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WASHINGTON D.C. AREA
TI 99/4 USER'S GROUP

NEWSLETTER

VOL #2

FEBRUARY - 1983

ISSUE #2

Bill Whitmore, President

Richard D. Sturgell, Editor

TI's NEW COMPACT COMPUTER-40



List Price

\$249.95

SEE PAGE 3

NEXT MEETING FEBRUARY 10

SEE PAGE 7

THE USERS REPORT

Have you ever wondered if your disk programs are related to rabbits? I mean the way they seem to multiply. About one year ago I didn't even have a disk drive, not to mention any disk programs. Now I have 354 disk programs scattered over 33 different diskettes.

At first there was no problem in keeping track of my programs. The Disk Manager Command Module will catalog a single disk to the screen or a printer. Also my memory worked fairly well--let's see, I think that is on disk #6. However, one day I had some friends over and in attempting to "show off" my 99/4A system I couldn't put my fingers on a special demo program they just had to see. The problem was that my programs and diskettes had multiplied until I really did not know what was where.

Today this has been changed. All of my programs are now printed in alphabetical order, all of my disk names are listed and I know exactly how many sectors I have used on my disks and how many are still free. I also know the exact type of files contained on my disks (program, internal, display, variable, etc.) and the date of my last programs print-out. SUPER CATALOGER has come to my rescue.

Two of our own local Club Members, Jim Hollender--a Computer Systems Analyst and founder of J & KH Software, famous for their Video Titles programs--and Larry Hughes--a Computer Consultant and our press-ahead Club Librarian, have made available at an introductory price of \$19.95 a "SUPER CATALOGER Multi-Disk Catalog Program". (I'm told after March 1st the price rises to \$29.95.)

So what can it do? ONLY read up to 63 disks or 550 filenames, sort them and print them on either a RS232 printer device or the TI Thermal Printer!!! (By the way, the sort is in Assembly Language--400 filenames sort in 22 seconds!) This disk-based program requires Extended Basic, 32K Memory Expansion and of course the disk and printer system to work.

The SUPER CATALOGER will load automatically after entering Extended Basic and the title screen draws 8 neat little diskettes while the Assembly Language routines are loaded into the Extended Memory. Then following the screen prompts, you enter the present date (or any message up to 28 characters), information concerning your printer system and then you just follow the instructions for placing the disks you want cataloged into your disk drive. As SUPER CATALOGER scans the disks, the screen gives you two read-outs: the left keeps a running list of the disk names you have already scanned; the right lists the separate filenames and gives their count in numerical order. (Don't worry, the program will not let you go over the 550 filename limit.) Also, should you happen to have two diskettes with the same disk name--confession is good for the soul--you can assign it a "temporary disk name" for listing purposes, it will not affect the actual disk name which can be changed with the Disk Manager at a later time.

Once you have finished scanning the disks you then press "N" to begin the sort. It is very fast! My printer started up so quickly that I initially jumped at its sound. A few seconds later I had in my hand a complete catalog of all of my programs. However, SUPER CATALOGER is not finished yet. It asks if you want another copy, or another copy, or another copy--in fact, as many as you want.

I am ready for my friends to see my system now, though I am slightly embarrassed. You see, I had three demo programs on three separate disks--two of which I have now eliminated and saved myself disk space and \$ for new disks I thought I needed.

Thanks to Jim and Larry I know exactly where all of my programs are and I can update the listing anytime. It really is a SUPER CATALOGER!!!

Rev. Keith G. Koch

**COMPACT COMPUTER ANNOUNCED BY TEXAS INSTRUMENTS
THREE LOW-COST PERIPHERALS ALSO AVAILABLE**

The **CC-40** has been shown by TI at the CES Show in Las Vegas the first of this year. This computer has an integrated LCD display, is programmable in Enhanced BASIC, and use plug-in solid state cartridges.

It is designed as a small desktop cordless computer and for data communications. Its small size and battery operation provide extensive capability for portable computer applications.

The computer console has a 34K byte ROM w/Basic. It also contains 6K bytes of RAM that can be expanded to 16K bytes. The module port for application software can add up to 128K of ROM. This port is also used to expand the RAM.

On the back of the console is a hex-bus connection allowing the connection of any Hex-bus compatible peripheral. The three peripherals announced at this time are an RS232 interface, a printer/plotter and a Wafertape (a digital tape drive).

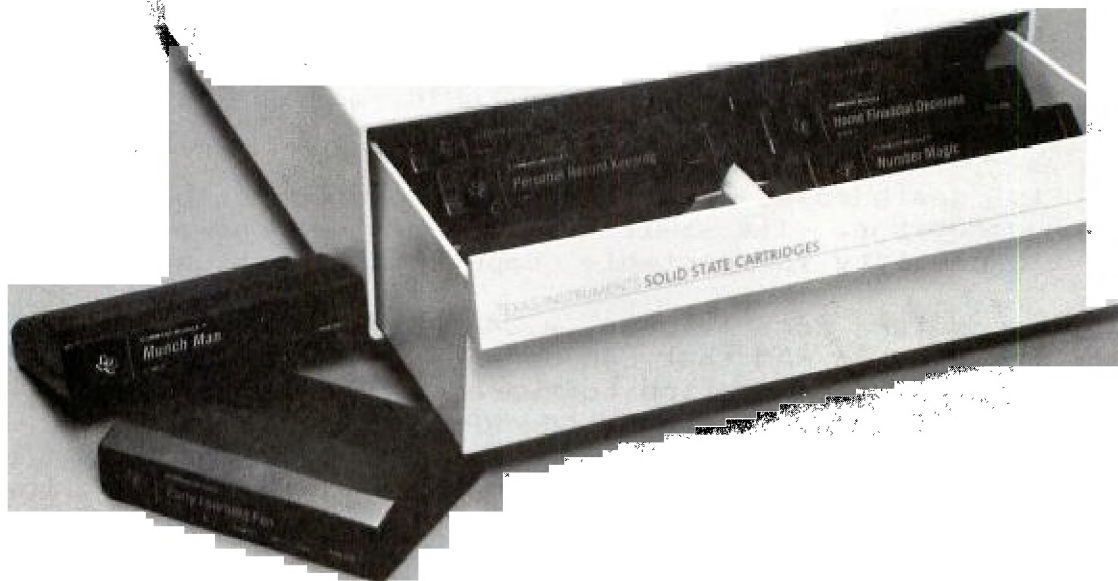
These low cost peripherals will be available in the first quarter of 1983 (Feb ??). Also in the third or fourth quarter TI may have a B+W monitor and a wand input device, a modem and a printer.

All of these peripherals that are to be used with this computer will also work with the new TI99/2 (next page) and WITH AN ADAPTER, **THEY WILL ALSO WORK WITH THE TI99/4A.**

PRICE of these units are: RS232 -- \$99.95, Printer/Plotter -- \$199.95, Wafertape a digital tape drive -- \$139.95, THE TI99/4A INTERFACE ATTACHMENT -- \$59.95.

Software available as plug-in cartridges and on Wafertape include - Math, Finance, Perspective Drawing, Statistics, Business Graphics, Nonparametric Statistics, Adv. Electrical Engineering, Editor/Assembler, Elementary Dynamics, Regression/CurveFitting, Pipe Design, Production and Planning, Inventory Control, Thermodynamics, Photography, Solar Energy, Profitability Analysis, Quality Assurance, Control Data and Sampling Plans. A total of 75 (48 SS cartridges and 27 Wafertape programs) will be available by the third quarter of 1983.

The console is 9 1/2 X 5 3/4 X 1 inch and weighs only 22 ounces. The display is a scrollable 31 character LCD. A tilt stand is built into the bottom of the computer. The power is supplied by four AA alkaline batteries that should provide power for up to 200 hours. The unit may also be connected to the 115V AC power line with an OPTIONAL adapter, \$14.95.



Command Module Storage Drawer



NEW TI CASSETTE RECORDER

TI has ended the search for a recorder to operate with the TI99/4A. This recorder is available from TI for \$69.95. It will operate on four size C batteries or AC power, cord included.



THE NEW TI99/2 A COMPUTER FOR BEGINNERS

TIMEX/SINCLAIR WATCH OUT

The new TI99/2 has been announced by TI, the price of this computer will be **\$99.95**. This computer is designed to allow computer novices to learn to program a computer in TI Basic and Assembly language.

The computer has 4.2K bytes of RAM and can be expanded to a total of 36.2K bytes of RAM. Two software cartridges, will be available initially for this unit - "Learn to Program" and "Learn to Program BASIC". Other cartridges will be available later.

