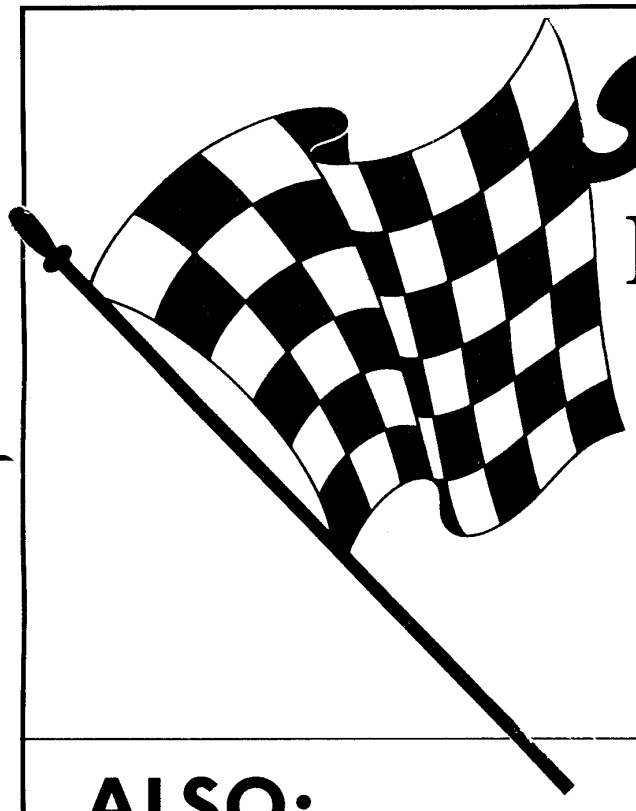
Covering the TI99/4A and the Myarc 9640

MICROpendium

Volume 9 Number 8 September 1992 $2.50



SPEED!

In Assembly Execution

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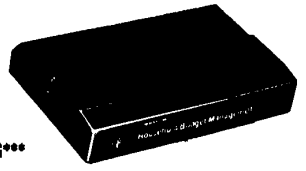

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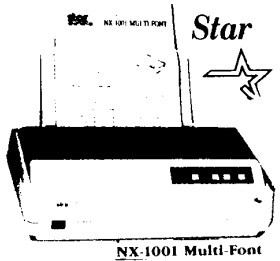

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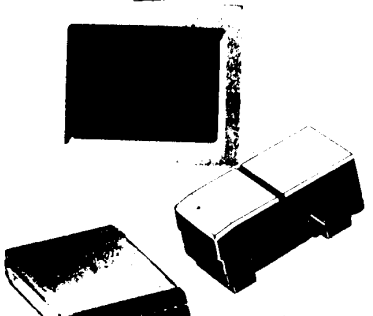

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***READ THIS**

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

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Comments

A new start for Geneve owners

Every Geneve owner hopes that Beery Miller and Cecure Electronics can bring some stability to the Geneve market, something that has been absent since the computer was introduced by Myarc. And the first signal of this should be the shipment of the final version of M-DOS. Once this is done, then users will have a stable platform from which to progress.

The most common criticism I've heard from users since the Geneve came out has to do with the fact that, because M-DOS is a work in progress, they can't write programs in A-BASIC. I know that Clint Pulley and others have done some wonderful things with c. But if you want to reach the level of the average user, you're going to have to give them a BASIC interpreter that is 100 percent functional. Then they can do the things they used to do on the TI using Extended BASIC. But, given the state of things up to now, anyone writing in A-BASIC has been able to do so only by working around the limitations of M-DOS. And in many cases, the limitations were so severe that the programmers simply stopped writing.

I think everyone hopes that is all behind us. I think we should all look at this as a new start for the Geneve. And I, for one, welcome it.

NEW 128K CARD ON THE SCENE

Asgard Software has released the Asgard 128K Memory System for use with the TI. The Peripheral Expansion Box card provides the normal 32K of expansion memory, plus 96K of additional CPU RAM when used with compatible software. Otherwise, it functions as a normal 32K expansion. However, it is not compatible with TI, CorComp or Myarc 32K cards. Also, it appears to be compatible only with Horizon RAM-disks.

Asgard says information on how to write programs to take advantage of the full 128K of memory will be freely provided. The company also notes that it has programmers working on programs for the the new card. A "compatible language" is also under development for use by casual programmers. The price is $119.95, plus $10 shipping. We'll have more on this in the October issue.

—JK

Feedback

Fibonacci quilts

Thank you for the program on the Fibonacci Numbers you had in your July 1992 issue. These series of numbers have other uses besides solving scientific problems or for puzzles. These numbers have turned out to be in the same ratio as many growth proportions found in nature. They were used by the Arabs in many of their intricate geometric designs.

As a quilter I use them whenever I want a pleasing proportion in my designs. They are nice for repeat patterns, and they can be used in four directions if wanted.

Joyce Becker
Merrick, New York

TI adaptor sought for Nintendo controller

There was a time when there weren't any new TI programs and I bought myself the Nintendo system. I did this two years ago. At first I wanted to use a Nintendo joystick, but later I found out a person really needs to get familiar with the Nintendo controller. I wasted my money getting myself the joystick and decided to go back to the controller. The reason was I am getting ready to get the Super Nintendo.

Everytime a new TI game comes out I usually buy it. There must be TI-Nintendo owners out there who would like to use the Nintendo controller with TI games.

When the joystick first came out the thing was to buy an adaptor to use with the TI. Nowadays it's the other way around. TI-Nintendo owners would like some kind of connection so we can use the Nintendo controller with the TI.

I am a diehard 10 years TI owner.

Robert F. Mendez
Fillmore, California

Where's D&L?

In your July MICRO-Review section, you comment on the item Household Budget, from D&L Software, 89 Little Neck Ave., Somerset, MA 02777.

Upon my ordering such item from the above concern, my letter was returned by the Post Office with the notation, No Such Street.

Could it have been by any chance a typo error or a different city?

Alfredo Arroyo
College Park, Maryland

So sorry — the city should be Swansea, not Somerset. — Ed.

Praise for Cecure

I purchased my Myarc 9640 computer late in the game so I did not get in on the original sorting-out games that others had to play. I had some video and sound problems but I blamed them on the not yet complete software that others were complaining about. I bothered quite a few people in the TI/Myarc family, and while all tried to be helpful, I was not able to find a solution to my problems (MICROpendium was one of those).

(See Page 8)

MICROpendium

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Feedback

(Continued from Page 6)

After deciding to "live with it," I read your article about Don Walden of Cecure Electronics offering repair of Myarc products. To make a long story short, Don was able to repair my computer by replacing a couple of chips. Not only were the repairs done at a very fair price and in a timely manner, Don went the extra mile with follow-ups and advice including some software patches.

I would encourage anyone who is having trouble with TI, Myarc or related hardware to consider contacting Cecure Electronics. It is people like Don Walden who will keep our computers alive for years to come.

Dave Renkenberger
Wabash, Indiana

Cecure Electronics is at 7759 So. Scepter Dr. #7, Franklin, WI 53132-2201. — Ed.

What's wrong with TI?

What's wrong with the TI99/4(A)?

It can be summed up in four words — "ninety-nine eighty five."

No, this is not the price your local discount store "blew" them out at in 1984 — or maybe it was, but I am referring to the TMS9985. This was the CPU that TI planned to have in the 99/4. Due to technical difficulties, the TMS9985 was never produced. That forced TI to use the more expensive 9900 in the 4A.

The TMS9985 is the father of the 9995, just as the 99000 is the son of the 9900. Let's review some of the highlights of the 9995.

- Has an onboard cache of 256 bytes.
- Has an 8-bit data bus.
- Utilizes only one dedicated external interrupt level besides Reset.

These are all "features" that the 9995 and 9985 share.

Highlights of the 9900:

- Has a 16-bit data bus to all memory.
- Has 15 external prioritized interrupt levels besides Reset.

Now, let's say for a minute you had a system designed for a TMS9985 but you were suddenly forced to use a 9900. What would you do?

- Tie interrupt pins such that only one external interrupt level was possible.
- You would probably implement the 256 bytes of on-board RAM as 256 bytes of static RAM on the 16-bit bus to simulate the on-board cache, but would leave the rest of the system access as 8-bit reads (done twice).

Does all of this sound familiar?

These considerations have had one major impact. If TI had implemented the 9900 like it had been designed, anyone building a 4A compatible would have been forced to use the 99000 as an upgrade processor.

While you can make a 9900 or a 99000 act like a 9985 or 9995, you cannot make the reverse happen.

Dan Eicher
Mooresville, Indiana

More than three

After reading "Sex and Extended BASIC" by Barry Traver in the August 1992 issue, I felt that I had to respond to the implication that were it not for a couple of women and one man (Lucie Dorais, C. Regena and Jim Peterson) there would be few if any Extended BASIC programs.

I am fairly new to the 99/4A and only five months ago joined the Danville 99er Group in Danville, Kentucky. I had seen their name in a list from TI but could not locate them because of the "old" address. Correct address is at the end of this letter.

To my surprise, the group has many, many listings for programs by Regena. I noticed that most (nearly all) are in TI console BASIC. That is not the major point here.

My point is that with so many 99/4A computers out there, that there "must" be many Extended BASIC programmers.

I base this idea on the fact that there are so many listings available in Extended BASIC that do not attach themselves to any of the three names mentioned above.

Because I am new to the 99/4A does not mean that I am new to the small "home" computers. I have come to care very much about the 99/4A and its abilities in the past few months and the devotion to it by (at least) the Danville group. Perhaps it is that I do not understand what is meant in the article by Extended BASIC programmers, but as a member of the Danville group I have access to many Extended BASIC programs from "A/G Software."

Now I know that with so much out there nowadays there is really very little that one can do that is "new," but as far as a good Extended BASIC program, just what does it take to be good?

I have (as yet) not seen a bad program from "A/G."

This letter is not to promote the Danville group, but simply to make it known that with such programs as "Compare," "Amanda's Kitchen," "Jitterbugs" and the latest (dedicated) data base, "News Carrier," and many others, there are Extended BASIC programmers around.

And speaking of using Extended BASIC to "educate" children, Gene (the "G" in A/G) wrote a program a couple of years ago with his four-year-old granddaughter sitting on her lap that has taught her and other four and five-year-olds to spell numbers. Yes, I said to "spell" the numbers.

And if you "educators" feel that a four or five-year-old cannot learn to use the cross sections of a grid, then you are in for a shock. Gene's version of the old "Battleship" game (which he calls USS Seawar) does just that.

This game is designed for players older than four or five and it is true that the very young do not understand the "search" concepts used to play, but they do learn quickly how to enter the letter and number to pinpoint the exact location that they wish to shoot it.

Again, this is not to promote the Danville group, but it is the group of people that I know as 99/4A users. I am sure that Gene and Amanda both would say that they are "only beginners compared to many of the programmers out there." I feel, even without knowing the 99/4A users throughout the TI world, that there must be many good Extended BASIC programmers out there. I also feel (if I understood the article correctly) that just because those programmers decided for whatever reason not to go public in print with their work, does not mean that they do not exist.

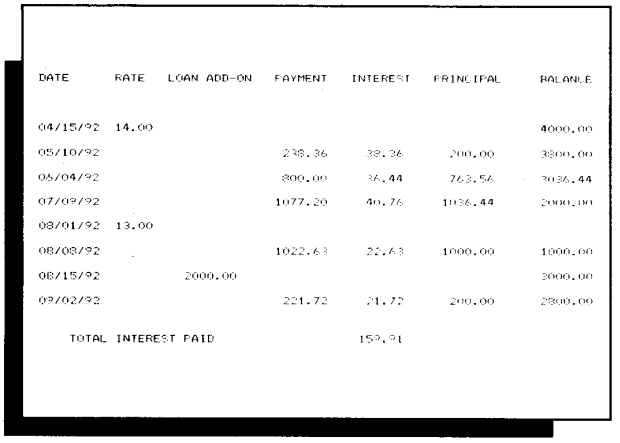
Larry Menton (member)
The Danville 99ers
888 Airport Rd.
Danville, KY 40422

BASIC

Loan Calculations

By REGENA

As my children have gotten older, it seems like they need more money. The problem is I have less money. Fortunately, I have a line of credit. Unfortunately, I keep using it. This month's program is a program to tell the loan balance, and the daily interest is calculated for each payment.



DATE	RATE	LOAN ADD-ON	PAYMENT	INTEREST	PRINCIPAL	BALANCE
04/15/92	14.00					4000.00
05/10/92			238.36	38.36	200.00	3800.00
06/04/92			800.00	36.44	763.56	3036.44
07/09/92			1077.20	40.76	1036.44	2000.00
08/01/92	13.00					
08/08/92			1022.63	22.63	1000.00	1000.00
08/15/92		2000.00				3000.00
09/02/92			221.72	21.72	200.00	2800.00
TOTAL INTEREST PAID				159.91		

Payments do not need to be made the same day each month — with daily interest the amount of interest is calculated from the last payment. This program also allows you to change the interest rate on any day, and you can add to the loan at any time.

Line 230 asks if you want a printed copy. If you do use a printer with this program, be sure to put your own printer configuration in Line 300. If you don't want a printed copy, each transaction is shown on the screen as you enter information.

The table show an example of what a printed copy can look like. This loan starts on 4/15/92 with a beginning balance of $4,000. The annual rate of interest is 14 percent. The next date entered is 5/10/92. The screen will show how much interest has accrued, so I made a payment of $200 plus the interest, or $238.36. The interest and principal are shown, with the balance of $3,800. At the next date of 6/04/92, I made a payment of an even $800, and the interest and principal are shown along with the new balance. The next date shows another payment. Notice that the payments are on different days of the month.

On 8/01/92, a change in interest rate to 13 percent is shown. The payment on 8/08/92 reflects that interest rate change. The interest includes 23 days at 14 percent and 7 days at 13 percent.

A loan add-on is illustrated on 8/15/92; $2,000 is added to the loan, to bring the principal balance to $3,000. The payment on 9/02/92 includes interest on $1,000 for seven days, then interest on $3,000 for 18 days.

I ended the program here — I can't ever seem to get back to a zero balance. In fact, in real life, my loan add-ons are used more than payments, it seems. That's why I needed this program.

When you end the program, the total interest paid is shown.

Loan balances are calculated in many ways. Years ago, we paid monthly interest — even if we paid different days of the month. If days were considered, calculations were made on a year of 360 days (for easier calculating), and months were 30 days each.

Computers really made loan payments and interest calculations more fair. Eventually banks realized years had 365 days and months were different lengths. However, even now, banks do not consider 366 days on leap years. The daily interest is based on the annual rate divided by 365 days. The banks do not recognize that February may have 28 or 29 days. This program is based on the standard 365 days no matter what year it is.

Lines 380-400 and 1070-1080 calculate leap years to determine how many days are in February. Lines 190-220 read in how many days are in each month.

Lines 320-410 ask for the beginning year. I put in limits of 1900 to 2100 for the year. You then enter the starting month and starting day. Later as you enter months and days, you may not enter a day before the previous month and day. You may enter any month later. If the month number is less than the previous month number, the computer assumes you go to the next year. For example, if you are on 10/23/92 and enter month 2, the computer will assume 1993 and calculate the number of days appropriately.

