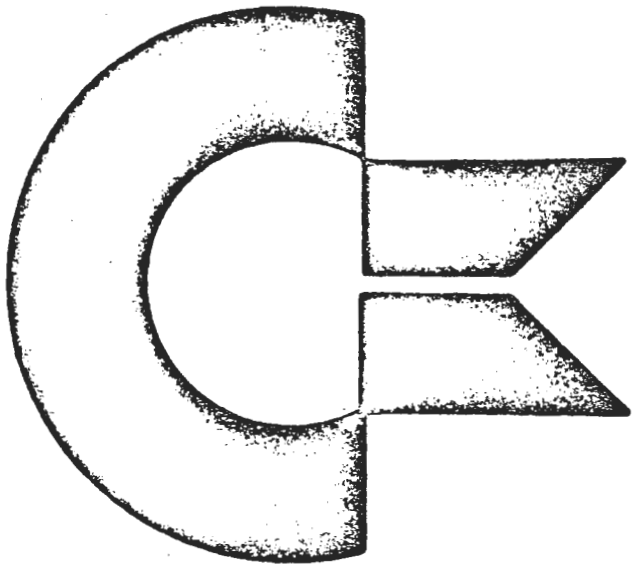
922-011



VOLUME I ISSUE 1

commodore

PET USERS CLUB NEWSLETTER

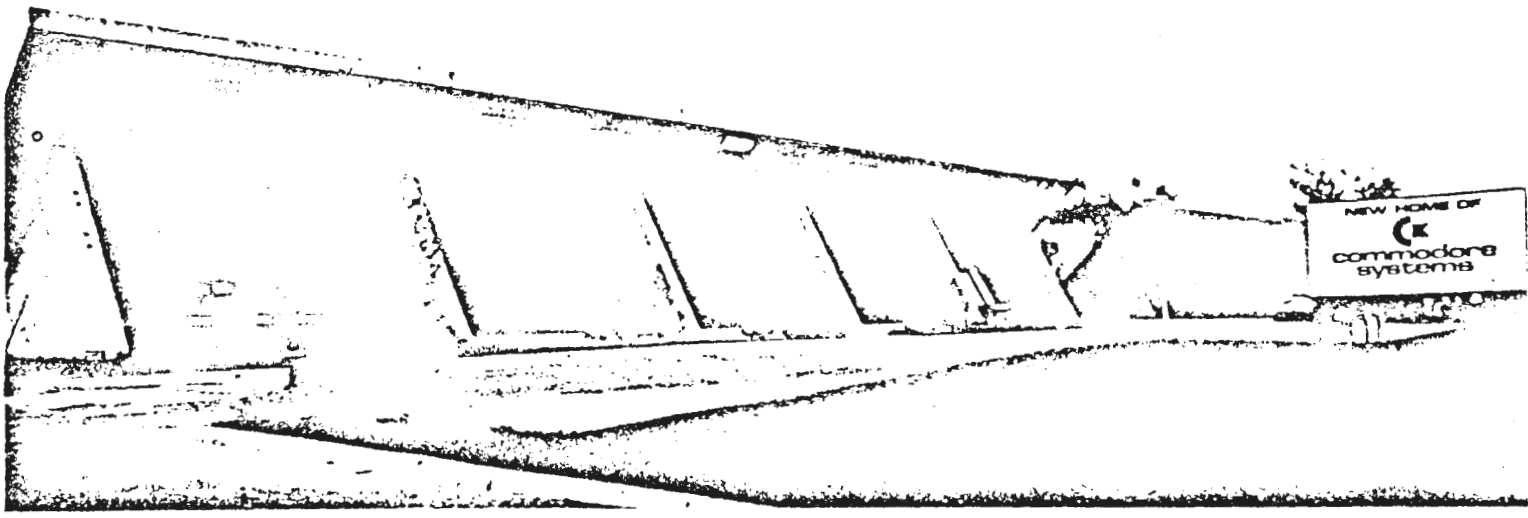
The new advanced technology headquarters for your high technology Company

Before the end of the 1978 calendar year, Commodore's new executive offices will be located in one of the first two solar energy industrial buildings in the United States; quite possibly in the world. Solar power will supply at least 90% of the heating, hot water and air conditioning requirements of the 60,000 square foot building, virtually eliminating the need for fossil fuel, winter or summer.

The building and its neighbor, each with massive cast-concrete fascia soaring skyward over the front facade, were the only industrial buildings to be awarded a solar grant by the U.S. Government's Energy Research and Development administration in a competition among 80 applicants in 35 states.

The buildings are located in the Oakmead industrial complex in Santa Clara, approximately fifteen miles south of Palo Alto.

It is fitting that your Company, engaged in high technology electronics, should establish headquarters in one of the most advanced technology buildings ever designed.



commodore

Dear PET Users,

On behalf of Commodore Business Machines, Inc., I would like to express my heartiest welcome to the COMMODORE U.S. PET USERS' CLUB.

I am pleased that Commodore can now offer this vehicle for effective communication among all PET Users within the United States of America. We have established similar clubs in those countries where Commodore is represented through its own sales offices, namely Canada, Germany, Japan and England.

This club has my sincere support but, needless to say, it's success is largely dependant upon each one of you.

Once again, I would like to say "Welcome to Commodore" and that, in the years ahead, Commodore pledges to continue successful responses to the changes and challenges of the electronic industry.

Sincerely,

Dennis R. Barnhart

Dennis R. Barnhart
Vice President, Marketing and Sales

NEWSLETTER CONTENTS

Commodore News

This issue initiates the formation of The Commodore U.S. PET USERS'CLUB, and is the first of our monthly newsletter which will be sent to each Club Member. The Charter of The Commodore U.S. PET USERS' CLUB is to provide a method of sharing up to date information, applications and programs relating to the PET Computer between the many PET owners, users and the manufacturer. Details on becoming a member are outlined in the enclosed flyer.

We would like to publish features from PET Users concerning specific applications, interesting discoveries or even bits worthy of sharing. If you would like to contribute to future newsletters, please send your article, letter or comments to:

Commodore Business Machines, Inc.
901 California Ave.
Palo Alto, CA 94304
Attn: The Editor
Commodore U.S. PET USERS' CLUB

NEW PRODUCT ANNOUNCEMENTS

During the recent Consumer Electronics Show in Las Vegas, the following new PETs were previewed. Each product will be highlighted in future issues prior to production availability.

