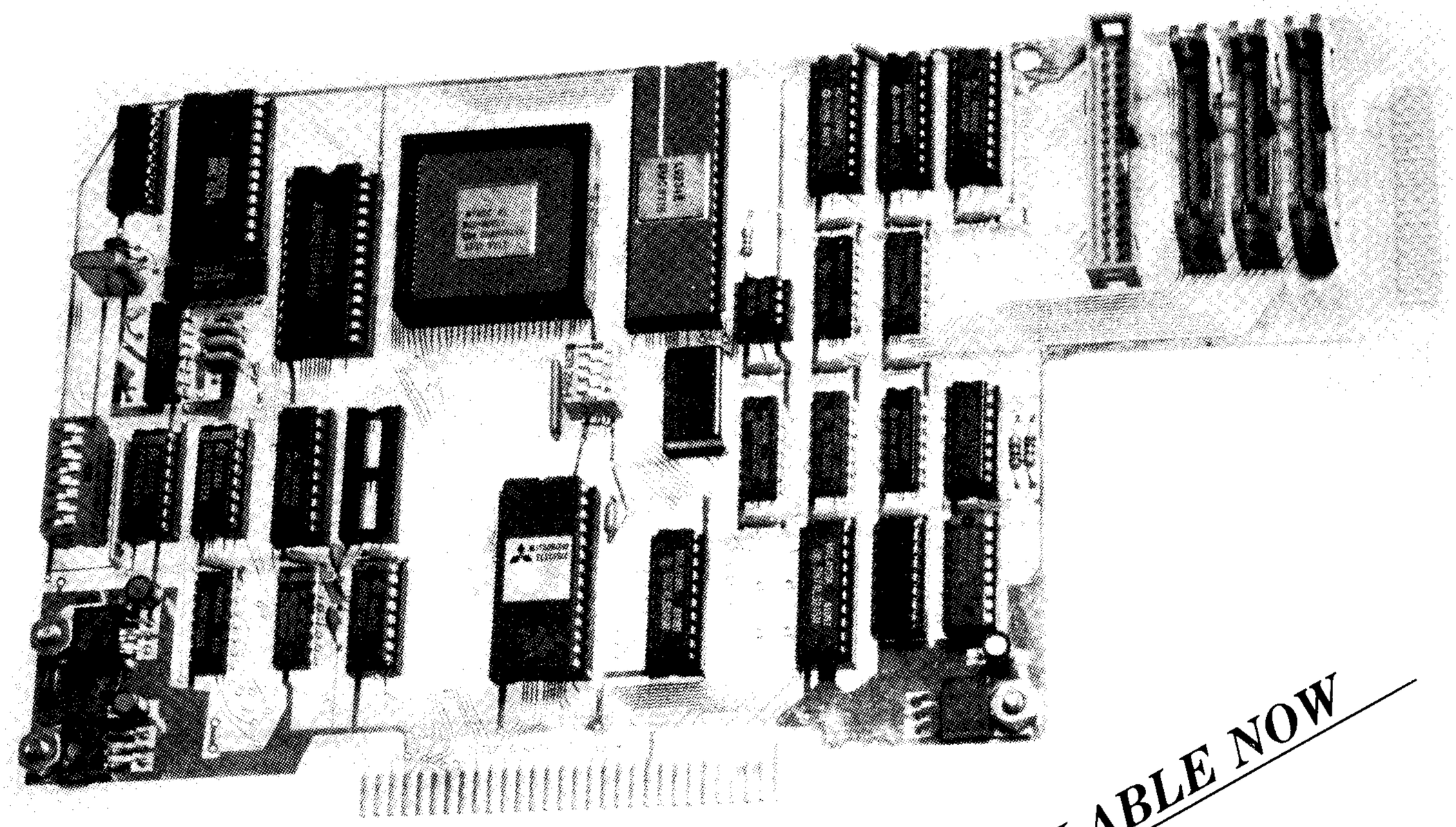

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Comments

Eight years and counting

This edition of MICROpendium marks the beginning of our eighth year of covering the TI. It's hard to believe. So much has happened over the years that keeping track of it is an impossible task. However, the highlights for me are easy to pick out. They arrive everyday in the mail. They are the wonderful letters we get from all over the world from TI users offering encouragement, advice and, yes, seeking answers. We do the best we can in finding answers — of course we have our share of misses, too — but nothing can take away from the wonderful feeling that comes from opening a letter from a reader and finding out that despite our faults he likes the job we're doing. All I can say at the start of this eighth year is keep those cards and letters coming.

HARD DISK AVAILABILITY

I mentioned last month that Myarc is selling a lot of hard and floppy disk controllers. And wouldn't you know a reader called to say that he'd had one on order since November and still hasn't received it. I've heard a lot of contradictory information about who has and who doesn't have the Myarc HFDC. One source that I know of is TM Direct Marketing.

Speaking of hard disk controllers, Electronic Systems Development Corp. may be nearing a production date for its hard and floppy disk controller. Nothing certain, but it could be out in another month or so.

Back to Myarc: Work on the Pascal Runtime for the Geneve is continuing and is now in the beta testing stage. Last month Lou Phillips said that the software was near completion. Runtime promises access not only to PC-originated programs but to the Pascal power system. Geneve users could then write Pascal programs of their own, not to mention running PC Pascal programs.

JOHN BIRDWELL PRIZE ANNOUNCED

A memorial prize in the name of John Birdwell will be awarded annually by the John Birdwell Memorial Fund. Birdwell died in late December and was a pillar of the TI programming community. He was best known for his DISKU disk utilities program. The foundation is seeking nominees for this year's prize, which will be awarded at the Chicago TI Faire in the fall. See page 35 for details.

—JK

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Feedback

Graphics program receives praise

The program "TIW+TIA" was great! It made me glad I purchased TML and the program allows me to further explore TI-Artist Plus! Harry Wilhelm states, "You cannot print two pictures side by side." On the contrary, *you can print whatever you can get on a screen!* With TIA in "E" mode, load an instance. Either copy the instance two or three times, or load additional instances. Move them around, copy them and goto "A" mode of TIA. In "A" mode, add-to, erase, modify or ... Now save it as a PICTURE. Go back to TML and load TIW+TIA and use the prompt for the PICTURE. You now have printed what the screen showed in "A" mode of TIA.

In MICROpendium (February 1988) a survey established certain facts. Most users have PEB systems with 32K memory expansion units. This makes me believe most users have an Extended BASIC cartridge. Why then do you still print pages on pages of BASIC programs by Regena? In December 1990 a 177-line listing of "Scripture Quiz" was published in BASIC. *Lines 520 to 1690 were DATA statements.* I like MICROpendium because I learn from it. I don't need that many lines of data to learn a quiz program. I like Regena's programs, but why can't they be written in Extended BASIC? If a true TI99/4A user does not have an Extended BASIC module by now, we've lost the ballgame!

The program "Mutual Fund Performance" by Bill Gaskill, along with his tutorials on TI-Base, are what make your magazine worthwhile. I *am not* a programmer. I think I am your "average" TI user, so each month I look forward to my copy of MICROpendium as much if not more than my wife waits for Ladies Home Journal and Redbook. *Keep up the good work.*

Harry Allston
Reedley, California

Some readers feel as you do, but others are great fans of Regena's column as it is. We have an Extended BASIC column by Jerry Stern, in any case. — Ed.

Tutorials sought

Looking over some of my back issues of MICROpendium I noted with mild interest (because I am not a hardware type of person) a review by Jan Janowski on the "Interface Standard and Design Guide for TI99/4A Peripherals" (July 1990) and with somewhat greater interest (as a wanna-be sofware type of guy) a micro-review by Harry Brashear on the "Extended BASIC Tutorials" (October 1990).

I have not, so far, ordered the XBASIC tutorials mainly because XBASIC doesn't do a lot of things I really want to do. For my purposes, I really need a much more powerful language. Unfortunately, I am in a position of having no *organized* method of learning one (a position I am certain I do not occupy alone).

I am somewhat a latecomer to the TI community being a low-income person, and, as such, obtained my console after "Black Friday" — once the price dropped to under $50. At that time, the salespeople were more concerned with "dumping these lemons while we can" than giving the consumer any ideas for support. The result was a *lot* of new TI owners with absolutely *no* idea how to use their new toy.

In my case I *found* some articles and programs in some of the later issues of *Compute!* but then *Compute!* discontinued its TI support. Then I found *Home Computer Magazine* and, for a while, was in "hog heaven." I even found out that there once was a magazine called *99er Magazine* (later, I was able to get hold of a few of these magazines). But then it happened again. I went to the store to buy a copy of *HCM* and was told it hadn't come in yet. This popular bookstore takes pride in their service, and tried to track down the problem. Several days later, they informed me that Emerald Valley Publishing had "changed *HCM*'s format." I was told they were going to four issues per year and that I would have to call the company directly. I have called several times and have left messages for the publisher to no avail. Another avenue down the drain.

The biggest problem with these and (with the exception of MICROpendium) all other publications has been a lack of support for assembly. MICROpendium offers an on-going tutorial on c99 (by Charles E. Kirkwood Jr.) which compiles into assembly, but c99 hasn't fully evolved yet. It doesn't give all the functions of assembly.

And even with Mr. Kirkwood's article's, a rather large gap exists between receiving the c99 language disks and the tutorials. In this area, we are left trying to figure out what commands work and what commands don't (usually with a book describing capital "C"). This means going to an Editor, typing in a few lines, going to the Compiler and compiling those lines, then to the Assembler and assembling this and then loading the result and trying it. After a week or so you end up wanting to stop typing and start *pounding*!

The Editor/Assembler manual is even worse because: 1) It was written by programmers, for programmers, about programming. This leaves someone like me trying to read Greek. And 2) It contains a *lot* of mistakes!

With *Introduction to Assembly Language for the TI Home Computer* by Ralph Molesworth, I found the need to read certain parts of the E/A manual daunting (possibly due to the above problems).

The end result is a lot of frustrated potential programmers. Programmers who, if they have the money, go to a system that gives *full* support, meaning the languages discussed in the tutorial books do everything the book says, allowing the student to start at the beginning of the book and work to the end without snags. Or if they are like me (poor folk), they sit there looking at the computer and the programs written by other people in *total* frustration because we have lots of great ideas but no way to develop them.

On top of all this, those like me are probably self-taught in BASIC and XBASIC, meaning we have little if any understanding of what "structured programming" means. This can be *extremely* daunting.

Now, I am watching support and outlets for TI software dwindling and see the possibility of the death of a system I have grown to enjoy, and I can't help thinking "If they could see my program ... " — conceited of me, I know, but how many others might be thinking the same thing?

(See Page 9)

Feedback

(Continued from Page 8)

What I feel is needed to keep the TI alive is a collaboration by programming leaders of the various languages in designing tutorials. I suggest these tutorials be disk-based and interactive and possibly have a workbook (maybe on disk to be printed out through TI-Writer) that would stress the more important points and serve to reinforce the learning process. The tutorials should be directed toward the complete novice with the idea of leading him/her by the hand from basic introduction of the language, through structuring, complete explanation of the mapping process, though the language with complete examples explaining what happens with the execution of each command. In other words, help the student reach a point where he/she can start programming knowing all the commands and the limitations rather than trying to do something other systems can do but the TI can't.

If these Programmers Tutorial Packs could be produced, I feel certain the number of programs (including commercial quality) would increase dramatically. I also feel much more variety would exist. Who knows, one of us frustrated programmers might even find a way to finish that word processor that passed into history unfulfilled recently.

I'm also sure a solid market for these packs would exist. Without them, I'm afraid more and more TIs will end up in the closet while the space is taken up by an IB* clone where the users can learn the languages completely.

This is not a "bash" commentary (although it may seem so), but more a suggestion and maybe just a little bit of an outlet for some of the frustration I (and probably others) feel over having our hands tied.

Phil Martin
Keiser, Oregon

Geneve and YAPP compatibility

Many thanks to you — and of course Harry Brashear — for publishing the very enthusiastic review of my YAPP program. However, I'd like to add some comments concerning the Geneve compatibility, you mentioned in the editorial, a part that Harry of course could not check.

Though it may sound a bit strange, concerning the facilities of YAPP, that program was written entirely on a Geneve; without the large buffer of MY-Word and the fast loading from hard disk, it would have taken nearly twice as long to write the program (but it took me quite some time to get it up and running on the TI: I don't have any, and the people here in Germany all have modified systems, so you don't know why something did not run. I also searched for about a month for an error concerning Horizon compatibility, that eventually was a bug in the older ROS's all the people here were still using). I also got my Asgard mouse in Wiesbaden, when YAPP was nearly finished, the whole testing by me was done with a 9938 mouse (I use this term rather than Myarc mouse since:

— I don't have an original Myarc, but a modified old PC-mouse, that plugs in the same port;

— The 9938 allows the connection of a mouse also on the TI's 80-column devices, but you lose the third button, that is provided by special hardware in the 9640, so the Asgard mouse might be the better selection when buying one).

YAPP uses the same input device interface as the popular TI-Artist, the only difference is, that the File must be named YAPPDSR, also I added control of the third (UNDO) button, that was not provided by the Artist protocol.

I should add, that you may use any Artist driver (I've seen) except the one for the SuperSketch module, since this one has a limited resolution and requires the SuperSketch module to be in place.

The only other limitation with an unmodified Geneve are the missing 64k VDP RAM. This was left out by Myarc due to a bug in the 9938, that prevents full use of this memory, but it is the only possibility to obtain larger amounts of memory also on the TI. Unfortunately the standard TI with 80-column devive has only 32k free CPU memory, but even a non-interlaced YAPP screen is about 54k in size — where could you put it ? Thus I decided to use also this memory. It may be updated also on the Geneve very easily as long as you know which side of the soldering iron to touch (and if your Geneve is socketed, otherwise you should have some hardware experience). I wrote an instruction on how to do the modification.

Since Myarc does not provide internal information about the Geneve, this is without any guarantee, and you are responsible for all modifications. (Just to calm you: My Geneve survived the operation for more than a year.)

If you don't have the expansion RAM you lose UNDO and ZOOM in interlace mode, as well as the GIF loader (That needs lots of space). Even this should be worth the modification (Not speaking of lots of other programs that make also use of more RAM).

If any other reader has problems setting up YAPP, he may write me, and I'll try to help.

I'd strongly suggest, that other programs should adapt the YAPP file header as described also in a previous issue of MICROpendium: There is no easy way to detect the mode the file is in with normal MY-Art pictures (Myarc klutzed it). Otherwise you might get quite some disappointment when using the AUTO detect feature of YAPP as Harry got (This is the reason, why it can be switched off). Other programs need more analysis of the whole file to detect the mode (for example MY-Basic and Funnelweb), but even they may fail. Since YAPP has always too little memory free — though it may load fonts much larger than Artist — I think it is not worth it to waste space on this problem that can be handled by setting one otherwise unused byte in the header correctly!

Just a final comment: I wrote the program, because several friends with a TI asked me for a paint program for their 80-column device. None of them groaned when they saw it first (I showed preliminary efforts only when the program could do quite a bit.). The name is a tribute to several other programs out there in the UNIX world, for example the Compiler generator YACC — and a sign of my lack of imagination in finding Yet Another name for a graphic program.

Alexander Hulpke
Gulpener Strasse 11
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Germany

BASIC

Famous authors

By REGENA

At the end of February, I will be a delegate at the Utah Governor's Conference on Library and Information Services. Each state is having such a conference, then selected delegates will attend a White House Conference in July. This type of conference is held only once in a decade and the results will affect all libraries for the coming decade. The theme for the Governor's Conference is "Libraries Supporting Literacy, Democracy and Productivity."

With my mind on goals for libraries (I am also on our city library board of directors), I have been thinking about how we teach our children to enjoy reading. Also, do we as adults continue to read? Sure, I read the newspaper and several magazines, but what about good recreational reading? In general, Americans spend hundreds of dollars each year on video games, but perhaps only a few dollars on books. Books are standard presents in our family for birthdays and Christmas. This past Christmas I tried to select from the classics — works of famous authors or books that everyone should know about.

When I was a child, we played a card game called "Authors," and we learned several famous authors and titles of their most popular works. My program this month reviews some of those authors. This program is a quiz for one player or two players. The title of a famous book or epic poem is printed on the screen. You must type in the name of the author. Use all capital letters (letters with the Alpha Lock key down). Type the author's name as we generally know it, such as LOUISA MAY ALCOTT, not LOUISA ALCOTT. Initials always have a period and a space before the next character. The Brothers Grimm are included as JACOB AND WILHELM GRIMM. The author's name must be spelled correctly to be considered correct.

Most of the authors I used in the program are listed in *A First Dictionary of Cultural Literacy*, by E.D. Hirsh Jr. (By the way, his books are excellend compilations of what people should know to be considered literate.) I included some of the books I remembered from my childhood. I also included some books from two of my favorite authors, Clive Cussler and Alistair MacLean. They aren't considered "famous" or "classic" authors, but I love their books. And, I had to include my oldest son's favorite author, Stephen King.

The DATA statements in Lines 600 to the end contain the author's name with the corresponding book. Line 130 DIMensions the variables A$ and T$ for the author and title. I have included 85 works, but you may add your own by adding to the DATA statements and changing the DIMension statement (and Line 190 and Line 320). Or you can delete some of my suggested books and put in your own. The quiz consists of 50 titles (Line 290).

If two players compete, they alternate questions. The screen will indicate PLAYER 1 or PLAYER 2. There will still be a quiz of 50, or 25 for each player.

Lines 180-220 read in the authors and titles for A$ and T$. Lines 230-270 offer the choice of one player or two. The variable P will be 1 or 2, and PL is the player number 1 or 2. Lines 290-500 contain the main part of the quiz for the 50 questions. Lines 310-330 randomly choose one of the 85 possible titles which has not previously been selected. T$ is printed, and you enter X$. X$ is compared to A$(R), the correct author. After this random selection has been used, A$(R) is set equal to "" so it cannot be chosen again. Lines 450-460 switch the player number for the two-player game.

