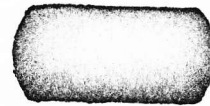


**BOX 43  
AUDUBON  
PA 19407**

**\$2.00**

**THE**



**PAPER**

**BOX 43  
AUDUBON  
PA 19407**

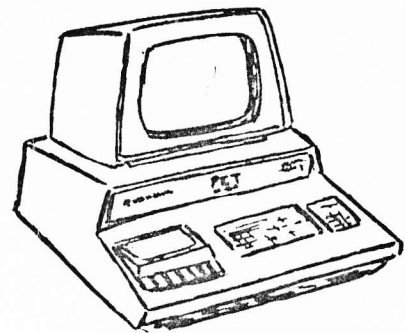


TABLE OF CONTENTS

Editorial . . . . . 2  
 Standard PET Symbols. . . . . 3  
 PET Operation Information: for PET Strangers. . . . . 3  
 Announcement: PET Classes . . . . . 4  
 Intro To BASIC. . . . . 5  
 PET Parade: Reader Questions & Comments . . . . . 9  
 PET Prose . . . . . 13  
 Ad Rates, Subscription Info, etc. . . . . 14  
 Tricks To Help Train Your PET . . . . . 15  
 From The Commodore Himself. . . . . 16  
 Errors Found in Home Data Retrieval . . . . . 17  
 PET User Group News . . . . . 18  
 Software Guarantee. . . . . 18  
 Flea Market - Software Exchange . . . . . 19  
 Software Shelf - Software Sales . . . . . 20  
 ■ From the S.P.H.I.N.X. Newsletter:  
 Principal Pointers into RAM . . . . . 21  
 PET Character Set . . . by Kim Rubin. . . . . 21  
 PET Variables Exposed . . . by Pete Rowe. . . . . 23  
 Auto Flash Cursor Mod . . . by Harry J. Saal. . . . . 25  
 Interesting Locations Accessible From BASIC . . . . . 26  
 PET Memory Map. . . . . 27  
 Hardware, Software, Paperware for Your PET. . . . . 29  
 SOFTWARE, SUBSCRIPTION, PET PROSE ORDER FORM. . . . . 30

ORDER FORM

SUBSCRIPTION (\$15.00 for 10 issues-complete volume) \_\_\_\_\_

FLEA MARKET Software Exchange: \_\_\_\_\_  
 I enclose \$5.00 per program \_\_\_\_\_  
 I enclose 1 exchange program per program I want \_\_\_\_\_

SOFTWARE SHELF: \_\_\_\_\_  
 I enclose payment in full for the programs I want \_\_\_\_\_

PET PROSE: \_\_\_\_\_  
 I enclose \$25.00 for inclusion in 10 issues \_\_\_\_\_  
 I want the following types of programs written \_\_\_\_\_

Enter program names here. If you are requesting inclusion in the PET PROSE section, enter the field of interest in which you want to write (or have someone write for you).

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

I enclose cash, check, or money order for payment in full \$ \_\_\_\_\_  
 Please charge my Master Charge, VISA, of BankAmericard for \$ \_\_\_\_\_  
 Master Charge Number \_\_\_\_\_ Expiration date \_\_\_\_\_  
 Interbank Number \_\_\_\_\_ Signature \_\_\_\_\_  
 VISA or BankAmericard number \_\_\_\_\_ Expiration date \_\_\_\_\_  
 Signature \_\_\_\_\_

NAME \_\_\_\_\_  
 (Please print or type)

STREET ADDRESS \_\_\_\_\_

CITY, STATE, ZIP CODE \_\_\_\_\_

\*Note: If you have received issues #1 and/or #2, decrease subscription cost by \$2.00 per issue received.

START SUBSCRIPTION WITH ISSUE # \_\_\_\_\_ (Initial here) \_\_\_\_\_

■ Telephone orders with MC, VISA, BAC:  
 Call (215) 631-9052. If your call is answered by a recording device, give your name, address, credit card name and number and expiration date. If yours is a MC order, also give Interbank number.

THE PAPER  
 P.O. BOX 43  
 AUDUBON, PA. 19407

		<u>H A R D W A R E</u>	
Serial Interface (TNW-488/RS-232)	\$280.00	Astronics (The Net Works)	4805 Mercury St., San Diego, CA 92111
Low Speed Modem	\$320.00	Astronics	
Joysticks	\$ 50.00	Coyote Enterprises	Box 101, Coyote, CA 95013
RS-232 Interface	\$169.00	Connecticut Microcomputers,	150 Pocono Rd., Crookfield, CT 06804
ASCII keyboard Interface	\$ 65.00	Excel Company,	2241 Tamalpais Ave., El Cerrito, CA 94530
Upper/Lower Case Expandapet	\$ 75.00	Excel	
	\$435.00	Convenience Living Systems,	648 Sheraton Dr. Sunnyvale, CA 94087
PETSQUEAK	\$ 19.95	HUH Electronic Music Productions,	
PET-TUNE-YA	\$ 29.95	Box 259, Fairfax,	CA 94930
Composite Video	\$ 19.95	HUH	
S100 Interface	\$199.95 (kit)	HUH	
	\$279.95 (assembled)	HUH	
Memory Expansion (8K)	\$279.00	International Technical Systems, Inc.	Box 264, Woodbridge, VA 22194

		<u>S O F T W A R E</u>	
AB Computers	Box 104	Perkasie	PA 18944
Computer Factory	790 Madison Ave.	New York	NY 10021
Don Alan Enterprises	Box 401	Marlton	NJ 08053
Mind's Eye	Box 354	Palo Alto	CA 94301
Silver State Ent.	Box 27111	Lakewood	CO 80227
Softbyte	315 Dominion Dr.	Newport News	VA 23602
Sof-touch	Box 422	Logan	UT 84321
Sawyer Software	828 Lewis Rt. 3	Dexter	MO 63841
Warren D. Swan	15933 S. Grove	Oak Forest	IL 60452
Walter J. Rychlewski	600 W. Mechanic	Independence	MO 64050
MH Major	300 Guaranty Bank Plaza	Corpus Christi	TX 78475
Randy Julin	15 Poncetta Dr. #322	Daly City	CA 94015
Michael Richter	2600 Colby Avenue	Los Angeles	CA 90064
Creative Software	Box 4030	Mountain View	CA 94040

		<u>P A P E R W A R E</u>	
PET User Notes	Box 371	Montgomeryville	PA 18936
TIS	Box 921	Los Alamos	NM 87544
Calculator/Computer (Magazine)	Box 310	Menlo Park	CA 94025
People's Computers (Magazine)	Box E	Menlo Park	CA 94025

M I S C E L L A N E O U S  
 Dr. Ted J. Cooper, Ohio Nuclear, Ct Systems Eng. 6000 Cochran Rd., Solon, OH 44139 has developed hardware to interface PET to the outside world, including an LSI-11 interface. He would like to talk to someone who knows the system monitor well.

Larry E. Ellison, 19 Huntindone Lane, Willingboro, NJ 08046 wants to talk to people interested in using the PET for Bible study.

### Editorial

Here we are with issue #3 already! We are happy to report that the Paper has more than met our expectations in terms of the number of subscribers and quality of software submitted by our readers.

Sometimes it's hard to remember that although Terry and I spend a substantial portion of our waking hours on the Paper, for most of you it is just an hour or so a month of interesting reading. We try hard to match our perspective to yours, and the letters we have received so far seem to indicate that you are pleased with what you receive. When we first started the Paper, the most exciting part of opening the mail was counting the number of subscriptions we received. Now the subscription letters are put aside for routine processing and we eagerly look for letters containing comment -- feedback on how you feel about what we write. Our major disappointment so far is that no one has sent us a real, honest-to-goodness article for the paper. We would especially like to get information on other devices or circuitry you have hooked to your PET, and what software you have created to control them.

In this issue we have started printing some of the excellent material we received from SPHINX, the Society of PET Handlers and Information eXchange. SPHINX is the PET user group for the San Francisco Bay area, also known as "Silicon Valley." They have really burrowed into the guts of the PET operating system and have taken the time to share what they have found with the rest of us. If you find this information useful, please let us know how you use it so that we can share it.

Rick Simpson

### CORRECTIONS TO PREVIOUS ISSUES

The PET HEX article contained a formula:  $D=H*16 P+D$ . The formula should read  $D=H*16 \uparrow P+D$  and in each step, there should be a  $\uparrow$  following the number 16 in the formula.

