BITS BYTES AND PIXELS

LIMA AREA TI USERS GROUP
VOLUME I NO.3 OCTOBER 1985

COMMENTARY

What follows,friends,may sound like a lecture and we don't intend for it to be one. Our message is simple "Why don't you come out for the meeting?"

For the TI99/4A owner we have one of the best arrangements available. Maybe we need to remind you that we have over 2000 pieces of software,that is freeware.in out library. We have a group of well informed,dedicated TI'ers with whom you can share ideas,solve problems and enjoy the company of persons with common interests.

It was kind of sad last month when only 4 persons showed up. Charlie had put together another of his superb demonstrations,Dave had lugged all of his equipment from home,for only 4 persons!

If we are to continue to be a support group for each other we have to support our user group. It can really improve your skills and make computing more fun.

Summer is over and the frost is on the pumpkin,now is the time for computer clunkin.(with apologies to James Whitcombe Reilly)

Mark your calander now for the 3rd saturday of each month at 0930 to 1:30.

SEPTEMBER MEETING

The atterdance is reported elsewhere in this issue. Charlie presented a display of music programs that were spectecular in both sound and graphics. A copy of these now resides in the library. Dave reviewed a superb program called"Disk Fixer" this,too, is in the library. It is also reviewed elsewhere in this issue of BB&P.

TIPS

Again we are pleased to present"Tips From The Tiger Cub" This one,number 27,was sent to us from the suthor,Jim peterson. Jim is the energetic publisher,writer of software and an ardent supporter of the TI. He is one of the reasons TI lives on.

AN INVITATION

Actually writing this newsletter is fun,that is,until the well of ideas begins to run dry. The well is being drawn down. In short, we need help,your help.

Maybe your well is full and you need an outlet. Well,our friend,we have the outlet! Let us know when and what you have to offer. We have the space.

TI WRITER

If you are a user of TI Writer the"Handy Dandy TI Users Reference Guide" may be an answer to your needs. Every time we hold the humungous TI note book in our lap we think there must be a better way. Maybe this is it. Thanks to the Hoosier User's Group for providing this.

MISCELLANY

"May I help with your anun,Sir?"the waiter asked.
"what do you mean'help me'-I dont need any help."
"Sorry,Sir.From the sound,I thought you might wish to be dragged ashore."

CHARLIE SAYS

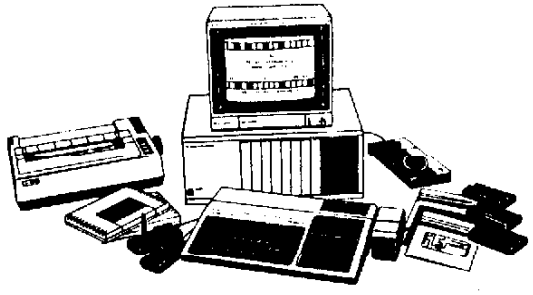
From Bill Sager of the New Horizons User Group comes the following information that is current as of September 1985. "The TI parts department is selling GROM chips for the EDITOR ASSEMBLER & MINI MEMORY module if any of your members want one as a back up or to do some messing around like the building of the 'Super Cart. Call TI at 806-762-7451 Ask for E/A GROM PART#1015960-1204 or M/M GROM PART#1015960-0215. They are priced $3.50 and $3.90 respectivly.

The balance of "Charlie Says" will be found on page three of BB&P.

DUES DUE!

We have been reviewing the club's financial status and we find that it is good,BUT,it could be better. There are large number of members who have not paid their current years dues. Like access to the Kingdom you have to pay your dues! The library is open only to dues paying members. If hou haven't paid pleasa send your check to Tim Martin,our treasurer.

COME COMPUTE WITH US



WEATHER

OR NOT...

Are you tired of the TV weather person's razzle dazzle that doesn't really tell you whether it is going to rain on your picnic?

Look no further than your TI keyboard. WEATHER FORCASTING,a product of the fertile mind of Gary Cox of Memphis,Tenn for $5.00 you can have a reliable forecaster at your fingertips.

While we have not gotten into the program it would appear that the is is based on the principle of synoptic forecasting.. This type of forecasting uses a series of data known to produce certian types weather based on long range studies. Accordngly,if in the area where the forecast is sought a falling barometer and a north wind can indicate the arrival of a front and the tempature reading can be an indicator of the type of percipitation.