The TI99/2 has a BW display only but it does have a built in RF modulator. All of the peripherals listed on previous page (with CC40) will work with this computer.

This should be a great first computer for anyone that wants to become computer literate. Available in second quarter of 1983.

NEW PLASTIC STORAGE DRAWER FOR TI99/4A CARTRIDGES AND CASSETTES NOW AVAILABLE

A plastic storage drawer is available from TI. This drawer will hold up to 12 cartridges or cassettes and is designed to be stackable. The price will be \$14.95.

BOOK REVIEW BY DAVE HILL:

Although "Basic And The Personal Computer by Thomas Dwyer and Margot Critchfield was copyright in 1978 don't let the date fool you. This is one of the best instruction books I have seen to date for learning more about basic programming. The version of basic used in the sample programs requires little if any modification to be used in the TI 99/4A computer. The programs given are short, easy to follow, educational, but most importantly, fun. Many areas of interest are covered in the ten chapters of this 438 page book. Topics include basic instruction, simple and more difficult computer graphics (some great examples of how to use the TAB function), computers in sports and recreation, sorting routines (one of the best tutorials I have seen on this topic), computer games, data bases for fun and profit and computer simulations. The text is well written and easy to understand. In the preface the authors recommend using their book for either college or secondary schools. I would highly recommend this text for someone who had become bored with the Beginners Basic text which came with their 99/4A computer and who would like to learn more about the fascinating world of computer programming. I have seen this book on the shelves of two or three well-known area bookstores in the computer sections.

FOR SALE USED COMMAND MODULES:

Video Chess	\$45.00	Multiplication I	\$25.00
Security Analysis SOLD	35.00	Hangman	13.00
The Attack	25.00	Connect Four	13.00
Addition & Substraction II	25.00		

Call Carl Savillo 703-339-6428. Those not sold will be available at the next meeting.

TAPE COUNT PROGRAM BY DAVE HILL:

The tape menu program is being presented as a challenge to all you budding programmers out there. Althought it works how can you make it work better ? How about adding a sorting routine or dumping the data into a file so that an entire library of tapes can be listed on a single page. What ideas do you have ? How about sumitting you revision to the club newsletter and the one judged to be the best will be printed (space permitting) in a subsequent issue. Here is a chance to make a contribution to the club library so that many can enjoy your creativity.

CONT ON PAGE 8

WANTED: 32K Memory Expansion PHP-2200
 Call Greg Diachenko (301) 249-1694

NEXT MEETING
THURSDAY FEBRUARY 10, 1983
AT THE
FAIRFAX HIGH SCHOOL
3500 OLD LEE HIGHWAY
7:00 PM

Directions: From I-495 (Washington Beltway) exit 8 West, U.S. 50, go 3.5 miles (at 3 miles you will drive thru Fairfax Circle), another 1/2 mile at a traffic light turn left. There is a small sign on the right shoulder of the road directing your left turn to Fairfax High School. Also on the right is a Denny's Restaurant (good food, inexpensive), and P. J. Skidoos Restaurant. After turning left the road winds around the athletic field to the school building. At the school building enter to the left side of the pillared center section. Located just inside the entrance will be a bulletin board directing you to the meeting room.

Alternate Directions: From Beltway take I66 west to the exit at Va. Route 123 South. Go south on 123 about 3/4 mile to the second traffic light, and turn left, this is U.S. 50 east, then go about 1/2 mile, pass the Red Lobster Restaurant, the Old Budapest Restaurant. Watch for a Fire House on right, then go to the next traffic light and turn right to school. This is the same light as described above at Denny's and P.J. Skidoos Restaurants.

In the event of bad weather, snowing, etc., or if Fairfax Schools are closed this meeting will be cancelled.

FIRST MEETING OF THE
MONTGOMERY COUNTY TI USERS GROUP

THURSDAY FEBRUARY 24 AT 7:30PM
In The **MUSIC ROOM** of The **SLIGO INTERMEDATE SCHOOL**
1401 DENNIS AVE SILVER SPRING, MARYLAND

DIRECTIONS: From the Washington Beltway I495, EXIT AT GEORGIA AVE. NORTH, go about 1/2 mile to the second light this is DENNIS AVE. turn right (east), go about 1/2 mile and the school is on your left.
For more information please phone ALLEN MINTON at (301) 949-4085.

```

10 LET FN$="PROGRAM NAME"
20 LET POS$="TAPE COUNT "
30 LET PG$="PROGRAM # "
40 CALL CLEAR
90 REM *****
100 REM ** THIS PROGRAM IS
110 REM ** TO BE PLACED AT
120 REM ** AT THE BEGINNING
130 REM ** OF EACH TAPE AS
140 REM ** A MENU OF WHAT
150 REM ** PROGRAMS ARE ON
160 REM ** THE TAPE.
170 REM *****
500 OPEN #1:"RS232/1.BA=9600.DA=8.PA=N"
510 DIM A$(50)
520 DIM B$(50)
530 DIM C$(50)
600 FOR X=1 TO 50
610 READ A$(X),B$(X),C$(X)
620 IF A$(X)="END" THEN 700
630 NEXT X
700 FOR X=1 TO 50
710 IF A$(X)="END" THEN 800
720 PRINT PG$;A$(X)::B$(X)::POS$;C$(X)
730 PRINT :::
731 A=A+1
732 IF A=1 THEN 735 ELSE 736
735 PRINT "PRESS ENTER TO CONTINUE"
736 PRINT ::
740 CALL KEY(0,KEY,STATUS)
750 IF STATUS=0 THEN 740
760 IF KEY=13 THEN 790
770 PRINT "WRONG RESPONSE PLEASE          TRY AGAIN"
775 PRINT ::::
780 GOTO 740
790 NEXT X
800 PRINT "DO YOU WANT A HARD COPY OF THIS LIST ? (Y/N)"
810 CALL KEY(0,KEY,STATUS)
820 IF STATUS=0 THEN 810
830 IF KEY=89 THEN 835 ELSE 900
835 PRINT #1:"TAPE #          PROGRAM NAME          TAPE POSITION":::
836 FOR X=1 TO 50
837 IF A$(X)="END" THEN 900
840 PRINT #1:A$(X);
850 PRINT #1:TAB(12);B$(X);
860 PRINT #1:TAB(55);C$(X)
870 NEXT X
880 PRINT #1:::::
900 END
2000 DATA 903A,DAY OF THE WEEK,25
2010 DATA 903A,MAILING LABEL MAKER,40
2020 DATA 903A,PERPETUAL CALENDAR (PRINTER OPTION),60
2030 DATA 903A,NEXT PROGRAM,85
10000 DATA END,END,END

```


TAN-HI ASSOCIATES

David Sillaman
2667-C Ice House Ct.
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5517 Pat. Henry Dr.
Balto., Md. 21225
301- 789-8017

SPECIAL OF THE MONTH

	<u>Reg.</u>	<u>Sale</u>
* TMS 100-1 PEB Single Sided, Single Density	389.99	275.99
* TMS 100-2 PEB Double Sided, Single Density	499.99	349.99
* PHP 1240-2 Disk Controller Card (single or double sided)	269.99	185.99
! PHP 2500 TI Impact Printer (90-day Guarantee)	750.00	530.00

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PHP 1240-2 Disk Controller Card	_____	@	185.99 =	_____
PHP 2500 Impact Printer	_____	@	530.00 =	_____
Make checks payable to:			Sales Tax	_____
TAN-HI Associates			Total	_____



Have you ever forgotten on which disk a particular program is located? Imagine being able to determine in just a few seconds which disk contains the program you're searching for! **SUPER CATALOGER** accepts up to 500 filenames from as many as 63 disks and produces a sorted catalog on any printer. *And it's fast too!*

... an Assembly Language subroutine sorts 200 filenames in six seconds! Requires: TI-Extended-BASIC, memory expansion, disk drive and printer. **Special introductory price: \$19.95 postpaid.** Virginia residents add 4% sales tax.

ROBINS Inc.