Have fun remembering some of these authors — and go ahead and read some of these books!

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

AUTHORS

```
100 REM AUTHORS !000
110 REM BY REGENA !071
120 CALL CLEAR !209
130 DIM A$(85),T$(85)!098
140 PRINT TAB(5);"NAME THE A
UTHOR" !162
150 PRINT : : :"THE TITLE OF
 A FAMOUS WORK  WILL BE GIVE
N." !121
160 PRINT :"TYPE THE FULL NA
ME OF THE   AUTHOR AND PRESS
 <ENTER>.   USE ALL CAPITAL
LETTERS." !227
170 PRINT : :"THE QUIZ CONSI
STS OF 50     BOOKS OR POEMS
." !195
180 PRINT : : :"... LOADING
DATA ..." !034
190 FOR J=1 TO 85 !118
200 READ A$(J),T$(J)!149
210 NEXT J !224
220 CALL HCHAR(23,3,32,20)!2
20
230 PRINT "PRESS 1 FOR ONE P
LAYER" !077
240 PRINT TAB(7);"2 FOR TWO
PLAYERS" !036
250 CALL KEY(3,K,S)!190
260 IF (K<49)+(K>50)THEN 250
 !013
270 P=K-48 !081
280 PL=1 !084
290 FOR J=1 TO 50 !110
300 CALL CLEAR !209
310 RANDOMIZE !149
320 R=INT(85*RND)+1 !216
330 IF A$(R)="" THEN 320 !23
1
340 IF P=1 THEN 360 !110
350 PRINT "PLAYER ";PL: : :
:!123
360 PRINT "NAME THE AUTHOR O
F": :T$(R): : :!255
370 INPUT X$ !014
380 IF X$=A$(R)THEN 410 !24
390 PRINT : :"THE CORRECT AU
THOR IS":A$(R): : :!156
400 GOTO 430 !254
410 PRINT : :"CORRECT!" !00
420 SCORE(PL)=SCORE(PL)+1 !
```

(See Page 11)

REGENA—

(Continued from Page 10)

```
_1
430 PRINT : :"SCORE: ";SCORE
(PL)!227
440 A$(R)="" !169
450 IF P=1 THEN 470 !220
460 PL=1-SGN(PL-2)!173
470 PRINT : :"PRESS <ENTER>"
 !127
480 CALL KEY(3,K,S)!190
490 IF K<>13 THEN 480 !214
500 NEXT J !224
510 CALL CLEAR !209
520 PRINT "FINAL SCORE:": :!
025
530 IF P=2 THEN 560 !056
540 PRINT SCORE(1);"OUT OF 5
0 POSSIBLE": : : :!147
550 GOTO 960 !018
560 PRINT "PLAYER 1 --";SCOR
E(1)!157
570 PRINT "PLAYER 2 --";SCOR
E(2)!159
580 PRINT : :"POSSIBLE 25 EA
CH": : : :!202
590 GOTO 960 !018
600 DATA LOUISA MAY ALCOTT,L
ITTLE WOMEN,LOUISA MAY ALCOT
T,LITTLE MEN !188
610 DATA LEWIS CARROLL,ALICE
'S ADVENTURES IN      WONDE
RLAND,LEWIS CARROLL,THROUGH
THE LOOKING GLASS !248
620 DATA HANS CHRISTIAN ANDE
RSEN,THE UGLY DUCKLING,HANS
CHRISTIAN ANDERSEN,THE EMPER
OR'S NEW CLOTHES !102
630 DATA HANS CHRISTIAN ANDE
RSEN,THE PRINCESS AND THE PE
A,MAYA ANGELOU,I KNOW WHY TH
E CAGED BIRD   SINGS !134
640 DATA JOEL CHANDLER HARRI
S,UNCLE REMUS,CHARLES DICKEN
S,A CHRISTMAS CAROL,CHARLES
DICKENS,DAVID COPPERFIELD !0
83
650 DATA CHARLES DICKENS,OLI
VER TWIST,CHARLES DICKENS,A
TALE OF TWO CITIES !019
660 DATA WASHINGTON IRVING,T
HE LEGEND OF SLEEPY HOLLOW,R
OBERT LOUIS STEVENSON,TREASU
RE ISLAND !255
670 DATA ROBERT LOUIS STEVEN
SON,THE STRANGE CASE OF
    DR. JEKYLL AND MR. HYDE
!125
680 DATA MIGUEL DE CERVANTES
,DON QUIXOTE,WILLIAM FAULKNE
R,THE SOUND AND THE FURY !22
6
690 DATA WILLIAM FAULKNER,AS
 I LAY DYING,MARY SHELLEY,FR
ANKENSTEIN,JACOB AND WILHELM
 GRIMM,HANSEL AND GRETEL !23
7
700 DATA JACOB AND WILHELM G
RIMM,SNOW WHITE,JACOB AND WI
LHELM GRIMM,RUMPELSTILTSKIN
!213
710 DATA DR. SEUSS,HOW THE G
RINCH STOLE      CHRISTMAS
,DR. SEUSS,THE CAT IN THE HA
T !176
720 DATA JONATHAN SWIFT,GULL
IVER'S TRAVELS,WILLIAM SHAKE
SPEARE,HAMLET,WILLIAM SHAKES
PEARE,ROMEO AND JULIET !022
730 DATA WILLIAM SHAKESPEARE
,MACBETH,WILLIAM SHAKESPEARE
,OTHELLO,WILLIAM SHAKESPEARE
,A MIDSUMMER NIGHT'S DREAM !
239
740 DATA NATHANIEL HAWTHORNE
,THE SCARLET LETTER,NATHANIE
L HAWTHORNE,THE HOUSE OF SEV
EN GABLES !141
750 DATA ERNEST HEMINGWAY,TH
E SUN ALSO RISES,ERNEST HEMI
NGWAY,THE OLD MAN AND THE SE
A,HOMER,ILIAD !220
760 DATA HOMER,ODYSSEY,MARK
TWAIN,THE ADVENTURES OF TOM
SAWYER,MARK TWAIN,THE PRINCE
 AND THE PAUPER !195
770 DATA MARK TWAIN,THE ADVE
NTURES OF      HUCKLEBE
RRY FINN,RUDYARD KIPLING,THE
 JUNGLE BOOK !234
780 DATA RUDYARD KIPLING,JUS
T SO STORIES,VICTOR HUGO,THE
 HUNCHBACK OF NOTRE DAME,HER
MAN MELVILLE,MOBY DICK !165
790 DATA WATTY PIPER,THE LIT
TLE ENGINE THAT COULD,HENRY
WADSWORTH LONGFELLOW,THE SON
G OF HIAWATHA !189
800 DATA HENRY WADSWORTH LON
GFELLOW,PAUL REVERE'S RIDE,H
ENRY WADSWORTH LONGFELLOW,TH
E VILLAGE BLACKSMITH !012
810 DATA CLEMENT C. MOORE,'T
WAS THE NIGHT BEFORE      C
HRISTMAS,J. M. BARRIE,PETER
PAN !027
820 DATA EDWARD LEAR,THE OWL
 AND THE PUSSYCAT,BEATRIX PO
TTER,THE TALE OF PETER RABBI
T !240
830 DATA C. COLLODI,PINOCCHI
O,EDGAR ALLAN POE,THE RAVEN,
EDGAR ALLAN POE,THE MURDERS
IN THE RUE      MORGUE !034
840 DATA ELEANOR PORTER,POLL
YANNA,WASHINGTON IRVING,RIP
VAN WINKLE,DANIEL DEFOE,ROBI
NSON CRUSOE !025
850 DATA FRANCES HODGSON BUR
NETT,THE SECRET GARDEN,HENRY
 DAVID THOREAU,WALDEN,J. R.
R. TOLKIEN,THE HOBBIT !213
860 DATA J. R. R. TOLKIEN,TH
E LORD OF THE RINGS,HARRIET
BEECHER STOWE,UNCLE TOM'S CA
BIN !221
870 DATA WALT WHITMAN,LEAVES
 OF GRASS,LAURA INGALLS WILD
ER,THE LITTLE HOUSE IN THE B
IG WOODS !240
880 DATA KENNETH GRAHAME,THE
 WIND IN THE WILLOWS,L. FRAN
K BAUM,THE WONDERFUL WIZARD
OF OZ !238
890 DATA RICHARD WRIGHT,NATI
VE SON,CLIVE CUSSLER,ICEBERG
,CLIVE CUSSLER,RAISE THE TIT
ANIC! !241
900 DATA CLIVE CUSSLER,PACIF
IC VORTEX,STEPHEN KING,IT,ST
EPHEN KING,CHRISTINE,STEPHEN
 KING,MISERY !242
910 DATA ALISTAIR MACLEAN,BR
EAKHEART PASS,ALISTAIR MACLE
AN,ICE STATION ZEBRA !183
920 DATA ALISTAIR MACLEAN,GO
ODBYE CALIFORNIA,JAMES A. MI
CHENER,HAWAII,JAMES A. MICHE
NER,CENTENNIAL !233
930 DATA JAMES A. MICHENER,T
ALES OF THE SOUTH PACIFIC,HA
RPER LEE,TO KILL A MOCKINGBI
RD !194
940 DATA BEVERLY CLEARY,HENR
Y AND RIBSY,MARY MAPES DODGE
,"HANS BRINKER, OR THE SILVE
R SKATES" !172
950 DATA FRANKLIN W. DIXON,T
HE HARDY BOYS SERIES,BEVERLY
 CLEARY,HENRY HUGGINS !030
960 END !139
```

EXTENDED BASIC

Cryptic Programming

Creating and solving cryptograms

By JERRY STERN

Edgar Allen Poe understood codes. Not ASCII codes, or token codes, but the simple letter substitution codes used in cryptograms. Poe would have understood ASCII, too. A printer code thirteen is always a carriage return, and his codes were equally whimsical; r could be substituted for e, or a for g, and as long as the receiver knew what code was being used, a message could be sent.

Poe's famous story of Captain Kidd's gold, treasure map, and cryptogram was "The Gold Bug." In that tale, the directions to a treasure chest of gold and gems were written in invisible writing in a letter substitution code, and the code provided directions to a skull, two skeletons, and a fortune.

Along the way, Poe's character William Legrand explained how he decoded Kidd's cryptogram. I'll just give you the short version. E is the most-used letter in English, followed by a, o, l, d, and so on. Poe ranked all the letters in order of frequency except j and v. Decoding the map directions was simply a matter of guessing what short patterns stood for, starting with the common words like "the," or single-letter words like "a" and "i." Double letters are usually good clues to words, and as each letter is exchanged, it provides more clues for more words.

Of course, a cryptogram is most useful if the receiving conspirator knows the code, or can repeat the process of creating the code rather than deciphering the cryptogram by trial and error. That requires some sort of system to communicate which code is being used.

The least fun part of the process of solving cryptograms is the manual tracking of which letters stand for what letters, and going through the cryptogram writing in the new letters. But that kind of bookkeeping task is what a computer does best. (We had to talk about computers eventually.) This month, there are three programs for creating and solving cryptograms. CYPHER creates letter substitution codes, and can recreate the same codes with a code number to identify which code has been used. DECODER deciphers cryptograms when the code number is known. CRYPTOGRAM helps decode cryptograms when the code number is not known.

But first, CYPHER. This program uses the RANDOMIZE statement and RND function to create the same cyphers over and over. Each letter of the alphabet is assigned at random to another letter. Programs that use the RND function without RANDOMIZE will produce the same numbers or patterns of numbers each time the program is run. That is useful for our code program, but there would only be one code possible. Adding the RANDOMIZE statement before the formula using RND will scramble the random numbers, and there would be a different code every time the program is run, with no way to repeat the same code.

CYPHER creates letter substitution codes ... DECODER deciphers cryptograms when the code number is known. CRYPTOGRAM helps decode cryptograms when the code number is not known.

PC versions of BASIC insist on a "seed number" each time RANDOMIZE is executed, and even provide a screen prompt for the number. TI BASICs can use a seed number as an option, but the programmer has to provide the seed number. Try running this program:

```
100 INPUT "seed? ":X ::IF X=0 THEN STOP
110 RANDOMIZE X
120 FOR L=1 TO 20::PRINT RND, ::NEXT L
130 GOTO 100
```

Try different numbers for X, and try using the same number twice. Each seed number will result in a different, but repeatable, sequence of numbers. This is the same technique used in CYPHER. Line 140 uses RANDOMIZE to create a random default number for the first execution of the code number prompt in line 200. That seed number will be used in RANDOMIZE in line 240, just before the new code is created. After the first cypher and cryptogram are created, the default will always be the last seed number used. That allows several messages to be coded with the same key.

The letter substitution codes, or the keys, are built in lines 250 to 300. It is a very simple loop. Each pass picks one letter from the string AL$, which contains "ABCDE...." Next, it copies the letter to the string CODE$, and removes the letter from AL$. Each execution of the loop chooses a letter from the remaining letters and shrinks AL$ by one more letter. Line 300 adds the last remaining letter to CODE$ manually.

Next, CYPHER asks for the message to encrypt. You may use upper or lower case, numbers, and punctuation, but only the letters will be encoded. Spaces, numbers, and punctuation are just copied into the new string, and all lower case will be converted to upper case in the cryptogram.

CYPHER will remember up to one hundred cypher codes, key numbers, and cryptograms. When you have finished entering messages, press ENTER at the message prompt, and CYPHER will allow you to print out your work, either printing only the coded messages, or including the original text, the cypher, and the seed number. To be sure you don't quit accidentally without printing your puzzles, the subprogram ENDING is used to warn you; press the space bar if you really want to quit, or press any other key to return to the program. No special printer codes have been used in CYPHER, so the only change to make for your printer is the default printer name in line 90.

(See Page 14)

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EXTENDED BASIC—

(Continued from Page 12)

The prompt for printing the listing uses a new subprogram. KEYAT combines the features of ACCEPT AT with the single keypress convenience of CALL KEY. ACCEPT AT requires a program user to press ENTER after each reply, and for a single character input that is not the easiest method. CALL KEY doesn't provide a flashing cursor or any validation of an input letter. KEYAT can flash a cursor at any row and column location, without erasing the character beneath the cursor, and it tests the letter chosen against the validation string in the CALL KEYAT statement. The variables used in the KEYAT subprogram are listed in line 28045. The column number used matches the column numbers from DISPLAY AT and ACCEPT AT, not HCHAR and VCHAR.

Well, at this point you've got a listing of encrypted messages. You could decode them with this month's second program, CRYPTOGRAM, or, since you know the seed numbers used to create the codes, you could let the computer decode them. That will require a third program, easily built from CYPHER. Since only five lines are different between these two programs, it's easier to convert CYPHER from an encrypting program to a decoding program than to start over. First, load CYPHER into memory, and then either type the lines listed in DECODER—MR into CYPHER, or merge them in from a disk file:

```
OLD DSK1.CYPHER
MERGE DSK1.DECODER—MR
```

and then save the program under a new filename!

```
SAVE DSK1.DECODER
```

To use DECODER, enter the same code number as CYPHER used to create the cryptogram, type in the cryptogram, and DECODER will convert the message back into readable form.

One warning: Random number functions are sometimes different between different versions of BASIC. CYPHER and DECODER were tested on Version 110 of Extended BASIC. That is the last and most common version from Texas Instruments. To identify your version of Extended BASIC, type this line:

```
CALL VERSION(V)::PRINT V
```

On some of the second party versions of Extended BASIC, the same seed number might create a different code. If you are going to send messages between different computers with different versions of Extended BASIC, test them first to see if the same seed number results in the same code.

CRYPTOGRAM is used when you don't know the code number that created the cryptogram, or the puzzle was created in some old-fashioned way in the B.C. era (Before Computers). This program displays the encoded message, Edgar Allen Poe's letter frequency table, space for the deciphered message, and a master list of what letters you've assigned to what characters. Each time you enter a pair of letters at the "FROM — TO — " prompt, the second letter will be filled in on the chart above the first letter.

Extended BASIC has more power than it has speed. To search a message character by character, and change each pair of letters every time you enter a pair, XB would take up to five seconds, depending on the length of the message. That is not acceptable, so I've used a completely different technique for decoding. The message is searched just once when you enter it, and a duplicate string is made of it. The original message is in all capital letters, and the second string is converted to all lower case by the subprogram LCASE. During the program setup, all the capital letter shapes are copied, using the CALL CHARPAT statement, into the array ACHAR$(), and the small letter set is blanked out with CALL CHAR(97,""). Both versions of the message are written on the decoding screen, but since the small letters have been blanked out, the second message is invisible. As you enter a pair of letters to exchange, line 270 copies the shape of the second letter entered to the lower case version of the first letter entered, and the entire screen is updated instantaneously.

This shortcut is fast, but doesn't allow the small letters to be used in any other screen displays. So, line 190 includes a CALL KEY(3,K,S) to remap the keyboard. Keyboard number three reads all letters as upper case, whether the shift key or Alpha Lock is up or down.

CRYPTOGRAM also uses the KEYAT subprogram for single- letter input, don't press ENTER after each letter. When you've finished a cryptogram, press the space bar. A small menu will appear, and you may proceed to the next cryptogram, continue work on the same puzzle, or quit the program.

Ready to practice? Here are some cryptograms to get you started. These won't lead to buried pirate treasures, but you might recognize some old nuggets in them....

YCZE QDBOANG GC OG JC IWRR JMQ JWSQ OKOWROHRQ ICZ WJGTCSBRQJWCA. (T. ACZJMTCJQ BOZEWAGCA)

DTNJ BTMPCPWP TI DYKWZHZN K ETSX CP TEQCVZS WT ST. KMS GQKXBTMPCPWP TI DYKWZHZN K ETSX CP MTW TEQCVZS WT ST. (FKNJWDKCM)

MWZX YI TJP ZPSNHP WS BPWBUP MJW JOVP RWTJYRH APTTPZ TW CW.(WILOZ MYUCP)

(Very Big Hint: They all start with the same word, and the key code for the third one is 4328.)