MODEL	DESCRIPTION	PRICE	AVAILABILITY
PET 2001-8 Computer	Standard PET with integral cassette and calculator type keyboard 8K bytes of memory. (7167 net).	$795.00	NOW
PET 2001-8 Users Manual	160 Page expanded user manual covering all facets of user operation programming and I/O for PET computers.	$ 9.95	NOW order P/N 320845
PET 2001-16N Computer	PET with 16K bytes of memory and large keyboard with separate numeric pad & graphics on keys. External cassette optional. (15,359 net)	$995.00	MAY 79
PET 2001-16B Computer	As above but has standard typewriter keyboard. No graphic keys.	$995.00	MAY 79
PET 2001-32N Computer	Identical to 2001-16N with 32K bytes of memory. (31,743 net)	$1,195.00	MAY 79
PET 2001-32B Computer	Identical to 2001-16B with 32K bytes of memory. (31,743 net)	$1,195.00	MAY 79

For Commodore's new Peripherals announcemnts,please see the Peripherals and Attachment section.

PET 2001-8 USER MANUAL

The new comprehensive PET 2001-8 User Manual is now in stock. If

you desire this manual, send us your proof of purchase, serial number and a handling charge of $3.50. Please allow 2-4 weeks for delivery.

PET 2001-8 SERVICE KIT

For those of you who are handier than most, you may wish to order THE PET 2001-8 SERVICE KIT (P/N 320405) which contains the following:

Booklet "Testing the PET Computer"
Cassette "PET Test Programs"
Two Connectors
Video Display Circuit Schematic and Supplement
Parts Location for the Video Display Assembly
Video Display Assembly Component Cross Reference
Main Logic Board Schematic (9 Sheets)
Main Logic Board Assembly Component Cross Reference

Send your check for $30.00 (California residents must add appropriate sales tax.) to :

COMMODORE BUSINESS MACHINES, INC.
901 California Ave.
Palo Alto, Calif. 94304
ATTN: Customer Service

If you have already purchased a service kit and have not received an ERRATA sheet please write Customer Service and it will be mailed to you immediately.

For expediting your service needs, contact your local Authorized PET Dealer (see list at end of Newsletter).

Software

This section will deal with PET Software available thru Commodore for the PET. We shall also be reviewing the latest programs in some detail and be making some general comments about obtaining software for your PET.

COMMODORE MASTER LIBRARY - These programs are professionally written, completely documented, and debugged. The following programs are available (or will be soon) thru your authorized Commodore PET Dealer.

MACHINE LANGUAGE MONITOR

This program enables you to program your PET in Machine Language

Part No. 321000 $9.95

REVERSAL AND NUMBER REVERSE

Reversal - is Commodore's version of Othello, a game of strategy played on a 8x8 board, much like a chess or checkers board.

Number Reverse - is another game to tax your intelligence and logic

Part No 321001 $9.95

DIET PLANNER AND BIORHYTHM

Diet Planner (By Les Palenik) Determines the ideal weight for your height, your age, sex and body frame. Should you wish to lose weight, your PET will display the calorie intake required for you to reach your goal

Biorhythm - will indicate your intellectual, emotional and physical cycles according to a well regarded series of computations based on behavior.

Part No 321002 $14.95

TARGET PONG AND OFF THE WALL

Target Pong. Insert paddles in the path of a fast moving ball to deflect the ball into a target. The secret is to use the fewest number of paddles and the least time to hit the target just once. It's really much more difficult than it sounds. It requires dexterity and guarantees you fun

Off the Wall is exactly the opposite

Part No 321003 $9.95

A TREASURE TROVE OF GAMES

Lunar Lander - You must make the Lunar Excursion Module land softly on the moon.

Rotate - is a puzzle on a 4 by 4 grid. The secret is to arrange the letters in sequence in as few moves as possible. Very tough at first. But it can be done

Wumpus - Clues are all given and you must find the Wumpus on the basis of these clues and get him before he gets you

Tic Tac Toe - See if you can beat your PET at this old reliable game

Part No. 321004 $9.95

BASIC BASIC (By Ralph James and Ron Lodewyck)

A real tutorial program introducing you to the BASIC language. You proceed at your own pace and can actually learn PET's BASIC in several hours and then begin your own programming

Uses just 4K of RAM memory

Part No 321005 $14.95

GALAXY GAMES (Peter Kuetz)

You're required to maneuver your space ship while firing at the enemy and at the same time, avoid hitting a star

Part No 321006 $9.95

MORTGAGE

Almost a misnomer, because this program is suitable not only for people considering buying or selling property, but also for anyone contemplating borrowing or lending money

Part No 321007 $14.95

DRAW POKER

You play Draw Poker against the house with two pair or better to win

Part No 321008 $9.95

BLACKJACK

Place your bet and watch your PET deal out the cards as you try to beat the house

Part No 321009 $9.95

SPACEFIGHT (By Leonard K. Sweatman)

Fire missiles at each other in this two player game.

Part No. 321010 $9.95

SPACETREK

This is the PET version of the famdiar game many computer enthusiasts know as "startrek."

Order Part No 321011 $9.95

STOCK PORTFOLIO ANALYSIS PACKAGE

With this package your PET can keep track of your stock portfolio and provide you with instant analysis of its current value and rate of return

Part No 321012 $24.95

BASIC FINANCE/INVESTMENT ANALYSIS PACKAGE

With this package of programs your PET can assist you in making investment decisions involving the interaction of time and money. This includes - calendar loan & saving calculations along with depreciation analysis

Part No. 321013 $24.95

BASIC MATH PACKAGE

This comprehensive package turns your PET into an efficient interactive calculator capable of solving many common mathematical problems. This includes matrix math routines, vector arithmetic, trigonometry, and numerical integration and differentiation

Part No. 321014 $29.95

THE PET SHOW

We have put together four demo programs especially designed to spotlight your PET's special qualities. This includes - Demo, Mandala Graphics and World Clock

Part No 321015 $9.95

STATISTICS PACKAGE

This package can assist you in the analysis of data. The four programs include general statistics, T tests, correlation and regression, and Chi-square

Part No 321020 $29.95

CHECKBOOK

This program provides an easy, error free method for keeping track of your checking account

Part No 321021 $24.95

REALTY FINANCIAL ANALYSIS

For professional Real Estate investors and Brokers. Includes installment sales, cash flow, property operations and analysis

Part No 321022 $59.95

WRITE-TO-READ LESSONS

This series of programs contains 66 lessons designed to supplement a reading program in teaching students basic word attack skills necessary to reading. The programs are designed for use in the primary grades

Part No 321100 $39.95

RHYMING

This program was designed to help teach the concept of rhyming words. The program is designed for use in the primary grades

Part No 321110 $9.95

ALPHABETIZING

This program was designed to help teach the concept of alphabetizing. The program is designed for use in the primary grades

Part No. 321111 $9.95

GUESS A SENTENCE

This series of programs was designed to help teach the concept of identifying complete sentences. The programs are designed for use in the primary grades

Part No. 321112 $29.95

SPELLING

This program was designed to help teach a student to spell words identified by the student.

Part No. 321113 $9.95

THE STATES AND THE CAPITALS

These two programs were designed to teach the names, spelling and locations of the fifty states and their capitals. Excellent use of PET graphics are demonstrated by these programs

Part No. 321114 $14.95

PROJECTILE MOTION

These two programs review the basic definitions of kinematics by dealing with the analysis of projectile motion

Part No. 321202 $19.95

MOMENTUM AND ENERGY

These two programs deal with the concepts of linear momentum, impulse, kinetic energy and work.