Did you notice that we did NOT include the sample of the Commodore printer output? Well, folks, somewhere between here and the printer (trips to California, to Trenton, to the typist, etc.), the output was lost. We couldn't get a new sample by press time for typing or printing -- and we couldn't get the article out and save it for the next issue. Our apologies.

STANDARD SYMBOLS FOR PET

Ⓜ	Cursor HOME	Ⓒ	CLEAR Screen
Ⓡ	Cursor RIGHT	Ⓛ	Cursor LEFT
Ⓤ	Cursor UP	Ⓣ	Cursor DOWN
ⓕ	Reverse FIELD on	Ⓞ	Reverse Field OFF
Ⓒ	Carriage Return	⇧	Shift On
Ⓛ	Delete	⇩	Shift Off
○	Space	★	Stop

Sample Program

```

10 PRINT "Ⓜ";           Send the cursor home
20 FOR I=1 TO 10
30 PRINT "Ⓣ"          Print 'cursor down' ten times
40 NEXT I
50 FOR I=1 TO 10
60 PRINT "Ⓡ";         Print 'cursor right' ten times
70 NEXT I
80 PRINT "HI!"        Print a message
    
```

From Peter L. A. Oakes, of Muskegon, MI, comes this useful note:  
 "I pasted this information on my PET for my friends and family to use until I get them checked out on the PET. Your readers may find it useful."

TO USE THIS PET

- Turn power on.
- Wait until screen shows \*\*\* COMODORE BASIC \*\*\*
- 7167 BYTES FREE
- READY.

TO LIST A PROGRAM

- Whole program: type LIST Ⓜ
- Line A: type LIST A Ⓜ
- Lines A thru Z: type: LIST A-Z Ⓜ

TO SAVE A PROGRAM

- Put cassette in & rewind it.
- Type: SAVE"program name" Ⓜ

TO GET BACK INTO PROGRAM IF CURSOR APPEARS

- Type CONT Ⓜ

TO WRITE A PROGRAM

- Key in program lines, pressing Ⓜ after each line of code.
- If an error is made before pressing Ⓜ, use Ⓛ to delete characters.
- If an error is found after pressing Ⓜ, retype the line correctly

TO RUN A PROGRAM ENTERED FROM KEYBOARD

- When the program is entered, type RUN Ⓜ

TO RUN CASSETTE PROGRAMS

- Put cassette in and type LOAD Ⓜ
- Follow screen instructions. Screen shows READY when PET is finished loading the program.
- Release PLAY button on tape unit, and rewind tape.
- Type RUN Ⓜ to run the program.

0200-0202	CLOCK	H.M.S.
0203	MATRIX COORDINATE OF LAST KEY DOWN	(255 IF NONE)
0204	SHIFT KEY STATUS	(1 IF DOWN)
0205-0206	JIFFY CLOCK	
0207	CASSETTE 1 ON SWITCH	
0208	CASSETTE 2 ON SWITCH	
0209	KEYSWITCH PIA	
020B	LOAD 0, VERIFY 1	
020C	STATUS	
020E	REVERSE VIDEO	
020F-0218	KYBD INPUT BUFFER	
0219-021A	HARDWARE INTERRUPT VECTOR	
021B-021C	BREAK INTERRUPT VECTOR	
0223	KEY IMAGE	
0225	CURSOR TIMING	
0228	TAPE WRITE	
0242-024B	LOGICAL NUMBERS OF OPEN FILES	
024C-0255	DEVICE NUMBERS OF OPEN FILES	
0256-025F	R/W MODES OF OPEN FILES	(COMMAND TABLE)
0262	GPIB TABLE LENGTH	
0265	PARITY	
0268	POINTER IN FILENAME TRANSFER	
026C	SERIAL BIT COUNT	
0270	TAPE WRITE COUNTDOWN	
0273	LEADER COUNTER	
0275	0 IF FIRST HALF BYTE MARKER NOT WRITTEN	
0276	0 IF SECOND " " " " " "	
0279	CHECKSUM WORKING WORD	
027A-0339	BUFFER FOR CASSETTE #1	
033A-03F9	" " " " #2	
0400	START OF BASIC STATEMENTS	
1FFF	END OF AVAILABLE RAM (8K VERSION)	
7FFF	END OF AVAILABLE RAM EXPANSION	
8000-8FFF	VIDEO RAM	
9000-BFFF	AVAILABLE ROM EXPANSION AREA	
C000-E0B0	MICROSOFT "8K" BASIC	
E0B5-E27D	SYSTEM SET UP	
E294-E66A	VIDEO DRIVER	
E66B-E684	INTERRUPT HANDLER	
E685-E75B	CLOCK UPDATE, KYBD SCAN (60HZ INT.)	
E75C-E7D4	KYBD ENCODING TABLE	
E800-EFFF	PIA'S	
F0B6-F226	GPIB HANDLER	
F346-F82C	FILE CONTROL	
F82D-FD15	TAPE CONTROL	
FD38-FFB2	DIAGNOSTICS	
FFC0-FFEC	JUMP VECTORS	
FFFA-FFFF	6502 INTERRUPT VECTORS (NMI NOT USED IN ORIG VERSIONS)	



## INTRO TO BASIC

Before we get into new material, let's review what we already know about the DATA statement.

The DATA statement is used to store data which will be read during program execution. The data items must be placed in the DATA statements in the same order in which they will be read, from left to right, and each item must be separated from the rest by a comma. Data can only be read once during each program RUN. If more than one reading is desired, a RESTORE statement will permit PET to re-read data stored in the DATA statement.

You may want to re-read the INTRO TO BASIC in issue #1, where the material covered by the above review is presented in greater detail. And issue #2 explained "strings", which we'll be using extensively in this article.

**DATA** The DATA statement can be used to store any type of data:

10 DATA 1,2,3,4,5	Integer data
20 DATA 1.2,3.4,.5,6.7	Decimal data
30 DATA "JOHN BROWN"	String data
40 DATA "␣○▲○",1,2.3	Mixed strings, integers, and decimals

Notice that the string data is enclosed in quotation marks. In the examples, each of the strings contained either embedded blanks, graphic characters, or punctuation or special marks or symbols. It is not necessary to enclose alphabetic characters in quotes if none of these special cases are part of the string:

10 DATA SAM,KAREN,JOE,SUE

In fact, if you enclose numbers in quotes, PET will treat the values as strings rather than numbers.

When string data is being read, it must be stored in a string variable and identified with a \$ appended to the variable name:

```
10 DATA "P.T. BARNUM","RING-MASTER"
20 DATA "ED JOHNSON",TEACHER
30 DATA "KAREN JONES",LAWYER
40 READ A$,B$
50 ? A$,B$      (Remember, ? means PRINT)
60 GOTO 40
```

If you enter and RUN the above code, you'll see an ?OUT OF DATA ERROR IN 40 message on the screen after the last data item is printed. This is because data can only be read once. When we use numeric data, it is easy to have PET check for a specific value and stop reading data when it finds the end. With string data, this is a bit clumsy. An easier method is to tell PET how many items it is supposed to read and then let it read that many items.

**FOR...NEXT** The FOR...NEXT statements provide PET an uncomplicated way

PET Matrix-Decoded Keyboard  
See 515 & 516 in table below

	8	7	6	5	4	(3)	2	1
64	!	"	#	\$	%	&	\	( ) ←
48	Q	W	E	R	T	Y	U	I O P ↑
32	A	S	D	F	G	H	J	K L : ;
16	Z	X	C	V	B	N	M	. ; ? re
0	sh	rv	@	[ ]	sp	<	>	st sh
	16	15	14	13	12	11	10	9

Interesting Locations Accessible from BASIC

Location (decimal)	Contents
225,224 226	Byte address of screen line with Cursor Character position of cursor (0 to 79)
515	Matrix-coordinate (row + column) of last key down 255 if no key down
516	1 if shift down, 0 if shift up
525 526-534	No. of characters in Keyboard Buffer Keyboard Buffer
578 to 587 588 to 597 598 to 607 610	Logical numbers of open files Device numbers of open files Read/write modes of open files How many open files
512, 513, 514 518, 517 59465, 59464	Clock that increments 60 times a second Clock that increments 30 times a second? Clock that decrements every microsecond
59456	WAIT 59456,32,32 waits for vertical retrace of display
64824	SYS(64824) simulates power-on reset
59469	Interrupt Flag Register; e.g., to input user port CAL: I=PEEK(59469) AND 2:POKE 59469,I: If I=0 THEN CAL low
59411	IEEE PIA B Control, e.g., to run cassette #1 motor N jiffies: 100 POKE 59411,53: T=TI 200 If TI-T<N GOTO 200 300 POKE 59411,61 Advice: Run motor at least 10 jiffies per 191 output chars