CRYPTOGRAM

```
100 ! CRYPTOGRAM !171
110 ! V. 1.0 J. L. STERN 2/9
1 TIXB !246
120 ! HELPS SOLVE LETTER SUB
STITUTION CRYPTOGRAMS !016
130 DIM ACHAR$(90)!173
140 ALPHA$=" ABCDEFGHIJKLMNO
PQRSTUVWXYZ" :: ALPHB$=" abc
defghijklmnopqrstuvwxyz" ::
POE$=" EAOLDHNRSTUYCFGLMWBKP
QXZJV" !065
150 CALL CHARSET !118
160 CALL CHAR(95,"00FF",61,"
00FF0000FF"):: CALL BLUE !07
3
170 GOSUB 330 !155
180 FOR L=65 TO 90 :: CALL C
HARPAT(L,ACHAR$(L)):: CALL C
HAR(L+32,""):: NEXT L !216
190 CALL KEY(3,K,S):: DISPLA
Y AT(14,2)BEEP:"  ENTER THE
CRYPTOGRAM:" :: LINPUT F$ !0
84
200 DISPLAY AT(1,1)ERASE ALL
:"  EDGAR ALLEN POE'S LIST:"
:POE$:RPT$("=",28)!005
210 T$=F$ :: CALL LCASE(T$):
```

(See Page 15)

EXTENDED BASIC—

(Continued from Page 14)

```
 F$=F$&RPT$(" ",140-LEN(F$)
):: T$=T$&RPT$(" ",140-LEN(F
$))!251
220 FOR L=1 TO 5 :: DISPLAY
AT(3*L+1,1):SEG$(T$,(L-1)*28
+1,28):SEG$(F$,(L-1)*28+1,28
):RPT$("_",28):: NEXT L !000
230 DISPLAY AT(18,1):RPT$("=
",28):ALPHB$:ALPHA$:RPT$("_"
,28)!094
240 DISPLAY AT(22,2):"CHANGE
 LETTER FROM   TO   ":TAB(21
);"_    _":"   PRESS SPACE W
HEN DONE" !109
250 CALL KEYAT(22,21,X,ALPHA
$):: IF X=32 THEN 280 !136
260 CALL KEYAT(22,26,Y,ALPHA
$):: IF Y=32 THEN 280 !143
270 CALL CHAR(X+32,ACHAR$(Y)
):: GOTO 240 !249
280 DISPLAY AT(24,1):"NEXT,
CONTINUE, OR QUIT?" :: CALL
KEYAT(24,26,Q,"NCQ")!062
290 ON POS("NCQ",CHR$(Q),1)G
OTO 300,240,310 !028
300 GOSUB 330 :: FOR L=65 TO
 90 :: CALL CHAR(L+32,""):::
NEXT L :: GOTO 190 !235
310 CALL CLEAR :: PRINT "QUO
TH THE RAVEN, NEVERMORE !" :
: STOP !090
320 !titles subroutine !136
330 DISPLAY AT(7,10)ERASE AL
L:"CRYPTOGRAM":"
_______" !171
340 DISPLAY AT(10,6):"CRYPTO
GRAM DECODER" :: DISPLAY AT(
12,3):"BY JERRY L. STERN  2/
'91" !056
350 DISPLAY AT(14,2):"RESEAR
CHING CRYPTOGRAMS..." !162
360 RETURN !136
28040 SUB KEYAT(R,C,X,V$)!21
7
28045 ! KEYAT(Row, Column, A
SCII Return variable, Valida
tion string) JLS 2/91 !033
28050 ! Combines cursor flas
h with single key entry, val
idation !111
28055 C=C+2 :: CALL GCHAR(R,
C,N(0)):: N(1)=N(0):: N(2),N
(3)=30 !163
28060 CALL HCHAR(R,C,N(Y-INT
(Y/4)*4)):: Y=Y+1 !209
28065 CALL KEY(0,X,S):: IF S
<1 THEN 28060 !092
28070 IF POS(V$,CHR$(X),1)=0
 THEN 28060 !120
28075 CALL HCHAR(R,C,X)!144
28080 SUBEND !168
28085 SUB LCASE(T$)!187
28090 !Converts all UPPER ca
se characters in string to l
ower case; JLS 2/91 !1892809
5 N$="" !247
28100 FOR L=1 TO LEN(T$):: C
=ASC(SEG$(T$,L,1))!048
28105 IF C>90 OR C<65 THEN 2
8110 ELSE C=C+32 !020
28110 N$=N$&CHR$(C):: NEXT L
 !068
28115 T$=N$ !168
28120 SUBEND !168
29505 SUB BLUE !149
29510 ! SWITCHES DISPLAY TO
WHITE ON BLUE; JLS 7/88 !230
29515 CALL SCREEN(5):: FOR L
=0 TO 14 :: CALL COLOR(L,16,
1):: NEXT L :: SUBEND !202
```

CYPHER

```
90 PR$="RS232.DA=8.BA=4800"
!123
100 ! CYPHER !110
110 ! V. 1.0 J. L. STERN 2/9
1 TIXB !246
120 ! CREATES LETTER SUBSTIT
UTION CYPHERS AND ENCODES ME
SSAGES !065
130 DIM M$(100),CY$(100),R(1
00),CODE$(100)!137
140 RANDOMIZE !149
150 N=0 :: ALPHA$="ABCDEFGHI
JKLMNOPQRSTUVWXYZ" :: R(0)=I
NT(RND*9999)+1 !200
160 CALL CHAR(95,"00FF"):: C
ALL BLUE !169
170 DISPLAY AT(7,12)ERASE AL
L:"CYPHER":"
___" !046
180 DISPLAY AT(10,6):"Crypto
gram Creator" :: DISPLAY AT(
12,3):"by Jerry L. Stern  2/
'91" !114
190 N=N+1 :: IF N=101 THEN 4
20 !162
200 DISPLAY AT(14,1)BEEP:"En
ter a random number:";R(N-1)
:"(Each random number create
s  a different cypher code.)
" !172
210 ACCEPT AT(14,24)VALIDATE
(DIGIT)SIZE(-5):R(N)!065
220 DISPLAY AT(18,1):"Thinki
ng about a cypher..." !162
230 IF (N>1)AND(R(N)=R(N-1))
THEN CODE$(N)=CODE$(N-1):: G
OTO 310 !219
240 RANDOMIZE R(N):: AL$=ALP
HA$ :: CODE$(N)="" !030
250 FOR L=26 TO 2 STEP -1 !
create code !180
260 TR=INT(RND*L)+1 !065
270 CODE$(N)=CODE$(N)&SEG$(A
L$,TR,1)!102
280 AL$=SEG$(AL$,1,TR-1)&SEG
$(AL$,TR+1,L-TR)!080
290 NEXT L !226
300 CODE$(N)=CODE$(N)&AL$ !0
27
310 DISPLAY AT(18,1):ALPHA$:
CODE$(N): :"Ready for a mess
age to code:":"Press Enter t
o Print or Quit" !171
320 LINPUT M$(N):: IF M$(N)=
"" THEN 420 !171
330 PRINT :"Encrypting...":
:!060
340 FOR L=1 TO LEN(M$(N))::
T=ASC(SEG$(M$(N),L,1))!169
350 IF (T>96)AND(T<123)THEN
T=T-32 :: GOTO 370 !037
360 IF (T>90)OR(T<65)THEN 38
0 !157
370 T=ASC(SEG$(CODE$(N),T-64
,1))!068
380 CY$(N)=CY$(N)&CHR$(T)::
NEXT L !103
390 PRINT CY$(N):: PRINT !05
3
400 CALL PAUSE :: GOTO 170 !
099
410 ! PRINTING OR LEAVING? !
052
420 DISPLAY AT(3,1)ERASE ALL
:"Print or Quit? (P/Q)" :: C
ALL KEYAT(3,22,LT,"PpQq")!10
7
430 IF POS("PpQq",CHR$(LT),1
)>2 THEN CALL ENDING :: N=N-
1 :: GOTO 170 !248
440 DISPLAY AT(5,1):"Print o
nly Cryptograms or  print m
essages, cryptograms,and num
bers for codes (All)?(C/A)"
!019
450 CALL KEYAT(8,7,LT,"CcAa"
)!034
460 DISPLAY AT(10,1):"Printe
r name?":PR$ :: ACCEPT AT(11
,1)SIZE(-28)VALIDATE(UALPHA,
DIGIT,"./="):PR$ !236
470 OPEN #1:PR$,DISPLAY ,VAR
IABLE 80 !062
480 PRINT #1:"Messages found
 under mysterious circumstan
```

(See Page 16)

EXTENDED BASIC—

(Continued from Page 15)

```
ces...": :!253
490 FOR L=1 TO N-1 !075
500 PRINT #1:CY$(L)!193
510 IF POS("CcAa",CHR$(LT),1
)<3 THEN 530 !104
520 PRINT #1:M$(L):CODE$(L),
"Code # ";R(L):ALPHA$ !124
530 PRINT #1: :: NEXT L !172
540 CLOSE #1 :: IF N=101 THE
N 420 !036
550 N=N-1 :: GOTO 170 !145
28040 SUB KEYAT(R,C,X,V$)!21
7
28045 ! KEYAT(Row, Column, A
SCII Return variable, Valida
tion string) JLS 2/91 !033
28050 ! Combines cursor flas
h with single key entry, val
idation !111
28055 C=C+2 :: CALL GCHAR(R,
C,N(0)):: N(1)=N(0):: N(2),N
(3)=30 !163
28060 CALL HCHAR(R,C,N(Y-INT
(Y/4)*4)):: Y=Y+1 !209
28065 CALL KEY(0,X,S):: IF S
<1 THEN 28060 !092
28070 IF POS(V$,CHR$(X),1)=0
 THEN 28060 !120
28075 CALL HCHAR(R,C,X)!144
28080 SUBEND !168
29160 SUB ENDING !036
29165 !CONFIRMS PROGRAM QUIT
 JLS 9/89 !129
29170 CALL SOUND(800,130,0,1
60,0):: DISPLAY AT(24,3):"PR
ESS SPACE BAR TO QUIT" !105
29175 CALL KEY(0,K,S):: IF S
<1 THEN 29175 ELSE IF K<>32
THEN SUBEXIT !003
29180 STOP :: SUBEND !194
29505 SUB BLUE !149
29510 ! SWITCHES DISPLAY TO
WHITE ON BLUE; JLS 7/88 !230
29515 CALL SCREEN(5):: FOR L
=0 TO 14 :: CALL COLOR(L,16,
1):: NEXT L :: SUBEND !202
30820 SUB PAUSE !236
30825 FOR D=1 TO 100 :: NEX
 D !241
30830 DISPLAY AT(24,2):"PRES
S ANY KEY TO CONTINUE" !088
30835 CALL KEY(0,K,S):: IF S
<1 THEN 30835 !049
30840 SUBEND !168
```

DECODER

```
100 ! DECODER  (MERGE THIS F
ILE WITH CYPHER) !121
170 DISPLAY AT(7,12)ERASE AL
L:"DECODER":"
___" !186
310 DISPLAY AT(18,1):ALPHA$:
CODE$(N): :"Ready for scramb
led message:":"Press Enter t
o Print or Quit" !057
330 PRINT :"Decyphering...":
 :!140
370 T=POS(CODE$(N),CHR$(T),1
)+64 !062
```

THE TI-BASE USER'S GUIDE - 9

Building a menu

By BILL GASKILL

One the most useful applications that you can design for use in TI-Base or most any other program is a menu. Menus provide guidance to the user and they add an element of convenience that removes much of the unfriendliness that often comes with learning a new application. The MENU1 command file that follows was written in TI-Writer because the number of lines exceeds the maximum allowable in the TI-Base Command File Editor.

Aside from the other directives used, MENU1 is a pretty good example of how the BREAK, CASE, DOCASE and ENDCASE directives may be used effectively. These seem to be among the most difficult directives for the novice user to understand.

When MENU1 is executed, by typing in DO MENU1 at the dot prompt, the screen clears and the program displays the available choices. Any option is selected by typing in the UPPER case letter listed directly to the left of the option and then pressing ENTER. What occurs with the use of MENU1 is that one command file RUNs another command file. Up to five command files may be nested, meaning that you could conceivably have five menus, each RUNable by the previous one. Exiting one menu would always return you to the previously displayed menu. The problem with having five menus is that you wouldn't be able to execute any of the options listed on menu number five, since the attempt would exceed the nested command file limit allowed by TI-Base. Realistically though, you could have four menus and any one of them could still run the next menu and any of the options listed on the menu.

Operationally, MENU1 accepts input at row 6, column 15 into the LOCAL named B (which was declared as a LOCAL in the first part of the command file) via the READCHAR directive, which only exists in V3.0. READCHAR is the equivilent of CALL KEY in Extended Basic in that it lets you make a selection from the menu with a single keypress. V2.0 users must use READSTRING in place of READCHAR.

When B has a value the DOCASE directive is invoked and it examines each CASE for a "true" condition. If none is found the MENU is redisplayed. You won't "crash" the program with an incorrect entry. When a "true" condition IS found the DO filename directive immediately following the CASE directive is executed. When whatever processing conducted by the command file selected is complete the MENU is RETURNed to and the next line in the file is interpreted, which is BREAK. The BREAK directive shifts control to the ENDCASE directive and the MENU1 file is then re-RUN via the WHILE and ENDWHILE loop until B equals X (which is a menu option that you select). Once B=X the command file is exited and the dot prompt is returned.

If you watch the operation of the MENU when a choice is made

(See Page 17)

TI-BASE—

(Continued from Page 16)

You will see the command file line counter being incremented in the status line at the base of the screen. While a command file does not actually contain line numbers, the command file interpreter tracks each line interpreted so that it knows which line to come back to when a RETURN is encountered. Thus if you selected option C the counter would increment to number 35, where a "true" condition existed, and then stop while the DO statement was executed in line 36. When the CHANGE program was exited the increment on the status bar would begin with the number 37, the BREAK directive, and increase until the RETURN in line 71 was encountered. It would then start over at line 10 and interpret each line of the MENU1 command file until it reached the READCHAR statement in line 25 again.

```
* menu1 06/01/90
* copyright 1990 by Wm. Gaskill
SET TALK OFF
SET RECNUM OFF
SET HEADING OFF
CLEAR
LOCAL DA D 8 C
LOCAL B C 1
REPLACE DA WITH .DATE.
WHILE B <> "X"
CLEAR
WRITE 01,17 DA
WRITE 04,16 "SYSTEM MENU"
WRITE 06,09 "ENTER:"
WRITE 08,09 "A^^TO^^ADD NEW DATA"
WRITE 09,09 "C^^^^^^CHANGE A RECORD"
WRITE 10,09 "F^^^^^^FIND A RECORD"
WRITE 11,09 "H^^^^^^HELP SCREENS"
WRITE 12,09 "L^^^^^^LIST ALL RECORDS"
WRITE 13,09 "P^^^^^^PRINT RECORDS"
WRITE 14,09 "Q^^^^^^QUERY EDITOR"
WRITE 15,09 "R^^^^^^REPORT GENERATOR"
WRITE 16,09 "U^^^^^^UTILITIES MENU"
WRITE 18,09 "X^^^^^^eXit THE PROGRAM"
READCHAR 06,15 B
IF B = "X"
^^^CLEAR
^^^CLOSE ALL
^^^RETURN
ELSE
^^^DOCASE
^^^^^CASE B="A"
^^^^^^^DO ADD
^^^^^^^BREAK
^^^^^CASE B="C"
^^^^^^^DO CHANGE
^^^^^^^BREAK
^^^^^CASE B="F"
^^^^^^^DO FIND
^^^^^^^BREAK
^^^^^CASE B="H"
^^^^^^^DO HELP
^^^^^^^BREAK
^^^^^CASE B="L"
^^^^^^^DO LIST
^^^^^^^BREAK
^^^^^CASE B="P"
^^^^^^^DO PRINT
^^^^^^^BREAK
^^^^^CASE B="Q"
^^^^^^^DO QUERY
^^^^^^^BREAK
^^^^^CASE B="R"
^^^^^^^DO REPORT
^^^^^^^BREAK
^^^^^CASE B="U"
^^^^^^^DO UTIL
^^^^^^^BREAK
^^^^^CASE 1=1
^^^^^^^REPLACE B WITH "Z"
^^^^^^^BREAK
^^^^^ENDCASE
^^^IF B<>"Z"
^^^^^CLEAR
^^^^^ENDIF
^^^ENDIF
ENDWHILE
RETURN
```

1991 TI FAIRS

FEBRUARY

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

MARCH

Family Computer Exposition and Ham Radio Festival, (formerly TICOFF), March 6, Roselle Park High School, 185 West Webster Ave., Roselle Park NJ 07204. Sponsored by students of the high school and the Old Bridge Ham Radio Club. For information write the high school or call (201) 241-4550 or call the 24-hour informational BBS at (201) 241-8902.

APRIL

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

MAY

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

SEPTEMBER

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

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

BASIC Assembly

Enlarging the Graphics Compiler

By BARRY A. TRAVER

In case you're just joining us, we are in the midst of publishing in this column a GRAPHICs COMPiler (GRAPHICOMP), which is able to convert normal Extended BASIC graphics statements into assembly language source code for equivalent routines that can be accessed by a CALL LINK from XB. Extended BASIC is notoriously s-l-o-w in implementing graphics statements, but that problem is neatly solved with the routines created by GRAPHICOMP.