Part No 321203 $19.95

PULLEY SYSTEMS

These two programs deal with the analysis of a simple machine - a pulley system consisting of single, double or triple fixed and movable blocks. The concepts of work and efficiency are reviewed

Part No 321207 $19.95

LENSES AND MIRRORS

These two programs deal with the image forming properties of convex mirrors and lenses

Part No. 321217 $19.95

SERIES PARALLEL CIRCUIT ANALYSIS

These two programs deal with the analysis of a circuit in which a single resistor, R1, is in series with a parallel combination of resistors, R2 and R3

Part No 321221 $19.95

THE MOLE CONCEPT

These two programs review the mole concept and the writing of chemical formulas

Part No 321224 $19.95

MOLARITY CONCEPT

These two programs deal with the concept of molarity

Part No 321225 $19.95

STOICHIOMETRY - General

These two programs involve mass-mass, mass/volume or volume-volume relationships in chemical reactions

Part No 321231 $19.95

NAMING COMPOUNDS DRILLS

These two programs give the student practice in writing the names of chemical compounds given the formula

Part No 321238 $19.95

FORMULAS OF COMPOUNDS DRILLS

These two programs give the student practice in writing formulas of chemical compounds whose names are given

Part No 321239 $19.95

ALL PROGRAMS REQUIRE 8K OF RAM UNLESS OTHERWISE SPECIFIED

NEW SOFTWARE

The following programs from our operation overseas are in the process of being added to our Master Library. Pricing and Ordering information will be included in February's Issue.

ROCKSTOCK

This is a stock control program designed to work on a PET system with a second external cassette deck. The use of a second cassette deck enables a virtually limitless number of items to be stored on tape. A feature of this program is that depending on the user's security level a password ensures that not all items on record will be displayed, e.g. buying price. This program is best suited when transactions are entered once daily and a daily summary of the latest position of a large number of items is then required.

ARDENSTOCK

This is a stock control program designed to work on a stand alone PET. The program will handle up to 90 products recording any period of issues and receipts as well as reporting their free stock position and stock value. Re-order levels can be set and 'on order' goods also shown. This program is best suited when quicker information is needed on a relatively small number of items.

COSTING

Cost report generating system covers up to 200 descriptions and costs. This can be altered by adding new records or changing existing ones. A two part coding system gives the grand total of the records and also up to 20 sub totals. The second part of the coding system allows for another 20 sub totals to be used independantly. It is easy for the user to specify the changes he wishes to make. Once the initial file set up has been performed, only one program is required to edit, add and delete records and print out the various totals available. This system is well documented and should be understood by inexperienced users.

DATA BASE UTILITY

This is an aid to businessmen wanting to design their own systems and will help them create their own programs for such areas as stock control, mailing lists and personnel records. It allows the user to create, maintain and examine files of data on cassettes. Although such files contain within themselves descriptions of the file structure, the actual user data can readily be processed by the user's own application program. The file contains logical records with a common format; all data is held as strings. Second cassette deck needed.

SURVEY ANALYSIS

This program will analyse the coded results of a small to medium size survey, e.g. 80 responses to a questionnaire of 12 questions.

SNARK

This program is written by a well known Professor of Computer Science. It converts PET into a simulated 16 bit abstract machine designed for use in an elementary Computer Science course. It aims to teach the elements of machine code programming.

DISASSEMBLER

6500 series full disassembler asks for decimal starting location and lists from this point, gives full mnemonics and handles ASCII tables.

MACHINE CODE HANDLER

This program allows you to type a list of HEX codes from a given location. These routines can then be called using the SYS verb.

HEX EDITOR AND LOADER

This allows you to edit, insert, delete, load and save HEX programs.

LEAST SQUARES

This program uses a well established formula for fitting a curve to any set of data points.

SOFTWARE REVIEW

In this issue, Commodore's Basic Finance/Investment Analysis and Real Estate Packages are reviewed.

BASIC FINANCE/ INVESTMENT ANALYSIS PACKAGE

With this package of programs your PET can assist you in making investment decisions involving the interaction of time and money.

The Calendar Calculation Program is a perpetual calendar and then some. You can convert from Julian to Gregorian dates and vice versa. You can determine the number of days and years between any two dates, or add a specified number of days, months or years to another date. In addition, you can ask your PET to display a calendar for any month in the past or future.

The Loan Calculator Program is multi-purpose. Your PET will calculate any one of principal, interest, term or regular repayment for you. If desired, the calculation can be performed with a balloon type last payment. Payments on the loan can be specified to be monthly, bimonthly, quarterly, semi-annually, or annually. All calculations are performed to the nearest cent. Thus if a regular repayment calculation is requested, your PET will calculate both the regular repayment and the last payment required to pay off the loan exactly. On request, the program will also display a schedule of repayments, equity, interest and outstanding balance.

The Depreciation Analysis Program enables your PET to prepare a schedule of depreciation for fixed assets according to any of the three common methods: straight-line, declining balance, or sum-of-the-years-digits. For planning purposes the display can be on an annual basis, while for more detailed work the month-to-month depreciation can be examined. The program is sufficiently flexible to allow analysis of assets placed in service midway through a fiscal year.

The Savings Calculator Program is also multi-purpose. You can use it to calculate the periodic deposits necessary to reach a savings goal, the time necessary to reach such a goal, or the savings that will be accumulated by a sequence of deposits. You can specify that interest is to be compounded continuously, daily, weekly, monthly, bimonthly, quarterly, semi-annually, or annually. The program automatically calculates the effective annual interest rate. You may specify that regular periodic deposits are made to your savings plan. You may also examine the future effect of irregular deposits to and withdrawals from the plan.

The basic Finance/Investment Analysis Package includes full documentation on the correct application and use of all four programs.

REALTY FINANCIAL ANALYSIS

This package is designed for use by professional Real Estate investors and brokers. It includes installment sales and cash flow, calculations along with property operations and analysis.

1. Financial Analysis

This program calculates future and present values, payment amounts, interest rates, number of payments, yield and purchase prices, balloon payments, amortization schedules, and cash flows.

2. Annual Property Operating Data

The Annual Property Operating Data (APOD) program is a good way to quickly analyze income property from a static point of view.

APOD calculates Cash Flow before taxes, Capitalization and Gross Multiplier. The program allows the user to change the price, income, expenses and/or financing and instantly see the effect of the change or changes on the investment.

3. Cash Flow Analysis

Cash Flow Analysis was designed as a quick method to analyze real estate investments not only from a static point which is the APOD form; but also to do cash flow projections for up to 15 years. The cash flow analysis program calculates the taxable income, cash flow before taxes, and cash flow after taxes.