PET MEMORY MAP

```

0000-0002 JUMP, USER ADDRESS
0005 CURSOR COLUMN
000A-005A BASIC INPUT BUFFER
005C BASIC INPUT BUFFER POINTER
005E CURRENT RESULT TYPE (FF)STRING (00)NUMERIC
005F " " " (80)INTEGER(00)FLOATING POINT
007A-007B START OF BASIC STATEMENTS
007C-007D START OF VARIABLE TABLE
007E-007F END OF VARIABLE TABLE
0080-0081 START OF AVAILABLE SPACE
0082-0083 BOTTOM OF STRINGS (MOVING DOWN)
0084-0085 TOP OF STRINGS (MOVING DOWN)
0086-0087 TOP OF MEMORY ALLOCATED FOR BASIC WORKING AREA
0088-0089 CURRENT PROGRAM LINE NUMBER
008A-008B " " " " SAVED BY END
008C-008D " " POINTER SAVED BY END
0092-0093 DATA STATEMENT PINTER
0094-0095 CURRENT VARIABLE SYMBOLS
0096-0097 CURRENT VARIABLE STARTING POINT
00AE-00AF POINTER ASSOCIATED WITH BASIC BUFF TRANSFER
00B0 EXPONENT + $80
00B1 MANTISSA MSB
00B2 " "
00B3 " "
00B4 " " LSB
00B5 SIGN OF MANTISSA (0 IF ZERO) (+ IF POS.) (- IF NEG)
00B8-00C0 DYADIC HOLDING AREA
00C2 START OF ROUTINE FOR FETCHING NEXT BASIC CHARACTER
00C9-00CA PROGRAM POINTER
00D9 END OF CHARACTER FETCH
00E0 SCREEN POSITION ON LINE
00E1-00E2 POSITION OF LINE START
00E3-00E4 CURRENT TAPE BUFFER POINTER
00E5-00E6 END OF CURRENT PROGRAM
00EA QUOTE MODE (00 IF NOT IN QUOTE)
00EE NUMBER OF CHARACTERS IN FILE NAME
00EF GPIB FILE #
00F0 GPIB COMMAND
00F1 GPIB DEVICE #
00F3-00F4 START OF TAPE BUFFER
00F5 CURRENT SCREEN LINE #
00F6 RUNNING CHECKSUM OF BUFFER
00F7-00F8 POINTER TO PROGRAM DURING VERIFY, LOAD
00F9-00FA FILENAME STARTING POINTER
00FC SERIAL WORD
00FD NUMBER OF BLOCKS REMAINING TO WRITE
00FE SERIAL WORD BUFFER
00FF BASIC
    
```

P-E-T C-L-A-S-S-E-S

As part of a summer program, the Computer Project at Lawrence Hall of Science will offer five classes designed specifically for PETs. Classes begin July 10th -- brochures will be available in early May and sign-ups start soon after that. As a special service for the PET user groups we are previewing class descriptions. If you are interested in signing up for a class, call L.H.S. (415-642-5132) and ask to receive the summer brochure. (There will be 12 PETs available for each class -- enrollments are limited.)

An Introduction To Computers for Teachers

An opportunity for classroom teachers and school administrators to learn about computers and how they enrich the students educational experience. Teachers will learn how to operate a "personal" computer. The L.H.S. timeshare computer, and various small computers will be available for use and comparison. Programming will be taught. This class will prepare teachers and administrators to choose a computer that will best meet the needs of their students and present some ideas and activities for classroom use.

Programming in BASIC

Students will learn to program a personal computer using the BASIC programming language. Students will be grouped according to experience so as to allow the instructors to provide individualized instruction. With the guidance of the instructors, students will learn to develop their own computer programs.

Computer Lab with Personal Computers

Do you want guaranteed access to a PET "personal" computer? Here is an opportunity to write your own programs, or play any games from our tape library. A staff member will be available for consultation.

Advanced Uses of Personal Computers

This class is directed toward "owners and trainers" of the Commodore PET. Through individual projects the class will explore extended capabilities of personal computers. Particular emphasis will be placed on the use of graphics and the PET's machine language.

Programming Without Numbers

Teach the computer to write your name; fill the screen with designs you create and change. You will learn simple aspects of computer programming as you work with a PET personal computer. Emphasis will be on non-mathematical approaches to programming; if you are shy of numbers, you will feel comfortable here.

```

1220 IF PEEK(I+1)>127 THEN 1240
1230 PRINT CHR$(PEEK(I));CHR$(PEEK(I+1));RETURN
1240 PRINT CHR$(PEEK(I));CHR$(PEEK(I+1)-128);"$";RETURN

```

To use the above subroutine, simply define one or more variables and GOSUB 1000, all in immediate mode. Example:

```
Z38=54:A$(5)="HELLO":RT=1E22:GOSUB 1000
```

(Challenges for the reader: 1. Why do we need line 1000? and 2. Can you devise a program to decode the bytes containing the actual data in both numeric and string variables, simple and array?)

T-H-E A-U-T-O F-L-A-S-H C-U-R-S-O-R M-O-D  
by Harry J. Saal

As fine as the PET is, there are a number of little details that could stand improving. One of my PET Peeves is the cursor flashing logic. It mainly flashes on and off at its own pace as I furiously move the cursor across the screen, and is invisible half the time I move it.

An improvement would be to have the cursor always flash "on" whenever a new keystroke is recognized. Now if we could modify ROM, the change would require the following code sequence just prior to the JMP located at \$E73C. (This JMP exits from interrupt handling at those times a new key is recognized).

```

LDX #1
STX $225 ;force cursor flip next frame
DEX
STX $227 ;force inverse video cursor

```

So what can we do about it if we don't want to redo Commodore's ROM? By trapping interrupts ourselves, we can detect the situation with a bit more work. The following BASIC program demonstrates the principle in a rough way. It is left as an exercise to the reader to do it in 6502 code.

```

100 POKE 548,0 :REM ENABLE FLASHING CURSOR
110 GOTO 1800 :REM INITIALIZE OLD CURSOR LOCATION
120 :REM GET A CHARACTER AND ECHO IT
130 :REM TRY THIS FOR LETTERS AND SPACES
140 :REM CURSOR MOVES ARE NOT HANDLED CORRECTLY
150 GET C$:IF C$="" THEN 150
160 PRINT C$;

1000 :REM THIS IS THE "INTERRUPT CODE". CURSOR MOVE?
1100 FOR I=0 TO 2:IF A(I)<>PEEK(I+224) THEN 1500
1200 NEXT I
1300 GOTO 150
1400 :REM RESET CURSOR STATUS AS DESCRIBED
1500 POKE 549,1
1600 POKE 551,0
1700 :REM RECORD CURRENT CURSOR POSITION
1800 FOR I=0 TO 2:A(I)=PEEK(I+224):NEXT I
1900 GOTO 150

```

of looping back through a set of instructions for a specified number of times.

```
10 FOR I=1 TO 10
```

Let's take this example apart, piece by piece, and see what it's all about. You recognize the number 10 as a line number already, so we won't discuss that in any detail. The keyword FOR signals PET that a set of instructions, beginning with the next line of code, is to be repeated a specific number of times. The letter I\* is called the 'index'. It is used to store the iteration count. The number 1 is the count for the first iteration and the number 10 is the count for the last one. The phrase "1 TO 10" expresses the range of the index. The lower limit of the range is 1, and the higher limit of the range is 10. You may use any numeric value or expression or variable for the index and the range values.

The FOR keyword precedes a set of instructions you want repeated, while the NEXT keyword follows the set. Whenever PET encounters a valid NEXT statement, it increments (adds 1 to) the value of the index. Let's see how it all works:

```

10 DATA "P.T. BARNUM","RING-MASTER"
20 DATA "ED JOHNSON",TEACHER
30 DATA "KAREN JONES",LAWYER
40 FOR I=1 TO 3
50 READ A$,B$
60 ? A$,B$
70 NEXT I
80 END

```

Since the lower limit of the range is 1, PET begins by storing a 1 in the index, I. Then line 50 is executed (PET reads A\$ and B\$: P.T. BARNUM, Ringmaster). Then line 60 is executed (PET prints A\$ and B\$).

When the NEXT I is encountered in line 70, PET first adds one to the value of I (so that now I=2) and then compares I to the upper limit of the index range. I is not greater than the upper limit (3), so PET loops back to the statement following the FOR keyword (line 50).