This program allows entry of the data and after analysis prints out the forecast. We have tryed it and have found that it is pretty accurate.

For $5.00 and a letter to Gary Cox 3174 Melborne,Memphis TN.38127 you can find out for yourself.

"Realistic graphics, huh?"

CHARLIE SAYS:

DISKO (in our library), DISK FIXER, and ADVANCED DIAGNOSTICS (demonstrated at our August and Sept. meetings) allow you to read and alter the information on individual disk sectors. You can actually see the program in the format it is stored on the disk. This allows you to alter programs that would otherwise be difficult to change such as assembly language programs or adventure game files.

If you are having trouble with an adventure game (Scott Adams, Infocom, etc.) stored on disk, you can start reading disk sectors and see all of the text messages for the entire game. These messages are not necessarily in a logical order, but they do give you some idea of the game contents. I can tell you from personal experience that such disk sector reading will not by itself allow you to solve the game, but it is a help when you get stuck.

Another thing you can do with disk sector read programs is make minor alterations in assembly language programs, even if you know almost nothing about assembly programming. An assembly language program on a disk looks like gibberish, except for the text protions of the program. The usual way of altering an assembly program is to go back and change the source code, then reassemble the program and store it back on disk. But what if you don't have the source code, but instead only have the object code (the actual assembled program that runs from disk). Then you have to disassemble the object code into its source (we have 2 disassembler programs in our library), alter the source code, and reassemble into object code. This is not easy. For one thing, disassambly programs do not always work completely. Also, you must have some assembly language knowledge to rewrite the source code prior to reassembly.

With disk sector readers such as DISKO you can directly alter assembly object code right on the disk. Any text portions of this code can be changed to other text simply by typing over the original text, as long as the new text is no longer than the original. Shorter text is OK, but text longer than the original requires alteration and reassembly of source code (not easy). If the assembly program is designed to output to a printer, but not your particular printer, this can often be fixed. Usually all you have to do is alter the printer device name. I recently obtained a graphics program that would automatially print to an RS232 printer. The program wouldn't work for me because I have a PIO printer. I searched the disk sectors where the program resided until I found the following ASCII code:
B R S B 2 3 B 2 . B C K B followed by 4 blank spaces (each blank was hex 20). This looked to me like RS232.CR with an extra B after each two letters. I changed this with DISKO to read B P I B O . B C R B followed by 7 blanks, and the program now works with my PIO printer. Those of you with AXIOM, PIO, or RS232 printers that don't work with some assembly language programs, take note!

Brunner News Agency, 217 Flanders, Lima OH (phone 419-225-5826) has 50% OFF ALL COMPUTER BOOKS. On October 1, the had 10 titles in stock about the TI99/4A. Brunner also has 20% off of all computer magazines. Among their regularly stocked titles HOME COMPUTER MAGAZINE and COMPUTE both support the TI99/4A.

A HANDY DANDY TI-WRITER USERS REFERENCE GUIDE

SUBMITTED BY BOB STEPHENS

The following handy TI-WRITER commands are reprinted for the June issue of the 99'er News published by the TI Users Group of Will County, Romeoville, Il. This puts the most used commands on one page for handy access at your computer.

EDITOR COMMAND	FCTN	CTRL	EDITOR COMMAND	FCTN	CRTL	EDITOR COMMAND	FCTN	CTRL
Back tab		T	Ins. Blank line	8	Q	Quit	=	
Beginning/line		V	Insert character	2	G	Reformat		2orR
Command/escape	9	C	Last paragraph		6orH	Right arrow	D	D
Delete character	1	F	Left arrow	S	S	Roll down	4	A
Del. end of line		K	Left margin rel.		Y	Roll up	6	B
Delete line	3	N	New page		9orP	Screen color		3
Line #'s(on/off)	0		New paragraph		8orM	Tab	7	I
Down arrow	X	A	Next paragraph		4orJ	Up arrow	E	E
Duplicate line		S	Next window	5		Word tab		7orW
Home cursor		L	Oops!		1orZ	Word wrap/fixed		O

Load files: LF (enter) DSK1.FILENAME (load entire file)
LF (enter) 3 DSK1.FILENAME (merges filename with data in memory after line 3)
LF (enter) 3 1 10 DSK1.FILENAME (lines 1 thru 10 of filename are merged after line 3 in memory)
LF (enter) 1 10 DSK1.FILENAME (loads lines 1 thru 10 of filename)