Each new transaction or change starts by entering a date. Lines 790-1230 get this date and calculate the number of days between the previous date and the new date.

The next step is to choose to change the interest rate, to add to the loan, to make a payment, or to end the program. If you want to do more than one of these, use the same date and select items one at a time.

Lines 1360-1440 calculate the interest due. The daily rate is multiplied by the number of days and the balance. ITD is the interest which is incremented when the interest rate changes or there is a loan add-on but no payment is made. The interest is calculated only when a payment is made.

Lines 2230-2300 are a subroutine to format numbers into a money form with two decimal places. Lines 2310-2370 are a subroutine to put the month, day and year in a date format. Lines 2380-2420 put the interest rate in a format with two decimal places.

Negative numbers may appear. If you make a payment that is less than the interest due at that time, the interest will be paid, and the amount of interest still due becomes principal on the balance due. If you pay more than the balance plus interest, then you will get a negative balance — which means you would get change from your payment. The program automatically ends when the balance becomes zero or less (you have paid off the loan).

If you convert this program to Extended BASIC, it would become a much simpler program. Formatting and printing numbers with PRINT USING format statements really helps line numbers up. In TI BASIC, I converted to strings to manipulate trailing zeroes and decimal places.

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

REGENA ON BASIC —

```
100 REM LOAN RECORDS !054
110 REM BY REGENA !071
120 DIM M(12)!113
130 CALL CLEAR !209
140 PRINT TAB(5);"** LOAN RE
CORDS **" !212
150 PRINT : : :"ENTER DATE,
INTEREST RATE," !138
160 PRINT :"LOAN ADD-ON, OR
PAYMENT." !102
170 PRINT : :"THE INTEREST,
PRINCIPAL," !110
180 PRINT :"AND BALANCE WILL
 BE SHOWN.": : : :!187
190 FOR J=1 TO 12 !108
200 READ M(J)!155
210 NEXT J !224
220 DATA 31,28,31,30,31,30,3
1,31,30,31,30,31 !110
230 PRINT "DO YOU WANT A PRI
NTED COPY? (Y/N)" !006
240 COPY=0 !242
250 CALL KEY(3,K,S)!190
260 IF (K=78)+(K=110)THEN 32
0 !129
270 IF (K<>89)+(K<>121)=-2 T
HEN 250 !059
280 COPY=1 !243
290 REM PRINTER CONFIGURATIO
N    !086
300 OPEN #1:"RS232.BA=600" !
222
310 PRINT #1:"DATE       RATE
   LOAN ADD-ON    PAYMENT   I
NTEREST   PRINCIPAL      BALA
NCE": : :!146
320 PRINT : : :"STARTING DAT
E": :!163
330 INPUT "YEAR ":Y !189
340 Y=INT(Y)!172
350 IF (Y>1899)+(Y<2101)=-2
THEN 380 !248
360 PRINT "PLEASE ENTER YEAR
 FROM 1900 TO 2100": :!125
370 GOTO 330 !154
380 IF (Y=1900)+(Y=2100)THEN
 410 !134
390 IF Y/4<>INT(Y/4)THEN 410
 !135
400 M(2)=29 !168
410 PRINT : :!006
420 INPUT "MONTH NUMBER ":MO
 !070
430 MO=INT(MO)!050
440 IF (MO>0)+(MO<13)=-2 THE
N 470 !200
450 PRINT "ENTER MONTH NUMBE
R 1-12": :!210
460 GOTO 410 !234
470 PRINT : :!006
480 INPUT "DAY ":DAY !238
490 DAY=INT(DAY)!182
500 IF (DAY>0)+(DAY<M(MO)+1)
=-2 THEN 530 !108
510 PRINT "DAY MUST BE FROM
1 TO ";M(MO)!249
520 GOTO 470 !038
530 CALL CLEAR !209
540 PRINT STR$(MO);"/";STR$(
DAY);"/";STR$(Y)!005
550 PRINT : :"ENTER ANNUAL I
NTEREST RATE  IN PERCENT": :
!156
560 INPUT "INTEREST RATE ":R
 !072
570 IF R>=0 THEN 600 !032
580 PRINT "INTEREST RATE MUS
T BE >= 0" !050
590 GOTO 550 !119
600 IF R<=100 THEN 630 !160
610 PRINT "INTEREST RATE MUS
T BE <= 100" !147
620 GOTO 550 !119
630 PRINT : : :"STARTING BAL
ANCE" !004
640 PRINT :"ENTER BALANCE DU
E IN DOLLARS": :!008
650 INPUT "BALANCE ":BAL !23
5
660 IF BAL>0 THEN 690 !057
670 PRINT "BALANCE MUST BE G
REATER THANZERO" !046
680 GOTO 630 !199
690 BAL=INT(BAL*100+.5)/100
!197
700 MONEY=BAL !021
710 GOSUB 2230 !014
720 BAL$=MONEY$ !093
730 GOSUB 2310 !095
740 GOSUB 2380 !165
750 CALL CLEAR !209
760 PRINT DATE$;"  ";R$;"%
 ";BAL$: : :!143
770 IF COPY=0 THEN 790 !008
780 PRINT #1: :DATE$;TAB(16-
LEN(R$));R$;TAB(74-LEN(BAL$)
);BAL$ !033
790 PRINT : : : :"*** NEW TR
ANSACTION ***" !218
800 ND=0 !073
810 PRINT : : :"ENTER DATE":
 : :!103
820 INPUT "MONTH NUMBER ":MO
2 !120
830 MO2=INT(MO2)!150
840 IF (MO2>0)+(MO2<13)=-2 T
HEN 870 !190
850 PRINT :"MONTH NUMBER MUS
T BE 1 TO 12": :!180
860 GOTO 820 !134
870 PRINT : :!006
880 INPUT "DAY NUMBER ":DAY2
 !016
890 DAY2=INT(DAY2)!026
900 IF (DAY2>0)+(DAY2<M(MO2)
+1)=-2 THEN 930 !147
910 PRINT :"DAY MUST BE FROM
 1 TO";M(MO2)!191
920 GOTO 870 !184
930 IF MO2<>MO THEN 970 !179
940 IF DAY2>=DAY THEN 970 !0
54
950 PRINT :"DATE MUST BE SAM
E AS OR     LATER THAN LAST
DATE": :!144
960 GOTO 790 !104
970 IF MO2=MO THEN 1190 !20
980 ND=M(MO)-DAY !070
990 IF MO2>MO THEN 1130 !149
1000 REM NEW YEAR !021
1010 FOR J=MO+1 TO 12 !201
1020 ND=ND+M(J)!167
1030 NEXT J !224
1040 M(2)=28 !167
1050 Y=Y+1 !043
1060 IF (Y=1900)+(Y=2100)THE
N 1090 !049
1070 IF INT(Y/4)<>Y/4 THEN 1
090 !050
1080 M(2)=29 !168
1090 FOR J=1 TO MO2-1 !201
1100 ND=ND+M(J)!167
1110 NEXT J !224
1120 GOTO 1170 !229
1130 IF MO2=MO+1 THEN 1170 !
118
1140 FOR J=MO+1 TO MO2-1 !03
8
1150 ND=ND+M(J)!167
1160 NEXT J !224
1170 ND=ND+DAY2 !179
1180 GOTO 1200 !003
1190 ND=DAY2-DAY !000
1200 PRINT : :"NUMBER OF DAY
S =";ND: :!185
```

(See Page 11)

REGENA ON BASIC—

(Continued from Page 10)

```
1210 MO=MO2 !040
1220 DAY=DAY2 !172
1230 GOSUB 2310 !095
1240 CALL CLEAR !209
1250 PRINT DATE$: :!072
1260 PRINT "CHOOSE:" !101
1270 PRINT "1  CHANGE INTERE
ST RATE" !107
1280 PRINT "2  ADD TO LOAN"
!185
1290 PRINT "3  MAKE PAYMENT"
 !065
1300 PRINT "4  END PROGRAM"
!244
1310 CALL KEY(3,K,S)!190
1320 IF (K<49)+(K>52)THEN 13
10 !056
1330 CALL CLEAR !209
1340 PRINT DATE$ !222
1350 ON K-48 GOTO 1450,1650,
1880,2430 !174
1360 REM  INTEREST DUE  !134
1370 DAILY=R/36500 !018
1380 DUE=DAILY*ND*BAL !246
1390 DUE=INT(100*DUE+.5)/100
 !227
1400 ITD=ITD+DUE !031
1410 MONEY=ITD !039
1420 GOSUB 2230 !014
1430 ITD$=MONEY$ !111
1440 RETURN !136
1450 PRINT : :"CHANGE INTERE
ST RATE": :!203
1460 INPUT "ANNUAL PERCENT "
:R2 !177
1470 IF R2>=0 THEN 1500 !217
1480 PRINT :"RATE MUST BE >=
 0": :!186
1490 GOTO 1460 !008
1500 IF R2<=100 THEN 1530 !0
89
1510 PRINT :"RATE MUST BE <=
 100": :!027
1520 GOTO 1460 !008
1530 GOSUB 1370 !175
1540 R=R2 !148
1550 GOSUB 2380 !165
1560 CALL CLEAR !209
1570 PRINT DATE$ !222
1580 PRINT :"INTEREST RATE =
 ";R$ !137
1590 PRINT :"PRINCIPAL BALAN
CE = ";BAL$ !248
1600 IF COPY=0 THEN 1620 !07
3
1610 PRINT #1: :DATE$;TAB(16
-LEN(R$));R$ !049
1620 PRINT : :"PRESS <ENTER>
 TO CONTINUE" !211
1630 CALL KEY(3,K,S)!190
1640 IF K=13 THEN 790 ELSE 1
630 !251
1650 PRINT : :"ADD TO LOAN":
 :!024
1660 INPUT "AMOUNT ":ADDON !
111
1670 IF ADDON>0 THEN 1700 !1
98
1680 PRINT :"ADD AMOUNT GREA
TER THAN ZERO": :!048
1690 GOTO 1650 !199
1700 ADDON=INT(ADDON*100+.5)
/100 !243
1710 GOSUB 1370 !175
1720 MONEY=ADDON !172
1730 GOSUB 2230 !014
1740 ADDON$=MONEY$ !244
1750 BAL=BAL+ADDON !131
1760 MONEY=BAL !021
1770 GOSUB 2230 !014
1780 BAL$=MONEY$ !093
1790 CALL CLEAR !209
1800 PRINT DATE$ !222
1810 PRINT :"LOAN ADD-ON ";A
DDON$ !095
1820 PRINT :"PRINCIPAL BALAN
CE ";BAL$ !153
1830 IF COPY=0 THEN 1850 !04
8
1840 PRINT #1: :DATE$;TAB(27
-LEN(ADDON$));ADDON$;TAB(74-
LEN(BAL$));BAL$ !075
1850 PRINT : :"PRESS <ENTER>
 TO CONTINUE" !211
1860 CALL KEY(3,K,S)!190
1870 IF K=13 THEN 790 ELSE 1
860 !226
1880 PRINT : :"BALANCE = ";B
AL$ !225
1890 GOSUB 1370 !175
1900 PRINT :"INTEREST DUE =
";ITD$ !201
1910 PRINT : : :"ENTER PAYME
NT AMOUNT": :!176
1920 INPUT "PAYMENT ":PAY !0
62
1930 PAY=INT(PAY*100+.5)/100
 !251
1940 IF PAY>0 THEN 1970 !089
1950 PRINT :"PAYMENT MUST BE
 GREATER     THAN ZERO": :!0
42
1960 GOTO 1920 !214
1970 MONEY=PAY !048
1980 GOSUB 2230 !014
1990 PAY$=MONEY$ !120
2000 PRIN=PAY-ITD !132
2010 BAL=BAL-PRIN !087
2020 TOT=TOT+ITD !078
2030 MONEY=PRIN !127
2040 GOSUB 2230 !014
2050 PRIN$=MONEY$ !199
2060 MONEY=BAL !021
2070 GOSUB 2230 !014
2080 BAL$=MONEY$ !093
2090 CALL CLEAR !209
2100 PRINT DATE$ !222
2110 PRINT "PAYMENT = ";PAY$
 !202
2120 PRINT "INTEREST = ";ITD
$ !018
2130 PRINT "PRINCIPAL = ";PR
IN$ !159
2140 PRINT :"BALANCE = ";BAL
$ !044
2150 IF COPY=0 THEN 2190 !13
3
2160 PRINT #1: :DATE$;TAB(39
-LEN(PAY$));PAY$;TAB(49-LEN(
ITD$));ITD$;TAB(61-LEN(PRIN$
));PRIN$;!240
2170 PRINT #1:TAB(74-LEN(BAL
$));BAL$ !132
2180 ITD=0 !152
2190 IF BAL<=0 THEN 2430 !20
1
2200 PRINT : :"PRESS <ENTER>
 TO CONTINUE" !211
2210 CALL KEY(3,K,S)!190
2220 IF K=13 THEN 790 ELSE 2
210 !065
2230 A=MONEY*100 !166
2240 IF A<>0 THEN 2270 !156
2250 MONEY$="0.00" !243
2260 GOTO 2300 !083
2270 A$=STR$(A)!172
2280 LA=LEN(A$)!242
2290 MONEY$=SEG$(A$,1,LA-2)&
"."&SEG$(A$,LA-1,2)!120
2300 RETURN !136
2310 M1$="0"&STR$(MO)!244
2320 M$=SEG$(M1$,LEN(M1$)-1,
```

(See Page 12)

THE ART OF ASSEMBLY - PART 16

Maximizing speed of execution

By BRUCE HARRISON
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Today's topic is speed, but it is also choices. Once we are doing our programming in Assembly, we have a big speed advantage going for us compared to the interpreted BASIC or Extended BASIC languages. None the less, when operations are performed over many repetitions, as in a loop, the choices we make as to how to perform our operations can make a big difference in the speed of completing them.

We have touched on the topic of integer math operations before, and mentioned how using integers rather than floating point numbers can make things go faster. Here is a concrete example from our Golf Analyzer program. When that was reviewed by Bill Gaskill, he remarked on the speed at which the program performed the calculation of Handicaps. That calculation involves taking as many as twenty rounds of golf, adding up the scores, multiplying and dividing many times, and so on, yet when the program performed that operation there was a barely perceptible delay between starting and ending the process.

One thing that made such speed possible was the range of numbers involved. Course ratings, for example, which must be used in the calculation, have two parts (as we treated them). There is an integer part and a single decimal place. (e.g. 72.4) The integer part will not go over 100, and the decimal will always be just one digit. Thus we were able to streamline all our math operations that invlove the rating by first multiplying the integer part by ten, then adding the decimal to that. In the example above, 72.4 would become 724. The gross scores, from which ratings are subtracted, were also multiplied by ten before doing the subtraction. Thus the whole of the calculations could be performed using the integer math instructions, and only at the very end of the calculations was the result divided by ten and then rounded to produce a "handicap". The code that performs this handicap calculation is shown in today's sidebar.

The source code will be difficult to follow, even with copious annotation, but we think it will serve as an example of how to take maximum advantage of the range of a number and thus apply the much faster integer math operations rather than the floating point operations.