PET reads A\$ and B\$ (Ed Johnson, Teacher) in line 50, and prints them in line 60. Again encountering the NEXT I in statement 70, PET increments I (now I=3) and compares I to the upper limit of the range. I is still not greater than the upper limit (although it is equal) so back PET goes again to the statement following the FOR keyword. Once more PET reads A\$ and B\$ (Karen Jones, Lawyer) in line 50, and prints them in line 60. And here we are again at the NEXT I statement in line 70. PET adds 1 to the value of I and compares I with the upper limit of the range. Now I is greater than 3 - it is equal to 4. So PET does not loop back to line 50, but goes on to line 80, the next line of code following the NEXT keyword.

\* It is customary and traditional to reserve variable names beginning with the letters I, J, K, L, M, and N for use as counters and indices. This custom is a donation to the programming world from FORTRAN, another programming language.

Run the program, then in direct mode (without using a line number) type ?I @ . PET will display the number 4 on the screen. Add more data items if you like, and increase the upper limit of the range by 1 for each pair of names & occupations you add. Note that after completing a FOR...NEXT loop, the index is always greater than the upper limit of the range.

#### Neat Notes on FOR...NEXT Loops

You can use variables instead of constants as the limits for the range:

```

10 N=SQR(27)          SQR=Square Root
20 M=10*N
30 FOR I=N TO M
40 ?I
50 NEXT I

```

You can concatenate statements (put more than one statement on a single line of code) to save memory:

```

10 FOR I=1 TO 10: ?I: NEXT I

```

Although other BASICS require you to use integer values for both the index and the limits of the range, PET does not. You can use decimal values to increment the index by using the STEP keyword:

```

10 FOR I=1 TO 10 STEP .5
20 ?I
30 NEXT I

```

The STEP keyword also makes it possible for PET to count backwards:

```

10 FOR I=100 TO 10 STEP -10

```

You don't have to use the index name in the NEXT statement:

```

10 FOR I=1 TO 20
   :
   :
50 NEXT

```

You can nest the loops, making it possible to build data tables:

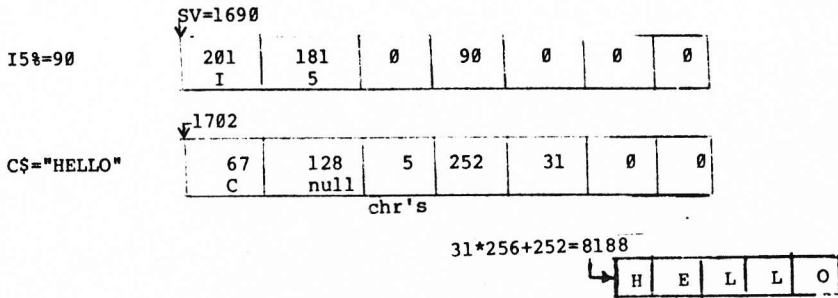
```

10 ?" ©"          Clear the screen
20 DATA 0,4,8,12,16,20,24,28,32,36
30 FOR I=1 TO 10   Set up # of lines to print
40 FOR J=1 TO 10   Set up # items across screen
50 READ X(J)       Read column numbers
60 ?TAB(X(J));I*J Print item in correct column
70 NEXT J         One product done
80 RESTORE        Restore column numbers
90 ?             Print an empty line
100 NEXT I        One line done

```

Note that for the two simple numeric variable types, the actual values are contained in the seven byte definition. The simple string variable points to a location in high memory where the actual string characters are contained.

#### Example:



The author has no encoding/decoding algorithm for the five floating point bytes. The algorithm is needed for the USR function and I hope to present some clues or actual code in the near future.

Arrays carry about the same format except that they begin at the location found in AV, a byte after the simple variables end. For vector arrays, the third thru seventh bytes in the definition are:

	byte 3	byte 4	byte 5	byte 6	byte 7
VECTOR ARRAYS	7+(size+1)* (dim)*A	0	1	0	size +1

where A = 2 for integer, = 3 for string, or = 5 for floating

The difference between simple variables and arrays is that after the seven byte definition comes the actual data for numerical arrays and character counts/pointers for string arrays.

Here is a BASIC program to list all your variables:

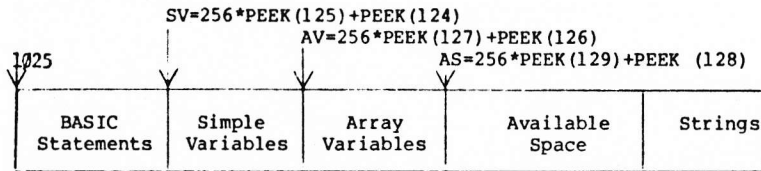
```

1000 I=0:SV=0:AV=0:AS=0
1010 SV=256*PEEK(125)+PEEK(124)
1020 AV=256*PEEK(127)+PEEK(126)
1030 AS=256*PEEK(129)+PEEK(128)
1040 FOR I=SV TO AV-1 STEP 7
1050 GOSUB 1200:PRINT
1060 NEXT I
1070 REM --DECODE ARRAYS--
1080 I=AV
1090 IF I>=AS THEN RETURN
1100 GOSUB 1200:PRINT " ARRAY"
1110 I=PEEK(I+2)+I
1120 GOTO 1090
1200 IF PEEK(I)<128 THEN 1220
1210 PRINT CHR$(PEEK(I)-128);CHR$(PEEK(I+1)-128);" ";:RETURN

```

P-E-T V-A-R-I-A-B-L-E-S E-X-P-O-S-E-D  
by Pete Rowe

(Have you ever wondered how (and where) PET stores the value of the variables you define and use in your programs? This article, reprinted from the SPHINX newsletter, should shed some light on the subject. - Terry)



Elsewhere in this issue, a similar chart is printed as the "Principal Pointer in PET RAM". Pointers AV (found in locations 128 and 127) and AS (found in locations 128 and 129) seemed to point to the same location. And in fact, when PEEKing at AV and AS during the execution of a program, they did point to the same place when using only simple variables. But as soon as the program dimensioned a string of numeric array, the pointers parted company and contained different values. This prompted an exploration of how variables are stored in PET BASIC.

Each variable definition; whether string, numeric or array; uses seven bytes. The first two bytes determine the variable type:

	byte 1	byte 2
INTEGER	first chr + 128	second chr + 128 or 128
FLOATING	first chr	second chr or 0
STRING	first chr	second chr + 128 or 128

The remaining five bytes are different for each SIMPLE VARIABLE type:

	byte 3	byte 4	byte 5	byte 6	byte 7
INTEGER	actual value 256 * HI   LO		0	0	0
FLOATING	actual value in binary floating point				
STRING	chr count	pointer LO   256 * HI		0	0

This program shows how to use most of the things we've learned so far in the INTRO TO BASIC. The DATA statement contains column numbers which are used to be sure our table lines up all the products properly and makes the table all neat and orderly. The I-loop, called the 'outer' loop, sets up the number of lines to be printed down the screen, while the J-loop (the 'inner' loop) establishes the number of products (of I\*J) to be printed across the screen. While the functions of the outer and inner loop are very grossly generalized here, it is helpful to learn the order in which the two loops will be performed. It is important to remember that the J loop will be performed 10 times for each time the I loop is executed. This is because the J index is reset to 1 each time the I index is incremented. The inner loop is performed more often than the outer loop. Remember to put the NEXT statement for the J loop in your code before the NEXT statement of the I loop:

```

10 FOR I=.....
20 FOR J=.....
   :
   :
50 NEXT J
60 NEXT I
    
```

You don't have to use the index names in the NEXT statements even when you nest the loops. PET just sort of stacks up the NEXT keywords like a pile of dishes, and it will use the appropriate NEXT when it gets to it if you don't use the index names. If you do name the index in a NEXT statement, you must put the names in the correct order. If you don't, PET will tell you it has a ?FOR WITHOUT NEXT ERROR. You do have to have one (and only one) NEXT for every FOR.

Be very careful about jumping OUT of a FOR...NEXT loop. It's wiser to set a flag\* and check the value of the flag once you're safely out of the loop. If you jump out of the loop unexpectedly, the unused NEXT is just sitting on the stack, and PET will go off somewhere and sulk, bombing your program if you should happen to use another FOR...NEXT loop later in your program. PET can be quite fussy about it, believe me!

You can concatenate the NEXTs for nested loops:

```
110 NEXT J:NEXT I   or   110 NEXT:NEXT
```

are both okay, so long as you remember to separate the NEXTs with a colon.