Save files: SF (enter) DSK1.FILENAME (save entire file)
SF (enter) 1 10 DSK1.FILENAME (save lines 1 thru 10)

Print Files: PF (enter) PIO (prints control characters and line numbers)
PF (enter) C PIO (prints with no control characters)
PF (enter) L PIO (prints 74 characters with line numbers)
PF (enter) F PIO (prints fixed 80 format)
PF (enter) 1 10 PIO (prints lines 1 thru 10)
NOTE: The above assumes PIO. DSK1.FILENAME, and RS232 are also valid!
To cancel the print command press FCTN 4.

Delete file: DF (enter) DSK1.FILENAME

Setting Margins and Tabs: (16 tabs maximum)
L - Left margin R - Right margin I - Indent T Tab
Use ENTER to execute or COMMAND/ESCAPE to terminate command.

Recover Edit: RE (enter) Y or N

Line move: M (enter) 2 6 10 (moves lines 2 thru 6 after line 10)
M (enter) 2 2 10 (moves line 2 after line 10)

Copy: same as move except use C instead of M.

Find String: FS (enter) /string/ (will look for string in entire file)
FS (enter) 1 15 /string/ (will look for string in lines 2 thru 15)

Delete: D (enter) 10 15 (deletes lines 10 thru 15 in memory)

TIPS FROM THE TIGERCUB

#27

TIGERCUB SOFTWARE
156 Collingwood Ave.
Columbus, OH 43213

The entire contents of Tips from the Tigercub Nos. 1 through 14, with some added, are available as a full disk of 50 programs, routines and files for just $15.00 postpaid.

>>>>>NOW AVAILABLE<<<<<<<<<

Tips from the Tigercub VOLUME 2 The entire contents of Tips Nos. 15 through 24, with 64 routines and files, also $15.00 postpaid.

Or both for $27 postpaid.

>>>>ALSO NOW AVAILABLE<<<<<<

New Catalog #6, for $1 which is deductable from your first order. Describes 144 original programs for only $3 each (plus $1.50 per order for cassette or disk, package and postage).

If you have my previous catalog, the following are now available in Extended Basic versions - Fast Addition Practice, Submarine Hunt, Arithmatik, Manaland (also now available in Basic with Speech), Long Division Cryptograms, Miss Spell, Scrambulation, Gargraffer, Squanch, Dry Gulch, Name That Tune, Scrum, Midnight Trail, Nimbo, Kindertimes, Optical Illusion, Bazoo, Synonymy, Speeder Reader, Changeroo, Glunk, Fraction Math, Three Buckets Puzzle, Roman Numbers, Match A Patch, Kindermimus, I & E Spelling, Casting Out Nines, Haunted Graveyard, Spelling Teacher, Homonyms, Antonyms, Old -Timer Puzzle, Ten Thousand Sights, Mechanical Aptitude Test, Junior Speeder Reader, and Bars and Rails.

Due to reduced prices for disks and mailers, the PPH charge is now $1.50 for either disk or cassette - BUT PLEASE BE SURE TO SPECIFY WHICH!

And my best seller - NUTS & BOLTS, a full disk of 110 (yes, I said 100) utility subprograms in MERGE format, ready for you to merge into your own programs. 13 type fonts, 14 text display routines, 9 wipes, 8 passes, 3 programming aids, 9 data saving and reading routines, 5 graphics routines, 4 time and date, 6 music, 12 sorts and shuffles, 2 printer aids, 4 key and joystick, 4 math, 2 protection and 7 miscellaneous, plus a tutorial on subprograms. With documentation, example of using each subprogram. All for only $19.95 postpaid.

I have been receiving several requests to publicize freeware which is sometimes good but sometimes of doubtful usefulness, quality, originality or even legality! And "Freeware! Send $10 and initialized disk" is not freeware, it's somebody trying to get a free ad! So - no more freeware mentions! I am also not going to mention commercial products - after all, I'm publishing this at my own expense to promote my own software! However, I do owe a mention to Larry Hughes of Quality 99 Software, because in Tips #22 I recommended that disks with fractured files should not be copied with a quick copier. Larry informed me his trademarked QUICK-COPYer is the only program of its kind on the earth that does un-fracture files. He sent along a copy to prove it, and it does just that. A very useful feature!