4. Installment Sale

The Installment Sale provision is an exception to the basic Capital Gains Rule that tax is due in the year of sale. The taxpayer may elect the installment method and report the gain over the period of collection on the contract. This program calculates the necessary data.

COMMODORE'S PUBLISHING PROGRAM

Commodore has established a program to publish software in a manner similar to traditional book publishing. Once a program is selected for the Master Library royalities will be paid on actual sales. Programs submitted for evaluation must be of high interest quality, and/or of specific problem-solving nature with complete documentation. If you have developed such a program or application system we would be happy to hear from you. A copy of the Commodore Software Publishing Program will be sent upon request.

If you are ready to submitt your program(s) for evaluation, please note the following:

1. Programs must be submitted with complete documentation that includes; program synopsis, limitations, references used, and operating instructions.

2. Cassettes should be labeled with your name, address and program name.

3. Program Documentation and Cassettes, should be sent to:

   Commodore Business Machines, Inc.
   901 California Ave.
   Palo Alto, Calif. 94304
   Attn: Software Department

4. Please allow at least 4 to 6 weeks for our evaluation process. You will be notified upon receipt.

5. If you have not already received a copy of Commodore's Publishing Program we will include one with our acknowledgement.

THE PLOTTER PROGRAM

The following program appeared in Issue 1 of the PET Users' Club Newsletter in England.

```
0 GOTO10
1 POKE(24-Y)*40+40+32768)+X,46:RETURN
5 DATA12,15,22,5,12,25,38
10 PRINT"L"
20 FORA=0TO4*πSTEP(4*π/.39
30 Y=INT(SIN(A)*11+12):X=X+1
40 GOSUB1
50 NEXT
60 FORA=33568TO33574:READZ:POKEA,Z:NEXT
```

It contains the useful sub outine for plotting functions on an xy coordinate plane which inspired the PLOTTER program which follows.

The PLOTTER program plots the graphs of 15 different mathematical functions on the screen. The subroutines 30-170 contain each function and the string A$ which is used to print out the equation of the function. Each graph is entered as Y expressed as a function of Z as in the case

Y = SIN (Z)

The subroutines on lines 13-27 input the constants A,B,C,D which scale the graphs. They are the coefficients of the two linear transformations

x' = Cx + D
y' = Ay + B

The variable C determines frequency, and A determines magnitude. The variables D and B move the frame of reference (the screen). The variable B moves the screen up and down and D moves it from side to side.

The key to choosing values for A,B,C and D for a particular function is trial and error. This process, however, is highly educational. You have the ability to examine any part of a particular function by adjusting the reference laterally. You can magnify and shrink by adjusting the magnitude. You can stretch and compress by changing the frequency.

To test new functions, you should create your own test program. It takes a great many trials to adjust the scale just right and time saving features are well worth it. Your program should display the current values of A,B,C and D and input statements can

be used to input modifications to these values. The advanced programmer can create an automatic scaling feature for the y values and then eliminate the need for the A and B. This involves computing the 40 y values of the function and storing them as subscripted variables. The maximum and minimum of these 40 numbers are found and these can be used to generate the appropriate values for A and B.

A word of warning about POKEing around in your PET. The plotting routine used in these programs POKEs the dot (46) into the screen memory (locations 32768- 33767). For some choices of the variable A, the POKEd location is either greater or less than the screen memory locations. Be sure to keep a current backup of your program in case you need to repower your PET. Automatic scaling eliminates the problem, or the dots can be printed using LEFT$ string manipulation. Using PRINT statements also eliminates the sparkling on the screen characteristic of POKEing to the screen.

After perfecting your plotting program, try graphing some unusual functions. Sums and products of two or more of the standard functions are interesting and the absolute value function, ABS, can give some interesting results.

Finally, since 40 points are plotted these may be determined discretely and plotted.

By creating a frequency distribution of randomly generated data, approximations to the binomial, F, and chi-squared distributions may be plotted.

PLOTTER

```
1 [illegible]"
2 F[illegible]
3 PRINT"[illegible] FOR[illegible]
4 [illegible]
5 [illegible]
6 Y=INT(M*Y+B)
7 PRINT$"[illegible]" = "M$
8 F[illegible]
9 NEXT FOR[illegible] NEXT NEXT GOTO2
10 REM**********THE CONSTANTS Y=AY+B X=CX+D******
11 A=7 B=12 C=.0019 D=.035 RETURN
12 A=.6 B=0 C=1 I=0 RETURN
13 A=7 B=13 C=.5 D=0 RETURN
14 A=7 B=13 C=.5 I=0 RETURN
15 A=1.1 B=11 C=.3 D=.2 RETURN
16 A=.07 B=2 C=1 I=-20 RETURN
17 A=.0219 B=12 C=1 I=-19 RETURN
18 A=1 B=2 C=.1 D=-.9 RETURN
19 A=7 B=12 C=.1 D=.2 RETURN
20 A=.7 B=12 C=.05 D=-.982 RETURN
21 A=9 B=12 C=.0321 D=.032 RETURN
22 A=169 B=12 C=.6 I=5.7 RETURN
23 A=18 B=2 C=.28 I=0 RETURN
24 A=20 B=2 C=1 D=0 RETURN
25 A=12 B=2 C=.1 I=-1 RETURN
26 REM**********THE FUNCTIONS Y = F(X)**********
30 Y=0 M$= 0 RETURN
40 Y=[illegible] M$="[illegible]" RETURN
50 Y=COS(X) M$="COS(X)" RETURN
60 Y=SIN(X) M$="SIN(X)" RETURN
70 Y=TAN(X) M$="TAN(X)" RETURN
80 Y=[illegible] M$="[illegible]" RETURN
90 Y=[illegible] M$="[illegible]" RETURN
100 Y=EXP(X) M$="EXP(X)" RETURN
110 Y=LOG(X) M$="LOG(X)" RETURN
120 Y=1/X M$="[illegible]" RETURN
130 Y=SIN(1/X) M$="SIN(1/X)" RETURN
140 Y=SIN(X)/X M$="SIN(X)/X" RETURN
150 Y=ABS(SIN(X)) M$="ABS(SIN(X))" RETURN
160 Y=RND(1) M$="RND(X)" RETURN
170 Y=EXP(-(Z)12) M$="NORMAL CURVE" RETURN
```

Peripherals & Attachments

This section will list and preview known PET compatible Peripherals and Attachments. In addition to standard or commercially available equiptment, we would be interested in any new and unusual hardware interfacing which you may come across.