It is not important that the reader understand all the operations in the Handicap program section, but let's briefly describe what happens. The program has a file of golf rounds loaded in memory. It works backward from the round that has just been entered by the user, and will look at the round just entered plus the 19 or fewer rounds which precede it. Rounds are stored in date order, so the program will use the most recent 20 rounds.

For each such round, the program uses a subroutine to add up the gross score for that round. It uses other subroutines to find the course data for the round, including the Course Rating and Course Slope. (Slope is a number which ranges from about 100 through 130 or so, with 113 being the "normal" course slope.) The rating is actually stored in the course record as two bytes, one which contains the integer part, and one which contains the single decimal place. Early in the planning stage for GSA we saw that the rating multiplied by ten would always be far less than 32767, and so could always be treated as a word value in integer math operations.

The program then subtracts the rating times ten from the gross score times ten for each of up to 20 rounds, then performs a multiply and divide with the number 113 and the course slope. The result is a "differential" for the handicap calculation. These differentials are stashed in a table in memory for examination later in the process. If twenty prior rounds are available, the program will use the ten lowest differentials from that table to perform the handicap calculation. If there are more than four rounds available but less than 20, a lookup table will be used to decide how many differentials are used.

The ten lowest differentials are all added together (these are still ten times the actual numbers), multiplied by .96 (really multplied by 96 and divided by 100). This result is then divided by the number of differentials used, and divided by ten to produce a handicap index number. The same result is then multiplied by slope, divided by 113, divided by ten and rounded to produce the handicap for the course just played.

(See Page 13)

REGENA ON BASIC—

(Continued from Page 11)

```
2)!023
2330 D1$="0"&STR$(DAY)!045
2340 D$=SEG$(D1$,LEN(D1$)-1,
2)!252
2350 Y$=SEG$(STR$(Y),3,2)!12
6
2360 DATE$=M$&"/"&D$&"/"&Y$
!036
2370 RETURN !136
2380 R=INT(R*100+.5)/100 !20
3
2390 MONEY=R !152
2400 GOSUB 2230 !014
2410 R$=MONEY$ !224
2420 RETURN !136
2430 PRINT : : :!187
2440 MONEY=TOT !061
2450 GOSUB 2230 !014
2460 TOT$=MONEY$ !133
2470 PRINT "TOTAL INTEREST P
AID = ";TOT$ !021
2480 IF COPY=0 THEN 2510 !19
8
2490 PRINT #1: : :TAB(5);"TO
TAL INTEREST PAID";TAB(49-LE
N(TOT$));TOT$ !057
2500 CLOSE #1 !151
2510 END !139
```

THE ART OF ASSEMBLY—

(Continued from Page 12)

This is probably all as clear as mud, but it may help those who are trying to follow what the source code does.

We don't really know how much impact there would be by peforming all these operations in floating point math, because we have not tried doing this. What we intended to point out in all this is that programmers should take advantage of the situation they are presented with, and use integer operations where possible.

Another potential time-waster is in dealing with strings. In the same program, we had to find the course data for each round played, as the course data was stashed in a different part of memory. The course name was included in the record for each round played, but the pars for each hole on that course, and its rating and slope were stored elsewhere. This meant that for each round encountered, we had to look up the course information. That operation involved a special kind of string comparison to find the corresponding course record.

We were comparing the course name stored with the round with each course name among the courses in memory. That could involve considerable time, but we made a special kind of string comparison routine to minimize time spent. For the course names to be a match, they had to be equal in all respects, including length. Therefore since the length was there as the first byte in each string, we compared that first. If the lengths were unequal, then there was no point in comparing the content, so we got out of the comparison loop immediately. If length were equal, we would compare the content part of the string only until we found an unequal character, and then get out. Thus only the matching string would require comparison of all the bytes in the string to reach a decision.

In other words, our comparison would end as soon as it was possible to end it. This principle should be applied in all cases when strings are being compared.

In a more generalized case of string comparison, one can't make any decision on the length alone, because the content of the strings will determine which is smaller or larger. For that case, we have shown in the sidebar a general purpose string comparison routine that will determine which string is larger, or whether they are equal. If they are identical up to the length of the shorter one, the longer string will be called larger. This routine is drawn from our "Easy Data" source code, and was actually used in the sorting of strings from XB DATA statements.

(See Page 14)

SIDEBAR 16

```
* SOME ILLUSTRATIVE CODE SECTIONS
* FROM OUR OWN PROGRAMS
* ALL CODE SHOWN IS PUBLIC DOMAIN
*

* HCAP SHOWS AN INTERESTING USE OF INTEGERS TO HANDLE NUMBERS
* THAT HAVE ONE DECIMAL PLACE ATTACHED
HCAP
       MOV  R11,*R15+     STASH RETURN ADDRESS
       CLR  @COUNT        CLEAR A DATA WORD
       CLR  @GTPIN        AND ANOTHER
       LI   R1,SCRLI      POINT R1 AT A BUFFER SPACE IN MEMORY
HCP0   BL   @GETRAT       GETRAT GETS THE COURSE RATING AND SLOPE INFORMATION
       MOV  @RATINT,R5    PLACE THE RATING'S INTEGER PART IN R5
       MOV  @TEN,R3       GET THE VALUE TEN IN R3
       MPY  R3,R5         MULTIPLY THE RATING'S INTEGER PART BY TEN
       A    @RATDEC,R6    ADD THE DECIMAL PART OF THE RATING
       C    @ACES,@NINE   WAS THIS A NINE-HOLE ROUND?
       JNE  HCAPA         IF NOT, JUMP AHEAD
* THE FOLLOWING LINES ARE USED TO COMBINE THE RESULTS OF TWO NINE HOLE ROUNDS
* INTO ONE 18 HOLE ROUND
       C    @GTPIN,@ONE
       JEQ  HCAPB
       MOV  @ONE,@GTPIN
       MOV  R6,@GTNET
       MOV  @RNDTOT,@GTSCR+2
       MOV  @SLOPE,@GTPAR
       JMP  HCAP1
HCAPB
       A    @GTSCR+2,@RNDTOT
       A    @GTNET,R6
       SRL  R6,1
       MOV  @SLOPE,R5
       A    @GTPAR,R5
       SRL  R5,1
       MOV  R5,@SLOPE
HCAPA  MOV  R6,@GTSCR     STASH R6 IN MEMORY
       CLR  @GTPIN        CLEAR A WORD
       MOV  @RNDTOT,R5    MOV THE TOTAL GROSS SCORE INTO R5
       MPY  R3,R5         MULTIPLY THAT BY TEN
       S    @GTSCR,R6     SUBTRACT THE RATING (X10) FROM THE SCORE (X10)
       JGT  HCAP0         IF POSITIVE RESULT, JUMP
       JMP  HCAP1         ELSE SKIP NEXT PART
HCAP0  MOV  R6,R5         PLACE R6 BACK INTO R5
       MPY  @ONE13,R5     MULTIPLY BY 113
       MOV  @SLOPE,R3     MOVE THE COURSE SLOPE INTO R3
       DIV  R3,R5         DIVIDE R5-R6 PAIR BY SLOPE
       BL   @ROUND        ROUND THE RESULTING NUMBER
       MOV  R5,*R1+       STASH THE RESULT IN A STACK POINTED TO BY R1
       INC  @COUNT        INCREMENT THE COUNT OF ROUNDS USED
HCAP1  MOV  @CURREC,R9    GET CURRENT ROUND RECORD POINTER IN R9
       AI   R9,-56        SUBTRACT LENGTH OF ONE RECORD
       CI   R9,FILORG     SEE IF THAT'S BEFORE OUR FIRST RECORD
       JLT  HCAP3         IF SO, WE HAVE RUN OUT OF PRIOR ROUNDS
       MOV  R9,@CURREC    ELSE PLACE R9 AS CURRENT RECORD POINTER
       C    @COUNT,@TWENTY  HAVE WE DONE TWENTY ROUNDS?
       JEQ  HCAP3         IF SO, JUMP TO NEXT PART
       BL   @GETCN        ELSE GET COURSE NAME FOR NEXT PRIOR ROUND
       BL   @FNDCRS       THEN FIND THE COURSE RECORDS
       MOV  @CURREC,R9    AND SET R9 BACK TO ROUND RECORD START
       LI   R10,TEMREC    POINT AT TEMPORARY RECORD STORAGE
       LI   R4,56         56 BYTES TO GET
       BL   @MOVBTS       MOVE THE CURRENT ROUND RECORD TO TEMREC
       BL   @RNDCMP       THEN COMPUTE THE ROUND'S SCORE
       JMP  HCP0          AND JUMP BACK TO INCLUDE THIS ROUND
HCAP3
       MOV  @COUNT,R3     GET THE NUMBER OF ROUNDS FOUND
       MOV  R3,@GTOT      GTOT HAS NUMBER OF ROUNDS AVAILABLE
       CI   R3,5          COMPARE TO FIVE
       JLT  HCZX          IF LESS, NO HANDICAP ISSUED
       CI   R3,19         COMPARE TO 19
       JGT  HCAP4         IF GREATER, JUMP
```

THE ART OF ASSEMBLY—

(Continued from Page 13)

Of course what is shown here is really a fragment, since it does not show what actually happens when strings are found to be bigger, less, or equal. In the actual application, this code resulted in storing the address of the least of the two strings, or the address of the first one if they were equal. We purposely left out that part from the sidebar so it would not confuse you.

In the real application, this string comparison was used as part of a very involved sorting routine. That routine was called from Extended BASIC, and could sort 55 records of six fields each by two criteria in about three seconds. That time includes the finding of the strings in XB DATA statements and the assignment of those 330 strings into XB Array variables. If such a sort were done by Extended BASIC, the time would be measured in minutes, not seconds.

Before we get too caught up in our own hype, though, we should say that what we are showing today are things that we have devised for specific circumstances. They have worked, and quite well, but that doesn't mean these samples are the "best" way to do things. Also, we are not showing today any "wrong" way to do things. The only thing we're attempting to say and show is a reasonably efficient and fast way to do some selected operations, and we are leaving the details of implementation to the user. The best way is still the one that you can use and understand, not necessarily our way.

There's another interesting tidbit in today's sidebar called the ROUND subroutine. There were places in the calculations where the formula called for a rounded result, so we devised this small subroutine to do the job for us. That is why we sometimes placed the divisor in R3 before doing a divide operation, instead of simply dividing by some word in memory.

The idea of rounding is simple enough in concept. If the remainder is equal to or more than half the divisor, then the quotient is incremented by one.

The first step in the rounding is to double the remainder in R6. Now we simply compare R6 to R3. If R6 is less than R3, then we do not increment the quotient. Otherwise we do increment the quotient, so it is now properly rounded. None of the cases where this was used needed the remainder for anything after this operation, so we left R6 alone as we exited. Had we needed R6 restored to its original value after rounding, we could put in one line at label ROUNDX to SRL R6,1. This would put R6 back to the value it had upon entry to this subroutine.

(See Page 18)

```
        AI    R3,-5          ELSE SUBTRACT FIVE FROM THE NUMBER
        MOVB  @RULUT(R3),R1 AND USE LOOKUP TABLE
        SRL   R1,8           RIGHT JUSTIFY NUMBER FROM LUT
        JMP   HCAP5          THEN JUMP AHEAD
HCAP4   MOV   @TEN,R1        IF TWENTY ROUNDS FOUND, WE'LL USE TEN OF THEM
HCAP5   CLR   @GTSCR         CLEAR A MEMORY WORD
        MOV   R1,@COUNT      COUNT HAS NUMBER OF ROUNDS TO BE USED
        CLR   R8             CLEAR REGISTER 8
        CLR   R5             AND 5
HCAP6   CLR   R13            CLEAR REGISTER 13
        CLR   R2             AND 2
        LI    R7,>7FFF       PLACE HIGHEST POSITIVE NUMBER IN R7
        MOV   @GTOT,R4       GET NUMBER OF ROUNDS FOUND IN R4
HCAP8   MOV   @SCRLI(R13),R2 GET A DIFFERENTIAL INTO R2
        JEQ   HCAP7          IF ZERO, SKIP THIS ONE
        C     R2,R7          ELSE COMPARE TO R7
        JGT   HCAP7          IF GREATER, SKIP
        MOV   R2,R7          ELSE R2 IS THE LOWEST DIFFERENTIAL
        MOV   R13,R9         SAVE POINTER IN R9
HCAP7   INCT  R13            MOVE AHEAD IN STASHED DIFFERENTIALS BY A WORD
        DEC   R4             DECREMENT COUNT
        JGT   HCAP8          IF GREATER THAN ZERO, GO BACK
        A     R7,@GTSCR      ELSE ADD R7 TO TOTAL OF DIFFERENTIALS
        CLR   @SCRLI(R9)     AND CLEAR THAT MEMBER OF THE DIFFERENTIAL SET
        INC   R5             INCREMENT R5 COUNT
        C     R5,@COUNT      COMPARE TO TOTAL
        JLT   HCAP6          IF LESS, JUMP BACK
HCAPX   MOV   @GTSCR,R5      MOVE TOTAL OF DIFFERENTIALS TO R5
* THE OPERATION IN THE NEXT FOUR INSTRUCTIONS ESSENTIALLY MULTIPLIES
* THE TOTAL OF DIFFERENTIALS BY .96
        LI    R3,96          PLACE 96 IN R3
        MPY   R3,R5          AND MULTIPLY R5 BY 96
        LI    R3,100         NOW LOAD 100 INTO R3
        DIV   R3,R5          AND DIVIDE R5-R6 PAIR BY 100
        MOV   R5,R6          MOVE THAT QUOTIENT TO R6
        CLR   R5             AND CLEAR R5
        DIV   @COUNT,R5      DIVIDE BY THE NUMBER OF DIFFERENTIALS
        MOV   R5,R10         AND STASH QUOTIENT IN R10
        CLR   R9             CLEAR R9
        DIV   @TEN,R9        DIVIDE R9-R10 PAIR BY TEN
        MOV   R9,@HCINT      R9 IS THE INTEGER PART OF HANDICAP INDEX
        MOV   R10,@HCDEC     R10 IS THE DECIMAL PART
        MOV   R5,@GTSCR      NOW STASH R5 IN MEMORY
        MOV   @SAVREC,@CURREC GET NEWLY ADDED RECORD'S ADDRESS BACK
        BL    @GETCN         GET ITS COURSE NAME
        BL    @FNDCRS        FIND THE COURSE DATA
        BL    @GETRAT        GET THE RATING AND SLOPE INFORMATION
        MOV   @GTSCR,R5      BRING BACK R5
        MPY   @SLOPE,R5      MULTIPLY BY SLOPE OF COURSE
        DIV   @ONE13,R5      THEN DIVIDE BY 113
        MOV   @TEN,R3        BRING TEN BACK INTO R3
        MOV   R5,R6          MOVE R5 VALUE TO R6
        CLR   R5             CLEAR R5
        DIV   R3,R5          DIVIDE R5-R6 BY TEN
        BL    @ROUND         ROUND THE RESULT
HCAPX1  B     @SUBRET        THEN EXIT THE SUBROUTINE
HCZX    CLR   R5             CLEAR R5
        JMP   HCAPX1         THEN SHORTCUT TO EXIT
*
* ROUNDING SUBROUTINE FOR INTEGER DIVIDE OPERATIONS
* INCREMENTS QUOTIENT IF REMAINDER IS >= HALF OF DIVISOR
* ON ENTRY, QUOTIENT IS IN R5, REMAINDER IN R6, DIVISOR IN R3
*
ROUND   SLA   R6,1           DOUBLE REMAINDER
        C     R6,R3          COMPARE R6 TO DIVISOR
        JLT   ROUNDX         IF LESS, SKIP
        INC   R5             ELSE REMAINDER IS => .5, INC QUOTIENT
ROUNDX
        RT                   RETURN TO CALLING SEGMENT
*
*
* SPECIAL PURPOSE STRING COMPARISON SUBROUTINE
```

THE ART OF ASSEMBLY—

(Continued from Page 15)

This rounding process is not always exact, but is good enough for the cases in which we have applied it. Suppose, for example, we divided 12 by 5. That would give us a quotient of 2 and a remainder of 2. Doubling the remainder would make that 4, which is less than 5, so the quotient would not be incremented. Had we divided 13 by 5, we would get a quotient of 2 and remainder of 3. Doubling 3 would make that more than 5 so we would (correctly) increment the quotient by one. We will leave it for the reader to play around with other numbers and see how accurate this process is. We chose this really simple method mainly for its speed, not for its ultimate accuracy.