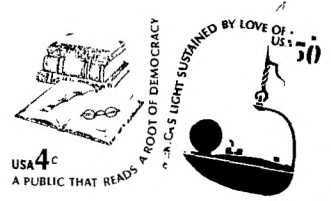
THE SMALL COMPUTER SUPPLIES STORE

LABELS		PRINT WHEELS	
3 1/2 x 15/16 (5,000)	\$16.00	Diablo Plastic	6.40
PAPER (15, 18 & 20 lb.)		Diablo Metal	41.50 & 49.95
9 1/2 X 11	\$26.95	Diablo 620	11.40
RIBBONS		QUME	6.40/7.90
Radio Shack		Smith/Cor. TP-1	4.90
Daisy Printer II	4.75 each	Olivetti	15.50
Line Printer III & IV	6.50 each	DISKETTES	
Line Printer VI & VIII	6.50 each	5 1/4 Single Side	
Diablo 620 M/S	7.45 each	Double Density	
Hytape II M/S	46.50 doz.	SYNCOM "Ectype"	20.95
NEC 5500/7700 M/S	63.00 doz.	Scotch, KYBE, Memorex, Verbatim	26.50
Cloth	69.90 doz.	Double Side Double Density SYNCOM	\$35.70
3500, 8023	11.90 each	Double Side/96 lpi SYNCOM	39.95
C. ITOH Prowriter	11.90 each	8" Single Sided/ Single Density	26.50
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M/S I & Cloth	33.50 doz.		
M/S IV	54.00 doz.		
IDS 560	5.75 each		
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TI NEWS
BOX 267
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FIRST CLASS

FIRST CLASS

DATED MATERIAL
MAILED JAN 26

EDMONTON USERS GROUP
BOX 11983
EDMONTON ALBERTA CANADA T5J 3L1

COMPU-SOURCE CORNER

By Rick Stickle
TI0121
70220,242

I guess its part of my job to be inconspicuous, however I must have over done it at the December meeting. Since I 'volunteered' to head the interest group for on-line networks I managed to hide or at least no one found me to give me their names and/or account numbers, so perhaps the best way to do it is electronically. If users of The Source (TEXNET) will contact me by SMAIL at TI0121 with your account number and Compu-serve people by EMAIL at 70220,242 maybe we can get something started.

Over the next few months I hope to find the time and energy to put forth some articles on the two systems covering some of their high points in hopes of learning more myself and perhaps generating enough interest to convince more members to take the plunge into these electronic wonderlands. I'll also try to shed some light on some of the more interesting free networks that are in this area.

The best place to start, as usual, is at the beginning. What do I need and how much does it cost? The first part is easy, the equipment to get started is an RS232 card, a Terminal Emulator (I or II), and a modem. The modem does not have to be the Texas Instruments version, I use a Star modem that I bought for \$129 at the time. Modems now range from \$149 - \$300 for a 300 Baud modem. The TI modem sells for about \$170 if you shop around.

The how much varies from service to service. The two most popular are The Source and CompuServe. The Source charges subscribers a \$100 initiation fee and the following connect-time charges for 300 Baud service: \$20.75 per hour from 7am to 6pm, \$7.75 from 6pm to midnight, and \$5.75 from midnight to 7am Monday thru Friday. Weekends and some holidays are charged at the non-prime rates (7.75, 5.75). 1200 Baud service is available but costs about 30% more. (so do 1200 Baud modems!)

CompuServe charges an initiation fee of \$22 and the following hourly connect-time fees for 300 Baud: \$22 per hour from 5am to 6pm Monday thru Friday, and \$5 from 6pm to 5am Monday thru Friday, Weekends and some holidays. CompuServe subscriptions are available through Radio Shack stores for \$29, this includes one free hour of connect-time.

If you have the equipment to go on-line but no account yet you might want to try one of the local nets. A good one to start with is the Get-Away Special (GAS), this is maintained by NASA and the number is (301) 344-9156. This net will give you all the information on the Space Shuttle flights to include the prices for flying your own special experiment if you feel like spending the money.

Until next month then, let me know if you have any suggestions or questions for the column to cover in the future.

CONVERTING NUMBERS:

The following program was submitted by Sam Williams.

```

100 PRINT "CONVERT NUMBER INTO 2-BASED SYSTEM"
105 REM LIST"RS232.BA=1200.DA=8"
106 REM SAVE DSK1.TWOBASESYM
107 REM ON DSK-DD1B SAM W.10/3/82
110 REM FROM "ASIMOFF ON NUMBERS" PG 22.
120 PRINT " DIVIDE NUMBER BY TWO,SET  ASIDE REMAINDER"
130 PRINT "CONTINUE UNTIL DIVIDEND IS  ZERO."
140 PRINT "READ TWO-BASED NUMBER FROM  BOTTOM TO TOP."
145 DIM A(16)
150 INPUT "NUMBER  ";NU
154 X=1
155 NU2=INT((NU+1)/2)
160 A(X)=NU2-INT(NU/2)
165 NU=NU/2
170 IF INT(NU)<=0 THEN 200
180 X=X+1
190 GOTO 155
200 PRINT A(X);
210 X=X-1
215 IF X<1 THEN 225
220 GOTO 200
225 PRINT
230 GOTO 150

```

FOTPOURRI:

A recent issue of the WASHINGTON POST newspaper reported that in the under \$500 computer market that TI99/4A has 34%, the VIC-20 33%, the Atari 400 20%, and the Radio Shack Color Computer 12%. These numbers do not include the sales of the Timex-Sinclair 1000. These sales figures augur well for TI owners. We should see a proliferation of new software and hardware. However, we must beware that some of this new materail maybe of inferior quality. If anyone purchases some third party software or hardware, please let us know your opinion of that material. The best way is to write a review for inclusion in the newsletter. You and your fellow club members will be richer for your efforts.

ASSEMBLY LANGUAGE:

On the following four pages is a dissertation on linking assembly language programs (floating decimal) to console BASIC and EXTENDED BASIC. The programs and the article were written by James G. Kulp. If you have any comments or suggestions I'm sure he would be glad to here from you. His telephone number is:(301)-894-7712.

< Many 99/4 and 99/4A users require applications dealing with floating point numbers. These applications can deal with large amounts of data. Assembly language can provide needed speed and efficiency, but for ease of data handling, interfacing with Console Basic or Extended Basic is attractive. The Console Basic interface with floating point routines is fairly well explained in the EDITOR/ASSEMBLER manual (section 16).

CAUTION: SINCE A FLOATING POINT NUMBER IS REPRESENTED WITH 8 BYTES YOU MUST MOVE 8 BYTES OF DATA FROM THE FLOATING POINT ACCUMULATOR (FAC) TO THE ARGUMENT LOCATION (ARG) OR ACCURACY WILL BE COMPROMISED.

EXAMPLE:

(Assume 3 arguments are passed: A,B,C where A is the multiplicand, B is the multiplier, and C is to hold the result; FAC = >834A, ARG = >835C)

Wrong:

* GET MULTIPLIER

```
LT   R1,1
CLR  R0
BLWP @NUMREF
MOV  @FAC,@ARG    ONLY MOVES 2 BYTES
```

Right:

* GET MULTIPLIER

```
LI   R1,1
CLR  R0
BLWF @NUMREF
LI   R4,4
LI   R2,@FAC
LI   R2,@FAC
```

* THE NEXT INSTRUCTION USES
* INDIRECT ADDRESSING AND
* AUTO INCREMENTING TO MOVE
* 8 BYTES (4 WORDS)

```
LOOP  MOV  #R2, #R3
      DEC  R4
      JNE  LOOP
```

Interfacing with Extended Basic is not explained in the EDITOR/ASSEMBLER manual. It is a simple matter though. The Extended Basic support utility XMLLNK does not function in the same manner as the Console Basic support utility of the same name. (It seems that EB XMLLNK does not support Floating Point routines). But you can interface directly to the console ROM Floating Point routines (the necessary equates can be found in section 24 of the EDITOR/ASSEMBLER manual). As an example, suppose you wish to multiply two numbers. Here is one way to do it: (SAME ASSUMPTIONS AS ABOVE AND FMUL = >0E80)

* MULTIPLY FAC * ARG

```
BL  @FMUL
```

SIMPLE!!! (FAC CONTAINS THE RESULT)

NOTE: EXTENDED BASIC DOES NOT SUPPORT THE EDITOR/ASSEMBLER REF/DEF TABLE SO ALL ROUTINES MUST BE SPECIFIED WITH EQU'S.