PERIPHERALS AND ATTACHMENTS

In addition to the newest PET members, the following Commodore Peripherals were also previewed at the recent Consumer Electronics Show: (January 6-9, 1979)

MODEL	DESCRIPTION	PRICE	AVAILABILITY
PET 2021 Printer	80 column dot matrix electrostatic printer with full PET graphics capability.	$ 549.00	MAY 79
PET 2022 Printer	80 column dot matrix printer with plain paper or forms handling tractor feed. Has full PET graphics.	$ 995.00	MAY 79
PET 2023 Printer	80 column dot matrix printer. Plain paper printer with full PET graphics.	$ 849.00	MAY 79
PET 2040 Dual Drive Mini Floppy Disk*	Dual drive intelligent mini floppy system. 340K net user storage capacity.	$1,095.00	MAY 79
PET 2041 Single Drive Floppy Disk	Single drive intelligent mini floppy 170K net user storage.	$ 595.00	JULY 79
PET External Cassette	Cassette player/recorder to use with PET 2001/8/16/32.	$95.00	NOW

* retrofit kit required for operation with PET 2001-8

Peripheral Specifications will be summarized in future newletters prior to production avalibility.

PRINTERS

The Commodore 2020 Printer has been officially withdrawn. The printhead vendor has been incapable of meeting the technical standard of product we require. We have selected two additional sources of printheads and are pleased with their tested performance. The three models replacing the 2020 are all capable of full PET graphics. The model 2021 is an electrostatic 80 column printer; the model 2022 an 80 column tractor feed printer; and the model 2023 an 80 column friction feed printer.

2040 FLOPPY DISK PREVIEW

Commodore's 2040 Mini Dual Floppy Disk is an intelligent IEEE-488 peripheral which is controlled by two MOS 6500 series microprocessors.

Unlike any other system on the market, this Disk System contains common memory that is shared between the IEEE communication processor and the disk controller processor.

This configuration provides for a distributed processing environment that allows the floppy to execute a command while the PET prepares the next command or performs other program functions.

The disk recognizes a command set that supports a high level sequential file management system. Utility commands are also provided for direct access to any byte on the diskettes.

In addition, the system is capable of executing machine language programs read directly from diskettes or transmitted from the PET. This feature is useful for executing complete diagnostic programs, recovery of data, and custom operating systems.

Applications

There are almost as many applications for a PET as there are PET's themselves. We would like to find out what the PET is being used for so that we can pass on relevent details to other people interested in the same area of use.

We are therefore offering $50.00 worth of free Master Library Software to the best 'Applications' article published in each issue. If you would like to write about what you are doing with your PET, please include the following details:

1. What the nature of the application is.
2. What (if applicable) non-computerized system has the PET replaced.
3. Details of any extra hardware used.
4. Any "special features" of the programs used.
5. Who else this system might be useful to.
6. Any further improvements/modifications intended.

We already know of many applications and intended applications but we would like to see details and know who to contact. The following list contains just some of the uses for PET that have reached our ears.

Mortage Analysis
Monitoring Chemical Reactions
Inventory Control
Questionnaire Analysis
Music Synthesising
Machine Tool Control
Perception Tests
Currency Conversion
Word Processing
PCB Testing
Statistical Analysis
Personal Finances
Computer Aid Instruction
Savings & Loan Computations
Address Lists
Aircraft Flight Simulation
Medical Records
Model Railway Control
Costing
Navigation
Language teaching
School Administration
Stock Control
Education Computer Literacy
Real Estate Analysis
Surveying
Civil Engineering

ARE ANY OF THESE FAMILIAR TO YOU?

Programming

This section will be dealing with useful routines and "tricks" for using on your PET. Some articles come from users, some from ourselves, and there is a 'Hints and Tips' section for smaller yet valuable items.

HIGH SPEED FILE ACCESS

There are many PET applications which require the reading and writing of several data files in one program. Since it is often inconvenient (or too expensive) to keep each file on a separate tape, it is normal practice to record several jobs on one tape - distinguished by their filenames. However, this can mean a long wait while searching for a file towards the end of the tape and many users have been looking for a way to decrease this search time.

This article describes one very good method, by using a short subroutine to control the cassette drive in 'FAST FORWARD' mode prior to writing or reading a file. By keeping note of the Fast Forward times, any particular file can be located at a much higher speed and with a reasonable degree of accuracy. To make use of this facility, proceed as follows:

1. Enter the following subroutine (suitably re-numbered if necessary) into your program:

```
1000    ?"■ Rewind the cassette and then lift up the cassette
        lid"
1010    ?:?"Press [F.FWD] and then [RETURN]":GOSUB 1200
1020    ?:?"Wait for a moment"
1030    OPEN 1,1,1
1040    ?" Now push the cassette back into the deck and press
        [RETURN]"
1050    GOSUB 1200
1060    ?"■ Fast forwarding for "T" seconds"
1070    Z = TI:POKE59411,53
1080    If TI<Z+60*T-340THEN1080
1090    POKE 59411,60:Close 1
1100    ?"■ Now in position"
1110    ?"Press [STOP] on Cassette #1 the [RETURN]"
1200    Get A$:IfA$=""Then 1200
1210    RETURN
```

2. To Fast Forward for 'n' seconds, set T=n and GOSUB to the above subroutine. Try this a few times and you will soon get the idea.

3. The basic idea when handling a number of files is to record them in known places. Before 'OPENing' to write a file, one might use the subroutine to Fast Forward for eight seconds. Thus to access that particular file later, simply Fast Forward (again using the subroutine for eight seconds) before 'OPENing' to read.

A typical program using this idea might look something like this:

```
      .
      .
      .
100   T=10:GOSUB1000                    F.FWD for 10 seconds
110   POKE 243,122:POKE 244,2
120   OPEN 1,1,1,"FILE 1"
      .
      .                                 Write data for file 1
      .
190   CLOSE 1
      .
      .
      .
350   T=15:GOSUB1000
360   POKE 243,122:POKE 244,2
370   OPEN 1,1,1,"FILE 2"
      .                                 Write data for file 2
      .
      .
410   CLOSE 1                           Having written files,
      .                                 they can be read back
      .                                 as follows:
      .
530   T=10:GOSUB1000                    F.FWD to file 1
540   OPEN 1,1,0,"FILE 2"
      .
      .
      .
580   CLOSE 1
      .
      .
      .
710   T=15:GOSUB1000
720   OPEN 1,1,0,"FILE 2"
      .
      .                                 Read back file 2
      .
830   CLOSE 1
      .
      .
      .
```

This system - if used correctly - can save you a lot of time in searching for files and hence has many applications in business

and other programs.

The following points should be noted:

a) The Fast Forward on a cassette deck is not linear - the tape travels faster as more is wound on the accepting spool. This means that for recording files of the same length, the larger values of T can be closer together than the low ones.

b) Different types of tape and different PETs Fast Forward at slightly different speeds. We therefore recommend that for a particular program, you stick to one type of tape and one PET.

c) Trial and error is the only real way of discovering just how close together you can pack your values of T.

d) Do not try to Fast Forward for T less than six seconds.

e) After Fast Forwarding, the PET will still allow a gap of several seconds (at playing speed) before starting to write a file. This is, in fact, useful as it allows a safety margin when reaccessing the file.

f) The system described in this article could be extended to form an almost automatic filing system, where each tape had a 'catalog' at the start giving the filenames and Fast Forward times to all the files on that tape. An improved subroutine would look up this value and hence find any file by name - very quickly. We would very much like to hear from any User

who takes up this idea.

g) The subroutine at the moment takes up 425 bytes of storage. After some practice, however, much of the prompting and wording can be removed or abbreviated.