The thoughtful reader will now look at our source code and see that in many instances we appear to have violated our own general rules. For example, we seem to be using labeled places in memory to stash values away, rather than keeping those values in registers, as we advocate.

Appearances can be deceiving. There are many subroutines called by the HCAP routine, and those alter the values in many of the registers. We chose to make room in our data segment of the program to stash things so we wouldn't have to worry about the registers that the subroutines use.

In the PC version of this same program, we handled things a bit differently. In the PC's Assembly language, one does not have the luxury of sixteen registers, nor the ability to do a "context switch" to another set of them. Instead, the PC has a readily useable "stack" segment in memory, into which one can "push" values and from which one can "pop" values whenever necessary. There are only four general purpose registers on the PC, called AX, BX, CX, and DX. There are also a number of special purpose registers which can't be used except for purposes like keeping track of memory segments and as pointers. A subroutine in PC assembly normally begins with a series of push operations to save the entry values of the registers, then at its exit ends with corresponding pops to restore the registers to their previous values. PUSH causes a value to be placed on the stack and the stack pointer register to be decremented by two. POP does the opposite. It looks something like this:

```
SAMPLE_SUB:
    PUSH AX
    PUSH BX
    PUSH CX
    PUSH DX
    (perform operations)
    POP DX
    POP CX
    POP BX
    POP AX
    RET
```

This saves and then restores the four "general purpose" registers available on the PC. The special purpose registers on the PC, such as DS, ES, SI, and DI may also be pushed and popped in a similar fashion. Of course the disadvantage of this method is that there is a lot of program memory used up as "overhead" for the subroutines, not to mention that all this pushing and popping eats into execution speed as well.

```
* DETERMINES ONLY WHETHER STRINGS ARE IDENTICAL OR NOT
*
* ON ENTRY, R9 AND R10 POINT AT THE LENGTH BYTES
* OF THE TWO STRINGS TO BE COMPARED
*
STRCMP
       MOVB *R9,R3        GET LENGTH INTO R3
       SRL  R3,8          RIGHT JUSTIFY
       INC  R3            INCREMENT TO INCLUDE LENGTH BYTE
STRCP0 CB   *R9+,*R10+    COMPARE ONE BYTE
       JNE  NOCMP         IF NOT EQUAL, GET OUT OF HERE
       DEC  R3            ELSE DECREMENT COUNT
       JNE  STRCP0        IF NOT ZERO, COMPARE NEXT BYTE PAIR
NOCMP  RT                 RETURNS FROM SUBROUTINE R3>0 MEANS STRINGS UNEQUAL

* GENERAL PURPOSE STRING COMPARISON SUBROUTINE
* ON ENTRY, R9 AND R10 POINT TO THE LENGTH BYTES OF
* TWO STRINGS TO BE COMPARED
*
CMPSTR
       MOVB *R9+,R4       GET LENGTH FIRST STRING IN R4
       MOVB *R10+,R5      LENGTH OF SECOND IN R5
       SRL  R4,8          RIGHT JUSTIFY
* THE FOLLOWING LINE WAS NOT NEEDED IN THE ORIGINAL APPLICATION
       JEQ  LESS          A NULL STRING WILL BE LESS
       SRL  R5,8          RIGHT JUSTIFY
* THE FOLLOWING LINE WAS NOT NEEDED IN THE ORIGINAL APPLICATION
       JEQ  BIG           IF THIS IS A NULL, THEN R9'S STRING IS BIGGER
CMP910 CB   *R9+,*R10+    COMPARE THE BYTES POINTED BY R9 AND R10
       JGT  BIG           IF R9'S BYTE IS BIGGER, JUMP
       JLT  LESS          IF R9'S BYTE IS LESS, JUMP
       DEC  R4            DECREMENT COUNT OF R9' STRING LENGTH
       JNE  DEC5          IF NOT ZERO, DECREMENT R5
       CI   R5,1          ELSE SEE IF R5=1
       JEQ  EQUAL         IF SO, STRINGS ARE EQUAL
* IF R5=1 AT THIS POINT, THE STRINGS BEING COMPARED ARE IDENTICAL
* IF R5 IS >1 AT THIS POINT, IT MEANS THE STRING POINTED BY R10
* IS IDENTICAL UP TO THE LENGTH OF THE STRING POINTED BY R9,
* BUT THE R10 STRING HAS MORE CHARACTERS, SO THE R9 STRING IS
* SMALLER BY DEFINITION
       JMP  LESS          ELSE STRING POINTED BY R9 IS LESS
DEC5   DEC  R5            DECREMENT OTHER COUNT
       JNE  CMP910        IF NOT ZERO, COMPARE NEXT BYTE
* IF WE REACH HERE, IT MEANS THE STRING POINTED BY R10 HAS RUN
* OUT OF CHARACTERS, AND ALL ITS CHARACTERS WERE EQUAL TO THOSE IN R9'S STRING
* THEREFORE R9'S STRING IS BIGGER BY DEFINITION
BIG    (PERFORM SOME OPERATION)
       JMP  RETRN         THEN JUMP TO EXIT
LESS   (PERFORM SOME OPERATION)
       JMP  RETRN         THEN JUMP TO EXIT
EQUAL  (SOME OTHER OPERATION)
RETRN  RT                 RETURN TO CALLING PROGRAM
```

Be grateful for the more efficient way that the TI lets us handle registers. While on this topic, we should also point out that not all operations on a PC can be performed with any of the four "General Purpose" registers. Indexed addressing, for example, can be performed using BX, but not AX, CX, or DX.

We hope this little digression into the PC realm will not upset you too much. It's there simply to show you what a good thing you have going in the TI's Assembly language.

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Two disk sides filled with files that print out great quality pictures on most printers. Many famous TV and comic characters on this disk. "Beam me up Scotty!"

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This disk is packed full of assorted files of all types. Graphics, speech etc. Contains complete TI-TREK game for Speech Editor or TE-II module.

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A two disk side collection of music & graphics that we consider some of the best.

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One of the real outstanding examples of programming. This disk has it all. Great graphics, music, and continuity. A real salute to the space program. It is almost like watching a movie!

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This program randomly generates numbers for use in the various state lotto games and even runs a simulated lotto game. Easy to modify for pick 6 etc. games. A great learning and fun disk.

#9. MONA LISA PRINT OUT
This disk prints out a near photo quality picture of that lady with the classic smile. We understand it was made by digitizing the original with a super powerful computer and converting the output to run on the TI-99/4A. Impresses everyone who sees it! Requires Epson printer compatibility.

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This disk lets you type out a phrase on the screen and then print it out in gothic (Old English) style. Looks like hand-lettered calligraphy. Use for invitations, announcements and business cards.

#11. ANIMATED CHRISTMAS CARD "WOODSTOCK"
This disk was actually originally sent to TEX-COMP as a greeting from master programmer Ray Kazmer. It was just too good not to share! One of the best examples of computer animation and graphics you will see on any computer!

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This great piece of programming actually simulates and plays the famous board game. For legal reasons we cannot name the game but "do not pass Go! but go directly to Jail!"

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Play Poker against your TI-99/4A. When you win a hand she loses--a piece of her clothes that is. Don't worry about being a lousy poker player. Another file is included where you don't even have to know an ace from a king.

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This 2 sided disk contains a large collection of demo programs to put your Star/Epson compatible printer through its paces. Learn what control codes can do! Lots of text and graphics examples. Second side has a great tutorial on printer graphics with examples!

#16. SIDEWAYS PRINTOUT
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#17. TI FORTH DEMO
This demo disk was released by TI to show the power of Forth. Fantastic music and graphics. Ed/Assem and 32k required!

#18. TI DIAGNOSTIC
This program loads into the Mini-Memory module and checks out your entire system. Much better than disk based diagnostics that cannot be used if a problem in the disk system is at fault. Complete documentation on second side.

#19. TI WRITER/MULTIPLAN UPGRADE
This disk released by TI adds real lower case to your TI Writer, speed to Multiplan and other enhancements. Easy to use, just substitute new files for old! Instructions included.

#20. ACCOUNTS RECEIVABLE
This self contained prize winning program loads and runs in Exbasic and has all the features found in a progessional accounting system. Complete with documentation and a second disk filled with report generating programs.

#21. DATA BASE DEMO DISK
A progessional data base program that was originally written to store various magazine articles from computer magazines and then find them by name, subject, key word, or publication. Fast, easy to use and easy to adapt for other applications. Come complete with sample data to make learning data base processing easy. Completely menu driven and unprotected.

#22. ASTROLOGY
This one is as good as will see in an arcade graphics and displays o Zodiac. Enter your bir learn about your sign, days and famous events on your birthday. Even report. Can be used as moneymaker at a charity guide your spouse's car

#23. WILL WRITER
Enter your answers to a computer asked question program then writes you and testament. Now you your TI-99/4A to your f nephew. Works with any Appears legal in all st better check that out!

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Two great programs for m custom labels for disks, video tapes or any other application. Even forma graphic display of the 2 console. Now you can cr labels of any number by in the lines as you want standard tractor labels.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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This game requires a mine field to be crossed before escaping from E Berlin. Good graphics and a real challenge.

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

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

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

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

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

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

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

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

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

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Speeding up your console

By JESSE C. SLICER

Does your stock TI99/4A console seem to be dragging in these modern days of computers running on 33 MHz 80486 and 68040 systems? If so, perhaps a quickie speedup is for you. The following instructional will show you how your stock TI99/4A can be speeded up from 3 MHz to 3.58 MHz. I accept *no* responsibility in the damage of anyone's computer equipment; however, I have taken care to ensure success. I credit most of the technical material presented here to Barry Boone, who first told me how this modification was done. Make sure you read this *entire* article before you take any action whatsoever.

BEFORE YOU START

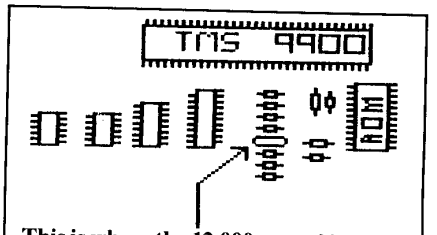
Before you begin dismantling your console, eager to speed it up, there is a part you may or may not need to buy. This is the 14.31818 crystal (this is *not* a *clock* crystal). I was once given two defunct Commodore VIC-20s and each of them had these for their video circuitry. Otherwise, it will be a trip to your local electronics store. Most Radio Shacks do not have this in stock but they can order it for you. It takes about four days, and the cost is about $4.50.

GETTING STARTED

With part in hand, and standard tools at your side, you are now ready to begin. Open the console all the way until you have the circuit board facing up at you. About one and one-half inches below the 9900 microprocessor and just to the right of the 9904 sound chip should be a component that looks almost like the one you just acquired. Carefully note the number on the one on the circuit board. If it is not 12.000 (might be 28.000), then this console cannot be modified in this manner.

REMOVING THE OLD CRYSTAL

Use your fingers to locate the solder pads for the crystal on the bottom of the circuit board. Flip the circuit board over. Using a desoldering iron, remove the solder pads surrounding the leads. The crystal can now be pulled out of its normal place and set aside. *Do not throw it away*! You have a definite use for this that I shall describe later.



This is where the 12.000 crystal is located on the console circuit board.

INSTALLING THE NEW CRYSTAL

(See Page 19)

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SPEEDING UP THE CONSOLE—

(Continued from Page 18)

Face the numbers that are on the new crystal in the same direction the old one was, slide the new crystal into the area where the old one was located. Using a soldering iron, place small solder pads around the base of the leads on the circuit board. Then, using wire snippers, cut the leads down to your solder. Clean up the area on the circuit board, close up the console, and turn on your computer.

THE MAGIC HAPPENS

Run a few programs and note the increase in speed they have. Enjoy how you gained 19.3 percent increase in pure microprocessor speed. Then, as you run some programs (terminal programs, graphics intensive, for example), you begin to notice ...

PROBLEMS!

Ack! Why did there have to be a snake in paradise? All is not lost. You can still use your terminal programs and graphics intensive programs with your new console. remember when you saved the 12.000 crystal? How about we put them *both* in and have a switch between them? Sounds like a good idea. Let's do it.

INSTALLING DUAL SPEED CRYSTALS

Assuming you read through this entire document before you started, this will save you some trouble. First, obtain a double pole, single throw (DPST) switch from ye olde electronics shoppe. this should have six connections on the bottom of it. also, obtain about 10 inches of some thin duralloy wire. Cut the wire in half and solder one end of each of the wires onto the middle leads of the switch. Then, instead of installing the new crystal as shown under "installing the new crystal," install the other ends of the wire into the old crystal "socket." After that is complete, solder (remembering the way the numbers were facing in the socket (key them with the wires) each crystal to the two paired leads of the switch. Mount the switch somewhere on your console. I cut a hole in the back and glued it there. You now can switch between a standard console for those problem programs and the new *speedy* console that gets your work done somewhat faster!

ENJOY!

Programs that do intensive number crunching or memory manipulation will benefit from this the most. Disk I/O will speed up slightly only because the code in the ROMs are being executed by the faster processor. Good luck and warp speed!

EXTENDED BASIC (plus)

Pegs and Puzzles

By BARRY TRAVER
©1992 B. Traver

It's time for some fun and games! This month's column is the first of a three-part series focused on an Extended BASIC program for one of the all-time classic (and fascinating) puzzle/games of the world. This month we offer the puzzles, next month we plan to offer the solutions (and some assembly routines to improve our XB program), and the final month we hope to provide some helpful commentary on the programming principles involved.

"Peg solitaire" has been popular in many countries since its creation sometime in the early 18th century or even earlier. You may be interested to know something of the background. The board itself was invented in the Middle Ages, quite possibly in Scandinavia. The game "Fox and Geese" has been popular throughout Europe and Asia. Gameboards dating from about 1300 have been found in England and Italy, and the earliest reference seems to be in the Icelandic Grettis Saga of the same time. Queen Victoria enjoyed playing "fox and geese" with Prince Albert during their courtship, and the game was very popular during the Victorian Age. The gameboard itself, however, has found another equally popular use: the board invented for the two-player "fox and geese" game is now even more commonly used for "peg solitaire."