One nice thing is that you don't even have to know anything about assembly source code to take advantage of the code that GRAPHICOMP creates: it's all ready to assemble and use. On the other hand, if you are interested in learning assembly language, the commented source code (along with these articles in MICROpendium) should be a significant help (we hope) in your learning how to handle screen graphics displays in assembly.

Last month we published GRAPHICOMP 1.4a, which was able to create assembly counterparts to the following XB graphics statements: CALL CLEAR, DISPLAY AT, CALL HCHAR, and CALL VCHAR. This month we are publishing a MERGE file which will expand GRAPHICOMP to be able to handle also CALL CHAR, CALL COLOR (for character sets), and CALL SCREEN. Thus GRAPHICOMP 1.4b will be able to do all that GRAPHICOMP 1.4a did and more.

Incidentally, next month we will be expanding GRAPHICOMP still further, adding the following commands, all dealing with sprites: CALL SPRITE, CALL LOCATE, CALL MOTION, CALL COLOR (for sprites), CALL PATTERN, CALL MAGNIFY, and CALL DELSPRITE. Here's the complete list of what GRAPHICOMP will be able to handle at that time: CALL CHAR, CALL CLEAR, CALL COLOR (for character sets and for sprites), CALL DELSPRITE, CALL HCHAR, CALL LOCATE, CALL MAGNIFY, CALL MOTION, CALL PATTERN, CALL SPRITE, CALL VCHAR, and DISPLAY AT. That should take care of all your graphics needs!

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

```
SAVE DSK1.GC/1-4BM,MERGE
```

To make GRAPHICOMP 1.4b, here's what you need to do:

```
OLD DSK1.GC/1-4A (from last month's MICROpendium)
MERGE DSK1.GC/1-4BM (from this month's MICROpendium)
SAVE DSK1.GC/1-4B
```

That's all there is to it!

Also included this month is a GRAPHICOMP TESTER (or GC/TESTER), which will make it easy for you test your experiments with GRAPHICOMP. If you choose option 1 or option 2 when using GRAPHICOMP, you can use GC/TESTER to check it out a step at a time. (GC/TESTER can be used with any version of GRAPHICOMP, by the way.)

Since assembly equivalents of CALL CHAR and CALL COLOR were discussed in this column in the November 1990 issue of MICROpendium, there is no need to repeat the same comments here. The approach there was a bit different - i.e., using a CALL LINK with passed parameters - but the principles are the same.

I did notice one very minor typo that I failed to catch in my article in that issue. At the bottom of page 19 I suggest the following subprogram:

```
30000 SUB CHAR(SET,DEF$)
30010 CALL LINK("CHAR",SET,DEF
$)
30020 SUBEND
```

Well, that will work, but that wasn't what I meant to type. What I intended was this:

```
30000 SUB CHAR(CHAR,DEF$)
30010 CALL LINK("CHAR",CHAR,DE
F$)
30020 SUBEND
```

I guess I had SET on my mind because I was thinking ahead of the next routine, i.e., CALL LINK("COLOR",SET,FORE,BACK), but for the CHAR routine I definitely meant to say CHAR rather than SET, just in case that was confusing to anyone.

Since handling CALL CHAR and CALL COLOR in assembly were explained in that issue, I'll confine my comments here to handling CALL SCREEN in assembly. It is very different from other things we have done, because it makes use of the VWTR or "Video Write To Register" (or, better, "write to video register"?) command.

Within the VDP chip hardware, there are special control locations known as VDP write-only registers. In a sense, they're sort of the opposite of ROM, which is read-only memory. There are seven write-only VDP registers, and it so happens that register 7 contains the screen color information. Using VWTR, we can poke a screen color into operation, but (for reasons I've never understand) there is no way to peek into that area to detect screen color (not that that really presents a problem to us).

Here's the assembly equivalent to CALL SCREEN(16):

```
LI    R0,>070F
BLWP  @VWTR
```

The >07 targets the output to VDP write-only register 7, and the >0F assigns white as the screen color. Yes, I know that >0F is decimal 15 and that white in (X)BASIC is 16, but remember that here as elsewhere assembly starts counting with 0, not 1, so we need to compensate for that in our numbering things. (We came across the same phenomenon when dealing with CALL COLOR.)

Well, that's enough for this month. Next month we will probably be finishing up the area of graphics (at least for now), and I've been considering looking at file operations (PABs and such) after that, although I am open to suggestions for other topics that may be of interest to people. If you would like to write to me (I will read your letter, although I can't promise to answer all letters I receive), my address is Barry Traver, 835 Green Valley Drive, Philadelphia, PA 19128 (or you can phone me at 215/483-1379, as long as you don't call collect!). Keep on compuTIn'!

(See Page 19)

BASIC/ASSEMBLY—

GRAPHICOMP/1.4B

```
10 GOTO 100 :: DIM A(50),A$(
100),B$(100)!095
20 AA,AA$,AB,AB$,AC,AC$,AD,A
D$,AF,AF$,AG,AG$,AH,AI,AJ,AO
,AP,AQ,AR,BD,C,C$,D,D$,E,E$,
EP$,F$,G,G$,H,H$,I,J,J$,K,L,
M,N,O,P,P$,Q,Q$,R,R$,S,S$ !1
32
30 T,T$,V,V$,W,W$,X$,Z$ !077
40 CALL ACCKEY :: CALL CHAR
:: CALL CLS :: CALL DECHEX :
: CALL DELAY :: CALL END ::
CALL EQWS :: CALL FB :: CALL
 GS :: CALL HDG !134
50 CALL PAUSE :: CALL PN ::
CALL SCREEN :: CALL START ::
 CALL WTSU !212
100 ! GRAPHICOMP COPYRIGHT (
C) 1991 by Barry Traver, 835
 Green Valley Drive, Philade
lphia, PA 19128 (phone: 215/
483-1379) !192
110 CALL FB(2,12):: DISPLAY
AT(1,10):"GRAPHICOMP": :"
     Version 1.4b": :"
for MICROpendium" !026
140 DISPLAY AT(17,1):"with o
nly constants (numericand st
ring) as parameters.  Use an
 XB LISTing as your  input
file." !041
150 CALL CHAR(127,"1824003C2
0203C"):: FOR I=128 TO 140 S
TEP 4 !251
160 CALL CHAR(I,"1824003C202
03C001824003C20203C001824003
C20203C001824003C20203C00"):
: NEXT I :: CALL PAUSE :: CA
LL FB(16,14)!175
170 DISPLAY AT(1,1)ERASE ALL
:"    Here are the XB comman
dsGRAPHICOMP can handle:":""
:" CALL CHAR(A,B$)": :" CALL
 CLEAR" !191
180 DISPLAY AT(8,1):" CALL C
OLOR(A,B,C)": :" CALL COLOR(
A,B,C,D,E,F,...)" !037
190 DISPLAY AT(12,1):" CALL
HCHAR(A,B,C[,D])" !196
200 DISPLAY AT(14,1):" CALL
SCREEN(A)": :" CALL VCHAR(A,
B,C[,D])" !194
210 DISPLAY AT(18,1):" DISPL
AY AT(A,B):C$[;]": :" DISPLA
Y AT(A,B)ERASE ALL:C$": :"(R
EM, !, & GOTO ARE IGNORED)"
:: CALL PAUSE !118
220 D,K,L,M,W,V,AR,BD=0 :: C
ALL FB(2,4):: DISPLAY AT(2,1
)ERASE ALL:"Here are your ch
oices:" !172
270 DISPLAY AT(7,1):"Input (
LISTing) File?": :" DSK" ::
IF E=1 THEN DISPLAY AT(15,1)
:"Output Drive (1-9)?" !094
400 IF EOF(2)THEN PRINT "EMP
TY FILE!" :: STOP ELSE LINPU
T #2:T$ :: IF T$="" THEN 400
 !059
420 PRINT " DV80 TEXT LISTIN
G": : :: GOTO 450 !052
450 IF LEN(T$)=80 THEN LINPU
T #2:X$ :: T$=T$&X$ ! DV80 B
AND-AID !234
540 IF POS(T$,"CALL CHAR",1)
<>0 THEN BD=(BD OR 1):: GOTO
 440 !105
550 IF POS(T$,"CALL CLEAR",1
)<>0 OR POS(T$,"COLOR",1)<>0
 THEN BD=(BD OR 2):: GOTO 44
0 !079
580 IF POS(T$,"DISPLAY AT",1
)<>0 THEN BD=(BD OR 2):: GOT
O 440 !220
640 IF POS(T$,"CALL SCREEN",
1)<>0 THEN BD=(BD OR 4):: GO
TO 440 !016
760 IF POS(T$,"CALL CHAR",1)
<>0 THEN GOSUB 1000 :: GOTO
910 !145
790 IF POS(T$,"CALL COLOR(",
1)<>0 THEN GOSUB 4000 :: GOT
O 910 !224
870 IF POS(T$,"CALL SCREEN",
1)<>0 THEN GOSUB 12000 :: GO
TO 910 !088
1000 ! CHAR !193
1010 AF=POS(T$,"CHAR(",1)+4
:: AG=POS(T$,",",AF+1):: AH=
POS(T$,"""",AG+1):: AI=POS(T
$,"""",AH+1)!139
1020 G$=STR$(8*VAL(SEG$(T$,A
F+1,AG-AF-1))+768):: CALL DE
CHEX(G$,4):: F$=SEG$(T$,AH+1
,AI-AH-1)!103
1030 T=LEN(F$):: IF T/16<>IN
T(T/16)OR T=0 THEN F$=F$&"0"
 :: GOTO 1030 ELSE R$=STR$(L
EN(F$)/2)!011
1040 CALL START(E,AB,S$,T$):
: IF E=1 THEN CALL EQWS(9)!0
00
1050 FOR R=0 TO 1 :: PRINT #
R:"* CHARACTER DEFINITION":"
" !155
1060 NEXT R :: D$=">" :: FOR
 P=1 TO 16 STEP 4 :: D$=D$&S
EG$(F$,P,4):: IF P<>13 THEN
D$=D$&",>" !147
1070 NEXT P :: FOR R=0 TO 1
:: PRINT #R:"D"&Q$&"DATA "&D
$ !225
1080 NEXT R :: F$=SEG$(F$,17
,LEN(F$)-16):: IF F$="" THEN
 1120 !074
1090 D$=">" :: FOR P=1 TO 16
 STEP 4 :: D$=D$&SEG$(F$,P,4
):: IF P<>13 THEN D$=D$&",>"
 !041
1100 NEXT P :: FOR R=0 TO 1
:: PRINT #R:"       DATA "&D
$ !215
1110 NEXT R :: F$=SEG$(F$,17
,LEN(F$)-16):: IF F$<>"" THE
N 1090 !237
1120 FOR R=0 TO 1 :: PRINT #
R:"" :: NEXT R :: CALL PN(E,
S$,Z$):: IF G THEN CALL CLS(
E,S$)!074
1130 FOR R=0 TO 1 :: PRINT #
R:"* CHANGE DEFINITION":"":Z
$;TAB(8);"LI   R0,>"&G$:"
    LI   R1,D"&S$:"       LI
   R2,"&R$ !075
1140 PRINT #R:"       BLWP @
VMBW":"" :: NEXT R :: IF E=1
 THEN CALL END(27,"")ELSE IF
 E=2 THEN CALL END(5,"")!242
1150 RETURN !136
4000 ! COLOR FOR CHAR SET !1
15
4010 CALL START(E,AB,S$,T$):
: IF E=1 THEN CALL EQWS(10)!
041
4020 CALL PN(E,S$,Z$):: I=0
:: AA=1 :: AF=1 !017
4030 AG=POS(T$,"(",AF):: IF
AG<>0 THEN 4060 !075
4040 AG=POS(T$,",",AF):: IF
AG<>0 THEN 4060 !079
4050 AG=POS(T$,")",AF):: IF
AG=0 THEN 4070 !149
4060 I=I+1 :: A(AA)=AG :: AA
=AA+1 :: AF=AG+1 :: GOTO 403
0 !170
4070 FOR P=1 TO I-1 STEP 3 :
: AD$=STR$(VAL(SEG$(T$,A(P)+
1,A(P+1)-A(P)-1))+2063):: CA
LL DECHEX(AD$,4)!061
4080 N=VAL(SEG$(T$,A(P+1)+1,
A(P+2)-A(P+1)-1)):: N=N-1 ::
 J$=STR$(N):: CALL DECHEX(J$
,1):: C=VAL(SEG$(T$,A(P+2)+1
,A(P+3)-A(P+2)-1)):: C=C-1 !
180
4090 C$=STR$(C):: CALL DECHE
```

(See Page 25)

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

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An exciting game for use with the Tunnels of Doom module. Several Exbasic bonus games are included.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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BASIC/ASSEMBLY—

(Continued from Page 19)

```
1(C$,1)!207
4100 D$=J$&C$ :: FOR R=0 TO
1 !117
4110 PRINT #R:"* WRITE TO CO
LOR TABLE":"":Z$;TAB(8);"LI
  R0,"&">"&AD$:"        LI
R1,>"&D$&"00":"       BLWP @
VSBW":"" !093
4120 NEXT R :: Z$="" !109
4130 NEXT P :: IF E=1 THEN C
ALL END(27,"")ELSE IF E=2 TH
EN CALL END(5,"")!201
4140 RETURN !136
12000 ! SCREEN !099
12010 AF=POS(T$,"CALL SCREEN
(",1)+11 :: AG=POS(T$,")",AF
+1):: H$=(STR$(VAL(SEG$(T$,A
F+1,AG-AF-1))-1)):: CALL DEC
HEX(H$,2)!225
12020 CALL START(E,AB,S$,T$)
:: IF E=1 THEN CALL EQWS(12)
!043
12030 CALL PN(E,S$,Z$):: FOR
 R=0 TO 1 :: PRINT #R:"* CHA
NGE SCREEN COLOR":"":Z$;TAB(
8);"LI   R0,>07"&H$:"
BLWP @VWTR":"" !209
12040 NEXT R :: IF E=1 THEN
CALL END(27,"")ELSE IF E=2 T
HEN CALL END(5,"")!203
12050 RETURN !136
30540 IF (A AND 1)THEN PRINT
 #B:"VMBW   EQU  >2024" !204
30560 IF (A AND 4)THEN PRINT
 #B:"VWTR   EQU  >2030" !227
30650 SUB GS(A,B):: FOR C=0
TO 1 :: PRINT #C:"* GENERAL
SETUP":"" :: NEXT C :: CALL
EQWS(A):: CALL WS :: IF B=0
THEN SUBEXIT !214
30670 FOR C=0 TO 1 :: PRINT
#C:"* GENERAL SPRITE DATA":"
" :: IF (B AND 1)THEN PRINT
#C:"DELSPR DATA >D000" !206
30680 IF (B AND 2)THEN PRINT
 #C:"HIDSPR DATA >C000" !055
30690 PRINT #C:"" !088
30700 NEXT C :: SUBEND !003
30770 SUB HDG :: PRINT #1:"*
 THIS ASSEMBLY SOURCE CODE":
"*      WAS CREATED BY":"*
GRAPHICOMP (VERS. 1.4b),":"*
  AN XB GRAPHICS COMPILER" !
146
30780 PRINT #1:"*    BY BARR
Y A. TRAVER":"*  835 GREEN V
ALLEY DRIVE":"*  PHILADELPHI
A, PA 19128":"*  (PHONE:  21
5/483-1379)":"" :: SUBEND !2
52
```

G/CTESTER

```
100 ! GC/TESTER COPYRIGHT (C
) 1991 by Barry Traver, 835
Green Valley Drive, Philadel
phia, PA 19128 (phone: 215/4
83-1379) !102
110 CALL FB(2,4):: DISPLAY A
T(1,7):"GRAPHICOMP TESTER":T
AB(7);"for MICROpendium":TAB
(9);"VERSION 1.31" !207
120 DISPLAY AT(5,5):"COPYRIG
HT (C) 1991":TAB(5);"BY BARR
Y A. TRAVER":TAB(4);"ALL RIG
HTS RESERVED!" !025
130 DISPLAY AT(9,1):"The pur
pose of this program is to t
est the assembly codeproduce
d by GRAPHICOMP, a  limited
-purpose XB graphics" !254
140 DISPLAY AT(13,1):"compil
er.  If you want to  check
out output that has  multip
le entry points, your origin
al XB program must" !142
150 DISPLAY AT(17,1):"have h
ad a fixed increment  from o
ne line to the next,  and fi
lenames must be of  the fo
rmat DSKn.Lnnn/O, or" !049
160 DISPLAY AT(21,1):"the pr
ogram will not peform proper
ly." :: CALL PAUSE(1):: CALL
 FB(2,14)!028
170 DISPLAY AT(2,1)ERASE ALL
:"Which type of object code?
": : :"1. Many output files,
 many     entry points (one
file" !128
180 DISPLAY AT(7,1):"   for
each line number,       one
entry point for         each
 file)" !033
190 DISPLAY AT(11,5):"2. One
 output file, many       ent
ry points (again,       one
 entry point for" !098
200 DISPLAY AT(15,4):"each l
ine number)": : :"3. One out
put file, one       entry p
oint (i.e., one     CALL LI
NK does it all!)" !162
210 DISPLAY AT(23,1)BEEP:"Wh
at do you want to test? 3" :
: CALL ACCKEY(23,27,"13",CH)
:: CALL FB(2,12):: IF CH<>1
THEN 240 !028
220 DISPLAY AT(4,1):"Object
Code Drive?": :" 2": : :"Fir
st line number?": :" 100": :
 :"Regular line increment?":
 :" 10" !013
230 DISPLAY AT(19,1):"Final
line number?": :" 990" :: R=
5 :: GOTO 310 !151
240 IF CH=3 THEN 270 !081
250 DISPLAY AT(4,1)BEEP:"Obj
ect Code File?": :" DSK": :
:"First line number?": :" 10
0": : :"Regular line increme
nt?": :" 10" !050
260 DISPLAY AT(19,1):"Final
line number?": :" 990" :: R=
4 :: GOTO 280 !120
270 DISPLAY AT(11,1):"Object
 Code File?": :" DSK": : :"E
ntry Point?": :" START" :: R
=11 !125
280 ACCEPT AT(R+2,2)SIZE(-27
)BEEP:I$ :: CALL INIT !057
290 ON ERROR 300 :: CALL LOA
D(I$):: ON ERROR STOP :: CAL
L SCREEN(12):: DISPLAY AT(24
,1):"" :: IF CH=2 THEN 320 E
LSE 350 !067
300 CALL SCREEN(10):: DISPLA
Y AT(24,3):"Disk Error - Try
 Again!" :: RETURN 280 !036
310 CALL ACCKEY(6,2,"19",DR)
!100
320 ACCEPT AT(11,2)VALIDATE(
DIGIT)SIZE(-5)BEEP:FL !124
330 ACCEPT AT(16,2)VALIDATE(
DIGIT)SIZE(-4)BEEP:INC !200
340 ACCEPT AT(21,2)VALIDATE(
DIGIT)SIZE(-5)BEEP:LL !131
350 IF CH<>3 THEN 360 ELSE A
CCEPT AT(18,2)VALIDATE(UALPH
A)SIZE(-6)BEEP:EP$ !153
360 CALL FB(2,8):: DISPLAY E
RASE ALL :: CALL HCHAR(1,1,8
8,767):: DISPLAY AT(11,1):"
Want screen cleared before":
" starting (Y/N)?  Y" !135
370 CALL ACCKEY(12,19,"YN",C
LS)!084
380 IF CH=1 THEN GOSUB 520 !
209
390 ON CH GOTO 410,410,460 !
112
400 STOP !152
410 ! CH=1 OR CH=2 !119
420 DISPLAY AT(15,1):" Press
 any key to begin, ":" and t
hen single-step your":" way
through, keypress by":" keyp
ress." !067
```