Here are two programs (one in Console Basic, one in Extended Basic) which illustrate the above assertions. With the EDITOR/ASSEMBLER manual figure out what I have done and try it yourself:

```

100 REM #####
110 REM
120 REM  CONSOLE BASIC PROGRAM TO
130 REM  INTERFACE WITH ASSEMBLY
140 REM  ROUTINE TO MULTIPLY TWO
150 REM  FLOATING POINT NUMBERS
160 REM  #####
170 REM
180 CALL CLEAR
190 REM
200 CALL INIT
210 REM
220 CALL LOAD("DSK1.MPYD")
230 REM
240 INPUT "ENTER ARGS(1,2): ";A,B
250 REM
260 CALL LINK("FMULT",A,B,C)
270 REM
280 PRINT " "
290 REM
300 PRINT "ANS: ";C
310 REM
320 PRINT " "
330 REM
340 INPUT "TRY AGAIN? ";ANS#
350 REM
360 CALL CLEAR
370 REM
380 IF ANS#="Y" THEN 240
390 REM
400 IF ANS#<>"N" THEN 340
410 END

```

```
DEF FMULT
```

```

*
* THIS ROUTINE ACCOMPANIES THE CONSOLE BASIC
* PROGRAM TO MULTIPLY TWO NUMBERS
*

```

```
REF NUMASG,NUMREF,XMLLNK
```

```

FAC EQU >834A - FLOAT PNT ACC HERE
ARG EQU >835C ARGUMENT HERE
STATUS EQU >837C STATUS BYTE
IFC DATA 0 SAVE R11 TO RETURN TO BASIC

```

```

*
* START
*

```

```

LDR R11,0
MOV R11,0FET

```

```

*
* GET THE 1ST ARGUMENT
*

```



```

CLR R0
LI R1,1
BLWF @NUMREF

```

```

LI R4,4           MOVE 8 BYTES
LI R3,ARG        TO @ARG
LI R2,FAC        FROM @FAC

```

```

LOOP

```

```

MOV *R2+,*R3+
DEC R4
JNE LOOP

```

```

*
* RETREIVE 2ND ARGUMENT
*

```

```

CLR R0
LI R1,2
BLWF @NUMREF

```

```

*
* MULTIPLY
*

```

```

BLWF @XMLLNK
DATA >0800

```

```

*
* ASSIGN RESULT TO 3RD ARGUMENT
*

```

```

CLR R0
LI R1,3
BLWF @NUMASS

```

```

CLR R0
MOV B R0,@STATUS TO SHOW THERE IS NO ERROR

```

```

MOV @RET,R11

```

```

RT
END

```

```

100 REM #####
10 REM
120 REM EXTENDED BASIC PROGRAM
130 REM TO INTERFACE WITH ASSEMBLY
140 REM ROUTINE ILLUSTRATING THE
150 REM MULTIPLICATION OF TWO
160 REM FLOATING POINT NUMBERS
170 REM
180 REM #####
190 REM
200 CALL CLEAR
210 REM
220 CALL INIT
230 REM
240 CALL LOAD("DSK1.FMULTO")
250 REM
260 INPUT "ENTER ARGS(1,2): ":A,B
270 REM
280 CALL LINK("FMULT",A,B,C)

```

```

290 REM
300 PRINT " "
310 REM
320 PRINT "ANS: ";C
330 REM
340 PRINT " "
350 REM
360 INPUT "TRY AGAIN? ":ANS#
370 REM
380 CALL CLEAR
390 REM
400 IF ANS#="Y" THEN 260
410 REM
420 IF ANS#<>"N" THEN 360
430 REM
440 END

```

```
DEF FMULT
```

```

#
# THIS ROUTINE INTERFACES WITH EXTENDED BASIC
# IN ORDER TO MULTIPLY TWO NUMBERS TOGETHER

NUMREF EQU >2008
NUMREF EQU >200C
FMUL EQU >0E88 FLOATING POINT MULTIPLY ROUTINE IN CONSOLE ROM
FAC EQU >834A FLOAT PNT ACC HERE
ARG EQU >835C ARGUMENT HERE
STATUS EQU >837C STATUS BYTE
RET DATA 0 SAVE R11
#
# START
#
FMULT
MOV R11,@RET
#
# RETRIEVE 1ST ARGUMENT
#
CLR R0
LI R1,1
BLWP @NUMREF

LI R4,4 MOVE 8 BYTES
LI R3,ARG TO @ARG
LI R2,FAC FROM @FAC

LOOP
MOV #R2+,*R3+
DEC R4
JNE LOOP
#
# RETRIEVE 2ND ARGUMENT
#
CLR R0
LI R1,2
BLWP @NUMREF
#
# MULTIPLY
#

```

DEFINITIONS TO BE ADDED

Chip
 COBOL
 CP/M

CPS
 CPU
 Cursor

MORE DEFINITIONS:

- 15. Chip-A collection of transistors, devices that alter and control the flow of electricity in circuits, hooked together or integrated in little packages. Forms the basics of the semiconductor industry.
- 16. COBOL-An acronym for Common Business Oriented Language. A programming language well suited to business applications involving complex data records and large amounts of printed output.

MORE DEFINITIONS:

- 15. Chip-A collection of transistors, devices that alter and control the flow of electricity in circuits, hooked together or integrated in little packages. Forms the basics of the semiconductor industry.
- 16. COBOL-An acronym for Common Business Oriented Language. A programming language well suited to business applications involving complex data records and large amounts of printed output.
- 17. CP/M-An acronym for Control Program for Microprocessors. An operating system used by many personal computers. CP/M is not now available for the TI 99/4.
- 18. CPS-An acronym for Characters Per Second.
- 19. CPU-An acronym for Central Processing Unit. The part of the computer that processes the data transferred to it by an input devices and in turn, transfers the results of the processing to an output device. In personal computers the console and transfers data inputed to it from the keyboard, disk, or tape to the screen, disk, tape, or printer.
- 20. Cursor-A movable, blinking spot of light on the terminal video screen indicating where the next character will be entered. Usually a block or line. The TI uses a block.

21. Daisywheel—A print head that forms full characters rather than characters formed by dots. Shaped like a spoked wheel with letter, numeral, or symbol at the end of each spoke, similar to that of a regular typewriter. Come in a variety of type styles. Wheels are interchangeable.
22. Data—Facts, numbers, letters and symbols stores in a computer to which meaning may be assigned.
23. Data processing—The manipulation of information via computer. Synonymous with information processing (DP).
24. DEBUG—To detect, locate, and remove mistakes or malfunctions from hardware and or/software.
25. Digital—Information represented by a code consisting of a sequence of discrete elements (bits).

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FRIDAY, JANUARY 14, 1983

THE WALL STREET JOURNAL

TECHNOLOGY

Texas Instruments Mimics... Big TV... Small Video Games

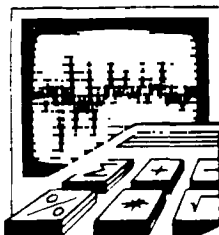
A WALL STREET JOURNAL News Roundup

TEXAS INSTRUMENTS INC., which is finally enjoying a boom in home computers, is about to move into personal computers with a machine that mimics the International Business Machines Corp. Personal Computer and even looks much like it.

To be announced Jan. 31, the computer is the first computing or calculating product from Texas Instruments that doesn't use one of the company's own integrated circuits as its central processor. The new machine, known within the company as Pegasus, incorporates an 8088 microprocessor from rival Intel Corp.

Pegasus also will be the third me-too product within a month from Texas Instruments, which just last week introduced products similar to the highly successful Sinclair and Epson computers.

At one time, Texas Instruments was widely expected to walk away with the microcomputer market once it decided to enter it, repeating its success in calculators. But the company was far ahead of its customers, and only last year did sales of its computer for the home market begin to soar. Although Texas Instruments was making the home computer, the 99/4A, on four production lines running three shifts, seven days a week, its production was sold out before Christmas, and the company is still selling all it can make.



ALTHOUGH THE COMPANY won't discuss it, Pegasus is expected to sell for about 10% less than comparable IBM systems and to feature a high-resolution color video screen for charts and graphs and circuits that allow it to respond to spoken commands.

Texas Instruments already is shipping machines and programs—including such popular packages as WordStar, PFS and dBaseII—so that dealers have an inventory on the day the product is announced, an unusual step. The company also is understood to be providing three-month, interest-free financing for dealers. A master control program known as VisiOn also is expected to be available on the machine this summer.

Will Pegasus be as successful as the company's home computer? Historically, imitators haven't done well. But some dealers who have seen the Pegasus are enthusiastic, and an increasing number of established computer makers are expected to offer IBM look-alikes in an effort to capitalize on the Personal Computer's strong sales.

"Compatibility with IBM's Personal Computer isn't the only strategy for success," says Portia Isaacson, a Richardson, Texas, consultant, "but it's certainly one of the winners, and more and more companies are beginning to realize that."