\*If you're looking for a specific string (in our example, let's look for "TEACHER"), you 'set a flag' by typing a line:

```
65 IF B$="TEACHER THEN M=1
```

and then change line 80 to say:

```
80 IF M=1 THEN ? "M=1"
```



P E T P A R A D E

■ Terry: Business will have me dividing my time between NJ/NY and Florida. Do you have a line on any club activity in the Tampa/St Pete area? Any subscribers? Any anything? - Roy O'Brien, Box 379 S. Bound Brook, NJ 08880

Roy: We do have subscribers in the area, but I haven't heard of a club. Anyone in the area wishing to contact you now has your address and can write to you directly. The problem is that no one has given me permission to distribute his/her name/address, and until such permission is granted, I can't do much to help you.

■ Terry: I wonder if you have any information on how you can connect T.V. monitor to the PET to get a larger screen picture (Video output) Any help would be appreciated. - Paul R. Latham, Oakland, CA

Paul: HUH Electronics, P.O. Box 259, Fairfax, CA 94930 has a Video Buffer (video combiner). It plugs into the User Port and provides a standard composite video signal out. It comes assembled for \$19.95.

■ Terry: Help! How do we get the PET to read data files? The Commodore kluge just doesn't work! - (So many letters like this, I can't attribute authorship to just one person. - Terry)

People: We are printing out Tape Packing, Reading, and Writing routines in this issue in the Tricks to Train you PET section. We didn't include the main routines (getting the data into the PET in the first place from the keyboard), but all the information is there for you to add to your existing programs. Hope the routines help. - Terry

■ Terry: I am very pleased with the first issue of the ~~NEW~~ PAPER. (He follows this line with many lines of lovely praise which I'd love to print but which would take up too much space. - Terry) You threatened us with a bubble sort routine in the future. I hope to head off that mischief with the sheets you will find enclosed...It's a wonderful idea to have a program exchange, but there may be a problem. I have a version of ELIZA, published in the JUL-AUG 1977 issue of Creative Computing. Steve North, who did the BASIC adaptation, says it runs in 16K of memory. I was able to cram it into less than 8K and it works perfectly. I would love to offer it to the Flea Market Software Exchange, but I'm afraid of violation of copyright laws. If you can get permission to distribute it from Creative Computing, I will send you a cassette copy. In most cases, distribution of published software would just cut down on the amount of typing and correcting most of us would have to do. Some of the games are poorly adapted to the PET, and I've made extensive modifications. Maybe you could get permission to distribute programs where a) much correction is required or b) the PET's unique graphics change the appearance of the game. I hope letters like this are the kind you like to receive. Keep up the good work. - Robert A. Kingshill, Houston, TX

Robert: A) Thanks for the kind words. B) The sheets you sent are being held pending our ability to find time to look closely at them and get the code into the PET. Please be patient with us until then. Meanwhile, a bubble sort will help those who need sorting and don't have access to the code you sent. C) It is my understanding that programs which are changed by as much as 30% are not included in the copyright of the original. Any program written for TTY use will need

There is a second font of 128 symbols in the character ROM. (Bit 1 of location 59468 controls font.) Thus the ROM stores two fonts of 128 characters each, with inverse provided by hardware.

The character storage format in the MOS Technology 6520 character generator ROM is straight forward (binary). The eight outputs 01-08 form one row of one symbol. The LSB 01 is on the right, 08 is on the left when facing the PET screen. A high (1) turns the beam on. The 6520 has 11 address lines (A0-A10), (2K x 8). A0-A2 are the row number: 0 is at the top, 7 is at the bottom of the character. A3-A9 are from the symbol (bits 0-6 of the screen memory). A10 determines the font.

The 6520 ROM may be replaced by PROM (not pin compatible) to form different characters set, or fonts. One Intel 8716 is ideal as it is also 2K x 8 and +5 volts only, but I used two 8708s and external power supplies and decoder. In any case an adapter board is necessary.

Uses might include:

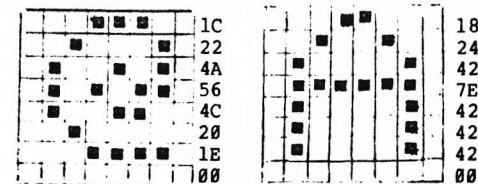
1. left-right reversal for display applications,
2. foreign language character sets
3. music notes and symbols
4. choreographic symbols,
5. special game symbols (pieces of stars, ships, moons, explosions, tanks, paddles, etc.),
6. Printed Circuit Board Layout symbols (implemented),
7. extra large characters (16 x 16 cell),
8. higher mathematics symbols,
9. chemical symbols,
10. pictures of food, animals, road signs, etc. for testing or teaching,
11. reversal to lower case normal/upper case shifted for terminal simulations.

The only limitation to the number of fonts that may be stored "on line" at once is the number of PROMS that can be fit on one adapter board. The PET user port bits may be used to select additional fonts above two.

Below is a coding example. The @ and A are actually the first two characters in the 6520 ROM. Anyone wishing to make up his/her own character set should get a pencil, eraser, ruler and a large stack of cheap graph paper -- "engineering paper" works well -- use 1/5 inch per dot, and twelve cells to a sheet. Then code the penciled in light/dark patterns into hex, and feed to a PROM programmer.

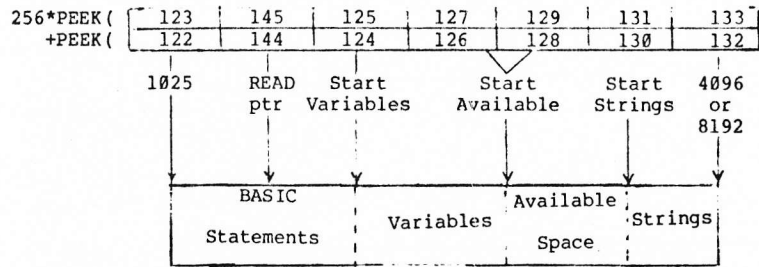
(People wishing to do this should contact me. I may be able to provide prom programming, adapter boards, and maybe even proms.)

Cell is square when displayed.

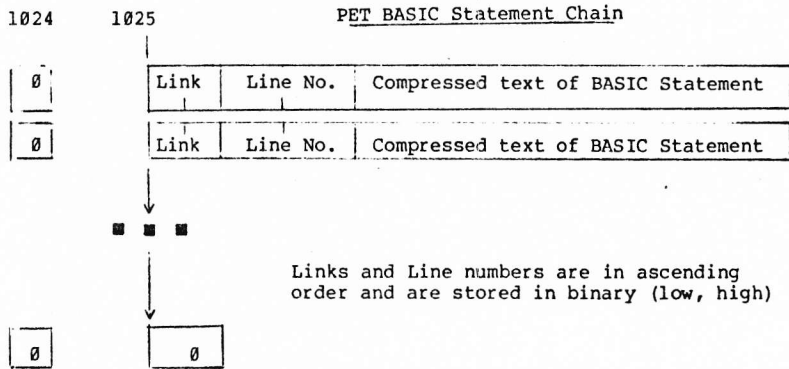


HEX: 1C 22 4A 56 4C 20 1E 00 18 24 42 7E 42 42 42 00

Principal Pointers into PET RAM



The READ pointer starts at 1024  
 When it is not pointing into a DATA statement  
 it resides at the 0-byte after a DATA statement



PET CHARACTER SET

Kim Rubin  
 Physics Dept  
 University of California, Berkeley

The characters on the PET consist of an 8 x 8 cell of off (blank, 0) or on (lit, 1) dots. The cells are contiguous both horizontally (40 wide) and vertically (24 high), thus simplifying line or continuous graphics.

Upper case letters and numbers are represented in a 6 x 7 subcell; the remaining two columns and one row provide nominal inter-character and -row spacing.