(See Page 26)

BASIC/ASSEMBLY—

(Continued from Page 25)

```
430 CALL PAUSE(0):: IF CLS T
HEN DISPLAY ERASE ALL ELSE C
ALL HCHAR(11,1,88,256)!002
440 FOR I=FL TO LL STEP INC
:: ON ERROR 450 :: CALL LINK
("L"&STR$(I)):: ON ERROR STO
P :: DISPLAY AT(24,1):STR$(I
);:: CALL PAUSE(0):: NEXT I
!014
450 STOP !152
460 ! CH=3 !158
470 DISPLAY AT(15,1):" Press
 any key to begin,":" and th
en any key to stop." :: CALL
 PAUSE(0)!050
480 IF CLS THEN DISPLAY ERAS
E ALL ELSE CALL HCHAR(11,1,8
8,256)!050
490 ON ERROR 500 :: CALL LIN
K(EP$):: CALL PAUSE(0):: STO
P !039
500 CALL SCREEN(10):: DISPLA
Y AT(11,10)ERASE ALL:"E R R
O R !": : :"  Entry Point No
t Found.": : :" Check DEF in
 Source Code." !078
510 CALL DELAY(200):: STOP !
189
520 ! LOAD MULTIPLE FILES !2
26
530 DISPLAY AT(15,1):"   One
 moment please...." !244
540 CALL INIT !157
550 FOR I=FL TO LL STEP INC
!250
560 ON ERROR 590 :: CALL LOA
D("DSK"&STR$(DR)&".L"&STR$(I
)&"/O"):: ON ERROR STOP !176
570 NEXT I !223
580 RETURN !136
590 ON ERROR STOP :: RETURN
580 !241
600 CALL SCREEN(10):: DISPLA
Y AT(12,10)ERASE ALL:"DISK E
RROR!" :: CALL DELAY(1000)::
 STOP !022
610 SUB FB(F,B)!155
620 CALL CLEAR :: FOR I=0 TO
 12 :: CALL COLOR(I,F,1):: N
EXT I :: CALL SCREEN(B)!065
630 SUBEND !168
640 SUB PAUSE(N)!167
650 IF N THEN DISPLAY AT(24,
1):"(Press any key to contin
ue.)" !219
660 CALL KEY(0,K,S):: IF S<1
 THEN 660 !220
670 IF N THEN DISPLAY ERASE
ALL !255
680 SUBEND !168
690 SUB DELAY(N):: FOR I=1 T
O N :: NEXT I :: SUBEND !049
700 SUB ACCKEY(R,C,FL$,CH)::
 CALL GCHAR(R,C+2,DF):: DISP
LAY AT(R,C)BEEP:CHR$(DF);::
CTR=0 !137
710 CALL KEY(0,K,S):: CTR=CT
R+1 :: IF CTR=5 THEN CALL HC
HAR(R,C+2,30)!004
720 IF CTR=10 THEN CALL HCHA
R(R,C+2,DF):: CTR=0 !166
730 IF S<1 THEN 710 ELSE IF
K>96 THEN K=K-32 !015
740 IF K=13 THEN K=DF !254
750 IF FL$<>"YN" THEN 770 !1
67
760 IF CHR$(K)<>"Y" AND CHR$
(K)<>"N" THEN 710 ELSE CALL
HCHAR(R,C+2,K):: CH=K :: IF
CH=89 THEN CH=1 :: SUBEXIT E
LSE CH=0 :: SUBEXIT !057
770 IF CHR$(K)<SEG$(FL$,1,1)
OR CHR$(K)>SEG$(FL$,2,1)THEN
 710 !197
780 CALL HCHAR(R,C+2,K):: I
 K>64 THEN K=K-64 !126
790 IF K>48 THEN K=K-48 !193
800 CH=K :: SUBEND !190
```

SAMPLE

```
100 REM ARK !152
110 CALL CLEAR !209
120 CALL SCREEN(12)!197
130 DISPLAY AT(12,8):"THIS I
S A TEST!";!245
140 CALL HCHAR(23,1,42,128)!
021
150 CALL VCHAR(1,31,42,96)!2
45
160 DISPLAY AT(13,8):"____ _
_ _ ____";!148
170 CALL COLOR(2,16,5)!230
180 CALL CHAR(95,"00FF")!150
190 ! COMMENT !182
200 GOTO 200 !023
```

Lima user group slates free May conference

The Lima Ohio User Group will sponsor an all TI/Geneve Multi User Group Conference 8 a.m.-6p.m. May 18 in Reed Hall on the Lima Campus of Ohio State University.

According to Charles Good, the group's newsletter editor and librarian, admission to the event is free, and there is no charge for user groups and others who want tables in the exhibit area. User group representatives will be able to make copies from the Lima group's software library the previous evening as well as during the conference, he says.

Good says that, as in past years, presentations at the event will be videotaped and tapes made available to user groups for the cost of media and postage. Motel information was scheduled to be posted in GEnie this month.

He lists the following, most of whom will be giving formal presentations, as having indicated they will probably attend: Barry Traver; Competition Computer Products; Chris Bobbitt, Asgard Software; L.L. Conner Enterprise; Bud Mills, Bud Mills Services; Ramcharged Computers; Mickey Schmitt, MS Express; Gary Bowker, O.P.A.; and Eunice Spooner, sponsor of an elementary school user group and a TI Logo expert.

For more information and to schedule free exhibit room tables or formal presentations, write the Lima User Group at P.O. Box 647, Venedocia OH 45894, or phone Dave Szippl evenings, (419) 228-7109.

BBS phone changes

The VAST User Group's BBS in Phoenix, AZ, was scheduled to have a new phone number as of Feb. 9, according to Tom Pfeffer, publicity chair for the group.

New phone number is (602) 233-0790. New sysop for the board is Mike Grogan, the club's president.

Enlarger status

Artist Enlarger, formerly sold by Asgard Software, is now available as fairware, according to the author, Howard Uman.

Copies may be obtained by sending a disk, a postage-paid mailer and $5 to him at 3913 Sybil Rd., Randallstown, MD 21133.

MY-BASIC

MY-Sleeve

Yet Another Sleeve program (this one's for the Geneve)

BY JIM UZZELL

YAS. Yet Another Sleeve? Yes and no. MYSLEEVE is a modification of the sleeve program which appeared in the September 1986 MICROpendium with the following changes:

Removal of comments on the front, addition of comments to the back(80 character width) and a list of your subdirectories and their files(remember-with MDOS 0.97H you do not need a HFDC card to create and use subdirectories with MYBASIC). There is also a slight redesign to the itself sleeve. I recommend using stick glue (found where school supplies are sold) to assemble sleeves.

The catalog routine will also print comments on the same page with the list of files. The printout is designed to be bound in computer paper binders.

The comments have to be created with a word processor and saved under the filename of COMMETBACK unless you change the filename in the program. If you use MY-Word, it must saved with no control codes (i.e. PF C DSKx.COMMETBACK). A maximum of 37 lines can be entered — but no blank lines after text — and requires approximately 9-10 sectors of space on disk.

The printer codes used are as follows:

Line #510 — CHR$(27);"0"(1/8 Spacing) CHR$(15) (Condensed) CHR$(27);"l";CHR$(10) (Left Margin 10) CHR$(27);"D";CHR$(10); CHR$(109)(TABS 10,109)

Line 520 — CHR$(27);"G"(Bold or Doublestrike) Rem this line for faster printing.

Line 790 — (tabs 20,119)and 27/216 spacing

Lines 800, 810 and 820 — (Emphasized, Bold, Condensed)

```
100 CALL GRAPHICS(1,1)
110 GOTO 130 :: CALL CHAR ::
 CALL CLEAR :: CALL COLOR ::
 CALL KEY :: CALL SCREEN ::
C$,E,D$,F,E$,F$ :: G$,H$,I$,
K$,L$,M$,H,N$,O$,P$ :: R$,S$
(),I,T$,J :: DIM V$(103)
120 X,K,L,M,N,O,DD :: DIM A$
(103),D(4):: !@P-
130 P$=RPT$(" ",19):: CALL C
LEAR :: CALL SCREEN(7):: FOR
 L=3 TO 12 :: CALL COLOR(L,1
6,7):: NEXT L
140 FOR L=1 TO 2 :: CALL COL
OR(L,16,5):: NEXT L :: CALL
COLOR(0,16,5)
150 GOSUB 910 :: DISPLAY AT(
15,5):" DISK SLEEVE PRINTER
"
160 CALL MEMSET(V$(),RPT$("
",29))
170 M$=DATE$ :: DISPLAY AT(1
9,3)BEEP:"ENTER IDENTIFING N
AME:    ": :"DDI SOFTWARE" ::
 ACCEPT AT(21,1)SIZE(-28):R$
180 DISPLAY AT(23,5)BEEP:"EN
TER PRINTER NAME":"PIO" :: A
CCEPT AT(24,1)SIZE(-28):C$ :
: DISPLAY AT(19,1):RPT$(" ",
144)
200 DISPLAY AT(22,1)BEEP:"AD
D COMMENTS  TO BACK N/Y  N"
:: ACCEPT AT(22,28)SIZE(-1)V
ALIDATE("NY")BEEP:O$
210 DISPLAY AT(12,1):RPT$("
",254):: DISPLAY AT(22,4):RP
T$(" ",20):: M=0 :: DISPLAY
AT(22,1):TAB(4);"PLACE DISK
IN DRIVE  1": :TAB(6);"THEN
PRESS ENTER"
220 ACCEPT AT(24,23)SIZE(-1)
VALIDATE("")BEEP:L$
230 DISPLAY AT(24,1):RPT$("
",24):: DISPLAY AT(16,1):"DI
SK NAME: " :: ACCEPT AT(16,1
1):N$ :: E=LEN(N$)
240 DISPLAY AT(21,1):"": :TA
B(9);"READING DISK" :: OPEN
#2:"DSK1.",INTERNAL,RELATIVE
,INPUT :: S$(1)="DIS/FIX " :
: S$(2)="DIS/VAR " :: S$(3)=
"INT/FIX " :: S$(4)="INT/VAR
 " :: S$(5)="PROGRAM    "
250 S$(6)="SUB DIR    "
260 INPUT #2:T$,I,I,J :: M=M
+1 :: V$(M)=T$&SEG$(P$,1,16-
LEN(T$))&"   =DISKNAME " ::
M=M+1 :: V$(M)="FREE= "&STR$
(J)&"          USED= "&STR$(I
-J)
270 V$(M)=V$(M)&SEG$(P$,1,29
-LEN(V$(M))):: M=M+1 :: V$(M
)="FILENAME   SIZE    TYPE
  P " :: M=M+1 :: V$(M)="---
-----   ----    ----    - "
280 IF M=103 THEN 460 ELSE I
NPUT #2:T$,H,I,J :: IF T$=""
 THEN 330 ELSE M=M+1 ::
290 IF H<1 THEN G$=" Y" ELSE
 G$="  "
300 IF H=6 THEN I$="" :: A$(
M)=T$ :: D(DD)=M :: DD=DD+1
310 IF ABS(H)=5 OR ABS(H)=6
THEN E$="" :: GOTO 320 ELSE
E$=SEG$("000",1,3-LEN(F$))&F
$
320 V$(M)=T$&SEG$(P$,1,12-LE
N(T$))&I$&SEG$(P$,1,3-LEN(I$
))&" "&S$(ABS(H))&E$&G$
330 CLOSE #2
340 IF D(0)>0 THEN M=D(0)::
GOTO 350 ELSE 460
350 FOR X=0 TO 2
360 IF D(X)>0 THEN 370 ELSE
450
370 OPEN #2:"DSK1."&A$(D(X))
&".",INTERNAL,RELATIVE,INPUT
380 INPUT #2:T$,I,I,J :: V$(
M)=A$(D(X))&SEG$(P$,1,13-LEN
(A$(D(X)))&S$(6)&SEG$(P$,1,
5)
390 IF M=103 THEN X=2 :: GOT
O 440 ELSE INPUT #2:T$,H,I,J
400 IF T$="" THEN 440 ELSE M
=M+1 :: I$=STR$(I):: F$=STR$
(J)
410 IF H<1 THEN G$=" Y" ELSE
 G$="  "
420 IF ABS(H)=5 THEN E$="" :
: GOTO 430 ELSE E$=SEG$("000
",1,3-LEN(F$))&F$
430 V$(M)=T$&SEG$(P$,1,12-LE
N(T$))&I$&SEG$(P$,1,3-LEN(I$
))&" "&S$(ABS(H))&E$&G$
440 CLOSE #2
450 M=M+1 :: NEXT X
460 FOR M=M+1 TO 32 :: V$(M)
=RPT$(" ",29):: NEXT M
470 IF M<103 THEN 480 ELSE 4
90
480 V$(M)=RPT$(" ",29):: FOR
 M=M+1 TO 67 :: V$(M)=RPT$("
 ",29):: NEXT M
490 OPEN #1:C$,VARIABLE 132
```

(See Page 28)

MY-BASIC—

(Continued from Page 27)

```
500 DISPLAY AT(21,1):RPT$("
",96):: IF H$="2" THEN 770 E
LSE 510
510 DISPLAY AT(21,6):"PRINTI
NG SLEEVE" :: PRINT #1:CHR$(
27);"0";CHR$(15);CHR$(27);"1
";CHR$(10);CHR$(27);"D";CHR$
(10);CHR$(109);CHR$(0);
520 PRINT #1:CHR$(27);"G";
530 PRINT #1:"INSTRUCTIONS:
1) TRIM AT DOTTED LINES  2)
FOLD AT DASH LINES  3) THEN
GLUE BACK FLAPS" :: PRINT #1
:CHR$(27);"U";CHR$(1);RPT$("
.",120):: L=1
540 PRINT #1:".";RPT$(" ",9)
;CHR$(124);RPT$(" ",3);R$;RP
T$(" ",39-LEN(R$));"DATE: ";
M$;RPT$(" ",21);:: PRINT #1:
"PGM/FILES";RPT$(" ",12);CHR
$(124);RPT$(" ",9);"." :: L=
2
550 PRINT #1:".";RPT$(" ",9)
;CHR$(124);RPT$(" ",3);RPT$(
"-",LEN(R$));:: PRINT #1:RPT
$(" ",39-LEN(R$));RPT$("-",1
4);RPT$(" ",21);RPT$("-",9);
RPT$(" ",12);CHR$(124);RPT$(
" ",9);"."
560 FOR L=1 TO 29 :: PRINT #
1:"."&CHR$(9)&CHR$(124)&"
"&V$(L)&" | "&V$(L+34)&" | "
&V$(L+68)&CHR$(9)&CHR$(124)&
"          "&"." :: NEXT L ::
 FOR L=30 TO 32
570 PRINT #1:RPT$(" ",(L-29)
*2)&"."&CHR$(9)&CHR$(124)&"
  "&V$(L)&" | "&V$(L+34)&" |
 "&V$(L+68)&CHR$(9);:: PRINT
 #1:CHR$(124)&RPT$(" ",(34-L
)*2-1)&"." :: NEXT
580 PRINT #1:RPT$(" ",(L-29)
*2)&"."&CHR$(9)&CHR$(124)&"
  "&V$(L)&" | "&V$(L+34)&" |
 "&V$(L+68)&CHR$(9);:: PRINT
 #1:CHR$(124)&RPT$(" ",(34-L
)*2-1)&"." :: L=34
590 PRINT #1:" "&CHR$(9)&"."
&"   "&V$(L)&" | "&V$(L+34);
TAB(68);" | "&V$(L+68)&CHR$(
9)&"." :: PRINT #1:RPT$(" ",
11);RPT$("-",98):: IF O$="Y"
 THEN 610 ELSE 600
600 FOR L=1 TO 37 :: PRINT #
1:RPT$(" ",11)&"."&RPT$(" ",
96)&"." :: NEXT L :: GOTO 65
0
610 OPEN #4:"DSK1.COMMETBACK
",INPUT ,DISPLAY ,VARIABLE 8
0
620 IF EOF(4)THEN 640
630 LINPUT #4:D$ :: N=LEN(D$
):: O=87-N :: PRINT #1:RPT$(
" ",11);".";RPT$(" ",9);D$;R
PT$(" ",O);"." :: F=F+1 :: G
OTO 620
640 CLOSE #4 :: FOR L=F TO 3
6 :: PRINT #1:RPT$(" ",11);"
.";RPT$(" ",96);"." :: NEXT
L
650 FOR L=1 TO 4 :: PRINT #1
:RPT$(" ",11+L*2);".";RPT$("
 ",96-L*4);"." :: NEXT L ::
PRINT #1:RPT$(" ",21);RPT$("
-",78);CHR$(27);"U";CHR$(0):
: FOR L=1 TO 2
660 PRINT #1:RPT$(" ",21-L*2
);".";RPT$(" ",76+L*4);"." :
: NEXT L :: PRINT #1:TAB(16)
;".";TAB(50-(E/2));CHR$(27);
"W";CHR$(1);N$;CHR$(27);"W";
CHR$(0);TAB(111-LEN(N$));"."
670 PRINT #1:RPT$(" ",13);".
";RPT$(" ",92);"." :: PRINT
```