MEMBERSHIP DIRECTORY - Next Month (MARCH) we will provide a membership list to all attendants. If you do not wish your name to appear in this directory please notify the Membership Chairman, Frank Jordan.

~~~~~  
 ~~~~~ WASHINGTON ~~~~~  
 ~~~~~ CALCULATORS ~~~~~  
 ~~~~~

POST OFFICE BOX 6763
 SILVER SPRING MD 20906
 PHONE: 301-384-2010

** TI-99/4A TI-CC-40 TI-99/2 **

TI-99er CLUB PRICE LIST

~~~~~ TEXAS INSTRUMENTS COMPUTERS ~~~~~

| MODEL                                   | DESCRIPTION                                | LIST PRICE | SALE PRICE |      |
|-----------------------------------------|--------------------------------------------|------------|------------|------|
| CONSOLE and PERIPHERALS and ACCESSORIES |                                            |            |            |      |
| PHC004                                  | TI-99/4A HOME COMPUTER CONSOLE             | 450.00     | 315.00     | **   |
| TI-CC-40                                | CC-40 COMPACT COMPUTER CONSOLE             | 249.95     | 192.00     | NEW  |
| PHC 002                                 | TI-99/2 BASIC COMPUTER                     | 99.95      | 88.00      | *NEW |
| HX-1000                                 | PRINTII/PLOTTER-4 COLOR-RECHARG. BATTERIES | 199.95     | 148.00     | NEW  |
| HX-2000                                 | WAFERTAPE DIGITAL TAPE DRIVE               | 139.95     | 105.00     | NEW  |
| HX-3000                                 | RS232 INTERFACE                            | 99.95      | 75.00      | NEW  |
| HX-3000/P                               | RS232 INTERFACE w/PARALLEL OPTION          | 124.95     | 95.00      | NEW  |
| PHP1200                                 | PERIPHERAL EXPANSION SYSTEM                | 249.95     | 177.45     | **   |
| PHP1220                                 | RS-232 CARD                                | 174.95     | 124.20     |      |
| PHP1240                                 | DISK CONTROLLER CARD                       | 249.95     | 177.45     |      |
| PHP1250                                 | EXPANSION SYSTEM DISK DRIVE                | 399.95     | 283.95     |      |
| PHP1260                                 | MEMORY EXPANSION CARD(32K RAM)             | 299.95     | 212.95     |      |
| PHP1270                                 | P-CODE CARD (32K RAM Memory Required)      | 249.95     | 177.45     |      |
| PHP1280                                 | PASCAL DEVELOPMENT SYTEM                   | 499.95     | 354.95     |      |
| PHP1300                                 | HEXBUS INTERFACE(use w/99/4A)              | 59.95      | 47.95      | NEW  |
| PHP1500                                 | SOLID STATE SPEECH SYNTHESIZER             | 149.95     | 115.45     |      |
| PHP1600                                 | TELEPHONE COUPLER (MODEM)                  | 224.95     | 159.70     |      |
| PHP1850                                 | DISK MEMORY DRIVE                          | 499.95     | 354.95     |      |
| PHP2500                                 | 80 COLUMN PRINTER                          | 750.00     | 532.50     | **   |
| PHP2700                                 | PROGRAM RECORDER(INCL PHA 2622)            | 69.95      | 53.95      | NEW  |
| PHA1100                                 | WIRED REMOTE CONTROLLERS (PAIR)            | 34.95      | 29.70      |      |
| PHA2000                                 | DUAL CASSETTE CABLE                        | 14.95      | 13.95      |      |
| PHA2100                                 | R.F. MODULATOR (TV ADAPTER)                | 49.95      | 38.45      |      |
| PHA2620                                 | SERIAL RS232 Y-CABLE                       | 34.95      | 28.95      | NEW  |
| PHA2621                                 | PARALLEL CABLE (for use w/PHP2500)         | 24.95      | 21.25      | NEW  |
| PHA2650                                 | BLANK FLOPPY DISKETTES                     | 19.95      | 16.00      | NEW  |
| PHA2670                                 | PRINTHEAD for PHP2500 PRINTER              | 54.95      | 44.00      | NEW  |
| PHA2671                                 | RIBBON for PHP2500 PRINTER                 | 14.95      | 13.50      | NEW  |
| PHA4100                                 | 10 INCH COLOR MONITOR                      | 399.95     | 335.00     | **   |
| AC-9201                                 | AC ADAPTER(CC40&DIG.TAPE DRIVE             | 14.95      | 13.50      | NEW  |
| WT-50                                   | 50' BLANK WAFERTAPE CARTRIDGE              | 7.95       | 7.50       | NEW  |
| WT-25                                   | 25' BLANK WAFERTAPE CARTRIDGE              | 6.95       | 6.50       | NEW  |
| WT-10                                   | 10' BLANK WAFERTAPE CARTRIDGE              | 5.95       | 5.50       | NEW  |
| WT-5                                    | 5' BLANK WAFERTAPE CARTRIDGE               | 4.95       | 4.50       | NEW  |
| PARA/KIT                                | PARALLEL UPGRADE FOR HX-3000               | 29.95      | 25.50      | NEW  |
| HXC-36                                  | 36 in. I/O CABLE w/HEXBUS CONNECTORS       | 9.95       | 8.95       | NEW  |
| PP-HX1000                               | 5 PACK PAPER ROLLS FOR HX-1000             | 3.25       | 3.10       | NEW  |
| PEN-1000CA                              | 3 PACK PENS(RED, GREEN, BLUE)FOR HX-1000   | 3.95       | 3.60       | NEW  |
| PEN-1000BL                              | 3 PACK PENS(BLACK)FOR HX-1000              | 3.95       | 3.60       | NEW  |

HOME MANAGEMENT/PERSONAL FINANCE  
 COMMAND MODULES

|         |                               |       |       |  |
|---------|-------------------------------|-------|-------|--|
| PHM3006 | HOME FINANCE DECISIONS        | 29.95 | 25.45 |  |
| PHM3007 | HOUSEHOLD BUDGET MANAGEMENT   | 39.95 | 33.95 |  |
| PHM3012 | SECURITIES ANALYSIS           | 54.95 | 42.30 |  |
| PHM3013 | PERSONAL RECORD KEEPING       | 49.95 | 38.45 |  |
| PHM3016 | TAX/INVESTMENT RECORD KEEPING | 69.95 | 53.85 |  |
| PHM3022 | PERSONAL REAL ESTATE          | 69.95 | 53.85 |  |
| PHM3044 | PERSONAL REPORT GENERATOR     | 49.95 | 38.45 |  |
| PHM3111 | TI WRITER (TI99/4A only)      | 99.95 | 76.95 |  |
| PHM3113 | MICROSOFT MULTIPLAN           | 99.95 | 76.95 |  |

DISKETTE

|         |                                            |       |       |  |
|---------|--------------------------------------------|-------|-------|--|
| PHD5001 | MAILING LIST                               | 69.95 | 53.85 |  |
| PHD5022 | BUSINESS AIDS LIBRARY-FINANCE MANAGEMENT   | 39.95 | 33.95 |  |
| PHD5024 | BUSINESS AIDS LIBRARY-INVENTORY MANAGEMENT | 69.95 | 53.85 |  |
| PHD5027 | BUSINESS AIDS LIBRARY-INVOICE MANAGEMENT   | 69.95 | 53.85 |  |
| PHD5029 | BUSINESS AIDS LIBRARY-CASH MANAGEMENT      | 39.95 | 33.95 |  |
| PHD5077 | PERSONAL TAX PLAN                          | 99.95 | 76.95 |  |