The half-ASCII (visual) set implemented consists of 64 symbols. PET adds 64 special symbols to total 128. The high order bit in the word is used by the hardware to produce inverse video (blank symbols on lit background), for a total of 256 distinct symbols viewable at once.

extensive modification in order to take advantage of PET's graphics capability, and in making those changes, there will be at least a 30% difference in the code. Further, since the object of the Flea Market is Software Exchange, not sale, we are not trying to make a profit on the published (or original) exchanged material. If a contributor reserves the first few lines of code for crediting the original source of published material, and if the code has been changed by at least 30%, we are not in violation of the copyright laws. And we really enjoyed your letter. It is the kind of letter we like to get! - Terry

■ Terry: I have heard that Commodore has instruction manuals out and is coming out with a level II BASIC. Any information yet on what the new BASIC will have over the present BASIC? - Jerome Salko, Broadview Hts. OH

Jerome: To my knowledge, Commodore is not planning a level II BASIC. PET's current BASIC is top-of-the-line stuff for a machine of this size and price, and except for a few necessary RAM/ROM fixes, there probably won't be any further upgrading of the BASIC. - Terry

■ Terry: Can you send me the address of Connecticut Microcomputers, whom you report as making a IEEE-488/RS232 interface? - G.E.A. Wyld, Houston, TX

G.E.A.: See the listing under "HARDWARE" in this issue. - Terry

■ Terry: I would like to information on how to use the parallel port on the PET. I would like to interface a baudot teletype through an ASCII to BAUDOT converter to list my programs and as an output printer. I have a SWTP converter, but do not know what commands to use to get the PET to output on the parallel port with handshaking. I also cannot get a LOAD command to work as part of a program statement to load the next program from tape. Any help will be appreciated. Jerome Salko

Jerome: We just received an article about the User Port and are preparing it for publication in the next issue. See Issue #2 about chaining programs. - Terry

■ Terry: When is the PAPER published? How often? I have received #1, but not #2. How often do you update your Flea Market catalog? How many issues do I get for my \$15.00? If I send you an article, when do you need it in order to get it into the next issue? Do you accept advertising? How much of your newsletter will be devoted to advertising? - Tom D. Westfield, Brooklyn, NY

Tom: The PAPER is published on the LAST day of each month. People who want to advertise, submit programs or tapes for publication, or who have specific questions they would like answered in the next issue should send their material to us no later than the 10th of the month in which they want to be published. We update our software catalogs (as well as our lists of available hard/soft/paper-ware) in each issue. You receive 10 issues (all the issues of volume 1) for your \$15.00. We accept advertising, but will not allow more than 6 full pages (or the equivalent in smaller ads) per issue. The PAPER is a minimum of 24 pages long, and will not reach its maximum until we run out of information, subscribers, money, or all three. The last issue was 28 pages, this issue is 32 pages, and we anticipate 28 pages for the next issue. - Terry



SOFTWARE SHELF  
SOFTWARE SALES

■ Terry: I would like to know where or how the PEEK and POKE numbers originate. Maybe more detail on how a program works. Going to build the noisemaker. - D. McDonald, Riverside, CA

D.: PET doesn't use hex in its BASIC, so all hex values must be converted to decimal numbers before PEEKing or POKEing at memory. The numbers are the decimal equivalent of the hex addresses being PEEKed or POKEd. - Terry

■ Terry: You have presented the material well, except all of this has already come to me from the PET people. I am looking for programs that will show me how to file, do checkbook work, or other useful things around the house. In a paper of this type, we are looking for something that we cannot buy at the computer store or find in books on BASIC. Like, how good is the second tape player? What will the new printer be like? Being a paper on PET, you should be able to get things from the PET people that we would be interested in. As for Issue #1 of the ~~new~~ PAPER, it is overpriced for its size and the amount of information it contains. Also, only 10 issues per year. I am hoping that you improve, otherwise I would cancel now. Good luck on the future of the ~~new~~ PAPER. - M.E. Thomas, Pearl River, LA

Mr. or Mrs. or Ms. Thomas: Thank you for the suggestions. We are trying to provide information of interest to people like you, and your ideas are more than welcome. I hope future issues of the ~~new~~ PAPER are more to your liking. Thanks for writing. - Terry

■ Terry: I am new to this computer game, and find it fascinating. But I also find it hard to get any useful information out of the Commodore people. What happened to the tape they were going to send me? Or to the manual they promised? Can I sue them for false advertising or something? I'm about ready to return my PET... not because I'm dissatisfied with the machine, but because I don't know what to do with it! Except for your PAPER and the miserly little manual that came packed with the PET, I can't get any answers from anybody about anything. HELP!!! Meantime, I found out how to do a date decoding thing. Is this old hat, or would you be interested in printing it? -S. T. Wilson, Baton Rouge, LA

```
10 INPUT"ENTER A DATE (MMDDYY)";D1
20 M=INT(D1/10000)
30 D=INT(D1/1000)
40 D=D-(100*M)
50 Y=D1-(10000*M)
60 Y=Y-(100*D)
70 PRINT M;"-";D;"-";Y
80 END
```

S.T.: Commodore is suffering from growing pains. All the documentation and software promised will eventually be forthcoming, but it will probably be awhile yet. Mind's Eye in California is planning to print and publish a User's manual for the PET. I understand it will be available sometime in mid-June or early July. Gene Beals publishes the PET User Notes out of Montgomeryville, PA, and there is this newsletter. If there is a User Group in your area, we'll let you know so you can get information from other PET people who are, like you, discovering the PET for themselves. - Terry

DEFLECTION \$10.00 A fast paced action game involving targets, deflection shields, and you. Excellent graphics.

HOME DATA RETRIEVAL \$10.00 Keep all your records on tape. Create files, sort them, and add to or from existing files.

STAT \$20.00 A real statistical package for up to 100 data points - basic stats - linear regression - moving averages - plotting - transformations.

ADDRESS FILE \$10.00 Create, sort, edit, and save up to 50 names and addresses.

CHASE \$10.00 A real-time version of the popular CHASE game. The robot guards can be made to be as intelligent or dumb as the user wishes. Great graphics.

BLOCKADE \$10.00 A two person game in which each person tries to avoid the other and the wall around their enclosure. Excellent graphics.

SPACE-TALK/SPACE FIGHT \$10.00 A two program set. SPACE-TALK is the instruction set. SPACE-FIGHT is a two player game in which each player tries to destroy the other's spacecraft. Excellent graphics.

BLACKJACK \$10.00 Excellent graphic game, displaying all the cards as they are turned up. Keeps track of finances for you, wises off when you lose. It is the best version of this game we've seen yet. Needs no documentation, since instructions are incorporated into the code.

The following seven programs constitute a set of routines which will carry out most of the sorts of statistical tests most people require. All the programs are conversational and interactive. The package will be mass duplicated and sells for \$20.00 complete.

1. DESCSTATS -- takes a set of data, either as single values or as grouped data, and calculates descriptive statistics -- mean, variance, standard deviation, maximum and minimum values.

2. PROBF -- this program accepts test statistics produced from statistical tests -- the variance ratio, (F), Student's T, standardized normal deviate or chi square -- and calculates the probability of such a value. It replaces looking up the values in tables, and is also used as a subroutine in all the programs below.

3. 1WAYANOVA -- this program performs analysis of variance on two or more sets of data, each set being the responses of a group of cases to a treatment, for example, two drugs and a control (three treatments). The number of cases for each treatment may be the same or different. In the special case of two treatments, it is identical with the well-known T-test.

4. 2WAYANOVA -- similar to program 3, but each case is subjected to two different treatments, A and B, simultaneously, e.g., treatment A might be different drugs (or different dosages of the same drug) and treatment B different diets; alternatively, the treatment B can be blocks of a block design.

5. ANOVA2WAYR -- as in program 4, but there are two or more cases (replicates) for each treatment combination. All the analyses of variance programs included tests of significance.

6. SLR -- this program calculates linear regression, correlation coefficients and coefficient of determination, and tests the significance of all statistics. This program is designed for grouped data, i.e., several values of Y (the dependent variable) for each value of X (independent variable).

7. XYSLR -- similar to SLR, but the X and Y values are in pairs.

**PET PAPER FLEA MARKET  
SOFTWARE EXCHANGE**

THE FOLLOWING PROGRAMS ARE FOR SALE FOR \$5.00 EACH IF PURCHASED WITHOUT AN EXCHANGE PROGRAM. IF YOU HAVE A PROGRAM OF YOUR OWN TO ADD TO OUR FLEA MARKET, SEND IT TO US AND WE'LL SEND YOU THE PROGRAM YOU WANT. (PLEASE INCLUDE \$2.00 FOR POSTAGE & HANDLING.) IF YOU DON'T SEE SOMETHING YOU WANT ON THIS LIST, WE'LL SEND YOU A COUPON WHICH YOU CAN RETURN (ALONG WITH THE \$2.00) AT A LATER DATE.