Now, here is the new, and final, version of the Tigercub Menu Loader.

```
100 !by A. Klude/M. Gordon/
L. Boisseau/J. Peterson/etc.
Version #5, 9/85
110 CALL PEEK(8198,A):: IF A
<>170 THEN CALL INIT
120 OPTION BASE 1 :: DIM P$(
127),V(127,3):: CALL LOAD(-
31806,16):: ON ERROR 130 ::
GOTO 160
130 DISPLAY AT(12,9)ERASE AL
L:"I/O ERROR" :: RUN 100
140 @,@@,A,A$,B,C,D$,FLAG,I,
J,K,KD,KK,M,M$,N$,NN,P,P$,P6
$(1,PP,PP$,Q$,S,SF,T$(1,TT,V
,V$(1,),W$,X,X$(1,%,X2,S2
150 CALL LINK :: CALL PEEK
:: CALL KEY :: CALL SCREEN ::
CALL COLOR :: CALL CLEAR ::
CALL VCHAR :: CALL SOUND ::
!@P-
160 CALL CLEAR :: CALL LOAD(
-194,63,248):: CALL LOAD(-163
76,67,85,82,83,79,82,48,8)
170 CALL LOAD(-12288,129,195,
126,165,129,153,102,60)
180 CALL LOAD(-12296,2,8,3,24
8,2,1,48,8,2,2,2,8,8,4,32,32,3
4,4,91):: CALL LINK("CURSOR"
)
190 CALL CLEAR :: FOR S=1 TO
14 :: CALL COLOR(S,7,16)::
NEXT S :: CALL COLOR(@,2,16)
200 T$(1)="d/f" :: T$(2)="d/
v" :: T$(3)="1/f" :: T$(4)="
1/v" :: T$(5)="pro" :: ON WA
RNING NEXT
210 IMAGE @@@
220 IMAGE @@% Quit
230 IMAGE @@@ Delete
240 IMAGE @@@ Print
250 IMAGE @@@ Rescan
260 CALL SCREEN(5):: CALL VC
HAR(1,31,1,96):: DISPLAY AT(
1,4):"TIGERCUB MENU LOADER"
270 ! IF YOU HAVE MORE THAN
ONE DISK DRIVE, DELETE THE !
IN LINE 280 AND THE FIRST S
TATEMENT IN 210
280 ! DISPLAY AT(12,6):"DISK
? (1-3):" :: ACCEPT AT(12,19
)SIZE(-1):VALIDATE("123"):D$
:: D$="DSK"&D$&"."
290 D$="DSK1." :: OPEN @1:D$
,INPUT ,RELATIVE,INTERNAL ::
INPUT @1:N@,A,J,K :: DISPLA
Y AT(1,2)SIZE(27):SEG$(D$,1,
4)&" - Disk name= "&N@;
300 DISPLAY AT(2,2):"Availab
le=";K;"Used="&J-K:" Prog Fi
lename Size Type":"----- ---
------- ---- ------" :: I,V
T=@ :: TT=J-K
310 FOR X=1 TO 127 :: IF X/2
@<>INT(X/2@)THEN 340
320 DISPLAY AT(24,1):"Choice
? Enter for more @" :: ACCEP
T AT(24,24)VALIDATE(DIGIT)SI
ZE(-3):X :: IF X=@ THEN 330
:: IF X>@ AND X<NN+1 THEN 60
@ ELSE 320
330 I=1
340 I=I+1 :: IF I>127 THEN K
=I :: GOTO 510
350 INPUT @1:P$,A,J,B :: NN=
NN+1
360 IF LEN(P$)=@ THEN 430
370 DISPLAY AT(I+4,1):USING
210:NN :: DISPLAY AT(I+4,5):
P$ :: P$(NN)=P$ :: DISPLAY
AT(I+4,16):USING 210:J :: DI
SPLAY AT(I+4,20):T@(ABS(A))
380 V(NN,1)=A :: V(NN,2)=ABS
(B):: V(NN,3)=J
390 I$=" "&STR$(B):: DISPLA
Y AT(I+4,24):SEG$(I$,LEN(I$)
-2,3):: VT=VT+J
400 IF A>@ THEN 410 :: DISPL
AY AT(I+4,28):"("
410 CALL KEY(@,K,ST):: IF S
T=@ THEN 420 :: FLAG=1 :: GO
TO 430
420 NEXT I
430 DISPLAY AT(I+4,1):USING
220:NN :: DISPLAY AT(I+5,1):
USING 230:NN+1
440 IF VT=TT OR FLAG=1 THEN
460 :: DISPLAY AT(12,25)SIZE(
1):VT
450 FOR @=1 TO 10 :: DISPLAY
AT(2,25)SIZE(1):CHR$(30):::
DISPLAY AT(12,25)SIZE(1):" "
:: CALL SOUND(-99,110,@,-4,@
):: NEXT @
460 IF FLAG=1 THEN 470 :: DI
SPLAY AT(I+4,13):USING 240:N
@+2 :: DISPLAY AT(I+5,13):US
ING 250:NN+3
470 DISPLAY AT(X+6,1):" C
hoice?" :: ACCEPT AT(X+6,16)
SIZE(-3)VALIDATE(DIGIT):K
480 IF FLAG=1 THEN 500
490 IF K=NN+2 THEN 140 ELSE
IF K>NN+3 THEN CLOSE #1 :: N
N=6 :: GOTO 190
500 IF K<>NN AND K<>NN+1 THE
N 59@
510 IF K=NN THEN CALL CLEAR