Legend has it that sometime in the 18th century an unfortunate French nobleman sentenced to solitary confinement in the Bastille developed "peg solitaire," using an improvised "fox and geese" board. It is likely, however, that the game existed before that, because the philosopher and mathematicial Leibniz referred to the solitaire game in a letter he wrote in 1716. Whenever and wherever it was invented, "peg solitaire" is finding new life today. You may find, for example, finely crafted sets in the offices of executives, and new books have been published on the game in recent years (although not as many as were published during the late 19th century in France!).

There are two slightly different versions of the gameboard. The 33-cell version is the one commonly used in England, the United States, and the U.S.S.R. The 37-cell version is more popular in France. But both forms are found throughout the world, and there is no reason not to enjoy both varieties. There is no standard way of numbering the board (each book seems to do it differently), but I've made use of the format used by Martin Gardner in his chapter on "Peg Solitaire" in his book The Unexpected Hanging and Other Mathematical Diversions (New York: Simon and Schuster, 1969), pp. 122-135. Three other books I've benefited from are these: Creative Puzzles of the World by Pieter van Delft and Jack Botermans (New York: Harry N. Abrams, 1978); Games of the World edited by Frederic V. Grunfeld (New York: Holt, Rinehart and Winston, 1975); The Way to Play: The Illustrated Encyclopedia of the Games of the World by the Diagram Group (New York: Bantam Books, 1977).

Some of the puzzles may be known by various names. For example, what some call the "Fireplace," others call the "Football Team." Likewise, what I call "Corner

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EXTENDED BASIC PLUS—

(Continued from Page 19)

to Corner," some others call the "Corsair." The specific puzzles included in my computer version of Jump-A-Peg are, I think, the most popular puzzles, but you can probably find many others if you check with your local public library. At any rate, something's included for everyone here, from the simple "Latin Cross" to the 15-move "Davis Jump." See how many puzzles you can solve by next month! (By the way, note that some puzzles may have hundreds of solutions: the solution I will be providing in the following column is just one example, and not necessarily the best!)

This month's version of Jump-A-Peg is written entirely in Extended BASIC. Some of the operations (e.g., some screen displays) are consequently a bit s-l-o-w in operation. Next month we will be adding half a dozen or so assembly routines to speed things up, and maybe we'll make some improvements in the XB code as well. (I don't think I've written — or even seen, for that matter — an XB program that can't be improved, and that is especially true of my own!) The final month we'll talk about some of the strong points (and some of the weak points?) of the program as a program, in the hope that you can apply some of the principles illustrated to your own Extended BASIC programming.

In the meantime, you have actually two types of puzzles to spend your time on: the various peg puzzles (see how many you can solve before next month!), and the puzzle of analyzing the XB programming (see if you can figure out how and why the code works before the third month, when I hope to explain things in some detail). Above all, I hope you will enjoy this Jump-A-Peg program, which has some advantages over non-computer versions: (1) you can't lose the pegs, (2) you can use either the English or the French board, and (3) you have a number of built-in specific puzzles (and — next month — their solutions, which we will be adding to the XB program itself).

By the way, although it is not always announced, FCTN-9 (ESCape) is active at most times while the game is running. What does that do? Well, FCTN-9 will allow you to escape to the main menu (unless you're already at the main menu, in which case it allows you to exit the program). I'll let you explore other aspects of the program on your own. Again, enjoy!

JUMP-A-PEG

```
1 CALL CLEAR :: CALL SCREEN(
12):: GOTO 100 !077
3 DIM P(77),B(77)!025
4 A,A$,B$,C,C$,D,D$,E,E$,F,F
$,FP$,FR,FS$,FX$,G,G$,H,H$,I
,I$,J,J$,K,K$,K1,K2,K3,K4,K5
,K6,L,L$,LE$,LM$,LO$,LT$,M !
243
5 M$,M1$,M2$,N,N$,O,O$,P$,Q,
Q$,R,R$,S,S$,T,T$,TC,U,U$,V,
V$,W,W$,WO$,X,X$,Y,Y$,Z,Z$ !
106
```

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EXTENDED BASIC PLUS—

(Continued from Page 20)

```
6 CALL BDDEF :: CALL BOARD :
: CALL CHAR :: CALL ENGLSH :
: CALL FRENCH :: CALL GCHAR
:: CALL GRAB :: CALL HCHAR :
: CALL KEY :: CALL MARK !000
7 !@P- !064
100 ! JUMP-A-PEG by Barry A.
 Traver, 835 Green Valley Dr
ive, Philadelphia, PA 19128
(phone:  215/483-1379) !183
110 CALL CLEAR :: DISPLAY AT
(1,1):"JUMP-A-PEG":" (C) COP
YRIGHT 1990, 1992":"  BY BAR
RY TRAVER": :"   JUMP-A-PEG
IS A CLASSIC" !001
120 DISPLAY AT(6,1):"SOLITAI
RE GAME DATING BACK":"TO THE
 EARLY 1700'S.":"   A PEG CA
N JUMP OVER AN":"ADJACENT PE
G TO AN EMPTY" !006
130 DISPLAY AT(10,1):"HOLE B
EYOND, AND THE PEG":"JUMPED
OVER IS REMOVED.":"ONLY HORI
ZONTAL OR VERTICAL":"MOVES A
RE ALLOWED." !004
140 DISPLAY AT(14,4):"MANY G
OALS ARE POSSIBLE,":"BUT THE
 MOST FREQUENT ONE":"IS TO H
AVE JUST ONE PEG":"LEFT, OCC
UPYING THE VERY" !015
150 DISPLAY AT(18,1):"CENTRE
 OF THE BOARD.":"   IF A PEG
 JUMPS OVER MORE":"THAN ONE
PEG DURING A TURN,":"THAT SE
QUENCE OF JUMPS IS" !219
160 DISPLAY AT(22,1):"COUNTE
D AS ONLY ONE MOVE." !030
170 P(37),P(47),P(57)=3 :: P
(36),P(46),P(56)=6 :: P(15),
P(25),P(35),P(45),P(55),P(65
),P(75)=9 !114
180 P(14),P(24),P(34),P(44),
P(54),P(64),P(74)=12 :: P(13
),P(23),P(33),P(43),P(53),P(
63),P(73)=15 !202
190 P(32),P(42),P(52)=18 ::
P(31),P(41),P(51)=21 :: B(13
),B(14),B(15)=9 :: B(23),B(2
4),B(25)=12 !103
200 B(31),B(32),B(33),B(34),
B(35),B(36),B(37)=15 :: B(41
),B(42),B(43),B(44),B(45),B(
46),B(47)=18 !012
210 B(51),B(52),B(53),B(54),
B(55),B(56),B(57)=21 :: B(63
),B(64),B(65)=24 :: B(73),B(
74),B(75)=27 !079
230 X$="nnnnnnnnnnnnnnnnnonnn
nnnnnnnnnnnnn      " :: LT$="o
ooonooonnnooooonoooooonooooo
oooo      " !142
250 G$="oooonoooonoooonnnnno
ooonoooonoooo      " :: FP$="n
nnnnnoonnnooooonoooooooooooo
oooo      " !133
270 J$="ooooooooonoooooonnnoo
onnnnnooooooooooo" :: K$="oo
oonooonnnooonnnnnonnnnnnnooo
ooo      " !116
290 LM$="ononnnonnnnnooooonoo
oooonooonnnnnn      " :: U$="o
nonnnonnnnnonnnonnnonnnnnnonn
nono      " !129
310 P$="ononnnonnnnnonnnnnnn
onnnnnonnnooo      " :: D$="nn
nnnnnnnnnonnnnnnnnnnnnnnnnnnn
nnn      " !024
330 N$="ooooooooooonoooooooo
ooooooooooooo" :: F$="nnnnnn
nnnnnnnnnnnonnnnnnnnnnnnnnnn
nnn" !227
350 Q$="onoonooonnnoonnnnnnn
oonnnooonoonnnnn" :: FX$="o
nonnnonononnnnnnnnonononnn
nonooooo" !249
370 O$="ononnnonnnnnnonnnnnn
onnnnnonnnnnonnnn" :: L$="on
nnnnnnnnnnnnnnnnnnnnnnnnnnn
nnnnnn" !142
390 R$="ooooooooooooooooonooo
ooooooooooo" :: Y$="oooooo
ooooooooonooooooooooooooo
ooo" !029
410 I$="ooooooooooooooooooo
ooooooooooonoooo" :: S$="oo
ooooonnnooooonoooonnnooooo
ooo" !007
430 Z$="oonononononooonooono
oononononoo" :: W$="nnnnon
nnnonnnnooooonnnnonnnnonnnn"
 !065
450 V$="nnnooonooooonnooooon
nooooonooonnnoooo" :: A$="no
nooonooooonooonooonooooonooo
nonnnnn" !178
470 LE$="nnnnoooonooooooonnno
ooonooooonoonnnoooo" :: FS$="
nnnooonononononnoonoonnooooono
nonnnnnnn" !061
490 LO$="nnnooonoonoonnonnno
nnoonoonooonnnnnnn" :: WO$="
nnnooonooooonnnnnnnnnnooooono
oonnnnnnn" !075
510 DISPLAY AT(24,1):"(PRESS
 ANY KEY TO CONTINUE.)" :: G
OSUB 2040 !170
520 N,Y=0 :: DISPLAY AT(1,1)
ERASE ALL:"WHAT WOULD YOU LI
KE AS YOUR":"STARTING POSITI
ON?" !221
530 DISPLAY AT(4,1):"A. ENGL
ISH TRADITIONAL": :"B. LATIN
 CROSS":"C. GREEK CROSS":"D.
 FIREPLACE (FOOTBALL TEAM)":
"E. PYRAMID OF CHEFREN" !029
540 DISPLAY AT(10,1):"F. PYR
AMID OF CHEOPS":"G. TIFFANY
LAMP":"H. TILTED (INCLINED)
SQUARE":"I. PENTAGON": :"J.
DAVIS JUMP (15 MOVES PAR)" !
116
550 DISPLAY AT(17,1):"K. FRE
NCH TRADITIONAL": :"L. DOUBL
E CROSS":"M. FIVE CROSSES":"
N. OCTAGRAM":"O. CORNER TO O
PPOSITE CORNER" !152
560 DISPLAY AT(24,1):"P. I'M
 NOT SURE; LET ME LOOK" !134
570 CALL KEY(3,K,S):: IF S<1
 OR((K<65 OR K>80)AND K<>15)
THEN 570 ELSE IF K=15 THEN D
ISPLAY AT(14,7)ERASE ALL:"HA
VE A NICE DAY!" :: STOP !055
580 CALL CLEAR :: CALL BDDEF
 :: CALL BOARD :: X=K-64 ::
IF K=80 THEN Z=0 :: GOTO 610
 !118
600 Z=1 :: ON X GOTO 610,620
,630,640,650,660,670,680,690
,700,710,720,730,740,750 !14
8
610 X=1 :: B$="ENGLISH,TRADI
TIONAL" :: C$=X$ :: E$=R$ ::
 GOSUB 1700 :: IF K=13 OR Z
THEN 770 ELSE IF N THEN 520
!100
620 X=2 :: B$="LATIN,CROSS"
:: C$=LT$ :: E$=R$ :: GOSUB
1700 :: GOTO 760 !136
630 X=3 :: B$="GREEK,CROSS"
:: C$=G$ :: E$=R$ :: GOSUB 1
```

(See Page 22)

EXTENDED BASIC PLUS—

(Continued from Page 21)

```
700 :: GOTO 760 !038
640 X=4 :: B$=",FIREPLACE" :
: C$=FP$ :: E$=R$ :: GOSUB 1
700 :: GOTO 760 !008
650 X=5 :: B$="CHEFREN,PYRAM
ID" :: C$=J$ :: E$=R$ :: GOS
UB 1700 :: GOTO 760 !072660
X=6 :: B$="CHEOPS,PYRAMID" :
: C$=K$ :: E$=R$ :: GOSUB 17
00 :: GOTO 760 !016
670 X=7 :: B$="TIFFANY,LAMP"
 :: C$=LM$ :: E$=R$ :: GOSUB
 1700 :: GOTO 760 !192
680 X=8 :: B$="TILTED,SQUARE
" :: C$=U$ :: E$=R$ :: GOSUB
 1700 :: GOTO 760 !218
690 X=9 :: B$=",PENTAGON" ::
 C$=P$ :: E$=R$ :: GOSUB 170
0 :: GOTO 760 !151
700 X=10 :: B$="DAVIS,JUMP"
:: C$=D$ :: E$=N$ :: GOSUB 1
700 :: IF K=13 OR Z THEN 102
0 ELSE IF N THEN 520 !220
710 X=11 :: B$="FRENCH,TRADI
TIONAL" :: C$=F$ :: GOSUB 17
00 :: IF K=13 OR Z THEN 880
ELSE IF N THEN 520 !126
720 X=12 :: B$="DOUBLE,CROSS
" :: C$=Q$ :: E$=Y$ :: GOSUB
 1700 :: GOTO 760 !182
730 X=13 :: B$="FIVE,CROSSES
" :: C$=FX$ :: E$=Y$ :: GOSU
B 1700 :: GOTO 760 !011
740 X=14 :: B$=",OCTAGRAM" :
: C$=O$ :: E$=Y$ :: GOSUB 17
00 :: GOTO 760 !188
750 X=15 :: B$="CORNER TO,CO
RNER" :: C$=L$ :: E$=I$ :: G
OSUB 1700 :: IF K=13 OR Z TH
EN 1020 ELSE IF N THEN 520 !
140
755 GOTO 610 !179
760 IF K=13 OR Z THEN 1040 E
LSE IF N THEN 520 ELSE ON X
GOTO 9,630,640,650,660,670,6
80,690,700,9,9,730,740,750 !
230
770 GOSUB 1830 :: H$=C$ :: G
OSUB 2030 :: DISPLAY AT(1,1)
ERASE ALL:"WHAT WOULD YOU LI
KE AS YOUR": :"ENDING POSITI
ON?" !031
780 DISPLAY AT(6,1):"A. TRAD
ITIONAL": : :"B. SQUARE": :
:"C. PINWHEEL": : :"D. WALL"
: : :"E. I'M NOT SURE; LET M
E LOOK" !229
790 CALL KEY(3,K,S):: IF S<1
 THEN 790 ELSE IF K<65 OR K>
69 THEN 790 ELSE CALL CLEAR
:: CALL BDDEF :: CALL BOARD
!029
800 E=K-64 :: IF K=69 THEN Z
=0 :: GOTO 810 ELSE Z=1 :: O
N E GOTO 810,820,830,840 !24
3
810 E=1 :: B$=",TRADITIONAL"
 :: C$,E$=R$ :: GOSUB 1700 :
: GOTO 850 !184
820 E=2 :: B$=",SQUARE" :: C
$,E$=S$ :: GOSUB 1700 :: GOT
O 850 !075
830 E=3 :: B$=",PINWHEEL" ::
 C$,E$=Z$ :: GOSUB 1700 :: G
OTO 850 !224
840 E=4 :: B$=",WALL" :: C$,
E$=W$ :: GOSUB 1700 :: GOTO
850 !174
850 IF K=13 THEN 870 ELSE IF
 Z THEN 860 ELSE IF N THEN 5
20 ELSE ON E GOTO 820,830,84
0,810 !190
860 GOSUB 2030 !069
870 DISPLAY AT(24,1):"" :: C
$=H$ :: Y=1 :: GOSUB 1830 ::
 CALL MARK(C$):: GOTO 1040 !
204
880 GOSUB 1850 :: H$=C$ :: G
OSUB 2030 :: DISPLAY AT(1,1)
ERASE ALL:"WHAT WOULD YOU LI
KE AS YOUR": :"ENDING POSITI
ON?" !051
890 DISPLAY AT(6,1):"A. TWEL
VE GUARDS": : :"B. THE APOST
LES": : :"C. THE LETTER E":
: :"D. FINAL SCORE" !188
900 DISPLAY AT(18,1):"E. LON
ELY CROSS": : :"F. THE WORLD
": : :"G. I'M NOT SURE; LET
ME LOOK" !148
910 CALL KEY(3,K,S):: IF S<1
 OR K<65 OR K>71 THEN 910 EL
SE CALL CLEAR :: CALL BDDEF
:: CALL BOARD :: CALL FRENCH
 !084
920 E=K-64 :: IF K=71 THEN Z
=0 :: GOTO 930 ELSE Z=1 :: O
N E GOTO 930,940,950,960,970
,980 !224
930 E=1 :: B$="TWELVE,GUARDS
" :: C$,E$=V$ :: GOSUB 1700
:: GOTO 990 !171
940 E=2 :: B$="THE,APOSTLES"
 :: C$,E$=A$ :: GOSUB 1700 :
: GOTO 990 !069
950 E=3 :: B$="THE,LETTER E"
 :: C$,E$=LE$ :: GOSUB 1700
:: GOTO 990 !096
960 E=4 :: B$="FINAL,SCORE"
:: C$,E$=FS$ :: GOSUB 1700 :
: GOTO 990 !056
970 E=5 :: B$="LONELY,CROSS"
 :: C$,E$=LO$ :: GOSUB 1700
:: GOTO 990 !179
980 E=6 :: B$="THE,WORLD" ::
 C$,E$=W$ :: GOSUB 1700 :: G
OTO 990 !121
990 IF K=13 THEN 1010 ELSE I
F Z THEN 1000 ELSE IF N THEN
 520 ELSE ON E GOTO 940,950,
960,970,980,930 !082
1000 GOSUB 2030 !069
1010 DISPLAY AT(24,1):"" ::
C$=H$ :: Y=1 :: GOSUB 1850 :
: CALL MARK(C$):: GOTO 1040
!224
1020 IF Z THEN GOSUB 2030 EL
SE GOSUB 1850 !229
1030 CALL MARK(E$):: DISPLAY
 AT(23,1):" HERE'S WHAT YOU'
RE AFTER!" :: GOSUB 2030 ::
DISPLAY AT(23,1):"":"" :: CA
LL MARK(C$)!003
1040 IF X<11 THEN GOSUB 1830
 ELSE GOSUB 1850 !006
1050 K=78 :: IF N THEN 520 E
LSE IF CHR$(K)="N" THEN V=0
:: GOTO 1310 ELSE V=1 !192
1310 DISPLAY AT(23,15):"FCTN
-9 =";:: DISPLAY AT(24,15):"
 ESCAPE" :: M,L=0 :: U,A=1 !
039
1320 IF FR THEN P(26),P(66)=
6 :: P(22),P(62)=18 :: B(22)
,B(26)=12 :: B(62),B(66)=24
ELSE P(22),P(26),P(62),P(66)
,B(22),B(26),B(62),B(66)=0 !
066
1350 DISPLAY AT(U,A):"JUMPS"
;!012
1360 U=U+1 :: IF A=1 AND U=2
5 THEN A=8 :: U=1 :: GOTO 13
```