(See Page 29)

```
INSTRUCTIONS: 1) TRIM AT DOTTED LINES  2) FOLD AT DASH LINES  3) THEN GLUE BACK FLAPS

DDI SOFTWARE                          DATE: 02-02-91                    PGM/FILES
------------                          --------------                    ---------
SYSTEM              =DISKNAME         DOCMYMENU+  31  DIS/VAR 080
FREE= 21          USED= 1417          DOCMYPLAN   99  DIS/VAR 080
FILENAME   SIZE    TYPE    P          DOCOVERLAY  15  DIS/VAR 080
--------   ----    ----    -          UTIL         SUB DIR
AUTOEXEC    2   DIS/VAR 080           CHARPATRN   3   PROGRAM
BASIC1     30   PROGRAM               CHECKSUM    4   PROGRAM
BASIC2     34   PROGRAM               DEFUPCHAR   6   PROGRAM
BASIC3     34   PROGRAM               MYASCHART   22  PROGRAM
BASIC4     34   PROGRAM               MYCALLKEY   38  DIS/VAR 080
BASIC5     34   PROGRAM               MYCODES     5   PROGRAM
BASIC6     34   PROGRAM               MYMULTPRNT  6   PROGRAM
BASIC7     34   PROGRAM
COMMETBACK  8   DIS/VAR 080
DDIDISASM  45   PROGRAM
LOAD      168   PROGRAM
SYSTEM/SYS 481  PROGRAM
APPOINT     SUB DIR
APR90SP     9   DIS/VAR 080
AUG90SP     9   DIS/VAR 080
DEC90SP     9   DIS/VAR 080
FEB90SP     8   DIS/VAR 080
JAN90SP     9   DIS/VAR 080
JUL90SP     9   DIS/VAR 080
JUN90SP     9   DIS/VAR 080
MAR90SP     9   DIS/VAR 080
MAY90SP     9   DIS/VAR 080
NOV90SP     9   DIS/VAR 080
OCT90SP     9   DIS/VAR 080
S           4   DIS/VAR 080
SCH        40   PROGRAM
SEP90SP    78   DIS/VAR 080
SETUP       9   PROGRAM
DOCS        SUB DIR
DOCDDIWORD 18   DIS/VAR 080

        MYSLEEVE
        BY JIM UZZELL
        DDI SOFTWARE

        YAS(yet another sleeve)-yes and no. MYSLEEVE is a modification of the sleeve
        which appeared in Sept. 1986 MICROpendium with the following changes; removal
        of comments on the front, addition of comments to the back(80 character width)
        and a list of your subdirectories and their files(remember-with 97H you do not
        need a HFDC card to create and use subdirectories with MYBASIC). There is also
        a slight redesign to sleeve. I recommend using stick glue(can be found where
        school supplies are sold) to assemble sleeves.
        The catalog routine will also print comments on the same page with the list of
        files. Printout is designed to be bound in computer paper binders.
        The comments have to be created with a word processor and saved under the
        filename of COMMETBACK unless you change the filename in the program. If you
        use MYWORD it must saved with no control codes(i.e. PF C DSKx.COMMETBACK).
        There is a maximum of 37 lines and no blank lines after text and requires
        approximately 9 or 10 sectors of space on disk.
        The printer codes used are as follows;
        Line #510
        CHR$(27);"0"(1/8 SPACING)CHR$(15)
        (CONDENSED)CHR$(27);"1";CHR$(10)
        (LFT MARGIN 10)CHR$(27);"D";CHR$(10);
        CHR$(109)(TABS 10,109)
        Line #520
        CHR$(27);"6"(BOLD or DOUBLESTRIKE)
        Ree this line for faster printing.
        Line #790
        (tabs 20,119)and 27/216 spacing
        Line #800,810,820
        (EMPHASIZED,BOLD,CONDENSED)

                        SYSTEM DISK
```

MY-BASIC—

(Continued from Page 28)

```
#1:RPT$(" ",11);RPT$(".",98)
;CHR$(27);"U";CHR$(0);:: PRI
NT #1 :: PRINT #1:CHR$(27);"
@"
680 IF H$="3" THEN PRINT #1
:: PRINT #1 ELSE 690
690 IF H$="1" THEN 700 ELSE
770
700 DISPLAY AT(20,2):"PRINT
ANOTHER SLEEVE OR": :"CATALO
G PAGE? (Y/N)  Y" :: ACCEPT
AT(22,22)SIZE(-1)BEEP VALIDA
TE("YN"):L$ :: IF L$="Y" THE
N 710 :: PRINT #1:CHR$(27);"
@" :: CLOSE ALL :: END
710 IF H$="2" OR H$="3" THEN
 720 ELSE 730
720 FOR X=1 TO (43-F):: PRIN
T #1 :: NEXT X
730 PRINT #1:CHR$(27);CHR$(6
4);:: CALL CLEAR
740 DISPLAY AT(22,4)SIZE(14)
:"!+#+$ $%& +'*+" :: F=0 ::
L$="" :: Q$="" :: DD=0
750 CALL MEMSET(V$(),RPT$("
",29))
760 CLOSE ALL :: GOSUB 910 :
: GOTO 190
770 K$="PGMS/FILES"
780 IF H$="2" THEN PRINT #1
:: PRINT #1
790 DISPLAY AT(21,3):"PRINTI
NG CATALOG PAGE" :: PRINT #1
:CHR$(27);"D";CHR$(20);CHR$(
119);CHR$(0);:: PRINT #1:CHR
$(27);"3";CHR$(27);
800 PRINT #1:CHR$(27);CHR$(6
9);TAB(25);"DISK CATALOG--";
N$
810 PRINT #1:CHR$(27);CHR$(7
0);CHR$(27);"G";TAB(4);"Iden
tifing Name:  ";R$;TAB(52);"
DATE: ";M$
820 PRINT #1:CHR$(27);"E";CH
R$(15):: PRINT #1:TAB(9);K$;
TAB(44);K$;TAB(73);K$ :: PRI
NT #1:TAB(9);RPT$("-",10);TA
B(44);RPT$("-",10);TAB(73);R
PT$("-",10)
830 FOR L=1 TO 32
840 PRINT #1:TAB(4);" ";V$(L
);" | ";V$(L+34);" | ";V$(L+
68):: NEXT L :: L=33 :: PRIN
T #1:TAB(4);" ";V$(L);TAB(35
);"| ";V$(L+34);" | ";V$(L+6
8):: L=34
850 PRINT #1:TAB(4);" ";V$(L
);" | ";V$(L+34);TAB(67);"|
";V$(L+68):: PRINT #1
860 IF O$="Y" THEN 870 ELSE
700
870 OPEN #4:"DSK1.COMMETBACK
",INPUT ,DISPLAY ,VARIABLE 8
0 :: F=0
880 IF EOF(4)THEN 900
890 LINPUT #4:D$ :: PRINT #1
:RPT$(" ",11);CHR$(15);D$ ::
 F=F+1 :: GOTO 880
900 CLOSE #4 :: GOTO 700
910 CALL CHAR(117,"000000070
7070707"):: CALL CHAR(118,"0
00000F1F9FD1D1D")
920 CALL CHAR(119,"000000C7C
FDFDCDC"):: CALL CHAR(120,"0
00000EECE8E0E0E"):: CALL CHA
R(121,"0000007070707 0E0"):
CALL CHAR(122,"0000003F7EFCE
0E0")
930 CALL CHAR(123,"000000707
0707070"):: CALL CHAR(124,"0
000001F1F1F1C1C"):: CALL CHA
R(125,"000000F7E7C70707"):
CALL CHAR(126,"000000FDF9F10
101")
940 CALL CHAR(91,"000000C7C7
C7C7C7"):: CALL CHAR(93,"000
0007F7F7F7070"):: CALL CHAR(
92,"000000C080000000"):: CAL
L CHAR(97,"0707070707070700"
)
950 CALL CHAR(98,"1D1D1D1DF9
F1E100"):: CALL CHAR(99,"DFC
FC0C0C7CFDF00"):: CALL CHAR(
100,"CFEFEEEEEECE8E00"):: CA
LL CHAR(101,"C0C0E0707070700
0")
960 CALL CHAR(102,"FE7F07073
F7EFC00"):: CALL CHAR(103,"7
07070707F7F7F00"):: CALL CHA
R(104,"1F1F1C1CDF9F1F00"):
CALL CHAR(105,"C7870707F7E7C
700")
970 CALL CHAR(106,"F1E10100F
CF8F000"):: CALL CHAR(107,"C
7C7C7C67C381000"):: CALL CHA
R(108,"7F7E70707F7F7F00"):
CALL CHAR(109,"C0ACCA0CC0B81
038")
980 DISPLAY AT(2,8)SIZE(14):
"uvwxy z{|}~[]\"
990 DISPLAY AT(3,8)SIZE(14):
"abcde fghijklm"
1000 CALL CHAR(33,"007844447
8504844"):: CALL CHAR(43,"00
7C40407840407C"):: CALL CHAR
(35,"00384440380444 38"):: CA
LL CHAR(36,"007C101010101010
")
1010 CALL CHAR(37,"007C44444
444447C"):: CALL CHAR(38,"00
7844447840404 0"):: CALL CHAR
(39,"0078242424242478"):: CA
LL CHAR(42,"003C40405C444438
")
1020 RETURN
```

READER TO READER

☐ Tom Penson, Box 844, Greenwood, MS 38930, asks: Do you know of anyone in the TI community who works with file programs especially random access files. I am trying to write a program for a random access file and am having a lot of trouble with inputting the item to search and not a record number. I can't get it to search by item. I can be contacted at the above address or they can call me at (601) 455-7036 till 5 p.m. (CST) or (601)455-6026 after 5 p.m. I also use the TI on ham radio.

☐ Albert E. Hunter, HC 60 Box 133, Idleyd Park, OR 97447 writes: I recently purchased a fairware copy of PR Base V2.1 but can't make good use of it because of a lack of instructions. If anyone has instructions or documents for this program or knows where I could get them, would you please let me know. Is the "Funplus" (Funnnelweb based) program still available? Has anyone found another use for the cassette cable port? It seems a shame to let it go to waste (I have disk drives).

☐ I.J. Atrill, Ste. K, 237 W. 2nd St., North Vancouver, B.C., Canada V7M 1C9, writes: 1) I have found that when I use the Formatter in My-Word, quite frequently the disk "Names" get swapped. Sometimes even the Allocation table goes "for a walk." Can anyone tell me why?

2) I have not been able to find much documentation on the Geneve or MDOS, and have not seen any "Maps" at all. I am trying to write my own assembly programs, but, with next to no information, it is a slow and painful process. Can anyone "let me in" on where this type of material is hiding?

3) With what little information I have, it would appear that a

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READER TO READER—

(Continued from Page 29)

lot of the MDOS XOPs just don't do anything (e.g.: ScrollWindowDown), while others have strange quirks (e.g.: BlockCopy/Move only works in "positive" directions). I know MDOS is not "finished" and has its share of "bugs," yet others seem to have found a way around this without resorting to rewriting the routines. My queston, then, is: Have the XOP *specifications* been updated? My reference material (just a list, really) is circa 1987/88 and makes no mention of any changes since V.1.6.

☐ Dan O'Quinn, Rt. 4, Box 565, Walterboro SC 29488, (803) 538-3376, writes: I was wondering if anyone who has built the XBASIC module kit by William Shores featured in the December MICROpendium could provide me with a schematic to install a ROM chip to make a super cart in there. Also, would it be possible to use another cart that accesses RAM by installing the appropriate GROMchips then jumpering to the same RAM XBASIC uses, specifically TE II.

☐ Peter deWitte, 570A Ferry Rd., Winnipeg, Manitoba, Canada R3H 0T7, writes: I recently got a P-GRAM card for my TI PE-box. I also have the CorComp 9900 Micro Expansion with 32K, RS232 and DSDD disk controller. I prefer using the CC9900 because of the DSDD disk controller, but, in order to use the P-GRAM, have to put up with the nuisance of switching back and forth between the two systems.

The reference manual for the CC9900 states that if you are usin a Speech Synthesizer, it must be plugged into the computer first, then the CC9900 plugged into the Speech Synthesizer. I noticed almost immediately the cover plate on the right side of the CC9900. Assuming it was there for some purpose other than cosmetic, I tried plugging the Synthesizer into the CC9900 and the CC9900 into the computer. Everything seems to work fine with this connection, so I thought it might be possible to connect the PE-box into the CC9900. If I removed the 32K, RS232 and TI Disk Controller from the PE-box, would I be able to access the P-GRAM card through the CC9900, and would I do any damage to either the CC9900 or the PE-box and its contents?

The alternatives are either: buy a DSDD controller for the PE-box, perhaps even a hard disk/floppy controller, or modify the TI controller. Is an upgrade available for the TI controller?

When I got the P-GRAM card I decided to hook up my two external disk drives to the TI controller. I removed the termination pack from the PE-box internal Shugart drive and left the term pack in the drive designated No. 3. When I turned everything on, all three drive motors came on and would not stop, and the front panel in-use lights glowed dimly. I reinstalled the term pack in the internal drive. As long as the term pack is in the internal drive, it doesn't seem to make any diffence whether or not a termination pack is installed in the last external drive.

I would also like a diagram of an IBM disk drive that shows all of the pin connections for the term pack.

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

MEMEX

More memory than you can shake a program at

By JOHN KOLOEN

Thanks to Ron Walters and Bud Mills Services, Geneve users can load up their computers with more memory than they can shake a program at. Up to 2 megabytes of memory, to be precise.

The MEMory EXpansion card for the Geneve, developed by Walters, comes in several varieties — a basic 504K for $245 through 2016K with GENMOD for $495. MEMEX uses inexpensive DRAM (Dynamic Random Access Memory) chips. GENMOD is a hardware modification that allows all 2 megabytes on the MEMEX card to be addresssed as zero wait state RAM. GENMOD is done on the 9640 card itself. Without GENMOD, the MEMEX card would still provide 504K of RAM, in addition to the Geneve's 640K.

The basic 504K card is simply installed in the PEB, and that's all there is to it. From then on you've got more than a megabyte of CPU memory on your Geneve.

The GENMOD involves the addition of two custom chips to the back of the Geneve's gate array. The modification can be done by the user, or Bud Mills will do it. In any event, after the GENMOD is installed, the user connects a small switch box to the Geneve card. The switch box consists of two switches that can be easily attached to the PEB with a piece of double-sided tape. One switch activates the "turbo" or no-wait-state mode while the other switch puts the system into TI-mode. I generally run the Geneve with both the turbo and TI-mode switched on.

Prior to installing the GENMOD, I used the basic MEMEX card for several months. I have not encountered any hardware problems, either before or after installing GENMOD. (The actual installation was done by Bud Mills.)

So what can you do with a Geneve loaded with 1-2 megabytes of memory? It can be used as program memory, RAMdisk and print spooler. You determine how much memory to devote to a RAMdisk and spooler through AUTOEXEC commands. Obviously, you can have a very large RAMdisk if you want to. Memory not reserved for RAMdisk or spooler remains program RAM which is accessible through Myarc BASIC and MDOS-based programs. (No, TI Extended BASIC can't use the extra program RAM.) Those who are accustomed to RAMdisks should know that the RAMdisk partitioned from MEMEX is not battery-backed. This is because the MEMEX card consists of CPU RAM, unlike RAMdisks.

MDOS-based languages, such as c99 as implemented by Clint Pulley on the Geneve, can also use the additional program RAM. The basic limitation is that programs that load through the GPL interpreter — Extended BASIC, Multiplan, Editor/Assembler, etc. — cannot access the additional RAM.

MEMEX comes with a memory diagnostic program that tests all memory chips and an elaborate graphics demo.

Is the Geneve faster with MEMEX and without? I can't tell, even while running at zero wait state. It certainly doesn't slow it down. If all you want is a faster Geneve, buying MEMEX isn't going to do much for you. The only effective way to increase the speed of the Geneve, or any other personal compouter for that matter, is to go to a faster CPU, which is not a user-installable option.

Those who buy the basic MEMEX card can upgrade to larger memory configurations whenever they wish. Because the larger configurations require installation of GENMOD, the first consideration should be whether to do the installation yourself or have Mills do it. Check with Mills on his installation charges (the prices above are for the hardware only). An advantage to having Bud do it is that he guarantees his work. The need for the GENMOD modifications is the reasons I give the card a "B" on Ease of Use.

An additional consideration when adding GENMOD is that your floppy disk controller or existing RAMdisk may have to be modified. The CorComp controller and Horizon RAMdisks, for example, don't decode the address bus as defined by the original TI specifications. TI set aside three address lines for future development that neither the Corcomp controller or the Horizon RAMdisk utilize. Without modification to these cards, damage could result to bus transceiver chips on other cards that do access these lines. Before ordering, check with Mills as to whether any cards in your PEB would need to be modified. (The MEMEX documentation indicates that these modifications are easy to perform.)