:: CLOSE #1 :: END
520 DISPLAY AT(X+5,2)SIZE(1
2):"#?" :: ACCEPT AT(X+5,15
)SIZE(2)VALIDATE(DIGIT):KD ;
: IF KD<1 OR KD>NN THEN 520
530 IF V(KD,1)>@ THEN 550
540 FOR J=1 TO 10 :: DISPLAY
AT(1,1):" ";" PROTECTED -
CANNOT DELETE":" " :: DISPL
AY AT(12,1):" " :: NEXT J ::
GOTO 570
550 DISPLAY AT(X+6,1)SIZE(27
):"Verify - Delete ";P$
@(KD);"?" :: DISPLAY AT(X+6,
28)SIZE(1):"Y" :: ACCEPT AT(
X+6,28)SIZE(-1)VALIDATE("YN"
):D$ :: IF D$<>"Y" THEN 570
560 DELETE D$&P$@(K))
570 CLOSE #1
580 CALL VCHAR(1,3,32,672)::
NN=1 :: X=@ :: FLAG=@ :: GO
TO 260
590 IF K(1 OR K>127 OR LEN(P
$@(K))=@ THEN 430
600 IF ABS(V(K,1))=1 OR ABS(
V(K,1))=4 AND V(K,2)=254 THE
N 640
610 DISPLAY AT(12,1)ERASE AL
L:"Print to ? S": :(P)printe
r?":(S)creen?" :: ACCEPT AT
(12,12)SIZE(-1)VALIDATE("PS"
):Q$ :: IF Q$="S" THEN PP=@
:: GOTO 630
620 DISPLAY AT(12,1)ERASE AL
L:"PRINTER? PIO" :: ACCEPT A
T(12,10)SIZE(-18):P$ :: OPEN
#3:P$ :: PP=3
630 CALL CLEAR :: CALL SCREE
N(11@):: ON ABS(V(K,1))GOTO 6
80,690,750,760
640 CLOSE #1 :: IF SEG$(P$@(
K),LEN(P$@(K)),1)="." THEN D
ISPLAY AT(12,1)ERASE ALL:"RE
TURN TO BASIC AND LOAD DV":"
TYPING OLD ";D$&P$@(K):: STO
P
650 CALL PEEK(-31952,A,B)::
CALL PEEK(A*256+B-65534,A,B)
:: C=A*256+B-65534 :: A$=D$&
P$@(K):: CALL LOAD(C,LEN(A$)
)
660 FOR I=1 TO LEN(A$):: CAL
L LOAD(C+1,ASC(SEG$(A$,I,1))
):: NEXT I :: CALL LOAD(C+I,
@)
670 CALL VCHAR(1,3,32,672)::
CALL SCREEN(8):: FOR S=@ TO
14 :: CALL COLOR(S,2,1):: N
EXT S :: DISPLAY AT(12,2):"L
OADING ";A$ :: GOTO 900
680 OPEN #2:D$&P$@(K),INPUT
,FIXED :: GOTO 700
690 OPEN #2:D$&P$@(K),INPUT
700 LINPUT #2:N$ :: PRINT #P
P:N$ :: IF EOF(2)THEN 730
710 CALL KEY(@,K,S):: IF S=@
THEN 700
720 CALL KEY(@,K2,S2):: IF S
2<1 THEN 720 ELSE !@@
730 CLOSE #1 :: CLOSE #2 ::
PRINT " >>>press any key<<
<" :: IF Q$="P" THEN CLOSE #
3
740 CALL KEY(@,K,S):: IF ST
<1 THEN 740 ELSE 580
750 OPEN #2:D$&P$@(K),INPUT
,INTERNAL,FIXED :: J=@ :: GO
TO !70
760 OPEN #2:D$&P$@(K),INPUT
,INTERNAL :: J=@
770 IF EOF(2)=1 THEN 730 ::
J=J+1 :: INPUT #2:!@ :: IF L
EN(!@)=@ THEN 790
780 PRINT #PP:N@ :: GOTO @28
790 FOR Y=1 TO @ :: @@=ASC(S
EG$(N$,Y,1)):: IF @@<32 OR @
@>127 THEN @10
800 NEXT Y :: GOTO 780
810 RESTORE #2 :: FOR X=1 TO
J-1 :: INPUT #2:N$ :: NEXT
X :: INPUT #2:N :: PRINT #PP
:N
820 CALL KEY(@,K,S):: IF S=@
THEN 770
830 CALL KEY(@,K2,S2):: IF S
2<1 THEN 830 ELSE !70
840 DISPLAY AT(24,1):"PRINTE
R NAME? PIO" :: ACCEPT AT(24
,15)SIZE(-14):PP$ :: OPEN #2
:PP$ :: PRINT #2:SEG$(D$,1,4
)&" - Disk name= "&N$
850 PRINT #2:RPT$("=",28)::A
vailable=";350-VT;"Used=";VT
:RPT$("=",28)
860 PRINT #2:"FILENAME SIZE
TYPE":RPT$(" ",28)
870 FOR P=1 TO NN-1 :: PRINT
#2:P$@(P);TAB(15);V(P,3);TA
B(21);T$(ABS(V(P,1)));TAB(25
);V(P,2):: NEXT P :: CLOSE #
2
880 DISPLAY AT(12,3)ERASE AL
L:"(P) to print again":" (R
) to rescan":" (Q) to quit"
890 ACCEPT AT(15,1)VALIDATE(
"PQR")SIZE(-1):BEEP:Q$ :: IF
Q$="P" THEN 840 :: CLOSE #1
:: NN=@ :: IF Q$="R" THEN 19
@ ELSE END
900 RUN "DSK1.123456789@"
```