"EXTRA" USE OF THE VERIFY COMMAND

VERIFY has the useful property of reading a program without loading it. Even if an error is detected, it is not displayed until the whole program has been read.

This provides a quick means of finding the end of a program on a cassette without losing what you currently have in the memory.

For example, one is occasionally in the position of having loaded a program, rewound the tape modified the program and now wish to save the new version after the old. Using an extra tape, this can be done using LOAD and SAVE, with a bit of shuffling.

Quicker however is to use the VERIFY command. When the error message appears, you know you are at the end of the old program. Select STOP on the cassette and SAVE in the normal way. (Remember to use a program name with a different initial character from the old one!)"

BITS AND PIECES

Some more hints and tips to help you write efficient programs:

When using subscripted variables such as A(4) the operating system automatically reserves 10 elements without having to declare a dimension with DIM. If, however, you are using a very long program and are using less than 10 elements per variable - say 4 - it will save space to declare the dimension's length. For example:

```
10  DIM A(4), CS (3)
```

* *

To display a number (N) to D decimal places, use the following routine:

```
10  M = INT(N*10↑D+0.5)/10↑D
20  PRINT M
```

* *

For an intriguing display of graphics, try running this one line program entitled "BURROW"

```
1 A$="↑↓→←":PRINTMID$(A$,RND(.5)*4+1,1)"* ← ";:FORT=
1TO30:NEXT:PRINT"R ← ";:GOTO1
```

* *

The following routine displays PETs complete character set:

```
10 FORI=32TO95:A$=A$+CHR$(I):NEXT
20 FORI=160TO223:B$=B$+CHR$(I):NEXT
30 C$="■"+A$
40 D$="■"+B$
50 PRINTA$
60 PRINTB$
70 PRINTC$
80 PRINTD$
```

* *

The following is an example of disabling the stop key.

This program prints only what has been typed on the keyboard. It cannot be stopped until the password CBM is typed.

```
10 REM DISABLE STOP KEY EXAMPLE
100 POKE 56334,PEEK(56334) AND 254:REM *** SET UP MASK AND DISABLE STOP ***
200 PRINT "{CLR}":REM *** CLR SCREEN ***
1000 REM*****************************************
1005 REM*                                         *
1010 REM*    EXAMPLE PROGRAM WITH NO STOP KEY     *
1015 REM*                                         *
1020 REM*   PROGRAM ECHOES ALL KEYS TYPED AT      *
1030 REM*   THE KEYBOARD. EXIT BY TYPING THE      *
1040 REM*   PASSWORD  CBM .                       *
1045 REM*                                         *
1050 REM*****************************************
1100 REM *** CLEAR SCREEN ***
1110 PRINT "{CLR}":REM *** PRINT EMPTY COMP AND CASE LEFT ***
1130 FOR I=1 TO 50:REM *** WAIT AND GET ANY CHARACTERS ***
1140 GET A$:IF A$<>"":THEN 3000
1150 NEXT
1200 PRINT "{CLR}":REM *** PRINT SAME AND CASE LEFT ***
1230 FOR I=1 TO 50:REM *** WAIT AND GET ANY CHARACTERS ***
1240 GET A$:IF A$<>"":THEN 3000
1250 NEXT
1300 GOTO 1100
3000 REM **** PASSWORD TEST ****
3010 B$=B$+A$:S$=S$+A$:REM *** TEST LAST THREE CHARACTERS ***
3020 IF B$<>"CBM" THEN 4000
3040 PRINT "{CLR}":REM *** DISABLE PASSWORD ***
3050 SYS(64818):REM *** ENABLE STOP KEY AGAIN ***
3060 END
4000 PRINT "{CLR}";A$:REM *** ECHO LAST CHARACTER ***
4020 GOTO 1102
10000 REM*****************************************
10010 REM*                                         *
10020 REM*       MACHINE LANGUAGE PROGRAM          *
10030 REM*                                         *
10040 REM*   SYS(832) DISABLE STOP KEY FUNCTION    *
10050 REM*   SYS(843) ENABLE STOP KEY FUNCTION     *
10060 REM*                                         *
10070 REM*****************************************
11000 DATA 120,169,96,141,20,3,169,3
11010 DATA 141,21,3,88,96,0,0,0
11020 DATA 120,169,131,141,20,3,169,230
11030 DATA 141,21,3,88,96,0,0,0
11040 DATA 32,234,255,169,255,141,5,2
11050 DATA 76,156,230,0
12000 RESTORE:FOR I=832TO844:READ A:POKE I,A:NEXT
12010 SYS(832):REM *** DISABLE STOP KEY ***
12020 RETURN
```

* *

When you answer an INPUT command with only RETURN, (CHR$(13)) the program stops and returns to BASIC. To avoid this protect your input statement as follows:

```
10 INPUT"{SHIFT SPACE}";A$:IF A$="{SHIFT SPACE}" THEN A$=""
20 IF A$="{SHIFT SPACE}" THEN 10
```

The spaces in the two strings are shifted spaces (SHIFT and SPACE together). If a RETURN is used, a space is inputed and line 20 detects this. Shifted spaces are used because leading unshifted spaces are ignored by the computer. With a protected input, the program cannot be stopped during input, even with the STOP key.

CURSOR CONTROL CHARACTER TOKENS

cursor up	
cursor down	
cursor left	
cursor right	
home	
clear	
reverse on	
reverse off	

Users' Directory & Announcements

One of the major advantages in being a member of the PET USERS' CLUB is the ability to get hold of PET related software and ideas. Although our Master Library of programs is now growing, we get frequent Software inquires for a wide range of applications.

We will therefore publish in future issues, a current Users' Directory, containing lists of people writing software, importing literature or starting local PET Groups. If you would like to use your PET for fun and profit, why not offer personal tutoring in PET programming to new PET owners. Alternatively, if you require a program to be written for you, ask for contacts via the Users' Directory. The possibilities are endless. To print more official company advertisements, please write to the Editor, U.S. PET USERS' CLUB, at the address below.

To include you name in the Users' Directory, please complete the following form:

To: The Editor, U.S. PET USERS' CLUB, Commodore Business Machines Inc., 901 California Ave., Palo Alto, Calif. 94304.

NAME_____

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Services Offered/Specialist area of interest:_____

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To include as many contacts as possible, we must restrict each User to only one line of description.

Commodore reserves the right to edit or withdraw any entry.

The list of PET User Groups listed below is by no means complete. Please notify us if we omitted your group. If there is no local group in your area, consider forming one yourself.