~~~~~ OTHER TI99 COMPUTER ACCESSORIES, TEXAS INSTRUMENTS & HEWLETT-PACKARD

~~~~~ CALCULATORS AVAILABLE AT DISCOUNT PRICES...CALL

NEW--Available 1st quarter 1983.....\*NEW--Available 2nd quarter 1983

Terms: Check in Advance or C.O.D. (Add \$2.00)

Freight Prepaid on Orders Over \$200...Except \*\* \$4.00...All Others \$1.50

Prices Subject to Change Without Notice.....Effective February 1, 1983

EDUCATION/PERSONAL ENRICHMENT

| COMMAND MODULES            |                                      |        |       |     |
|----------------------------|--------------------------------------|--------|-------|-----|
| PHM3002                    | EARLY LEARNING FUN                   | 29.95  | 25.45 |     |
| PHM3003                    | BEGINNING GRAMMAR                    | 29.95  | 25.45 |     |
| PHM3004                    | NUMBER MAGIC                         | 19.95  | 17.95 |     |
| PHM3005                    | VIDEO GRAPHS                         | 19.95  | 17.95 |     |
| PHM3008                    | VIDEO CHESS                          | 69.95  | 53.85 |     |
| PHM3015                    | EARLY READING                        | 54.95  | 42.30 |     |
| PHM3020                    | MUSIC MAKER                          | 39.95  | 33.95 |     |
| PHM3027                    | ADDITION AND SUBTRACTION I           | 39.95  | 33.95 |     |
| PHM3028                    | ADDITION & SUBTRACTION II            | 39.95  | 33.95 |     |
| PHM3029                    | MULTIPLICATION I                     | 39.95  | 33.95 |     |
| PHM3040                    | TI LOGO                              | 99.55  | 76.95 |     |
| PHM3049                    | DIVISION I                           | 39.95  | 33.95 |     |
| PHM3064                    | TOUCH TYPE TUTOR                     | 39.55  | 33.95 |     |
| PHM3109                    | TI LOGO II                           | 99.55  | 76.95 |     |
| PHM3122                    | PLATO INTERPRETER                    | 49.95  | 38.45 | NEW |
| DISKETTE                   |                                      |        |       |     |
| PHD5007                    | TEACH YOURSELF BASIC                 | 34.95  | 29.70 |     |
| PHD5009                    | MUSIC SKILLS TRAINER                 | 29.95  | 25.45 |     |
| PHD5011                    | COMPUTER MUSIC BOX                   | 19.95  | 17.95 |     |
| PHD5018                    | MARKET SIMULATION                    | 19.95  | 17.95 |     |
| PHD5019                    | TEACH YOURSELF EXTENDED BASIC        | 24.95  | 21.20 |     |
| PHD5025                    | BRIDGE BIDDING I                     | 29.95  | 23.79 |     |
| PHD52xx                    | TI PLATO COURSEWARE (call)           | 49.95  | 38.45 | NEW |
| PHD53xx                    | TI PLATO COURSEWARE (call)           | 49.95  | 38.45 | NEW |
| CASSETTE                   |                                      |        |       |     |
| PHT6007                    | TEACH YOURSELF BASIC                 | 29.95  | 25.45 |     |
| PHT6009                    | MUSIC SKILLS TRAINER                 | 24.95  | 21.20 |     |
| PHT6011                    | COMPUTER MUSIC BOX                   | 14.95  | 13.95 |     |
| PHT6018                    | MARKET SIMULATION                    | 14.95  | 13.95 |     |
| PHT6019                    | TEACH YOURSELF EXTENDED BASIC        | 19.95  | 17.95 |     |
| PHT6025                    | BRIDGE BIDDING I                     | 24.95  | 21.20 |     |
| ENTERTAINMENT              |                                      |        |       |     |
| COMMAND MODULES            |                                      |        |       |     |
| PHM3009                    | FOOTBALL                             | 29.95  | 25.45 |     |
| PHM3018                    | VIDEO GAMES I                        | 29.95  | 25.45 |     |
| PHM3023                    | HUNT THE WUMPUS                      | 24.95  | 21.20 |     |
| PHM3024                    | INDOOR SOCCER                        | 29.95  | 25.45 |     |
| PHM3025                    | MIND CHALLENGERS                     | 24.95  | 21.20 |     |
| PHM3030                    | A-MAZE-ING                           | 24.95  | 21.20 |     |
| PHM3031                    | THE ATTACK                           | 39.95  | 33.95 |     |
| PHM3032                    | BLASTO                               | 24.95  | 21.20 |     |
| PHM3033                    | BLACKJACK AND POKER                  | 24.95  | 21.20 |     |
| PHM3034                    | HUSTLE                               | 24.95  | 21.20 |     |
| PHM3036                    | ZERO ZAP                             | 19.95  | 17.95 |     |
| PHM3037                    | HANGMAN                              | 19.95  | 17.95 |     |
| PHM3038                    | CONNECT FOUR                         | 19.95  | 17.95 |     |
| PHM3039                    | YAHTZEE                              | 24.95  | 21.20 |     |
| PHM3042D                   | TUNNELS OF DOOM                      | 59.95  | 46.15 |     |
| PHM3042T                   | TUNNELS OF DOOM                      | 59.95  | 46.15 |     |
| PHM3052                    | TOMBSTONE CITY:21st CENTURY          | 39.95  | 33.95 |     |
| PHM3053                    | TI INVADERS                          | 39.95  | 33.95 |     |
| PHM3054                    | CAR WARS                             | 39.95  | 33.95 |     |
| PHM3056                    | ALPINE                               | 39.95  | 33.95 |     |
| PHM3057                    | MUNCH MAN                            | 39.95  | 33.95 |     |
| PHM3110                    | CHISHOLM TRAIL                       | 39.95  | 33.95 |     |
| PHM3112                    | PARSEC                               | 39.95  | 33.95 |     |
| PHM3125                    | E.T. THE EXTRA-TERRESTRIAL           | 39.95  | 33.95 | NEW |
| OTHER APPLICATION PROGRAMS |                                      |        |       |     |
| COMMAND MODULES            |                                      |        |       |     |
| PHM3000                    | DIAGNOSTIC                           | 29.95  | 25.45 |     |
| PHM3011                    | SPEECH EDITOR                        | 44.95  | 34.60 |     |
| PHM3014                    | STATISTICS                           | 44.95  | 34.60 |     |
| PHM3026                    | EXTENDED BASIC                       | 99.95  | 76.95 |     |
| PHM3035                    | TERMINAL EMULATOR II                 | 49.95  | 39.65 |     |
| PHM3055                    | EDITOR/ASSEMBLER                     | 99.95  | 76.95 |     |
| PHM3058                    | MINI-MEMORY                          | 99.95  | 76.95 |     |
| DISKETTE                   |                                      |        |       |     |
| PHD5004                    | PROGRAMMING AIDS I                   | 14.95  | 13.95 |     |
| PHD5005                    | PROGRAMMING AIDS II                  | 24.95  | 21.20 |     |
| PHD5006                    | MATH ROUTINE LIBRARY                 | 29.95  | 25.45 |     |
| PHD5008                    | ELECTRICAL ENGINEERING LIBRARY       | 29.95  | 25.45 |     |
| PHD5012                    | PROGRAMMING AIDS III                 | 19.95  | 17.95 |     |
| PHD5013                    | GRAPHING PACKAGE                     | 19.95  | 17.95 |     |
| PHD5016                    | STRUCTURAL ENGINEERING LIBRARY       | 29.95  | 25.45 |     |
| PHD5044                    | AC CIRCUIT ANALYSIS                  | 29.95  | 25.45 |     |
| PHD5063                    | UCSD-PASCAL COMPILER                 | 124.95 | 96.20 |     |
| PHD5064                    | UCSD p-SYSTEM Assembler/Linker       | 99.95  | 76.95 |     |
| PHD5065                    | UCSD p-SYSTEM Editor/Filer/utilities | 74.95  | 57.70 |     |
| PHD5066                    | TI PILOT                             | 79.95  | 61.55 |     |



## PROGRAM LIBRARY

In order to eliminate the time-consuming procedure of accepting Tape Requests at a meeting, the following new procedure has been adopted. Effective immediately, mail all Tape Request Forms to: Ken Geremia, 1401 Peachwood Lane, Bowie, Md. 20716. Be sure to include a check made out to "Washington DC Area TI 99/4 Users Group" in the amount of \$1 for each tape ordered. Requests that are received two weeks prior to a meeting, may be picked up at that meeting. For example, Requests that are received by Feb. 24, may be picked up at the March 10 meeting. You must show your mailing label on a newsletter in order to pick up the tapes.

Robert Goff has graciously offered to process the Disk Requests. Please give your Disk Requests to him and pick them up from him at a meeting. (Elwood Schneider, Ken Young, and Hugh Brackett also generously volunteered to handle the Disk Requests.)

Programs to be donated to the Club library may be given to Larry Hughes.

The Library Catalog handed out at the Jan. meeting was in error. The page labeled "TOTAL CATALOG 03/20/82" is out-dated. The two correct pages are dated, 05/21/82 and 08/23/82. Please pick up a new catalog at the Feb. meeting and then discard the incorrect one. We apologize for the inconvenience.

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### Jan. talk available on tape

As a service to Club members, Ken Geremia has offered to make available a cassette tape of the talk given by Larry Hughes at the Jan. meeting. The talk was entitled, "Efficient Coding in TI BASIC". Both the tape and Larry's notes are available for the cost of reproduction, \$2. Please order from Ken Geremia, 1401 Peachwood Lane, Bowie, Md. 20716, 301-249-5486. Please make checks out to Ken Geremia.

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OFFICERS ELECTED FOR 1983: William Whitmore, President; Pete Eddy, Vice-President; Richard Sturgell, Treasurer; Fred Gray, Secretary.

FYI: For the members who have requested information on the International 99/4 Users Group, Dues \$12,00 per year, Address: PO Box 67, Bethany, OK 73008 ph. (405) 787-8521

FOR SALE: 80 col. Impact Printer, IDS-440 Paper Tiger with graphics, fan fold or roll paper, 3 rolls inc. \$350.00  
ph. (301) 460-5518

\* \* NOTICE \* \*

Each person who receives programs from the Club library must agree not to sell the programs and not to give them to anyone who is not a member of the Club.

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### COPYRIGHT NOTICE

Articles appearing in this newsletter may be reproduced if and only if proper credit is given to the author and to the Washington DC Area TI 99/4 Users Group.

The next two pages are taken from the newsletter of The KENTUCKIANA 99/4 COMPUTER SOCIETY. You will find them very useful when trying to enter a program written for another computer.




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PASCAL USERS GR

PASCAL INTEREST GROUP REPORT----Ready made activities await the formation of a PASCAL INTEREST GROUP. A tremendous library of UCSD Pascal Applications are available from the International UCSD p-System User Group. Terminal emulators, word processors, other programming tools are all available. Games too. However, this software must be converted from 8" to 5¼" format, not too hard a job with a host machine that can read the 8" disks of the Association and the appropriate RS232 connections. The president of MUSUS, the group that communicates on behalf of the international Society on Compuserve, has offered to help, as he probably should. President Bob Peterson, Richardson Texas, is a Texas Instruments employee! Though he does not work in the Consumer Products Division Bob has maintained a keen interest in the 99/4 and will be releasing a command module for the 99/4 (a game) soon. NEEDED--A telephone coordinator to set up group meetings. Any takers? JIM HORN 241-7064 (Metro area code 703).

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PARSEC BUG/TRICK--If you have PARSEC you know you fire the space ship by pressing down the "Q" or the "." If you hold both down at the same time, your laser does not overheat! JIM HORN

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**LETTERS**

Dear Editor:

I ran your accuracy test on several computers and found the results quite surprising (see table 2).

It is interesting that the orphan among microcomputers, the TI-99/4A, scores perfectly on this test, and the two "business" computers, the ALSPA and NEC, perform least well.

Robert Wegener  
Denver, CO

*For those who missed the article, here's the benchmark program. It squares each number from 1 to 1000 and compares the square roots of the squares with the original numbers.*