This version turns off the Quit key, restarts itself rather than crashing on an I/O error, and has pre-scan for faster start-up. It displays disk name, sectors available and sectors presumably used - it also totals up actual sectors used and sounds a warning if any sectors are not accounted for.

It lists up to 127 programs and files by number, filename, number of sectors, program or file type, file record length, and write-protection. It will stop for menu selection on any keypress or at the end of each screen, continuing on Enter. It will load and run any program that can run from Extended Basic, displaying its filename while loading. If the filename ends in an asterisk, it will warn you to return to Basic. It will delete any unprotected program or file, after first requiring verification by filename, or will inform you if the file is protected. It will read any readable file, including internal numeric, and list it to screen or printer. It will dump a catalog of the disk to your printer, and it will offer the option of quitting or rescanning the disk or another disk. And it's free, I don't even want a freeware donation - but I would appreciate if you would take a look at my catalog and see if, somewhere among those 140 programs, there might be something you would be willing to pay $3 for? The Menu Loader is included as a bonus on every disk I sell!

```
100 CALL CLEAR :: RANDOMIZE
:: DISPLAY AT(3,1):"TIGERCUB
MATH PUZZLE"
110 DISPLAY AT(6,1):"Insert
+ -, * (multiply) OR / (div
ide) between the digits
to equal the total": :"Type
@ to give up"
120 DISPLAY AT(11,1):"Level
1 or 2?" :: ACCEPT AT(12,15)
VALIDATE("12"):L
130 T,X=INT(99*RND+1):: M$=ST
R$(X):: Z$=M$&" "
140 FOR J=1 TO 4 :: Y(J)=INT
(9*RND+1):: Z=IN(49*RND+1)::
IN Z GOSUB 240,250,260,270
:: Z$=Z$&STR$(Y(J))&" " :: N
EXT J
150 IF L$="1" AND T<>INT(T)T
HEN 130 :: Z$=Z$("="&STR$(T)
160 DISPLAY AT(1,1):Z$ :: D
ISPLAY AT(18,1):" " :: DISPL
AY AT(20,1):" " :: DISPLAY A
T(22,1):" "
170 FOR P=2 :: FOR J=1 TO 4 :: A
CCEPT AT(12,P)VALIDATE("0+-*
/")SIZE(1):S$
180 IF S$="@" THEN 200 ELSE
IF S$="+" THEN X=X+Y(J)ELSE
IF S$="-" THEN X=X-Y(J)ELSE
IF S$="*" THEN X=X*Y(J)ELSE
X=X/Y(J)
190 P=P+2 :: NEXT J :: IF X=
T THEN 230 :: DISPLAY AT(18,
1):"WRONG!"
200 DISPLAY AT(21,1):"ANSWER
S ";M$
210 DISPLAY AT(22,1):"PRESS
ANY KEY"
220 CALL KEY(@,K,ST):: IF ST
<1 THEN 220 :: GOTO 130
230 DISPLAY AT(18,1):"RIGHT!
" :: GOTO 210
240 M$=M$&"+"&STR$(Y(J)):: T
=T+Y(J):: RETURN
250 M$=M$&"-"&STR$(Y(J)):: T
=T-Y(J):: RETURN
260 M$=M$&"*"&STR$(Y(J)):: T
=T*Y(J):: RETURN
270 M$=M$&"/"&STR$(Y(J)):: T
=T/Y(J):: RETURN
```