Documentation: The documentation that comes with the basic MEMEX card comes on a disk, along with the graphics demo and memory testing program. GENMOD comes with installation instructions as well as instructions on how to modify CorComp controllers and Horizon RAMdisks to decode the three address lines noted above. Although the instruction sheets offer step-by-step guidance, users should be experienced at soldering before attempting the modifications themselves.

Value: MEMEX gets an "A" for value because it does what is advertised at a reasonable price. MEMEX lets you start small — with 504K — and move up to as much as 2 megabytes when you can afford it. Even with the 504K, Geneve users have a prodigious amount of memory at their disposal, considerably more than is available to PC and PC-XT users. You also have flexibility in how to utilize the memory — RAMdisk, spooler and program RAM.

Review

Report Card

Performance	**A**
Ease of Use	**B**
Documentation	**B**
Value	**A**
Final Grade	**A**

Cost: $245-$495 depending on configuration
Manufacturer: Bud Mills Services, 166 Dartmouth Dr., Toledo, OH 43614; 419-385-5946; BBS 419-385-7484
Requirements: Geneve 9640

Golf Score Analyzer

Keeping track of progress on the links

By BILL GASKILL

Assembly language guru Bruce Harrison, known to most 99ers for his incredible assembly-based music programs, has released a program for recreational productivity purposes called Golf Score Analyzer. As the name implies, it is aimed at the many 99ers who spend their time away from the console, on the golf course.

Golf Score Analyzer comes on one SS/SD diskette that contains the loader, program code, installation routine and enough free space to store the maximum 360 rounds of golf that the program is able to support. A 22-page manual rounds out the package. The cost is $17, which includes shipping and handling charges.

Golf Score Analyzer is a simple program to figure out and an even easier program to use. It is designed to help the golfer keep track of both golf course ratings, slopes and pars and the scores earned on the courses entered into the program's database. GSA also provides some useful analytical capabilities to determine handicap (not USGA sanctioned handicaps, but accurate enough for your personal use), what courses you have played best and worst on and whether you are doing better at your long game or your short game. With only a few keystrokes you can search the data base for your performance between two dates, on a specific golf course or you can view (and print) the entire file.

Performance: Golf Score Analyzer is entirely menu driven (Fig. 1), with options to add golf course data and individual golf scores to the database, and then to analyze the results of that data in a variety of ways. You can also find any course data for editing purposes in only a few keystrokes, but you cannot edit rounds that are already part of the database. Anything displayed on screen can also be printed at the touch of the Fctn 7 key. Each time you play 9 or 18 holes GSA allows you to enter total strokes per hole and optionally, the number of putts taken per hole, so that you can determine the impact your short game is having upon overall scores.

Review

Report Card

Performance	**A-**
Ease of Use	**A**
Documentation	**B**
Value	**A+**
Final Grade	**A**

Cost: $17
Manufacturer: Harrison Software, 5705 40th Place, Hyattsville, MD 20781
Requirements: Extended BASIC, disk system, expansion memory; printer recommended

Although you can't see it because GSA is written in assembly language, and thus operates at blazing speed, the program does a lot of number crunching behind the scenes to provide the analytical information that a golfer needs most. All data for courses and golfer performance are stored in memory and so little gems like handicap determination are lightning quick. Although Harrison is not a golfer, he had the input of an experienced golfer in designing the program, so it comes off as a complete and very useful tool.

```
Golf Score Analyzer
1 ADD ROUNDS
2 LOAD FILE
3 DELETE DATA
4 ANALYZE SCORES
5 SAVE FILE
6 ADD/EDIT COURSES
7 REVIEW COURSES
8 EXIT PROGRAM
SELECT BY NUMBER
```

Fig. 1

Unlike other golf programs that I have seen written for the 99/4A, GSA includes Slope as well as course rating when computing handicap. It counts previous 18-hole rounds and 9-hole rounds in following the USGA handicap determination method as closely as possible, but wisely, Mr. Harrison clearly states that the handicap GSA produces is not official and should not be used in place of a USGA GHIN.

In the analysis area, users can choose to analyze full rounds, they can produce a quick summary, display only averages or show best on hole scores. Anything that can be analyzed can be done so for a range of dates, or for only specific golf courses.

When the program is first used you must set up the golf courses that you have played on, and then you enter golfer performance on a specific course for a specific date. Multiple rounds can be entered for the same course on the same date with no adverse affect or overwriting of data. Once the golf courses are identified data saved for each round is entered to include; raw score on each hole and optionally, the number of putts taken on each hole. From that information, and the previously entered par for each hole for the course played, course rating and slope from the courses database, GSA calculates gross score, handicap, net score and number of eagles, birdies, pars, bogies and double bogies.

Using what must be a very complex algorithm, GSA counts backwards to determine the number of rounds played and whether or not they were 9-hole or 18-hole rounds, before producing a handicap. Mirroring the USGA method, you will not see a handicap produced if less than five rounds reside in the database. Once a handicap is produced, the number of rounds played since that calculation is also tracked so that your new handicap calculation uses the most recent performance. All of this happens in the blink of an eye, with almost imperceptible delay. Incredible!

A couple of minor shortcomings that GSA has are the inability to edit rounds already entered into the database and the lack of a display screen for most current calculated handicap. You can edit the courses database, but you can't change the figures in an existing round of golf. You

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GOLF SCORE ANALYZER—

(Continued from Page 32)

must instead delete the round and then re-enter it if changes need to be made after the initial data entry. Deletions are possible only by date, though. Thus, if you have more than one round of golf played on a single day, all of them are deleted. Another quirk that might bother out of U.S. golfers is that dates can only be entered in MM/DD/YY format. Lastly, once calculated, your handicap appears only on the screen for the round that the calculation actually took place, meaning you must find that round in order to go back and review your handicap. I couldn't make it show up on any of the analysis screens. Despite these minor complaints, the program is still an admirable performer.

Ease of Use: Golf Score Analyzer is one of the easiest programs to use that you will find. With only a couple of exceptions the manual is almost unnecessary. Getting started involves little more than letting the program auto-load out of Extended BASIC. Although it is not required, you can customize the program to your hardware, including configuring it for a Ramdisk. A built in INSTALL routine lets you change the default drive and file name that is used to store data, plus you can alter the default printer name of PIO. Extended BASIC, disk and 32K memory are required to use GSA.

Documentation: As I stated, the manual is almost unnecessary. Despite this, it is nice to have one for those times when a question does come up. The instructions are brief but concise and no question pertaining to program operation went unanswered. The organization of the manual might stand some improvement though, like a table of contents or an index, but that is certainly not a fatal flaw. You just have to read through it to find something, rather than being able to go directly to a specific page.

Conclusion: Being a golfer, I found Golf Score Analyzer to be a joy to use and a welcome addition to my software library. Anyone looking for a useful tool to help analyze performance out on the fairways and greens won't go wrong with this program. GSA promises analysis of golfer performance and it delivers it at lightning speed. Harrison Software has produced another gem to compliment their existing line of assembly language software for the 99/4A user.

MICRO-REVIEWS

Star Trek Calendar, Artist Fonts and Borders, Adventure Hints, The Bible, and a little bit about Tyro

By HARRY BRASHEAR

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

★ Leave it alone, back to the drawing board.

★★ Needs improvement, but workable.

★★★ A good program, worth trying.

★★★★ Send your money and buy it.

To start with this month I'd like to tell you about something that I'm not going to review, but it get's four stars for innovation.

I know there are a lot of book readers out there in TI land, maybe even a few undiscovered writers like this one, Matt Mullen. Matt has written a book, an adventure, called TYRO, starring a character named Mark MacBurlen. What I read of the book looks a little like a cross of "Man from Uncle," and a 007 novel. While it's not my kind of story, I can say that the writing seems pretty darn good. It takes five disks to tell the story, (they can be printed out or read on screen) and the cost of the novel is $10.

This is a new idea folks, why not give it a try. Send to Matt Mullen, 36 Montrose, Romeoville, IL 60441.

(By the way Matt, let me know how you make out, I've got a couple of 300-pagers I may do the same with. Any one for a 10,000-year-old witch?)

★★★★

1991 Star Trek Calendar

Last month I promised that I would tell more about some of the software from Ray Kazmer's new Notung Software company. If I'd had the Star Trek Calendar then, I wouldn't have waited, but Ray was late in sending it, so ... don't wait to buy it, you are already two months late! See, you obviously need it.

Ray really did himself proud this time and what's more, he walked in the valley of the shadow of IBM to get the very best

1991 December 1991

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

for us. He deserves our sympathy and undying gratitude for having put his very soul in jeopardy. He had to use a hand

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MICRO-REVIEWS—

(Continued from Page 33)

scanner to get the pictures for the calendar and then clean them up in a (yuk) PC drawing program. But fear not, he stayed in the valley only long enough to transfer those pictures over to the TI.

The program disk consists of 13 files, (one for each month and a cover) that can be printed out all at once or one at a time. Each month is a single 8½ x 11-inch page and there are three printer densities to choose from. The photos are beautiful and, since they have been dithered, the detail is fantastic, as you can see in the sample I included here.

Don't wait, order it now for only $10 plus a buck for shipping. Send to: Notung Software, 7647 McGroarty Street, Tujunga, CA 91042.

★ ★ ★ ★

ARTIST FONTS AND BORDERS

Sorry if this edition of Micro-Reviews seems a little one-sided, but I didn't want to let Notung go before I showed you some of their Artist Fonts.

It would appear that Ken Gilliland is taking responsibility for most of the Artist packages. I don't know how he does it when you consider that we have over 350 fonts for Artist at this time, and still, we have nothing like the stuff that's in these three packages.

My sample sheet gives you some idea of what these fonts look like. The borders and Gothic letters open up a whole new world of Victorian graphics to us.

There's little more I can say to back up the illustration other than to tell you that Fonts 1 and 2 are $7 each. Fonts 3 is $8. I'm also not going to tell you which sets the sample came from because you can get all three for $20 so why waste time.

Send to: Notung Software, 7647 McGroarty Street, Tujunga, CA 91042

★ ★ ★

ADVENTURE HINTS

After a considerable length of time, adventure games are starting to come back into their own again. The Scott Adams concept was tried and proven on almost every eight bit computer there was back about eight years ago. Many of us spent a lot of sleepless nights with Savage Island parts one and two, probably the best of the lot.

Not too long ago three new, well-programmed adventures hit the market: Oliver's Twist, Rattlesnake Bend and Zoom Flume. A lot of people forgot how to play adventure games and started whining "too hard." Too hard, my foot! They were just well done. What's the point if you can breeze right through.

However, to keep those people from drowning in their own misery, Linn Gradner has come up with a super series of hints for those three packages. The cute part is that the HINTS get loaded right into the Adventure cartridge the same as the adventure. Neat!

If you want to find out how to get to the castle, just type "GO CASTLE" and the program tells you how to get there. It will also list verbs or nouns, or even *find* treasures. The package also contains paper maps of the three aforementioned new adventures. Remember, the single package covers all three.

The cost is $9.95 plus $1 for postage. They're from: MS Express Software, P.O. Box 498, Richmond, Ohio 43944.

The adventures are from Asgard Software, but they don't sell the hints.

★ ★ ★ ★

THE BIBLE

So I had to give it four stars, didn't I? I mean, who would give it bad reviews? (From somewhere in the depths of the TI cellar I heard a pitiful cry ... Harry would!) Yeah, probably, but in this case I'd give the stars for effort. Here's an excerpt from a letter I got in January: "... this project has taken 160 hours of just file D/L'ing time not counting the hours I spent removing control characters from the IBM file format to convert these files to D/V 80 format by Book and verse."

Here's an excerpt from the *README file I found on the disk:

"The 1611 King James Bible is in the public domain. These archived files are the entire King James Bible New and Old Testaments. The files are in DS/SD format for all TI users, however, the larger books will un-pack to aprox DS/SD so please be forewarned if you use SS/SD."

Back to me — the only complaint that I have with the files is that they have no carriage returns or line feeds. You would have to leave them absolutely alone as far as use is concerned, or make up a little XBASIC program to add the characters. No matter, it's a heck on an effort.

Thanks Mike.

The copying/disk charge for all is:

4 Quad 3 1/2 Disks $10

4 Quad 5 1/4 Disks $ 8

13 Dual 5 1/4 Disks $26

26 Single 5 1/4 Disks $52

Send to money to: Mike McGaughey, 118 Aylesbury Rd., Irmo, SC 29063.

The files are also available for downloading from Why Knott BBS, 300/1200/2400, 8N1, 24 hours, running TI-Doors. BBS Phone: (803) 781-4626.

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

Tacoma convention

A TI/Geneve convention is planned for the weekend of Sept. 21 in Tacoma, Washington, according to organizer Cynthia Becker.

For further information, contact Barb Wiederhold, (206) 546-1865 (BBS) or (206) 546-1205.

User Notes

John Birdwell Prize nominations sought

The trustees of the John Birdwell Memorial Fund have announced the creation of the John Birdwell Prize, to be given annually to the individual, organization, or firm, who, in the opinion of the trustees, has made the most significant contribution to the TI99/4A and Geneve 9640 community. This award is meant to acknowledge the highest level of excellence in service to the users of these computers. The prize will consist of a cash award to be determined at the time of the award, according to the trustees.

This award is being funded through the generosity of Kathy Birdwell, John's widow, who has donated all further proceeds from software registration fees of John's software, including the popular DISKU, and all monies received from the sale of John's personal computer equipment. These revenues will be held in trust to insure that the John Birdwell Memorial Fund may continue to award this prize for many years to come.

The John Birdwell Prize will be awarded at the annual banquet following the Chicago TI International World Faire. Winners will be notified in advance of the event.

Nominations for the John Birdwell Prize will be accepted by the trustees until Sept. 1, 1991, and may be sent to: The John Birdwell Memorial Fund; c/o Chicago TI User Group; P.O. Box 578341; Chicago, IL 60657.

Nominations may take the form of a short letter explaining why the nominee should be considered. All nominating petitions will be carefully considered by the trustees. Anyone may submit a petition. The decision will be reached on the basis of the merits of the nominated party, not on the eloquence of the petition.

Those who wish to register their copies of John Birdwell's software and receive the documentation can submit their fees to the above address as well. The John Birdwell Memorial Fund will depend mostly on the integrity of the users of the software for its continued existence.

For more information, write to the above address.

Generic calendar program

This comes from Jerry Stern, our Extended BASIC columnist. It has do with modifying a program that appeared in the November 1990 edition to create a general calendar program that will work with any printer, with no graphics.

Begin with CALENDAR, version 4.3 as printed in the November, 1990 MICROpendium, and make these changes.

Delete lines 190, 200, 210, 250, 290, 300, 430, 530, and 550.

Optional: Delete the HEAD subprogram (lines 30000 to 30095).

Add this line:

```
265 DISPLAY AT(16,1):"Load paper
 and press ENTER" :: ACCEPT AT(1
6,28)VALIDATE(" "):TM$ !209
```

Edit or retype these lines to match this listing. Most of the changes are removed "CHR$()" commands, or changed numbers in TAB() statements. The blank in line 460 is now TWO spaces.

```
390 PRINT #1:" ";JD;TAB(37-LEN(A
$)/2);A$;" ";X;TAB(76);YD;CL$ !1
84
410 PRINT #1:" Sunday Monday Tue
sday Wednesday Thursday Friday S
aturday" !060
450 IF C=6 THEN PRINT #1:TAB(72)
;STR$(D);CL$ :: GOTO 480 !113
460 IF C=0 THEN PRINT #1:" "&STR
$(D)&CHR$(13):: GOTO 480 !158
490 IF C>=7 THEN C=0 !239
510 IF C=0 THEN PRINT #1:CHR$(13
3)ELSE PRINT #1:CL$ !099
520 CALL LINE(2,P$):: PRINT #1:C
L$ !157
31650 ! PRINTS A LINE TO PRINTER
 FULL WIDTH FOR NON-GRAPHIC PRIN
TERS !250
31655 OPEN #77:P$,OUTPUT,VARIABL
E 132 :: N=MIN(N,2)!133
31660 PRINT #77:RPT$(SEG$("-=",N
,1),80)!223
31665 CLOSE #77 :: SUBEND !255
```

Catalog program for Reminders

This is the fifth installment of Bill Gaskill's Reminders system of programs. Refer to the September, October and December 1990 editions and the January 1991 edition for previous installments. Reminders requires Brad Snyder's 40-column Utilities (see above installments for ordering information).

The month's Reminders program NPCATALOG, a system utility for displaying or printing the contents of a disk, or for deleting user selected files from the disk.