(See Page 23)

EXTENDED BASIC PLUS—

(Continued from Page 22)

```
50 !124
1370 IF A=8 AND U=25 THEN A=
24 :: U=1 :: GOTO 1350 !013
1380 IF FR=1 THEN 1430 !232
1390 IF A=8 AND U=7 THEN U=1
7 :: GOTO 1350 !099
1400 IF A=21 AND U=7 THEN C=
24 :: U=1 :: GOTO 1350 !010
1410 IF A=24 AND U=7 THEN U=
24 :: GOTO 1350 !144
1420 IF FR=0 THEN 1450 !251
1430 IF A=8 AND U=4 THEN U=2
0 :: GOTO 1350 !090
1440 IF A=24 AND U=4 THEN U=
20 :: GOTO 1350 !137
1450 IF V THEN 1990 !032
1460 R=U :: C=A :: GOSUB 187
0 :: IF N THEN 520 ELSE K1=K
 !045
1470 C=A+1 :: GOSUB 1870 ::
IF N THEN 520 ELSE K2=K :: F
=10*K1+K2 !048
1480 IF F>75 OR P(F)=0 THEN
1460 !102
1490 CALL GCHAR(P(F),B(F)+2,
W):: IF W<>110 THEN 1460 ELS
E DISPLAY AT(U,A+2):"-";!251
1500 IF V THEN 2010 !052
1510 C=A+3 :: GOSUB 1870 ::
IF N THEN 520 ELSE K3=K !005
1520 C=A+4 :: GOSUB 1870 ::
IF N THEN 520 ELSE K4=K :: D
=10*K3+K4 !055
1530 IF D>75 OR P(D)=0 THEN
1460 ELSE K5=ABS(K1-K3):: K6
=ABS(K2-K4):: IF (K5=0 AND K
6=2)OR(K5=2 AND K6=0)THEN 15
50 ELSE 1460 !078
1550 CALL GCHAR(P(D),B(D)+2,
TC):: IF TC<>111 THEN 1460 !
149
1560 J=(P(F)+P(D))/2 :: G=(B
(F)+B(D))/2 :: CALL GCHAR(J,
G+2,H):: IF H<>110 THEN 1460
 !106
1570 DISPLAY AT(P(F),B(F)):"
o";!074
1580 DISPLAY AT(P(D),B(D)):"
n";!069
1590 DISPLAY AT(J,G):"o";!22
7
1600 CALL GRAB(T$):: IF F<>L
 THEN M=M+1 !068
1620 IF FR=0 THEN IF SEG$(T$
,1,33)=E$ THEN 1650 !108
1630 IF FR THEN IF T$=E$ THE
N 1650 !224
1640 DISPLAY AT(23,15):" MOV
ES  ";:: DISPLAY AT(24,16):"
  "&STR$(M)&"    ";:: L=D ::
GOTO 1360 !095
1650 Q=1 :: DISPLAY AT(23,16
):"WON IN";:: DISPLAY AT(24,
14):" "&STR$(M);TAB(17);" MO
VES ";!074
1660 CALL KEY(0,K,S):: IF S=
1 THEN 520 ELSE Q=Q+1 :: IF
Q<50 THEN 1660 !043
1670 Q=1 :: DISPLAY AT(23,16
):"PRESS ";:: DISPLAY AT(24,
14):"SPACE BAR";!173
1680 CALL KEY(0,K,S):: IF S=
1 THEN 520 ELSE Q=Q+1 :: IF
Q<50 THEN 1680 !063
1690 GOTO 1650 !199
1700 IF X<11 THEN FR=0 ELSE
FR=1 !151
1710 IF Z=0 THEN IF C$=X$ TH
EN GOSUB 1850 :: CALL ENGLSH
 ELSE IF C$=F$ THEN GOSUB 18
30 :: CALL FRENCH !189
1720 IF Z THEN IF X<11 THEN
CALL ENGLSH ELSE CALL FRENCH
 !211
1730 CALL HCHAR(3-2*FR,3,32,
11):: CALL HCHAR(5-2*FR,3,32
,11):: CALL MARK(C$):: IF Z
OR Y THEN RETURN !155
1750 O=POS(B$,",",1):: M1$=S
EG$(B$,1,O-1):: M2$=SEG$(B$,
O+1,LEN(B$)-O)!188
1770 DISPLAY AT(3-2*FR,6-LEN
(M1$)/2):M1$;:: DISPLAY AT(5
-2*FR,6-LEN(M2$)/2):M2$;:: D
ISPLAY AT(18+3*FR,1):"PRESS
ENTER";!207
1780 DISPLAY AT(20+2*FR,1):"
TO SELECT";:: DISPLAY AT(22+
FR,1):"OR SPACE BAR";:: DISP
LAY AT(24,1):"TO CONTINUE LO
OKING.";!233
1810 CALL KEY(0,K,S):: IF S<
1 THEN 1810 ELSE IF K<>13 AN
D K<>15 AND K<>32 THEN 1810
ELSE IF K=15 THEN N=1 !075
1820 RETURN !136
1830 CALL HCHAR(3,3,32,13)::
 CALL HCHAR(5,3,32,13):: CAL
L HCHAR(18,3,32,12):: CALL H
CHAR(20,3,32,12)!153
1840 CALL HCHAR(22,3,32,12):
: CALL HCHAR(24,3,32,20):: R
ETURN !069
1850 CALL HCHAR(1,3,32,13)::
 CALL HCHAR(3,3,32,13):: CAL
L HCHAR(21,3,32,12):: CALL H
CHAR(22,3,32,12)!145
1860 CALL HCHAR(23,3,32,12):
: CALL HCHAR(24,3,32,20):: R
ETURN !070
1870 CALL GCHAR(R,C+2,I):: Q
=0 !198
1880 CALL KEY(0,K,S):: Q=Q+1
 :: IF Q=5 THEN DISPLAY AT(R
,C):"_";!242
1890 IF Q=10 THEN DISPLAY AT
(R,C):CHR$(I);:: Q=0 !052
1900 IF S<1 THEN 1880 ELSE I
F (K<49 OR K>55)AND K<>13 AN
D K<>15 THEN 1880 ELSE IF K=
13 THEN K=I !146
1910 IF K=15 THEN N=1 :: RET
URN !125
1920 K=K-48 :: DISPLAY AT(R,
C)SIZE(1):STR$(K):: RETURN !
185
1930 CALL GCHAR(R,C+2,I):: Q
=0 !198
1940 CALL KEY(3,K,S):: Q=Q+1
 :: IF Q=5 THEN DISPLAY AT(R
,C):"_";!245
1950 IF Q=10 THEN DISPLAY AT
(R,C):CHR$(I);:: Q=0 !052
1960 IF S<1 THEN 1940 ELSE I
F K<>78 AND K<>89 AND K<>13
AND K<>15 THEN 1940 ELSE IF
K=13 THEN K=I !038
1970 IF K=15 THEN N=1 :: RET
URN !125
1980 DISPLAY AT(R,C)SIZE(1):
CHR$(K):: RETURN !230
1990 GOSUB 2050 :: IF N THEN
 N=0 :: GOTO 520 ELSE M$=SEG
$(M$,4,LEN(M$)-3):: IF LEN(M
$)>=5 THEN 2000 ELSE READ M$
 !134
2000 GOSUB 2050 :: IF N THEN
 520 ELSE F=VAL(SEG$(M$,1,2)
):: K1=ASC(SEG$(M$,1,1)):: K
2=ASC(SEG$(M$,2,1)):: GOTO 1
480 !216
2010 GOSUB 2050 :: IF N THEN
```

(See Page 24)

EXTENDED BASIC PLUS—

(Continued from Page 23)

```
 520 ELSE D=VAL(SEG$(M$,4,2)
):: K3=ASC(SEG$(M$,4,1)):: K
4=ASC(SEG$(M$,5,1))!069
2020 DISPLAY AT(U,A):SEG$(M$
,1,5);:: GOTO 1530 !149
2030 DISPLAY AT(24,1):"(PRES
S ANY KEY TO CONTINUE.)" !21
7
2040 CALL KEY(3,K,S):: IF S<
1 THEN 2040 ELSE RETURN !081
2050 CALL KEY(0,K,S):: IF K=
15 THEN N=1 !176
2060 RETURN !136
2999 !@P+ !062
3000 SUB BDDEF !195
3010 CALL CHAR(45,"000000007
C000000")!203
3020 CALL CHAR(95,"000000000
00000FF")!226
3030 CALL CHAR(96,"809CA2A6A
AB2A29C808898888888889C809CA
282848890BE809CA2828C82A29C"
)!065
3040 CALL CHAR(100,"80848C94
A4BE848480BEA0BC8282A29C808C
90A0BCA2A29C80BE828488909090
")!086
3050 CALL CHAR(106,"00000000
000000FF8080808080808080")!0
92
3060 CALL CHAR(108,"00000000
0000008080808080808080FF001C
3E7F7F7F3E1C0000000000000000
")!045
3070 CALL CHAR(112,"00081808
0808081C001C22020408103E001C
22020C02221C00040C14243E0404
")!026
3080 CALL CHAR(116,"003E203C
0202221C000C10203C22221C003E
020408101010")!190
3090 SUBEND !168
4000 SUB BOARD !214
4010 DISPLAY AT(1,14):"_____
_____l";:: DISPLAY AT(2,14):"
cv dv ev k";:: DISPLAY AT(3,
14):"k  k  k  k";:: DISPLAY
AT(4,14):"m__m__m__k";!084
4020 DISPLAY AT(5,14):"cu du
 eu k";:: DISPLAY AT(6,14):"
k  k  k  k";:: DISPLAY AT(7,
8):"_____m__m__m__m_____";:
: CALL HCHAR(7,31,108)!171
4030 DISPLAY AT(8,8):"at bt
ct dt et ft gt ";:: CALL HCH
AR(8,31,107):: DISPLAY AT(9,
8):"k  k  k  k  k  k  k  ";:
: CALL HCHAR(9,31,107)!089
4040 DISPLAY AT(10,8):"m__m_
_m__m__m__m__m__m__";:: CALL HC
HAR(10,31,107):: DISPLAY AT(
11,8):"as bs cs ds es fs gs
";:: CALL HCHAR(11,31,107)!1
22
4050 DISPLAY AT(12,8):"k  k
 k  k  k  k  k  ";:: CALL HC
HAR(12,31,107):: DISPLAY AT(
13,8):"m__m__m__m__m__m__m__
";:: CALL HCHAR(13,31,107)!1
10
4060 DISPLAY AT(14,8):"ar br
 cr dr er fr gr ";:: CALL HC
HAR(14,31,107):: DISPLAY AT(
15,8):"k  k  k  k  k  k  k
";:: CALL HCHAR(15,31,107)!0
03
4070 DISPLAY AT(16,8):"m__m_
_m__m__m__m__m__m__";:: CALL HC
HAR(16,31,107):: DISPLAY AT(
17,14):"cq dq eq k";:: DISPL
AY AT(18,14):"k  k  k  k";!1
46
4080 DISPLAY AT(19,14):"m__m
__m__k";:: DISPLAY AT(20,14)
:"cp dp ep k";:: DISPLAY AT(
21,14):"k  k  k  k";:: DISPL
AY AT(22,14):"m__m__m__k";!0
56
4090 SUBEND !168
5000 SUB FRENCH !037
5010 DISPLAY AT(4,11):"___m"
;:: DISPLAY AT(4,23):"m__l";
:: DISPLAY AT(5,11):"bu";::
DISPLAY AT(5,23):"fu k";:: D
ISPLAY AT(6,11):"k";!033
5020 DISPLAY AT(6,26):"k";::
 DISPLAY AT(7,11):"m";:: DIS
PLAY AT(7,26):"m";:: DISPLAY
 AT(17,11):"bq";:: DISPLAY A
T(17,23):"fq k";!067
5030 DISPLAY AT(18,11):"k";:
: DISPLAY AT(18,26):"k";:: D
ISPLAY AT(19,11):"m__m";:: D
ISPLAY AT(19,23):"m__k";!163
5040 SUBEND !168
6000 SUB ENGLSH !048
6010 DISPLAY AT(4,11):"   m"
;:: DISPLAY AT(4,23):"k   ";
:: DISPLAY AT(5,11):"  ";::
DISPLAY AT(5,23):"k   ";:: D
ISPLAY AT(6,11):" ";!027
6020 DISPLAY AT(6,26):" ";::
 DISPLAY AT(7,11):"_";:: DIS
PLAY AT(7,26):"_";:: DISPLAY
 AT(17,11):"  ";:: DISPLAY A
T(17,23):"k   ";!178
6030 DISPLAY AT(18,11):" ";:
: DISPLAY AT(18,26):" ";:: D
ISPLAY AT(19,11):"   m";:: D
ISPLAY AT(19,23):"k   ";!119
6040 SUBEND !168
7000 SUB MARK(A$):: I=0 !236
7010 FOR R=3 TO 6 STEP 3 ::
FOR C=15 TO 21 STEP 3 :: I=I
+1 :: DISPLAY AT(R,C):SEG$(A
$,I,1);:: NEXT C :: NEXT R !
152
7020 FOR R=9 TO 15 STEP 3 ::
 FOR C=9 TO 27 STEP 3 :: I=I
+1 :: DISPLAY AT(R,C):SEG$(A
$,I,1);:: NEXT C :: NEXT R !
167
7030 FOR R=18 TO 21 STEP 3 :
: FOR C=15 TO 21 STEP 3 :: I
=I+1 :: DISPLAY AT(R,C):SEG$
(A$,I,1);:: NEXT C :: NEXT R
 !253
7040 DISPLAY AT(6,12):SEG$(A
$,34,1);:: DISPLAY AT(6,24):
SEG$(A$,35,1);!138
7050 DISPLAY AT(18,12):SEG$(
A$,36,1);:: DISPLAY AT(18,24
):SEG$(A$,37,1);!246
7060 SUBEND !168
8000 SUB GRAB(A$):: A$="" !1
99
8010 FOR R=3 TO 6 STEP 3 ::
FOR C=17 TO 23 STEP 3 :: CAL
L GCHAR(R,C,A):: A$=A$&CHR$(
A):: NEXT C :: NEXT R !202
8020 FOR R=9 TO 15 STEP 3 ::
 FOR C=11 TO 29 STEP 3 :: CA
LL GCHAR(R,C,A):: A$=A$&CHR$
(A):: NEXT C :: NEXT R !001
8030 FOR R=18 TO 21 STEP 3 :
: FOR C=17 TO 23 STEP 3 :: C
ALL GCHAR(R,C,A):: A$=A$&CHR
$(A):: NEXT C :: NEXT R !047
8040 CALL GCHAR(6,14,A):: A$
=A$&CHR$(A):: CALL GCHAR(6,2
6,A):: A$=A$&CHR$(A)!0518050
 CALL GCHAR(18,14,A):: A$=A$
&CHR$(A):: CALL GCHAR(18,26,
A):: A$=A$&CHR$(A)!155
8060 SUBEND !168
```