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Computer Project, Room 254.....Berkeley, CA 94720

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3030 Topaz, Apt. A.....Fullerton, CA 92361

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Texas A & M Microcomputer Club.....Texas A & M, TX

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PET User Group
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PUG
310 Showers Dr.....Mountain View, CA

Sacramento PET Workshop
P.O. Box 26314.....Sacramento, CA

S...
314 10th Ave.....Oakland, CA

S.. LOUIS CLUB
40 Westwood Court.....St. Louis, MO 63131

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Lafayette Radio Electronics Assoc. Store
(Eric Electronics)
1375 E. Grand River Ave.
East Lansing 48823
517-332-8676

Lafayette Radio Electronics Assoc. Store
(Eric Electronics)
29400 Orchard Lake Road
Farmington 48024
313-626-4595

Lafayette Radio Electronics Assoc. Store
(Eric Electronics)
3142 - 28th St.
Grand Rapids 49508
616-949-8590

MICHIGAN (Cont'd)

Lafayette Radio Electronics Assoc. Store
(Eric Electronics)
214 N. Rose St.
Kalamazoo 49006
616-381-5164

Lafayette Radio Electronics Assoc. Store
(Eric Electronics)
33760 Plymouth Road
Livonia 48150
313-261-0600

Lafayette Radio Electronics Assoc. Store
(Eric Electronics)
31873 Gratiot
Roseville 48066
313-294-8000

Lafayette Radio Electronics Assoc. Store
(Eric Electronics)
34208 Van Dyke
Sterling Heights 48077
313-268-8550

Lafayette Radio Electronics Assoc. Store
(Eric Electronics)
3460 West Road
Trenton 48183
313-675-7900

Lafayette Radio Electronics Assoc. Store
(Eric Electronics)
3127 W. Huron
Waterford 48095
313-681-7400

Newman Computer Exchange
1250 N. Main St.
Ann Arbor 48107
313-994-3200

Olson Electronics
29121 DeQuindre
Madison Heights 48071
313-546-0190

Olson Electronics
15620 Grand River Ave.
Detroit 48227
313-838-0777

Olson Electronics
14243 Gratiot Ave.
Detroit 48205
313-372-1317

Olson Electronics
15847 Southfield Rd.
Allen Park 48101
313-388-9150

Olson Electronics
200 North Wayne Rd.
Westland 48185
313-722-3440

MICHIGAN (NEW Cont'd)

Olson Electronics
19045 Middlebelt Rd
Livonia 48152
313-477-02k0

Olson Electronics
1990 Woodward Ave.
Bloomfield Hills 48013
313-334-4759

Olson Electronics
37627 Gratiot Ave.
Mt. Clemens 48043
313-463-7074, 7075

Tri-Cities Computer Mart
3145 Shattuck Rd
Saginaw 48603
517-790-1360

MINNESOTA

Computer Depot
3615 W. 70th St.
Minneapolis 55436
612-927-5601

Computerland/Bloomington
8070 Morgan Circle Dr.
Bloomington 55431
612-884-1474

Minnesota Micro Systems
514 Cedar Avenue South
Minneapolis 55454
612-338-5604

MISSISSIPPI

MISSOURI

CDC Associates, Inc.
235 Dunn Rd.
Florissant 63031
314-921-4433

Computerland/Springfield
1722 W.W. So. Glenstone
Springfield 65804
417-883-7085

Computer Mart
3622 Noland Court
Independence 64055
816-461-5005

Forsythe Computers
11966 St. Charles Rock Rd.
Bridgeton 63044
314-739-8300

Gateway Electronics Corp.
8123-25 Page Blvd.
St. Louis 63130
314-427-6116

Parsons Electronics
1059 Venture Dr.
St. Charles 63301
314-723-2227

MONTANA

The Computer Store
3548 Miles Ave.
Billings 59102
406-656-2365

Varitron
Box 729
Chinook 59523
406-357-2116

NEBRASKA

Omaha Computer Store
4540 S. 84th St.
Omaha 68127
402-592-3590

NEVADA

Home Computers
1775 Tropicana
Las Vegas 89109
702-736-6363

Ingenuity, Inc.
1562 Linda Way
Sparks 89431
702-359-6671

NEW HAMPSHIRE

Computerland/Nashua
419 Amherst
Nashua 03060
603-889-5238

NEW JERSEY

Computerland/Bergen County
35 Plaza
Highway E65, Route 4
Paramus 07652
201-845-9303

Computerland/Cherry Hill
Pine Tree Plaza
1442 E. Route 70
Cherry Hill 08034
609-795-5900

Computerland/Morristown
2 De Hart St.
Morristown 07960
201-539-4077

The Computer Nook
Pine Brook Plaza
Route 46
Pinebrook 07058
201-575-9468

NEW MEXICO

NEW YORK

American Peripherals
3 Bangor St.
Lindenhurst 11747
516-587-2615

A.S.D. Office Systems
Van Wyck Plaza
Poughkeepsie 12603
914-473-9400

The Computer Corner
White Plains Mall
200 Hamilton Ave.
White Plains 10601
914-949-3282

Computer Factory
485 Lexington Ave.
New York 10017
212-687-5001

Computer General Store
103 Atlantic Ave.
Lynbrook 11563
516-887-1500

Computer House, Inc.
721 Atlantic Ave.
Rochester 14609
716-654-9238

Computerland/Buffalo
1612 Niagara Falls Blvd.
Buffalo 14150
716-836-6511

Computerland/Ithaca
225 Elmira Rd.
Ithaca 14850
607-277-4888

Computer Microsystems
1311 Northern Blvd.
Manhasset 11030
516-627-3640

Computer Mart of New York
118 Madison Ave.
New York 10016
212-686-7923

Computer Shop of Syracuse
3470 E. Erie Blvd.
DeWitt 13214
315-446-1284

Meixner Business Machines
24 Lorraine Ave.
Mt. Vernon 10553

NEW YORK (Cont'd)

Olson Electronics
711 Main St.
Buffalo 14203
716-856-2504

Olson Electronics
3259 Sheridan Drive
Buffalo 14226
716-837-6300

Olson Electronics
Clarence Mall, 4401 Transit Rd
Buffalo 14221
716-633-6644

Olson Electronics
3768 Seneca St.
West Seneca 14224

NORTH CAROLINA

Byte Shop
218 N. Elm St.
Greensboro 27401
919-275-2983

Carolina Information Systems
P. O. Box 10534
Raleigh 27605
919-833-0210

Computerland/Charlotte
3915 E. Independence Blvd.
Charlotte 28205
704-536-8500

The Computer Room
1100 E. Morehead St.
Charlotte 28204
704-377-9821

NORTH DAKOTA

OHIO

Astro Video Electronics
504 E. Main St.
Lancaster 43130
614-687-0629

Computerland/Cleveland East
1288 SOM Center Road
Mayfield Heights 44124
216-461-1200