```

10 K=0
20 FOR I=1 TO 1000
25 REM--R SHOULD EQUAL 0
   EVERY TIME
30 R=SQR(I*I)-I
40 PRINT "FOR": I; "THE ERROR
   IS": R
45 REM--K ACCUMULATES THE
   ERROR IF ANY
50 K=K+ABS(R)
60 NEXT I
70 PRINT "CUMULATIVE ERROR
   IS": K
80 END
  
```

Table 2 Results of the original benchmark program on various computers

| COMPUTER     | LANGUAGE          | NUMBER OF ERRORS | CUMULATIVE ERROR |
|--------------|-------------------|------------------|------------------|
| ALSPA ACI 2  | BASIC-80          | 822              | 0.0811372        |
| Apple II     | Applesoft         | 954              | 0.0002909        |
| NEC PC 8001A | BASIC 8001        | 848              | 0.0982087        |
| TI 99/4A     | TI Extended BASIC | 0                | 0 (no error)     |

From POPULAR COMPUTING February 1983

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FOR SALE: Used computer cassettes \$1.00 each. Call (703)560-1725 Bill Gunderman, Dunn Loring, Va.

WANTED: Volume 1, issues 2, 3 and 5 of 99'er Magazine, State your price. Fred (703)250-6901

WANTED: Used Thermal Printer Call (301)428-4357 (days) Henry E. Carlson

GROUP PURCHASE DISKS - WABASH S.Side \$18.20 per box of 10 S.Side w/plastic box \$19.25 available at Feb. Meeting

# BASIC Statements

| BASIC Statements           | PET | Apple II     | TRS-80 | Atari    | TI 99/4                 | Sorcerer | ZX80 |
|----------------------------|-----|--------------|--------|----------|-------------------------|----------|------|
| General Statements         |     |              |        |          |                         |          |      |
| APPEND                     |     |              |        |          | *                       |          |      |
| BLS                        |     | *            | *      |          | CALL CLEAR              |          | *    |
| CALL address               |     | *            |        |          |                         |          |      |
| CALL CHAR                  |     |              |        |          | *                       | EN       |      |
| CALL COLOR                 |     |              |        | COLOR    | *                       |          |      |
| CALL JOYSTK                |     |              |        | STICK    | *                       |          |      |
| CALL SCREEN                |     | HCOLOR=      |        | SETCOLOR | *                       |          |      |
| CALL SOUND                 |     |              |        | SOUND    | *                       |          |      |
| CLOSE                      | *   |              |        |          | *                       |          |      |
| COLOR = n                  | *   |              |        |          |                         |          |      |
| DATA                       | *   |              |        |          |                         |          |      |
| DEF FN (name)              | *   | *            | *      | *        | DEF                     | *        |      |
| DEFINT                     |     |              | *      |          |                         |          |      |
| DEFDBL                     |     |              | *      |          |                         |          |      |
| DEFSNG                     |     |              | *      |          |                         |          |      |
| DEFSTR                     |     |              | *      |          |                         |          |      |
| DIM var(k)                 | *   | *            | *      | *        | *                       |          | *    |
| DISPLAY                    |     |              |        |          | *                       |          |      |
| DRAWTO                     |     | H PLOT       |        | *        |                         |          |      |
| DSP var                    |     | *            |        |          |                         |          |      |
| END                        | *   | *            | *      | *        | *                       | *        |      |
| EOF                        |     |              |        |          | *                       |          |      |
| ERROR (mm)                 |     |              | *      |          |                         |          |      |
| FOR ... TO ... STEP, NEXT  | *   | *            | *      | *        | *                       | *        | *    |
| General Statements         |     |              |        |          |                         |          |      |
| GOSUB linenum, RETURN      | *   | *            | *      | *        | *                       | *        | *    |
| GOTO linenum               | *   | *            | *      | *        | *                       | *        | *    |
| GR                         |     | *            |        |          |                         |          |      |
| GRAPHICS                   |     |              |        | *        |                         |          |      |
| HLIN ... AT                |     |              |        |          | CALL HCHAR              |          |      |
| IF expr THEN linenum       | *   | *            | *      | *        | *                       | *        | *    |
| IF expr THEN ... ELSE      |     |              | *      |          | *                       |          |      |
| IF expr GOSUB ... RETURN   | *   | *            | *      | *        | e                       | *        | *    |
| IF expr GOTO               | *   | *            | *      | *        | e                       | *        | *    |
| IN (port)                  |     | IN # expr    | *      |          | *                       | *        |      |
| INPUT "msg", var           | *   | *            | *      | *        | *                       | *        | *    |
| INPUT # n, var             | *   | RECALL       | *      |          | *                       | *        | *    |
| LET var = expr             | *   | *            | *      | *        | *                       | *        | *    |
| LPRINT "msg" or LPRINT var |     |              | *      | *        | *                       | *        | *    |
| NEXT var                   |     |              |        |          |                         |          | *    |
| ON ERROR GOT linenum       |     | ONERR        | *      | TRAP     | e                       |          |      |
| ON expr GOSUB, RETURN      | *   | *            | *      | *        | *                       | *        |      |
| ON expr GOTO linenum       | *   | *            | *      | *        | *                       | *        |      |
| OPEN                       | *   |              |        |          | *                       |          |      |
| OPTION BASE (x)            |     |              |        |          | *                       |          |      |
| OUT portnum, val           |     | PR # expr'   | *      |          |                         |          |      |
| PADDLE                     |     | PDL          |        | *        |                         |          |      |
| PEEK                       | *   | *            | *      | *        | CALL GCHAR              | *        | *    |
| POINT                      |     |              | *      |          |                         |          |      |
| POP                        |     | *            |        | *        |                         |          |      |
| POKE locn, val             | *   | *            | *      | *        | (e) Call Load           | *        |      |
| PRINT "msg" or PRINT var   | *   | *            | *      | *        | *                       | *        | *    |
| PRINT@                     |     |              | *      | *        | POSITION (e) Display At | *        | *    |
| PRINT #i                   | *   | *            | *      | *        | *                       | *        |      |
| PRINT USING                |     |              | *      |          | e                       |          |      |
| PTRIG                      |     |              |        | *        |                         |          |      |
| READ var, var ...          | *   | *            | *      | *        | *                       | *        | *    |
| RECALL                     |     | *            |        |          |                         |          |      |
| REM                        | *   | *            | *      | *        | *                       | *        | *    |
| RESET (x,y)                |     |              | *      |          |                         |          |      |
| RESTORE                    | *   | *            | *      | *        | *                       | *        | *    |
| RESUME linenum             |     | *            | *      |          |                         |          |      |
| SET (x,y)                  |     | PLOT, H PLOT | *      | PLOT     |                         |          |      |
| SPEED = expr               |     | *            |        |          |                         |          |      |
| STOP                       | *   | *            | *      | *        | *                       | *        | *    |
| STORE                      |     | *            |        |          |                         |          |      |