Enjoy!

Jim Peterson

EXPLORER

YOUR WINDOW INTO THE 99/4A

Have you ever wondered how CALL SOUND, CALL SAY or the GPL Interpreter actually works? Or how Parsec sets up and scrolls its bit mapped screen? Or exactly what Extended Basic is doing when you type in LIST or RUN and it executes a program? Or how about the Interrupt Routines?

Imagine what else you could LEARN if you had an instrument that gave you total control over the microprocessor in your computer and you could stop and start it at will, at any point in a program or module and it allowed you to examine and change memory, or any of the registers or Cru Bits.

Well stop imagining because the Explorer turns our 99/4As into that powerful Instrument and Learning Tool! The heart of the Explorer is a machine language interpreter that thinks its a 9900 microprocessor. This allows you to be in TOTAL CONTROL of the application program so you can watch the Explorer's Main Screen with all of its dynamic information or flip to the ACTUAL Program Screen running in slower motion under YOUR control.

Along with ALL the other items on the Main Screen, You can also track up to 3 Dynamic Memory Windows for any area of CPU Memory, VDP Memory or GROM/GRAM Memory, in any one of 4 sizes. You can also Track, Display, Edit and Search any area of memory in Hex, ASCII and in ASCII with Basic Bias. This powerful interpreter also allows you to look in Break Points for ROM or RAM, Any VDP Write or Read and Any GROM or GRAM Memory access. And, at any time, You can easily modify any of the items on the Explorer's Main Screen or, with the aid of the Explorer's Registers Screen, the GPL Status and VDP Registers.

The number converter on the Explorer's Options Screen uses the same mathematical logic as the 9900 microprocessor. It will Add, Subtract, Multiply, Divide, AND, OR, XOR or NOT numbers in all three, Decimal, Hexadecimal and Binary, number bases at the same time so you can easily calculate what's going to happen next, before it happens. And, Yes, it will convert negative numbers and numbers into their CALL PEEK or LOAD addresses.

To further assist you, and help explain what is going on, the actual 9900 source code for the next instruction to be executed is displayed. Also, the ENTIRE Main Screen is Dynamically updated after each and every instruction is executed, so you can examine, learn and control it step-by-step or TURN IT ON and watch it GO!!

This is an extremely easy utility Instrument to use with its Function and Control Keys, Binary Switches, and its Full Screen Edit Control fields. It also includes a function key strip and an extensive 100 pages of documentation complete with Step-By-Step Explorations, Memory Maps, Register Information and Cru Bit Assignments.

* However, its only fair to warn you!

Millers Graphics has determined that the EXPLORER is very hazardous to your sleep!

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