Dayton Computer Mart
2665 S. Dixie Ave.
Dayton 45409
513-296-1248

Graham Electronics Supply
239 Northland Blvd.
Cincinnati 45215
513-772-1661

OHIO (Cont'd)

McShane, Inc.
123 W. Washington
Medina 44256
216-725-4568

Micro Mini Computer World, Inc.
Town & Country Shopping Center
62 Country Road
P. O. Box 13207
Columbus 43213
614-235-5813

Olson Electronics
69 West State St.
Akron 44308
216-762-0301

Olson Electronics
1994 Brittain Rd.
Akron 44310
216-633-4338

Olson Electronics
3265 W. Market St., Room 108
Akron 44313
216-864-3407

Olson Electronics
1975 Henderson Rd.
Columbus 43220
614-451-3245

Olson Electronics
2020 Euclid Ave.
Cleveland 44115
216-621-6387

Olson Electronics
6813 Pearl Road
Cleveland 44130
216-845-2424

Olson Electronics
6153 Mayfield Road
Cleveland 44124
216-449-2690

Olson Electronics
21850 Center Ridge Rd.
Cleveland 44116
216-331-4600

Olson Electronics
7401 Market St.
Southern Park Mall
Youngstown 44512
216-758-3828

Olson Electronics
36212 Euclid Ave.
Willoughby 44094
216-946-5457

Olson Electronics
1193 W. Pleasant Valley Rd.
Parma 44134
216-888-6366

Olson Electronics
414 Northfield Rd.
Bedford 44146
216-663-5970

Rike's
1111 S. Miami Blvd. West
Dayton 45401
513-225-8457

OKLAHOMA

OREGON

Ancrona
1125 NE 82th Ave.
Portland 97220
503-254-5541

Computer Pathways Unlimited, Inc.
145 Alice St. South
Salem 97302
503-399-0534

PENNSYLVANIA

Computer Aid
Latrobe 30 Shopping Plaza
Route 30 East
Latrobe 15650
412-539-1133

Computerland/Harrisburg
4644 Carlisle Pike
Mechanicsburg 17055
717-763-1116

Glosser Bros., Inc.
Franklin & Locust Sts.
Johnstown 15901
814-536-6633

Grey Fox Electronics
Main & Reliance
Telford 18969
215-723-3831

Marketline Systems
2337 Philmont Ave.
Huntingdon Valley 19006
215-947-6670

Olson Electronics
5918 Penn Ave.
Pittsburgh 15206
412-362-1333

Olson Electronics
3405 Saw Mill Run Road
Pittsburgh 15227
412-881-0702

Olson Electronics
4778 McKnight Road
Pittsburgh 15237
412-366-7298

RHODE ISLAND

SOUTH CAROLINA

SOUTH DAKOTA

TENNESSEE

TEXAS

Anchorna
2649 Richmond Ave.
Houston 77098
713-529-3489

Computerland/Austin
Shoal Creek Plaza
3300 Anderson Lane
Austin 78757
512-452-5701

Computerland/Dallas
The Corner Shopping Center
8061 Walnut Hill Ln., Suite 912
Dallas 75231
214-363-2223

Computerland/Houston-Bay Area
1018 Willowvale
Seabrook 77586
713-474-4808

Computerland/S.W. Houston
6439 Westheimer
Houston 77057
713-977-0909

The Computer Shop
6812 San Pedro
San Antonio 78216
512-828-0553

TEXAS (Cont'd)

Eclectic Rentals
2830 Walnut Hill Lane
Dallas 75229
214-358-1307

Foleys
2103 Ennestine
Houston 77023

KA Electronic Sales
1220 Majesty Dr.
Dallas 75247
214-634-7870

KA Electronic Sales
1117 S. Jupiter Rd.
Garland 75042
214-494-2588

Prescription Learning
7422 Harwin Drive
Houston 77036
713-977-2440

UTAH

ADP Systems
95 W. 100 South
Logan 84321
801-752-2770

Computerland/Salt Lake City
161 E. 2nd South
Salt Lake City 84111
801-364-4416

The Hi-Fi Shop
2323 Washington Blvd.
Ogden 84401
801-621-5244

VERMONT

VIRGINIA

Computerland/Washington D.C.
8411 Old Courthouse Rd.
Vienna 22180
703-893-0424

Computer Systems Store
1984 Chain Bridge Rd.
McLean 22101
703-821-8333

COM, Inc.
407 Hampton Court
Blacksburg, 24060
703-552-4923

MS Technology, Inc.
706 Industry Drive
Hampton 23661
804-838-2458

Scientific Trading, Inc.
2990 Telestar Ct, Room 115
Falls Church 22042
703-573-8787

WASHINGTON

American Mercantile Co., Inc.
2418 First Ave. South
Seattle 98134
206-624-6141

Computerland/Bellevue
14340 N.E. 20th
Bellevue 98007
206-746-2070

Computerland/So. King County
1500 S. 336th St.
Parkway Center, Suite 12
Federal Way 98003
206-838-9363

Computerland/Tacoma
8791 S. Tacoma Way
Tacoma 98449
206-581-0388

Micro Computer Center
11822 NE 8th St.
Bellevue 98005
206-455-3710

Omega Computers
1032 N.E. 65th
Seattle 98115
206-522-0220

Personal Computers, Inc.
South 104 Freya
Spokane 99202
509-534-3955

WEST VIRGINIA

WISCONSIN

Byte Shop of Milwaukee
6019 W. Layton Ave.
Greenfield 53220
414-281-7004

Colortron
2111 Lathrop Ave.
Racine 53405
414-637-2003

Computerland/Madison
690 S. Whitney Way
Madison 53711
608-273-2020

Computerland/Milwaukee
10111 W. Capitol Dr.
Milwaukee 53222
414-466-8990

Madison Computer Store
1863 Monroe St.
Madison 53711
608-255-5552

Olson Electronics
3125 S. 108th St.
West Allis 53227
414-541-1406

WYOMING

COMMODORE SALES AND SERVICE:

Commodore Business Machines, Inc.
901 California Avenue
Palo Alto, California 94304, USA

MOS Technology
950 Rittenhouse Road
Norristown, Pennsylvania 19401, USA

Commodore Business Machines, Limited
3370 Pharmacy Avenue
Agincourt, Ontario, Canada M1W2K4

Commodore Business Machines Limited
446 Bath Road
Slough SL1 6BB, England

Commodore Buromaschinen GmbH
Frankfurter Strasse 171-175
6078 Neu Isenburg
W. Germany

Commodore Switzerland S.A.
Bahnhofstrasse 29-31, 2 Stock
Postfach 666, 5001 Aarau, Switzerland

Commodore Japan Limited
Taisei-Denshi Building
8-14 Ikue 1-Chome
Asahi-Ku, Osaka 535, Japan

Commodore Electronics (Hong Kong) Ltd.
Watsons Estates
Block C, 11th floor
Hong Kong, Hong Kong