| TAB                        | *   | *            | *      |          | *                       | *        |      |
| TEXT                       |     | *            |        |          |                         |          |      |
| UPDATE                     |     |              |        |          | *                       |          |      |
| VLIN ... AT                |     | *            |        |          | CALL VCHAR              |          |      |
| VTAB (x)                   |     | *            |        |          |                         |          |      |
| WAIT A,B,C                 | *   | *            |        |          |                         | *        |      |

This Basic language reference chart may be of some use in transposing programs from one computer's Basic to another's. Stars indicate the existence of the command listed at the left for a particular computer. A small (e) in the 99/4A column indicates the existence of a command in Extended Basic.

# System Commands

| System                         | PET             | Apple II   | TRS-80    | Atari      | TI 99/4<br>Number | Sorcerer   | ZX80     |
|--------------------------------|-----------------|------------|-----------|------------|-------------------|------------|----------|
| AUTO mm, n                     |                 | *          | *         |            | *                 |            | BREAK    |
| BREAK mm                       |                 |            |           |            |                   |            | *        |
| CLEAR                          | CLR             | *          | *         | *          |                   | *          |          |
| CLEAR n                        |                 |            | *         |            |                   |            |          |
| LOAD                           | LOAD            | LOAD       | *         | *          | OLD               | *          | LOAD     |
| LOAD?                          | VERIFY          |            | *         |            |                   |            |          |
| CONTINUE                       | CONT            | CONT       | CONT      | CONT       | *                 | CONT       | CONT     |
| CSAVE                          | SAVE            | SAVE       | *         | *          | SAVE              | *          | SAVE     |
| DELETE mm                      |                 | DEL        | *         |            | *                 |            |          |
| EDIT mm                        | cursor          | cursor     | *         | cursor     | cursor            |            | cursor   |
| HOME                           |                 | *          |           |            |                   |            |          |
| HIMEM                          |                 | *          |           |            |                   |            |          |
| LIST mm-nn                     | *               | *          | *         | *          | *                 | *          | *        |
| LOMEM                          |                 | *          |           |            |                   |            |          |
| MAN                            |                 | *          |           |            |                   |            |          |
| NEW                            | *               | *          | *         | *          | *                 | *          | *        |
| RESEQUENCE mm, nn              |                 |            | *         |            | *                 | *          | *        |
| RUN mm                         | *               | *          | *         | *          | *                 | *          | *        |
| SYSTEM                         | SYS             | CALL - 151 | *         | BYE        | BYE               | BYE        |          |
| TROFF                          |                 | NOTRACE    | *         |            | UNTRACE           |            |          |
| TRON                           |                 | TRACE      | *         |            | TRACE             |            |          |
| UNBREAK                        |                 |            |           |            | *                 |            |          |
| (Screen Format)                | 40 by 24        | 40 by 24   | 64 by 16  | 40 by 24   | 32 by 24          | 64 by 30   | 32 by 24 |
| (Character Resolution, m by n) |                 | 7 by 8     | 2 by 3    | 8 by 8     | 8 by 8            | 8 by 8     |          |
| (Total pixels)                 | 128 full-screen | 280 by 192 | 128 by 48 | 320 by 192 | 256 by 192        | 512 by 240 |          |

# String Functions

| System                  | PET | Apple II | TRS-80 | Atari | TI 99/4  | Sorcerer | ZX80 |
|-------------------------|-----|----------|--------|-------|----------|----------|------|
| <b>String Functions</b> |     |          |        |       |          |          |      |
| ASC (string)            | *   | *        | *      | *     | *        | *        |      |
| CHR\$ (code)            | *   | *        | *      | *     | *        | *        | *    |
| CODE (string)           |     |          |        |       |          |          | *    |
| FRE\$(X\$)              | *   |          | *      | *     |          | *        |      |
| INKEY\$                 | GET | GET      | *      |       | CALL KEY |          |      |
| LEFT\$(string, n)       | *   | *        | *      |       |          | *        |      |
| LEN (string)            | *   | *        | *      | *     |          | *        |      |
| MID\$(string, p, n)     | *   | *        | *      |       | SEGS     | *        |      |
| POS (str 1, str2, n)    |     |          |        |       | *        |          |      |
| RIGHT\$(string, n)      | *   | *        | *      |       | *        | *        |      |
| STR\$(expr)             | *   | *        | *      | *     | *        | *        | *    |
| STRING\$(n, char)       |     |          | *      |       |          |          | *    |
| TLS (string)            | *   | *        | *      | *     | *        | *        |      |
| VAL (string)            | *   | *        | *      | *     | *        | *        |      |
| VARPTR var              |     |          | *      | ADR   |          |          |      |

# BASIC Math and other Functions

| BASIC FUNCTIONS | PET    | Apple II | TRS-80     | Atari | TI 99/4 | Sorcerer | ZX80 |
|-----------------|--------|----------|------------|-------|---------|----------|------|
| (Precision)     | 9      | 10       | 8 or 16    | 10    | 14      | 6        |      |
| ABS (expr)      | *      | *        | *          | *     | *       | *        | *    |
| ATN (expr)      | *      | *        | *          | *     | *       | *        | *    |
| CINT (expr)     |        |          | *          |       |         |          |      |
| CDBL (expr)     |        |          | *          |       |         |          |      |
| CLOG (expr)     |        | *        |            | *     |         |          |      |
| CSNG (expr)     |        |          | *          |       |         |          |      |
| COS (expr)      | *      | *        | *          | *     | *       | *        | *    |
| ERL (expr)      |        |          | *          |       |         |          |      |
| ERR (expr)      |        |          | *          |       |         |          |      |
| EXP (expr)      | *      | *        | *          | *     | *       | *        | *    |
| FIX (expr)      | *      |          | *          | *     | *       | *        | *    |
| FRF (expr)      | *      |          | (also MEM) | *     | *       | *        | *    |
| INT (expr)      | *      | *        | *          | *     | *       | *        | *    |
| LOG (expr)      | *      | *        | *          | *     | *       | *        | *    |
| MOD (expr)      | *      | *        | *          | *     | *       | *        | *    |
| POS (expr)      | *      | *        | *          | *     | *       | *        | *    |
| RANDOMIZE       | RANDOM |          | RANDOM     |       |         |          |      |
| RND (0)         | *      | RND      | *          | *     | RND(1)  | *        | *    |
| RND (expr)      | *      | *        | *          | *     | *       | *        | *    |
| SCRN (x, y)     |        | *        |            |       |         |          |      |
| SGN (expr)      | *      | *        | *          | *     | *       | *        | *    |
| SIN (expr)      | *      | *        | *          | *     | *       | *        | *    |
| SPC (expr)      | *      | *        | *          | *     | *       | *        | *    |
| SPC (num)       |        |          |            | NULL  |         |          |      |
| SQR (expr)      | *      | *        | *          | *     | *       | *        | *    |
| TAN (expr)      | *      | *        | *          | *     | *       | *        | *    |
| TI (expr)       | *      | *        | *          | *     | *       | *        | *    |
| USR (X)         | *      | *        | *          | *     | *       | *        | *    |
| AND, OR, NOT    | *      | *        | *          | *     | *       | *        | *    |