**ADDITION GAME** - A fun game with ten timed levels of addition skill.  
**OTHELLO FOR ONE** - The famous Othello game. Plays a good corner game as well.  
**OTHELLO FOR TWO** - PET does the work and keeps score.  
**CODES** - A computerized version of Mastermind . PET selects codes, you decode.  
**ROAD RALLY** - Race any of 5 vehicles, don't run out of gas, don't get hit by a bus!  
**SLOT MACHINE** - As fun as the real Las Vegas game - but you get to keep your cash.  
**STATES & CAPITALS** - Learn all 50 states and their capital cities.  
**EMPEROR** - A well-executed version of Hamurabi.  
**GRADES** - Find the final and letter grades for up to 35 students, using up to 10 tests per student to find the average.  
**HEX-DEC** - Convert from hexadecimal to decimal or from decimal to hex - helps calculate hex addresses for your PET.  
**MATH QUIZ** - Drill in addition, subtraction, multiplication, and division.  
**FLEA-PAK** - Four trivial programs: Haiku, Hi-lo, Hangman, and Computer Haiku.  
**USEFUL ROUTINES** - CHARACTER\*FRAME\*GET\*XS, Y\$ CURSOR CONTROL\*CURSOR DEMO\*SORT\*SORT DEMO\*FORMS\*FORMS DEMO\*NUMBER EDIT. This is the ONLY mass duplicated tape in our library, and it requires you to use the word LOAD rather than the shifted RUN/STOP key to load each program from the tape.  
**PUBDOMDIS** - disassembler  
**NOTE** - Hold a transistor radio on the keyboard and PET will sing to you.  
**KLIDISKOP** - Neat graphic designs  
**KYBD UTILITY** - displays the keyboard on the screen. As you press the keys, the appropriate key in the display lights up. This is useful if you are adding a standard keyboard to your PET.  
**RENUMBER & UNLIST** - permits a user to renumber a BASIC program.  
**HIMONDIS & HIMON INTRO** - machine language monitor and disassembler (8K version).  
**LOMONDIS** - disassembler (4K version)  
**AIR WAR** - A neat graphic game in which you control both the movement of the aircraft and the firing of the missiles that will shoot it down. Not as easy as it sounds, since there's a tricky little random motion by the aircraft just to keep you on your toes.  
**DOGFIIGHT** - A modified TTY program that has been improved with some graphics.

SOFTWARE EXCHANGE AND ORDER FORM ON LAST PAGE OF THIS ISSUE

■ Terry: Why not name your publication ETPAY APERPAY? - Victor F. Zell, Chicago, Ill.

■ Terry: May I suggest PERSONAL TRANSACTIONS? This will still tie the publication with the Personal Electronic transactor made by Commodore. - D. Stephenson, Saskatoon, Saskatchewan, Canada.

We have heard from approximately 20% of our readers regarding the new name for the **PAPER**. All but two or three suggested we keep the name "THE **PAPER**". The other suggestion was "The Transactor Newsletter", but Commodore is sitting on that name (Gordon French, Greg Yob, and I thought that one up while we were all still employees with the company). I don't think it would be fair to use the name until Commodore decides what it wants to do with it.

Please note that we have finally broken down (or given in) to the overwhelming response for the Flea Market Tape, USEFUL ROUTINES, and have had to have it mass duplicated. Since mass duplication almost always causes loading problems, we have extensively tested random samples and can report the following results: If you type the word LOAD instead of using the RUN/STOP key, the programs will almost always load the first time out. If the program does not load the first time, try again. We did not encounter any total failures to load.

Some of you (two of you, to be exact) have had trouble getting the last data record off the tape when using the Address File or the Data Retrieval programs. This is not a tape failure. We can't do anything about it except refund your money, because when the tapes were returned to us, we managed to get all the data every time we ran the programs. It may be that the RAM which handles variable storage on your PET is faulty, or it may be any one of a number of other problems. Address File and Home Data Retrieval are good-sized programs, and if you have lost RAM somewhere where it doesn't show in your BYTES FREE message, you'll never find it without a good memory checking program.

Some of you have contributed programs to the Flea Market which are, by my own knowledge, products of the Commodore Software Staff. I was working for Commodore when the programs were developed. Even though we have the programs in our library, we will not publish them nor exchange them until we obtain permission from Commodore to do so. We have also received tapes containing programs from Don Alan Enterprises and from Personal Software. We won't exchange them, either. The reason is that Commodore, Don Alan, and Personal Software SELL these programs, much as we sell the Software Shelf material, and they pay royalties to the authors. It isn't fair to those authors to be giving away copies of their work. If an author is selling his material to several different sources, he is still receiving royalties from all of those sources, since exclusive rights defeat the purpose of maximum return for minimum investment. If an author has sold his program to Commodore and then to us, we will of course sell or exchange it as he directs if we think it's of value.

### PET PROSE

There are many people who want specialized application programs to use on their PETs, but who are not knowledgeable enough to design or to write them. If you can write significant software in some specialized field (i.e., education, engineering, business, etc.) and are willing to do so, we may be able to help you find the people who are willing to pay you to write programs for them. Send us \$25.00 and we'll print your name, address, phone number, and field of expertise in the next 10 issues of The **PAPER**.

Wes Fasnacht (215) 436-2886      Programming & Systems Development  
West Chester State College  
West Chester, PA 19380

Don Pegnataro      Education, Engineering, Business,  
1420 Centre Ave. #1907      Games, Photographic Applications  
Pittsburgh, PA 15219

GEORGE J. SHUTTRUMP, Jr., President of The Builders Co., Inc., P. O. Box 419, Federal Plaza E., Youngstown, OH, 44503 would like to have specific programs written for his use and would like to be contacted by interested programmers.

This letter came from Ed Crossman, and we thought we'd print it (and our reply) to help clear up some confusion:

Dear Terry:

I saw in the first copy of The **PAPER** the notice for a brief ad under the PET PROSE section stating that for 10 issues the cost is \$25. Therefore, I am submitting the following ad which I would like to be placed in the PET PAPER as soon as possible. If \$25.00 is not sufficient for this sort of ad, please publish anyway and run as long as possible.

PET GAMES: Cannon Ball (2 pers) & Tic Tac Toe (1 pers) \$8.95.  
          Battleships (2 pers) & Spin-To-Win (1 pers) \$8.95  
Send check to SOF-TOUCH, Box 422, Logan, UT 84321

Ed Crossman

Normally, we would not run this type of ad under PET PROSE. We would run it under a commercial ad for commercial prices. However, since this is the first letter of its kind that we have received, we decided to print it and to explain why this would not be a PET PROSE item.

PET PROSE programmers act much like consultants. Someone who wants a customized program would contact a PET PROSE person, and the two parties would handle all the financial arrangements and whatever program specifications they mutually agree upon. Software which is pre-taped and is not specifically tailored to a user's needs can be advertised (see the rate schedule on the next page of this issue) or placed on our Software Shelf or in the Flea Market Exchange. The person who supplies such software as is advertised in Ed's letter will

one other letter noting that the last record is sometimes not picked up, but we haven't isolated the problem yet. It's probably the OS, but we aren't ready to swear to it!

The update and edit parts of the program can be written - we hope - by someone like yourself, who can utilize the tape-read/write routines. If you decide to write it, send it to our Software shelf. We'd like to consider selling a DATA EDIT with the RETRIEVAL program as a package.

Thanks again,  
Rick Simpson

---

---

### PET USER GROUPS

ACGNJ (Amateur Computer Group of New Jersey) PET Subgroup meets again on the 4th Friday of the month at UCTI (7:00 to 10:30 PM).

The Bay Area group, S.P.H.I.N.X., is planning a huge PET User group meeting on June 7, 1978. The meeting will be held at the Sunnyvale Community Center, Room 133, between 7 and 10 PM. The address is 550 East Remington, Sunnyvale, California. No commercial sales will be permitted, although you can bring tapes for exchange. No admission charge, of course.

SPHINX (Society of PET Handlers and INformation eXchange) (Bay area group, San Francisco/Oakland/Berkeley and points south) meets the 2nd Thursday at the Teacher's Shelter, O.P.S., 1025 2nd St., Oakland, at 7:00 PM.

PUG (South San Francisco Bay Area Users group) meets the 1st Wednesday in the Mercury Room, 350 Showers Drive, Mountain View, CA, at 7:00 PM.

North Orange County Computer Group, PET User Subgroup, has been formed by David Smith, 3030 Topaz, Apt. A, Fullerton, CA 92631. Contact him for details, meeting places, and so on.

We understand there's a PET group being formed in the Boston, MASS area, but we haven't been able to find anyone who knows anything about it. Any information will be appreciated.