The program provides selective deletions of file or program entries on a disk, as well as the usual screen list or printer list of a disk's contents. All prompts are aided by a help window at the base of the screen. Simply follow the instructions.

```
1 !NPcatalog 07/29/90
   Bill Gaskill
   Grand Junction, Co. !225
2 !Requires Brad Snyder's
   40-Col Utilities !230
100 CALL LINK("CLS"):: CALL
LINK("TEXT",16,5):: ON ERROR
 720 :: CALL CHAR(126,"00FF"
):: ON BREAK NEXT !189
110 CALL LINK("HORZ",1,1,129
,39):: CALL LINK("VERT",1,1,
130,4):: CALL LINK("HORZ",4,
2,131,39):: CALL LINK("VERT"
,1,40,132,4)!239
120 CALL LINK("HORZ",21,1,12
9,39):: CALL LINK("VERT",1,1
,130,24):: CALL LINK("HORZ",
24,2,131,39):: CALL LINK("VE
RT",1,40,132,24)!187
130 CALL LINK("DISP",2,3,"Pa
th:DSK1."):: CALL LINK("DISP
",3,3,"Delete Files?N Screen
/Printer?:S")!179
140 CALL LINK("DISP",22,3,"E
nter path to be cataloged.")
:: CALL LINK("ACCEPT",2,8,-2
0,"",DR$):: CALL KEY(0,K,S)!
245
150 IF DR$="" THEN 500 ELSE
IF K=11 THEN 500 !217
160 CALL LINK("DISP",22,3,"D
o you wish to do selective f
ile     "):: CALL LINK("DISP
",23,3,"deletions? Yes or No
?")!136
170 CALL LINK("ACCEPT",3,16,
-1,"YN",A$):: IF A$="Y" THEN
 200 !073
180 CALL LINK("DISP",22,3,"S
end catalog contents out to
the     "):: CALL LINK("DISP
",23,3,"printer or the scree
```

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User Notes

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```
n?")!164
190 CALL LINK("ACCEPT",3,34,
-1,"SP",B$):: CALL LINK("HOR
Z",3,3,32,36)!117
200 DIM E$(5):: E$(1)="DIS/F
IX" :: E$(2)="DIS/VAR" :: E$
(3)="INT/FIX" :: E$(4)="INT/
VAR" :: E$(5)="PROGRAM" !200
210 D,B=1 :: C$=STR$(B):: CA
LL LINK("DISP",2,3,"DiskName
:"):: CALL LINK("DISP",2,23,
"Page:"):: CALL LINK("DISP",
2,29,C$)!065
220 OPEN #1:DR$,INPUT ,RELAT
IVE,INTERNAL !153
230 INPUT #1:F$,E,E,F :: CAL
L LINK("DISP",2,12,F$)!189
240 FF$=STR$(F):: U=E-F :: U
$=STR$(U):: IF B$="P" THEN 5
20 !249
250 CALL LINK("DISP",3,3,"Le
ft:       Used:"):: CALL LIN
K("DISP",3,8,FF$):: CALL LIN
K("DISP",3,20,U$)!218
260 CALL LINK("DISP",5,6,"Fi
leName   Size    Type      P")
:: CALL LINK("DISP",6,6,"~~~
~~~~~~~ ~~~~ ~~~~~~~~~~ ~")!
015
270 G=7 !005
280 FOR H=1 TO 127 !162
290 INPUT #1:F$,D,E,F !144
300 IF LEN(F$)=0 THEN 450 !0
35
310 CALL LINK("DISP",G,6,F$)
:: EE$=STR$(E)!067
320 CALL LINK("DISP",G,17,EE
$)!063
330 CALL LINK("DISP",G,22,E$
(ABS(D)))!223
340 IF A$="N" OR A$="n" THEN
 370 ELSE 350 !101
350 CALL LINK("DISP",22,3,"D
elete? (Y/N)N
        "):: CALL LINK("ACCE
PT",22,16,-1,"YN",G$)!173
360 IF G$="Y" THEN DELETE DR
$&F$ !243
370 G=G+1 :: IF ABS(D)=5 THE
N 400 !079
380 IF LEN(H$)<3 THEN H$="
"&STR$(F)ELSE H$=" "&STR$(F)
!239
390 CALL LINK("DISP",G-1,29,
SEG$(H$,LEN(H$)-2,3))!206
400 IF D>0 THEN 420 !159
410 CALL LINK("DISP",G-1,33,
"Y")!108
420 IF INT(H/13)<>H/13 THEN
430 :: G=7 :: B=B+1 :: C$=ST
R$(B):: GOSUB 450 !167
430 H$="" :: NEXT H !081
440 GOSUB 450 !019
450 CALL LINK("DISP",22,3,"
  F6-NextPage F9-Exit F8-Sta
rt      "):: CALL LINK("HORZ"
,23,3,32,36)!030
460 CALL KEY(0,K,S):: IF S=0
 THEN 460 !017
470 IF K=6 THEN CLOSE #1 ::
GOSUB 750 :: GOTO 100 !202
480 IF K=12 OR K=13 THEN GOS
UB 750 :: CALL LINK("DISP",2
,29,C$):: IF LEN(F$)<>0 THEN
 280 ELSE CLOSE #1 :: B=1 ::
 GOTO 210 !191
490 IF K=15 THEN 500 ELSE 45
0 :: GOTO 450 !204
500 CALL LINK("DISP",22,3,"
  Insert program disk,press
F6"):: CALL KEY(0,K,S):: IF
K<>12 THEN 500 !125
510 ON ERROR 740 :: RUN "DSK
.NP.NPMENU" !157
520 CLOSE #1 :: OPEN #1:DR$,
INPUT ,RELATIVE,INTERNAL !17
8
530 IF I$="" THEN GOSUB 700
!052
540 OPEN #3:I$,OUTPUT !100
550 PRINT #3 :: PRINT #3 !17
2
560 PRINT #3:TAB(3);" Disk D
irectory " !218
570 PRINT #3:DR$;" - DISKNAM
E= ";F$:"AVAILABLE=";F;" USE
D=";E-F !014
580 PRINT #3: :" FILENAME  S
IZE    TYPE    P":"--------
- ---- ---------- -";!097
590 INPUT #1:F$,E,E,F !145
600 INPUT #1:J$,C,E,F !147
610 IF LEN(J$)=0 THEN 680 ::
 PRINT #3 !037
620 PRINT #3:J$;TAB(12);STR$
(E);TAB(17);E$(ABS(C));!075
630 IF ABS(C)=5 THEN 650 !19
2
640 PRINT #3:STR$(F);!140
650 IF C>0 THEN 600 !083
660 PRINT #3:TAB(28);"Y";!11
2
670 GOTO 600 !169
680 IF LN>=6 THEN LN=1 !157
690 FOR SP=1 TO (6-LN):: PRI
NT #3 :: NEXT SP :: CLOSE #3
 :: GOTO 450 !225
700 CALL LINK("HORZ",22,3,32
,36):: CALL LINK("HORZ",23,3
,32,36)!087
710 CALL LINK("DISP",23,3,"I
IO"):: CALL LINK("ACCEPT",23
,3,-28,"",I$):: RETURN !214
720 CALL LINK("DISP",22,3,"E
rror reading
        "):: CALL LINK("DISP"
,22,17,DR$):: CALL LINK("DIS
P",23,3,"Press <ENTER> to co
ntinue...")!164
730 CALL KEY(0,K,S):: IF K<>
13 THEN 730 :: RUN !057
740 RUN 720 !068
750 FOR I=7 TO 20 :: CALL LI
NK("HORZ",I,3,32,36):: NEXT
I :: G=7 :: RETURN !105
```

Using TIPS with 24-pin printers

This comes from Ed Machonis, of Floral Park, New York. He writes:

Several people have reported problems using TI Print Shop with 24-pin printers. The problems include labels extending onto the following label, distorted images and extended page lengths when printing image catalogs with TIPSSHOW. This is caused by the print codes used in the program to set line spacing in 1/72 of an inch. The Epson LQ850, a 24-pin printer, uses the same codes to get line spacing in 1/60 of an inch.

The following fix worked for the LQ850 and may work for similar printers. Edit line 1480 in TIPSX by changing CHR$(65) to CHR$(51) and changing CHR$(08) to CHR$(20). Make the same changes in line 260 of TIPSSHOWX. The changes work for versions 1.4, 1.6 and 1.7, except the line number to change in TIPSX V1.4 is 1820.

The net effect of the changes is to set the line spacing to an equivalent spacing in 1/180 of an inch.

Speeding up CHECK program

This comes from Phil Martin, of Keizer, Oregon. He writes:

I recently received the October 1987 issue with the CHECKSUM program by Tom Freeman. I noted with interest the ed

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itorial comment at the beginning of the article which mentioned the E/A source code. I haven't seen anything more about it since, so what follows is my solution to this oversight.

Start off by loading the CHECK program from the October 1987 issue using DSKx.CHECK, where "x" is the drive you are using. Bring up line 100 in edit mode and delete CALL INIT (and CALL CLEAR if, like me, you added it). Also, if you added line 400 as described by Charles Good's Feedback item in the February 1988 issue, delete it as well, for now. Now in command mode, type CALL INIT, followed by Enter. Then RUN the program. At this point you should see everything done up to now followed by:

XBASIC ERROR CHECKER
USINGCHECKSUMS
BY TOM FREEMAN, LA99ERS

Next, type NEW <Enter>, then load Barry Traver's ALSAVE program (September 1990) using CALL LOAD("DSKx.ALSAVE"). Follow this with CALL LINK("SAVE") <Enter>, MERGE DSKx.ALLOADM <Enter>, SAVE DSKx.ALBASE <Enter>, then type NEW. Now type in the following program:

```
90 CALL LINK("CURSOR")
100 CALL CLEAR :: DISPLAY AT(10,4):"XBASIC ERROR CHECKER" :: DISPLAY AT(11,6):"USING CHECKSUMS"
110 DISPLAY AT(12,2):"BY TOM FREEMAN, LA 99ERS"
120 CALL LOAD(-31952,255,231,255,231) ! This was originally line 400 as suggested by Charles Good-Feedback 2/88
```

Save this using DSKx.XBSTUFF,MERGE. Finally, type OLD DKSx.ALBASE, then MERGE DSKx.XBSTUFF and lastly save the result as SAVE DSKx.ASCHECK.

The result is a load/run time that seems to be about halved or slightly better. My test load/run time (hardly the most accurate) was about 12 seconds for the old program and about 4.5 seconds for this one.

After worked with several program listings through this, it seems to work as well as the original. My thanks to Tom Freeman, Charles Good and Barry Traver.

Saving a lost file from oblivion

This item is by D.L. Mohler. It appeared in the newsletter of the Boston Computer Society TI99/4A User Group.

I have seen several articles on salvaging a blown disk when sector zero or sector one is damaged, but almost nothing on saving a file when the File Descriptor Record (FDR) has been damaged. (Remember, this is the file that points to the sectors that contain the program itself, and tells such file characteristics as the type, size, etc. It is usually one of the sectors from 2-21 and is itself pointed to by the listing in sector 1.)

I recently found that the appropriate FDR for one of my GIF (Graphic Interchange Format) files had mysteriously blown, and the file could no longer be accessed. Sector 1 still listed the FDR as 3, but sector 3 could not be accessed with a sector editor. Attempts to restore the file using the restore file functions of DM1000 and DISKU resulted only in error messages. Validating the disk with DISKU showed that only sector 3, the needed FDR, was gone. I figured I had nothing to lose by trying to rebuild the file.

The first step was to format a new disk, and copy in sectors 0 and 1. Using a sector editor, I went into sector 1 and eliminated all pointers except a single one to 2, since there would be only a single file on the new disk. I then copied the FDR of another GIF file into sector 2, so that all of the appropriate flags were correct. Again, using the sector editor, this time in ASCII, I changed the file name to the one I was trying to restore.

Now, back to the original disk with the defective sector 3. Using the search function of the DISKU, I searched and found "GIF" as the first byte of sector 97. All sectors from 97 to 02CF (the end of the disk) were then copied to the new disk.

Now, some arithmetic: >02CF=719; >97=151; 719-151=568 or >238. We need this number to correct bytes 14-15 ("Total Sectors Used") and bytes 18-19 ("Number of Fixed Length Records"). Remember, GIF files are D/F128 files.

Back to the sector editor. First of all, the FDR has to point to the body of the file in bytes 28-30. We know the starting sector is >97 and the trial length is >238; by some alchemy known only to God and TI, this translates to 97 80 23, so this is what we enter. As a first attempt, I put 0238 in bytes 14-15. But the bytes are reversed in 18-19, so instead of 0238 we enter 3802. Trying this out as a GIF file gave about half the picture, so obviously things were going in the right direction!

I gradually increased the value in 18-19 to 6802, 9902, 5003, 9003 and E003, trying out the file each time with Picture-Transfer. I made a copy of the sector each time before writing to it, because I found that if I tried to write in too high a value, I destroyed the sector and had to start all over again. Small increases over E003 gave no more picture, so it was left there, and sector 0002 of the new disk was was written to sector 0003 of the original disk, fully restoring it. All of this searching, editing and sector copying was done using DISKU.

Which joystick are you using?

This item, by Chick De Marti, appeared in TopIcs, the newsletter of the Los Angeles 99ers.

Have you ever had difficulty in finding which joystick is to be used in a program? (No matter which joystick you pick up, it's the wrong one!) With this routine all you have to do is to push the fire button on either joystick and the computer will then remember which one you are using.

```
100 CALL KEY(1,J1,STATUS)
110 CALL KEY(2,J2,STATUS)
120 IF J1+J2 < > 17 THEN 100
130 JS=INT(J1/18+J2/9+1)
```

With this routine inserted prior to the use of CALL JOYST(J1,J,STATUS) the computer will respond to the joystick you were using when you pressed the fire button.

Shadowy monitors can be fixed cheaply

The following item is by Earl Raguse of the User Group of Orange County.

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Have you ever been bothered by a white shadow around the images on your monitor? This is a problem on some of the less expensive monitors and can be fixed quite easily. The problem is that the TI console puts out a spurious signal that causes this "ringing" on the monitor screen. To get rid of it all you need to do is put a .005 MFD ceramic capacitor (Radio Shack Part No. 272-130) across the video input wires to the monitor. An easy way to do this is buy an RCA-type monaural "Y" adapter (Part No. 274-304) and an RCA phono plug (RCA #274-339 or #274-321) and solder the capacitor to the phono plug. Then plug the "Y" adapter into the video input on the monitor. Put the plug with the capacitor into one side of the "Y" adapter and video output from the console into the other side. Bye-bye monitor ring; hello crisp images.

How to make your XB programs unlistable

The following programs appeared originally in the Tidewater User Group-Newsletter and are by Ken Woodcock. The programs are used to make an Extended BASIC program unlistable and unalterable, though you can save and load them.

The computer keeps BASIC program lines in one lbock, and a line number table in a separate block. The line number table identifies the location in memory of each line number. The line number table is in numeric order while the program lines are kept in the order in which they were entered. The first byte of the line number table tells the computer the length of the line in bytes. This information is used to list the program or during editing. When the program is running, a zero value byte terminates each program line and the line number table is used only to locate the beginning of each program line.

To make a program so that it can't be listed, all that needs to be done is to change the length bytes in the line number table. The following program sets all length bytes to zero. Extended BASIC and memory expansion are required. Note that line 1 is extra long and that after entering four screen lines you'll have to press Enter and then press FCTN X to put it back on the screen. Cursor to the end of what you've entered and continue until finishing the line.

```
1 CALL INIT :: CALL PEEK(-31
952,A,B,C,D):: SL=C*256+D-65
539 :: EL=A*256+B-65536 :: F
OR X=SL TO EL STEP -4 :: CAL
L PEEK(X,E,F,G,H):: ADD=G*25
6+H-65536 :: PRINT X*256+F
2 CALL LOAD(ADD-1,0):: NEXT
X :: STOP :: !@P
```

After saving the above program — use a name such as UNLIST — in MERGE format, load any BASIC or XBASIC program and then merge UNLIST (you want to make sure that they program you load doesn't have lines numbered 1 or 2).

Now run the program. You'll see a listing of five-digit numbers. When it has finished, type 1 <Enter>, and 2 <Enter> to delete the MERGEd lines and then save the remaining program with a name such as TEST — we're experimenting here, you know.

Now load TEST into memory and RUN it. It should run normally. After running it, try to LIST it byt typing LIST <Enter>. Doesn't the screen look funny now?

Suppose for a moment that you inadvertantly saved the program with UNLIST merged into over your original program. Dont' worry, you can still get it back.

The length bytes could be altered to the maximum, which would allow the program to be listed (change the value 0 in line 2 above to 255), but editing could still pose a problem. The best thing, then, would be to reset the length bytes to what they should be.

Start by looking for a zero byte, but this isn't enough by itself because a zero byte mayh also occur in a program line. So, in addition to looking for a zero byte, look at the line number table to see if the value obtained is really the start of a program line.

To do this you'll need to first enter the following program.

```
1 CALL INIT :: CALL PEEK(-31
952,A,B,C,D):: SL=C*256+D-65
539 :: EL=A*256+B-65536 :: F
OR X=SL TO EL STEP -4 :: CAL
L PEEK(X,E,F,G,H):: ADD=G*25
6+H-65536 :: PRINT X*256+F
2 I=1 :: CALL PEEK(ADD-1,V)
: IF V THEN 6
3 CALL PEEK(ADD+I,V,W):: IF
V THEN I=I+1 :: GOTO 3
4 FOR Y=SL TO EL STEP -4 ::
CALL PEEK(Y,E,E,E,F):: IF E*
256+F-65536=ADD+I+2 OR=0 OR
ADD-I>-3 THEN CALL LOAD(ADD-
1,I+1):: GOTO 6
5 NEXT Y :: I=I+1 :: GOTO 3
6 NEXT X :: STOP :: !@P
```

After saving the above program in MERGE format as UNLIST2, or any other name, load the program that you mistakenly saved with UNLIST attached, and resequence it so that you know that the first line is number higher than six. Then merge in UNLIST2. Now run the program. You'll see a list of numbers and when it's done you can again list and edit the program.

TI users who see incredibly low prices on memory chips and are thinking about using them in their Horizon RAMdisks should think twice about it, according to Bud Mills, of Bud Mills Services.

Horizon owners seeking 128x8 chips should beware of the differnce between cheaper psuedo static RAM and real static RAM chips. Advertisements in many computer magazines do not distinguish between the two. According to Mills, if a chip is priced considerably under similar chips it is probably a psuedo static RAM, which won't work on the Horizon. Readers who find a great deal on memory chips should verify that what they are buying is the real thing.

MICROpendium pays $10 for items submitted by readers for use in this column. If you have a tip or idea, routine, program or other item that may be useful to other readers send it to MICROpendium User Notes, P.O. Box 1343, Round Rock, TX 78680.

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and attend
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Classified

SOFTWARE

!!MINDREADER!!

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