Beery Miller now in charge of MDOS, other Geneve software

The MDOS buyout spearheaded by Beery Miller was successful, according to Miller, and he now retains exclusive rights to the source code for MDOS, ABASIC and PSYSTEM for the Myarc Geneve 9640.

Paul Charlton also included the GPL Interpreter source code. The source code is available only to financial contributors to the MDOS buyout. According to Miller, the source code will not be available on any network or BBS, and should not be distributed to anyone without Miller's direct authorization.

Final versions of the program image files for MDOS, ABASIC and the PSYSTEM runtime system will be available on Delphi, GEnie and through other BBS systems.

According to Miller's contract with Lou Phillips of Myarc, Miller will send final copies of MDOS directly to the owners. Miller is awaiting names and addresses of the owners from Phillips. Phillips required Miller to handle the estimated 2,200 Geneves and the final mailing of MDOS software in lieu of receiving immediate cash for the buyout.

Miller notes that he had anticipated mailing for 800 Geneves and is still short of money to handle the final mailing. He says contributions will be welcome, and persons may still have the option of acquiring source code diskettes with a minimum $25 contribution.

Suggestions for enhancements to MDOS will only be accepted from contributors; bug reports will, however, be accepted from anyone, Miller says. He says current enhancements have included a three-fold speed increase for any floppy controller access and a two-fold increase in hard drive speed.

A Hard and Floppy Disk Controller and hard drive are required to assemble the source code to these systems, as well as ownership of GenPROG by Paul Charlton, Miller says. Miller says he is negotiating a contract with Charlton on the redistribution of this package.

Packages are available in 5.25-inch DS/SD (180K) format or 3.5-inch DS/QD (720K) format.

Prices are: MDOS/GPL, $10 for four 5.25-inch disks or $5 for one 3.5-inch disk; ABASIC/GPL, $7.50 for three 5.25-inch disks or $5 for one 3.25-inch disks; and PSYSTEM, $5 for two 5.25-inch disks or one 3.25-inch disk.

Write Miller at P.O. Box 752465, Memphis, TN 38175.

Myarc sends hardware to Cecure

Don Walden of Cecure Electronics says he received a package of gate arrays for the Myarc Hard and Floppy Disk Controller and Geneve 9640 and some 9938 video chips from Lou Phillips Aug. 24.

"There was no note or anything," Walden says, "just the package."

Also, Walden notes, he recently received a letter from a user in Austria who had been referred to him by the Somerset County, New Jersey, Consumer Affairs Division. This agency has recently investigated a number of complaints against Myarc.

The Consumer Affairs Division advised the Austrian customer that Phillips had told them that Walden would be supplying proprietary parts.

Walden notes that he still has not directly heard from Phillips himself for several months.

For repairs or parts for Myarc products, write Cecure Electronics, 7759 So. Scepter Dr. 7, Franklin, WI 53132-2201 or call (414) 529-2173.

Newsbytes

Notung lists products

Ken Gilliland of Notung Software says the company has released several new products, and plans to release two more at the Chicago International World Faire Oct. 31 and one at the Australian TI-Faire in Ashfield, New South Wales, Nov. 28-29.

Recent products include "Disk of the Old West" at $15 for the four-disk set, plus postage and handling; Midi Music for Midi Master 99, vols. 1, 2, 3, 4 and 5, DSDD format, $5 each plus postage and handling; Fonts & Borders V, $7 plus postage and handling; Notung T-Shirt, $10 plus postage and handling; and How to Use TPA, book with disk, $19.95 plus postage and handling.

Planned for the Chicago fair is a videotape, "How to Use TI-Artist ... and Not Go Insane." In it, Gilliland plans to show all features of TI-Artist Plus and go through several freehand drawings star to finish, as well as demonstrate drawing with the aid of clip art and covering the movie and 3-D vectors. Planned price is $19.95 plus postage and handling.

Also scheduled for a Chicago release is "Disk of the Ancient Ones," containing clip art, essays, fonts and a game from the period of "The Ascent of Man to the Fall of Rome." Gilliland says he plans to have a program which translates a phrase into ancient Egyptian hieroglyphs and offers a print-out on the printer version. Price is $15 plus postage and handling.

Though Gilliland himself will not attend the fair in Australia, he plans to release his "Disk of Medieval Times," containing graphs, music, games and fonts plus histories and legends. He says a game for this disk "will probably involve jousting, slaying dragons and rescuing the princess." Price is $15 plus postage and handling.

For information or to order, contact Notung Software, 7647 McGroarty St., Tujunga, CA 91042, (818) 951-2718.

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Newsbytes

Harrison introduces Stor Mor for XBASIC

Harrison Software has introduced Stor Mor, a program which provides a set of tools that will allow the Extended BASIC programmer to stash string variables in the unused part ofthe 32K memory expansion, instead of the VDP RAM space used by XB for string storage. This means that programmers who make extensive use of string variables can have another resource available for keeping them in memory.

According to Bruce Harrison of the company, this is done with assembly routines. Versions included in the package use leftover high memory (program space) and low memory (assembly routine space). Error checking and reporting is built into the routines to help the Extended BASIC programmer debug his program, Harrison says. According to the manufacturer, all necessary object files, including ALSAVE, are included, as are the source files and complete instructions on the disk, plus demo programs and an XBASIC program to print the instructions. No assembly knowledge is required.

Harrison notes, "We'd like to publicly thank Bill Harms of Chino, California, and Jim Peterson of Columbus, Ohio, for first inspiring and then helping test and improve this product."

Stor Mor, on a single-side, single-density disk, sells for $6, including shipping and handling in the United States and Canada, from Harrison Software, 5705 40th Place, Hyattsville, MD 20781.

Quick File released

Bill Gaskill has released a new personal productivity program dubbed Quick File. The program can manage up to 1,352 free-form index cards, which may be used to store any type of information desired, from anniversary dates to insurance policy data, Gaskill says.

Each card can hold 36 lines of text, with 38 characters available per line. Accorcing to Gaskill, the Quick File editor used to create index cards offers several word-processor-like features, such as word wrap, insert and delete capabilities by character or line, and static cursor movement from line to line. Index cards may be saved us-ing descriptions up to 32 characters long, and the program contains a built-in system of alphabetical organizing.

Quick Notes runs on a TI99/4A with Extended BASIC, 32K and one disk drive, or on a Myarc Geneve 940 in GPL mode with one disk drive. It is available for $15 from Bill Gaskill, 3210 Cypress Court, Grand Junction, CO 81506.

Texaments halves 9640 game prices

As part of its Super Summer Deals promotion, Texaments is offering nine arcade games for the Geneve 9640 at half their normal retail price until Nov. 1, 1992:

Jungle Terror. A high-speed game where the player controls the white Jungler Worm and tries to destroy the evil red, yellow and green worms. Special price: $7.47.

Space Champions: The player pilots a 21st century spaceship through missile zones, asteroid belts, enemy scouts and the mother of all enemy ships. Special price: $6.47.

Cave Explorer: Locked in a twisted series of tunnels and caverns the player must find the secret key that will unlock the door to freedom. Special price: $6.47.

Train Twister: Driving a train, the player must replace the tracks a few gremlins have moved while competing against other trains for the same track. Special price: $6.47.

Traffic Frenzy: Driving a car, the play

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BUGS & BYTES

TI-Writer manual for $1

Reader Ellen Kramer of New Jersey called MICROpendium to let us know that Texas Instruments is selling its TI-Writer manuals for $1 plus $1 shipping.

She says she called 1-800-TI-CARES and ordered the manual on her credit card. She was billed the $2 plus 6 cents sales tax.

Revised Disk Manager

Clint Pulley has reportedly revised his Disk Manager program to be compatible with the new versions of MDOS that support the P-system which have become available since the MDOS buy-out.

Pulley's address is 38 Townsend Ave., Burlington, Ontario, Canada L7T 1Y6.

Andrew hits TIers

Mark Wacholz of the Broward Computer Group has had a bulleting uploaded to Delphi, in which he notes that members of the Broward Computer Group were not hit too hard by Hurricane Andrew, but that members of the Miami Users Group are either without water, food, electricity or phone.

"Some members living in Homestead have had a total loss of their home. There are also some members that haven't been heard from before the storm hit," he notes. "We are asking you to help in this time of need."

Wacholtz says money is needed, not food or clothes. Checks or money orders may be sent to him at 2141 NW 64th Ave. 15, Sunrise, FL 33313-3950.

He says the Drawing Board BBS will try to help locate anyone in the area. "Leave feedback before logging off the board," says Wacholtz. The number is (305) 749-5690. A voice number between 9 a.m. and 9 p.m. is (305) 749-4690.

Howe heads SIG

Walt Howe has been named manager of the Internet forum on Delphi. Howe's experience with on-line services includes meeting his wife via CompuServe. He is the author of a number of programs for the TI and past articles in MICROpendium.

Newsbytes

(Continued from Page 26)

er is stuck in traffic and must negotiate a way out of it without crashing into other cars or being squashed by a steamroller. Special price: $6.47.

Submarine Revenge: Piloting a nuclear submarine, the player must attack the enemy base while avoiding depth charges, torpedoes and other deadly weaons. Special price: $6.47.

Sea Terror: The player must swim the ocean sea to claim a sunken treasure and avoid being eaten by piranhas, sharks and killer jelly fish. Special price: $6.47.

Islander and Car Race (two games): In Islander the player is marooned on an island and must avoid being killed by the natives. Car Race is an educational game where the player must use math and English skills plus quick reflexes to win. Special price: $4.97.

Geneve Games can be ordered directly by mail by sending a check or money order to Texaments, 53 Center St., Patchogue, NY 11772. C.O.D. orders can be placed by calling (516) 475-3480. A shipping charge of $3.25 for domestic and Canadian delivery or $8.50 for foreign insured air mail should be added to each order.

Oakland Club gets new mailing address

New mailing address for the Oakland Computer Club is c/o Mrs. Eunice B. Spooner, RFD 1, Box 5860 Pond Rd., Oakland, ME 04963.

BBS number for the club is (207) 547-4107.

Membership in the club is primarily elementary school students at the Atwood-Tapley School in Oakland, Maine.

BBS to close

According to a message signed by Shirley Slicer, sysop, and Jesse Slicer, co-sysop, the Manhattan Project BBS will close permanently at the end of September. Last night online will be 10 p.m. Sept. 30 through 7 a.m. Oct. 1, Central Time.

The bulletin board has operated for more than five years and received more than 15,500 calls. The Olathe, Kansas, BBS operates 10 a.m.-7 p.m. Central Time, 300/1200/2400 baud, 8-N-1, at (913) 764-6451 and is PC Pursuitable through MOKAN.

Reach thousands of TIers for free. Send your news items to MICROpendium Newsbytes, P.O. Box 1343, Round Rock, TX 78680.

READER TO READER

Norberto Lambertini, Terrero 11 San Isidro, (1642) Buenos Aires, Argentina, wants to find out technical information or buy manuals for TI and Shugart floppy disk drives.

Reader to Reader is a column to put TI and Geneve users in contact with other users. Address questions to Reader to Reader, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

Ida McCargar, FestWest '90 organizer, dies

Ida McCargar, a member since 1985 of the SouthWest Ninety-Niners in Tucson, Arizona, died Aug. 8. She had been given a short time to live after surgery for brain tumors. Before her death, she planned her funeral services, conducted by the Rev. Ed McCallum at the New Covenant Church in Tucson, with burial in South Lawn Cemetery.

Born in western New York state, she studied library science at Syracuse University. She was married to Harold McCargar, and they had one son, three daughters, 10 grandchildren and a great-grandchild. Two of her daughters followed in her footsteps by becoming librarians.

She and her husband moved to Tucson in 1960. She worked for the Tucson Unified School District, where she started the Centralized Library Services and was responsible for cataloging books and audio-visual materials for the entire district. She retired in 1963.