### SOFTWARE GUARANTEE

If the tape you receive from us does not load on your PET, send it back and we'll record it on the older model PET. We do not guarantee that FLEA MARKET programs will do anything more than load, since they are submitted by readers and we do not check them out except to be sure they will load and are free from obvious errors.

### ERRORS FOUND IN HOME DATA RETRIEVAL PROGRAM

Dear Rick: I received the "Home Data Retrieval" program last week. I was only able to play around with it a little bit during the week, but I quickly found several bugs in the program. They have to do mostly with the section involving the selection of a) SORT b) SAVE or c) ADD another file. Specifically, the errors reside in the SAVE portion of the program. When I ran it, I got an invalid NEXT WITHOUT AN ERROR IN LINE 4880. I also got an extra " " on the tape. The errors are in lines 4845, 4850, and 4880. The following code gives a 'before' and 'after' of the above lines:

Before:

```
4845 IF NF=0 OR LEN(N$(I))=0 THEN A$=" ":GOSUB 1000:GOTO 4880
4850 FOR J=1 TO LEN(N$(I)): IF MID$(N$(I),J,1)=CHR$(13) THEN
GOSUB 1000:A$=" ":GOTO 4880
4880 NEXT:A$=" ":GOSUB 1000:NEXT:GOSUB 1060:CLOSE 1:GOTO 4525
```

After:

```
4845 IF NF=0 OR LEN(N$(I))=0 THEN 4880
4850 FOR J=1 TO LEN(N$(I)):IF MID$(N$(I),J,1)=CHR$(13) THEN GOSUB
1000:A$=" ":GOTO 4870
4870 NEXT
4880 A$=" ":GOSUB 1000:NEXT:GOSUB 1060:CLOSE1:GOTO 4525
```

Note the addition of a statement 4870 NEXT. The correction in 4845 does not put an extra " " at the end of a record, while the 4870 statement is the NEXT statement for the J loop in 4850.

I have experienced difficulties in reading back the tapes. For some reason, my computer seems to go beyond the EOF mark. All the strings up until the last record are picked up all right. Just the last record (on this tape) seems to be lost or unable to be picked up by my PET. I tried a fix by putting an extra 190 blank characters after my last record, but it seems to work only sometimes. Some files it can read completely, while others it goes beyond the EOF. Is there possibly something wrong with my operating system or the cassette hardware?

Overall, I felt the program was satisfactory. However, there are certain aspects which I felt could have been added. The major one is the ability to update a record that is in memory. If someone has a list, it would be nice to be able to change records or add new records to that list while it exists in memory. When someone examines a record, it would be nice to be able to update it also. So the updates in the program which I would like to see involve the third section of the code, which is:

1) When examining a record, the user can select to delete it or to change it.

2) A new record can be added directly to the list. Then the user can save the new and/or changed records in a file.

Sincerely,  
Sholom Sanders - Flushing, NY

Dear Sholom: Thank for the fix. I've corrected the program (and the documentation) to show your 'after' section of code. We have received

be included in our list of available goodies for the PET at no cost, but the program names would not be.

We are available by phone to answer specific questions about the PET or this newsletter, or PET software in general. Call Rick Simpson or Terry Laudereau at (215) 631-9052. If we aren't in, leave your name and phone number with our recording device, and indicate whether or not we can call you collect to answer your inquiries.

\*\*\*\*\*  
\*\*\*\*\*

NEWMAN COMPUTER EXCHANGE announced its annual summer mail order auction -- which this year will include the PET. Get your catalog by writing to:

NCE  
Dept. R58  
P.O. Box 8610  
Ann Arbor, Mich.

Opening date for bids is set for Monday, July 31. Call Chuck Newman (313) 994-3200 for more info.

\*\*\*\*\*  
\*\*\*\*\*

### ADVERTISING RATES

Full page - \$150. Half page - \$90. Quarter page - \$50.

Ads must be accompanied by payment. Camera ready copy on 8½ x 11 paper, with the ad occupying the appropriate portion of the page. Use white stock only.

### SUBSCRIPTION RATES

Single issue - \$2.00. Year subscription (10 issues) - \$15.00. Outside USA and Canada, add \$10.00 per year postage, or \$1.00 for single issue postage. Subscription for 1978 covers Volume I, issues 1 through 10.

THE PAPER is an ARESKO publication, edited by Terry L. Laudereau, published ten (10) times per year, and mailed on the last day of the month. Non-profit organizations (ie, computer clubs) are free to reprint this newsletter, with appropriate credit given. Profit organizations must obtain permission from the editor before reprinting.

Readers are encouraged to submit material for publication in the newsletter. Material will be considered free of copyright restrictions and will be edited only for clarity and readability. Material must reach the editor by the 10th day of the month of publication. Send material to THE PAPER, P.O. BOX 43, Audubon, PA., 19407.

SUBSCRIPTION AND SOFTWARE ORDER FORM ON LAST PAGE OF THIS ISSUE.



TRICKS TO HELP TRAIN YOUR PET

We used a technique somewhat different from the one employed by Commodore to read and write data files. These are the routines used in our Address File and Home Data Retrieval programs. A\$ is passed to the write routine and destroyed. The user must GOSUB 1040 before closing the file to be certain the last few characters are written out of the output buffer.

```
999 *** TAPE PACKING AND WRITING ROUTINE ***
1000 B$=B$+A$+" "
1010 IF LEN(B$)<=190 THEN RETURN
1020 A$=MID$(B$,191)
1030 B$=LEFT$(B$,190)
1040 PRINT#1,B$
1050 POKE 59411,53:FOR J1=1 TO 100:NEXT
1060 POKE 59411,61
1070 B$=A$
1080 A$=""
1090 RETURN
```

The " " added to the string in line 1000 is the field delimiter.

```
1999 *** TAPE UNPACKING AND READING ROUTINE ***
2000 A$="":F1=0
2010 GOSUB 2200
2020 IF F1=1 THEN RETURN
2030 IF B$=" " THEN RETURN
2040 IF B$=CHR$(13) THEN RETURN
2050 A$=A$+B$
2060 GOTO 2010
2200 GET#1,B$
2210 IF (ST) AND (64) THEN F1=1
2220 RETURN
```

The user must be sure to check F1 before closing the data file. If F1=1 then an end-of-file has been encountered. Don't use B\$ in any other part of your program, since B\$ contains data still waiting to be printed.

\*\*\*\*\*

PRINT,,, "MESSAGE" prints the message in the 4th pre-tabbed PRINT position.

POKE 59468,12 turns on the graphic character font.  
POKE 59468,14 turns on the lower-case alphabet font.  
POKE 59411,53 turns on the cassette motor.  
POKE 59411,61 turns off the cassette motor.

\*\*\*\*\*

The second cassette motor requires a little game-playing to turn it on and off:

```
A=PEEK(59456)
POKE 59456,A AND 239 turns on the 2nd cassette motor.
POKE 59456,A OR 16 turns off the 2nd cassette motor.
```

---

---

FROM THE COMMODORE HIMSELF

Commodore has found a way to mass-duplicate tapes so they will load on all versions of the PET. Adrian Byram, Commodore's software manager, tells me the monitor and two tutorial-type games (BIGTIME and SQUIGGLE) will be shipped to all PET owners and then packed with every new PET. He anticipates that the mailings will start in about two weeks.

Any PET owner who has not received a mailing from Commodore within the last month should write to the PET Sales Department, 901 California Ave., Palo Alto, CA 94304, and ask to be included in the mailing list. Be sure to send them the serial number on your PET.

There is an expanded version of the Introduction To Your PET booklet that accompanies the unit when shipped. Commodore will be including the expanded version in the new units beginning in late June. There will be a second booklet, incorporating most of the Software Bulletins, available in the near future, but I couldn't get a date. The bulletins are being re-worked and cleaned up some so they'll be clearer and more complete. Chuck Peddle is doing the work on the bulletins himself, so they'll be quite useful when complete.

■ The PET Service Department has been given its own telephone numbers: (415) 327-4030 and (415) 327-4031.

And Commodore is still 'quite serious' about publishing its own newsletter. Again, no date, but the word is that "maybe in a month or so" they'll have the first issue available.

COMMODORE SETS PRELIMINARY PRICES ON REPLACEMENT PARTS: One of the Commodore people told us that preliminary prices have been set for:

RAM	\$30.00 each	6502	\$25.00 each
PIA	\$30.00 each	PIA	\$30.00 each
2nd Cassette	\$100.00	Printer	\$595.00

Out of Warranty service \$35.00 flat fee, regardless of what's wrong with the unit.

And we have word that a disk (Shugart, single side) will be ready by August.....???