For the SouthWest 99ers, she was in charge of the hard copy lending library and disk library, cataloging newsletters and maintaining the Altman Fairware List. At her suggestion, the group instigated its Disk of the Month program. She attended all the Fest Wests and helped organized the 1990 Fest West held in Tucson. She appeared with the user group on KUAT-TV's Middle of the Road program.

She always paid for fairware, Tom Wills, the group's vice president, notes in an article in tribute to her in the group's newsletter. The SouthWest 99ers want TIers to pay for their unpaid-for fairware as a memorial to her.

"When sending your compensation to the authors, mention that you are doing so in memory of Ida McCargar," writes Wills. "I'm certain all authors would be pleased to know how Ida has touched us all."

Wills also notes that fairware authors can send notices of new programs and updates to the SW99ers as a memorial.

The SW99ers September disk of the month is dedicated to her memory. It contains the program AMAZEGRACE, which is the hymn, "Amazing Grace," she selected to be played at her funeral, as well as nine other programs, including games, utilities and graphics.

DOMs are available free to SW99ers attending the membership meeting each month. Members unable to attend the meeting may buy DOMs for $1, either at a later meeting or by mail. Non-members should send $2 for each DOM requested.

Cassettes are prepared each month for members with "cassette only" systems, free to members attending each month or $1 as outlined above.

For further information, contact SouthWest Ninety-Niners, P.O. Box 17831, Tucson, AZ 85730; Cactus Patch BBS, (602) 290-6277 (8N1).

Take a Break Attend a TI Fair

MICRO-REVIEWS

Column Text V4.4 and Margin Text V3.3, Disk of the Old West, Super Space Acer and RXB

By STAN KRAJEWSKI

This month there are two updates of programs I recently reviewed. Harrison Word Processor V2.2 (April 1992 MICRO-Reviews) has been updated for use on the Geneve. Geneve users had sent for this program and encountered problems loading. (See note below). Bruce Harrison reworked the LOAD program and Main Code so some Geneve users could use this new version, V2.2GX. I used this new version and it worked well for me on the Geneve using the TI Controller Card. If you are using another disk controller card, you might not be able to use this program on the Geneve. You should mention whether you want the Geneve or the TI version when ordering.

The second update is Astro-Mania (August 1992 MICRO-Review). Bugs I had noticed were fixed and it also warns the user if the write protect notch is covered.

I also have been advised that any checks sent to Media Ware Software should be made payable to Mark Wacholtz to avoid delays in orders.

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

★ Leave it alone, back to the drawing board.

★★ Needs improvements, but workable.

★★★ A good program, worth trying.

★★★★ Send your money and buy it.

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

★★★★ DISK OF THE OLD WEST

Upon booting the Extended BASIC load program, you feel as if you are in the desert in the days of the Old West. You're looking at trail signs pointing to which key you will press.

System Requirements are Geneve 9640 or TI99/4A, 32K memory, disk drive, Extended BASIC and TI-Artist (needed for using the Instances or Fonts). This package contains four SS/SD disks.

By now you should know the format of Notung's "Disk Of" packages. This one, no exception, brings you into another graphical adventure. Your trail signs contain:

A — Library of Legends
B — Portrait Gallery
C — Sing Along Saloon
D — Faro Gaming Parlor
E — Ride Off Into The Sunset.

Library of Legends contains key figures of the Old West such as William H. Bonney, the Earp Brothers, Judge Roy Bean, the James and Younger Boys, Frederic Remington, Belle Star, Wild Bill and Buffalo Bill, B. Siddons & Poker Alice, Custer and Geronimo.

These are D/V80 files and included is a file reading program to read any or all these files.

The Portrait Gallery contains six well created figures of the Old West. These are displayed through the program.

Sing Along Saloon option plays five songs with words displayed on the bottom of the screen. Faro Gaming Parlor features an Old West card game that plays one or two players.

Other features that make this disk an excellent value are: Two more Borders, rope and barb wire; western style Fonts, and many Instances for your TI-Artist program.

I found that just the big PHIDIAN_F font needed TI-Artist Plus to load all of the character sets. The other two fonts can fit into memory with TI-Artist 1 or 2. The sing-along songs were plain vanilla in sound, but this set of disks has so much more making it a very good bargain.

Disk Of The Old West is available from Notung Software, 7647 McGroarty St., Tujunga, CA 91042. Price is $15 plus $1 S&H.

★★★★ COLUMN TEXT V4.4 and MARGINTEXT V3.3

This set of Fairware programs has been improved and just recently updated since its last MICRO-Review (June 1989). System requirements are Geneve 9640 or TI99/4A, 32K memory, disk drive, Extended BASIC and a printer. Because this program was reviewed in a past issue I will just inform you of the updates.

I, like Harry Brashear, also am a newsletter editor. After reading his review I was prompted to send for this program. The program worked really fine but lacked a few things such as hard disk compatibility and a prompt for multiple copies. So I sent a note to Ron Pruitt with a few suggestions for improvement. He sent me back a nice letter and included a new copy with the improvements I mentioned, plus a few more.

In the main menu, 2 — Number of Columns option now offers 1 column (Pica), 2 column (Pica), 2 column (Cond), 3 column (Elite), 4 column (Cond). There is now a sixth option, Paginate Y/N. This feature will print a page number at the bottom of each page. It will also print "Continued from page x" on the following pages. When the program is executed it will now ask a Starting Page and Number Of Copies. Next it now asks you the Drive.Path.File Name for us hard disk owners. DSKx. can be used for disk drive users.

As almost all TI programmers will do, Ron will tailor the program for your system configuration. In this case if it does not work with your printer, let him know and he will reconfigure it for you.

Column Text IV is available from Ron Pruitt, 6429 South Fife, Tacoma, WA 98409. These are Fairware programs. At least a $5 donation is requested plus $1.50 S&H.

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MICRO-REVIEWS—

★ ★ 1/2
SUPER SPACE ACER

This game was written in c99, has good graphics and requires fast reflexes. So what is wrong with this program? Read on.

System requirements are Geneve 9640 or TI99/4A, 32K memory, disk drive, joysticks and Editor/Assembler cartridge or any Program Image loader.

You are in control of a space ship which appears on the bottom of the screen. You are constantly bombarded by alien probes and drones while they are firing at you. You must maneuver around the screen, firing at and dodging these enemies, while collecting boxes with Power-up and Shield symbols. Towards the completion of each level you must destroy the engines on the mother ship to complete a level. There are five levels of difficulty.

Now, here's why only two stars. What is wrong with two-player games? This is another game that does not include a second player. It can't be much more difficult to add a second player. I haven't seen a two-player option in joystick games in a long time. Competing with someone always provides a better challenge to the game. In that way the game would still get some use even though you had beaten all the levels. The second fault I found was, there is no SCORE to the game. How can you tell if you beat someone or yourself if you don't know what you did the last time you played? The least important flaw is the lack of a pause function, which would be nice. If these features were added to this game, I would have gladly given it a four-star rating.

The game runs flawlessly on the TI; however, though it runs on the Geneve, it does not display the nice TI-Artist start-up screen. You get a framed blank screen and must press the fire button to continue.

Taking all into consideration I still like the game and my kids like it, although they also mentioned the shortcomings. The sound effects and music are fine. Also, joystick response is excellent and the Extended BASIC equivalent of CALL COINC is good. Either joystick can be used to avoid fumbling with them. Another nice feature is your ship turns three colors to warn you as your shield is depleting. Included in the manual is an enjoyable story of Super Space Acer. I enjoyed reading it almost as much as playing the game.

This game can still be enjoyed if you don't mind playing by yourself and not having a score. Super Space Acer on SS/SD disk is available from Julius Software, 70 McEwen Ave., Apt. 1406, Ottawa, Ont., Canada K2B 5M3. The price is $10 plus $2 S&H (Canadian Funds) payable to Mike Ward.

★ ★ ★ ★
RXB

In case you haven't heard of RXB, also known as RICHGKXB, it stands for Rich Gram Kracker Extended BASIC. It is an Extended BASIC language compatible with TI Extended BASIC. It has all the TI Extended BASIC commands plus many more, making a more powerful programming environment. It loads into any TI with a GRAM device. It also works with the Geneve 9640 when loaded into GRAM. RXB is made to work out of its own environment. Included on this DS/DD disk are LOAD and DSKCMDS. Together, these programs contain some features that are contained in a disk manager.

System requirements are Geneve 9640 or TI99/4A, 32K memory, disk drive and a GRAM device such as Gram Kracker or Gramulator.

After you load RXB into your GRAM device, it will auto-load its own menu. From this menu you can choose from:

1-EA5	6-BASIC
2-EA3	7-XBASIC
3-EAMENU	8-EAASS
4-STOP	9-CATALOG
5-EAED	0-XBPGM

As you can see by the menu the program has a full arrangement of Editor/Assembler options. This means that you can run any Program or Image file without the Editor/Assembler cartridge. A catalog option and a program option let you look at a disk or load any Extended BASIC program without leaving this environment. You can even leave to TI BASIC. RXB will remain in GRAM while running any program or leaving to TI BASIC. When returning to RXB just have the RXB disk in the specified drive to reload the menu. If the RXB disk is not in the drive it will enter the RXB Command environment instead of the menu.

Not only is RXB friendly to the user, it is also a programmer's paradise. For one thing, it allows auto-repeat of commands. You only need to use some commands just once and continue the contents of the statement by just using commas as separators and instead of duplicating the commands. A few of these commands are CALL KEY, CALL JOYST AND CALL COINC. Another good feature is the PDISK. This is an 8K area used for saving or loading programs. Up to four banks of 8K RAM may be used or switched from XB; however, this feature will not work on the Geneve. Combined commands can be used in a program line. Only one CALL is needed, and up to four characters replace two names. There are many more of its own additions, plus the Gram Kracker Extended BASIC additions. Now imagine how powerful RXB can be!

More than 60 pages of docs are included on disk. Another 22 pages of Gram Kracker Utilities are also included. This disk as I received it was close to filling a DS/DD disk. You must mention your configuration before ordering. RXB is available from CaDD Electronics, 81 Prescott Rd., Raymond, NH 03077. Price is $24.95 USA, add $2 shipping and handling outside the U.S.

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

MIDI-Master group forming

Dolores P. Werths, musician for Harrison Software, and Jim Peterson of Tigercub Software are trying to organize a by-mail users group for persons making music with MIDI master.

The group plans member exchange of SNF source file disks, a central clearinghouse/library and a disk newsletter.

Write Werths at 5705 40th Place, Hyattsville, MD 20781.

User Notes

Full-screen editing for XB programs

We left out a large part of a user note in the July issue, about converting text files to programs. We are running the entire item here, with our regrets. The item originally appeared in the newsletter of the Central Iowa 99/4 User Group. We saw it in 9T9, the newsletter of the Toronto TI User Group, and it appears below.

John Hamilton, writing a column called 99 Tips in the Central Iowa 99/4 UG newsletter, is up to tip 81. We don't know about the first 80, but the last is a real humdinger.

John's crucial insight into TI's MERGE command makes this program tick. What he noticed — and TI didn't document — was that the MERGE command doesn't check for syntax on the way back in from the disk.

In other words, if your disk file is:

1. Display/Variable 163;

2. and each record starts with a line number (followed by a space);

3. the last record is hex FFFF — CHR$(255) twice;

you have a MERGE format file.

Notice that the file does not require any BASIC syntax. You could create a Display 163 file that consists of a grocery list and it will MERGE.

Why is the ability to create a MERGE file so earthshaking? Because now you can use TI-Writer or the Editor/Assembler to write your BASIC programs. You can have all of the features of their editors (Find String, Move, Copy, Include Files, etc.) and still be able to run the program. You can also run a LISTed program (obviously it has to be on a storage device, not a printer). Other uses include being able to run screen dumps from the Terminal Emulator II environment.

Here is the program, called TRANSL:

```
1 CALL CLEAR :: OPEN #1:"DSK
1.TESTR" :: OPEN #2:"DSK1.OU
TR",VARIABLE 163
2 LINPUT #1:L$ :: S=POS(L$,"
 ",1):: ON ERROR 6 :: N=VAL(
SEG$(L$,1,S))
3 ON ERROR 5 :: A=INT(N/256)
:: A$=CHR$(N-A6):: PRINT L$
4 PRINT #2:CHR$(A);A$;CHR$(1
31);SEG$(L$,S+1,80);CHR$(0):
: GOTO 2
5 PRINT #2:CHR$(255);CHR$(25
5):: CLOSE #2 :: END
6 ON ERROR 5 :: RETURN 2
```

HOW TO USE TRANSL

The program expects a standard Display/Variable 80 file. Each line in the program text must begin with a line number. Error trapping on lines 2 and 6 will discard any line that has no line number. The program test line numbers do not have to be in order — the MERGE command will put them where they ought to go.

You can modify line 1 to open different files. As the program runs, each line is displayed to the screen. Watch for truncations on a LISTed or downloaded file. When XBASIC returns READY, type the following:

NEW

MERGE "DSK1.OUTR" (or whatever

(See Page 31)

1992 TI FAIRS

MARCH

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

APRIL

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

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

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

MAY

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

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

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

SEPTEMBER

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

OCTOBER

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

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

NOVEMBER

Milwaukee TI Faire, Nov. 1. Contact Gene Hitz, Milwaukee Area 99/4A Users Group, 4122 North Glenway, Wauwatosa, WI 53222.

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

1993 TI FAIRS

FEBRUARY

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

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

User Notes

(Continued from Page 30)

name you used).

If you run the program now, nothing will happen. Each line is a tail REMark. Edit the program from the top down using FCTN X and FCTN 1. As you delete each exclamation point and cursor down, the XBASIC system retokenizes each line into a RUNable statement. If you get a syntax error, look first for a truncated line. Second, insure that you didn't use word-wrap mode in TI-Writer. A quick check from the XBASIC environment:

```
CALL SCREEN(14) :: FOR A=0 TO 12
:: CALL COLOR(A,16,15) :: NEXT A ::
ACCEPT AT (4,4):A$
```

Don't answer ACCEPT, but rather clear it with FCTN 4. Now list the program. Anything that looks like a red box is probably bad.

If you've a routine in one program, just LIST "DSK1.TESTR": (line numbers of your routine), and run TRANSL against it. Voila! Here's your routine in MERGE format.

Widget switching

This item, by Paul Heerman, appeared in the newsletter of the Portland Users of Ninety-Nines.

The Widget, or Cartridge Expander, is a device for keeping three cartridges or modules ready for use at the flip of a switch. However, this little jewel has the un-nerving habit of locking up the console when it is switched too fast, and without waiting for a few seconds or so. I have found that by holding the FCTN= key, the quit key, this does not happen while switching the Widget. This seems to act as an interrupt, allowing you to choose a new cartridge and carry on in the new cartridge without having to turn the console off or pressing the reset switch on the Widget.

I have been using this combination for some time and have had only one or two failures. I have even used it with the real touchy SuperCart and have not wiped out the volatile SuperCart RAM.

You must hold down both the FCTN and the = key while switching for this procedure to work. It takes about three thumbs and a couple of fingers, but it works.

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WANTED

Book "Technical Drive" by Monty Schmidt (1987). Photocopy okay. Merle Vogt, P.O. Box 145, Von Ormy, TX 78073. 9/8

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