TPUG magazine

Aug / Sept. 1984

$2.95

The magazine of the world's largest international Commodore users group

Commodore 64
VIC 20
PET/CBM
SuperPET

TPUG Conference presentations

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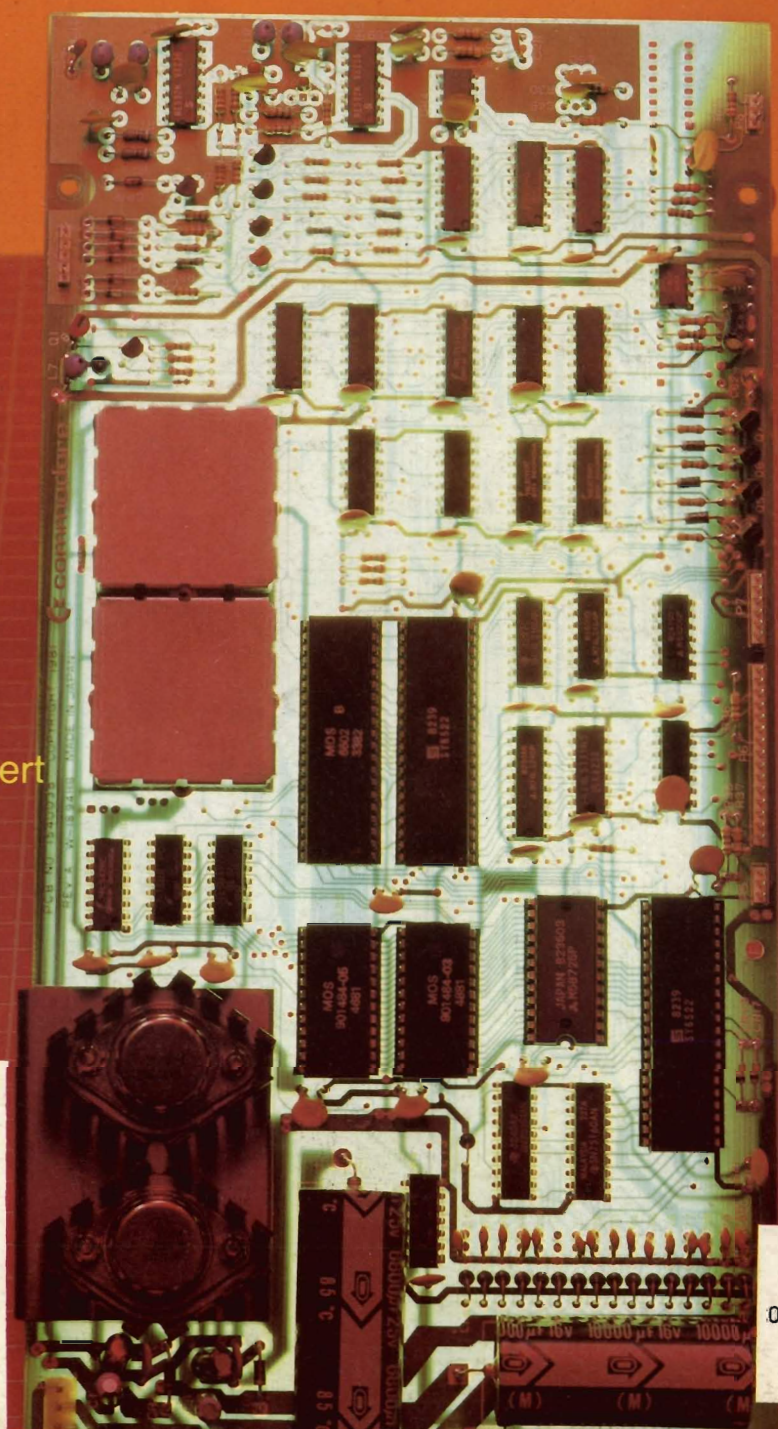
TPUG Fall Schedule

C-64 Library Listings Insert

The Beginner and the Disk—Part III



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Articles

TPUG NEWS

A=all, C=C-64, V=VIC 20, P=PET/CBM, S=SuperPET,*=none
G=General, B=Beginner, I=Intermediate, A=Advanced

*(see insert)– Enclosed in this issue is TPUG Information Package. Please refer to this for all information pertaining to the library.

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one block each . . .

line number and speed update

Paul Blair
Holder, Australia

As far as I can decipher, Commodore 64, when it does a "goto", actually checks both the high and low bytes of the current line number against the target line number. In this way, it decides with a greater degree of accuracy whether it should go back to the start of the program to hunt or continue on from where it's at. As a result, playing around with line number increments of, say, 256, is no longer valid.

Without being very scientific about it, the rule now seems to be that you either place routines at the start of a program or as soon after the line from which they are called. The extra accuracy of the algorithm would make the latter location feasible now. *TPUG*

Editor's Note:

Mr. Blair is correct. Both the C-64 and the VIC 20 check both bytes of the line numbers.

Immediate Mode Load And Run

Ian A. Wright
Toronto, ON

Zohar Kritzer of Rexdale, one of my former students, has provided me with this interesting technique for LOAD and RUN on the C-64 in immediate mode:

Clear the screen and move the cursor at least 5 spaces to the right.

At this point type "PROGRAM NAME",8 and press SHIFT/RETURN.

Cursor up to the line with the name.

Now press SHIFTED RUN/STOP

The program will load and run and you will find a few simple keystrokes simplify this procedure immensely. *TPUG*

Errata: According to QUESTAR INTERNATIONAL, Canadian Distributors of MSD drives, "All MSD Super Disk Drives are warrantied, to the original purchaser, for a period of six months from date of purchase from an authorized MSD dealer".

Useful Notes for Users

A.E. Krause
Saskatoon, Saskatchewan

PAPERCLIP V2.85 will not work with the MTU graphics option on a PET CBM computer. It also fails for the same reason on some SP9000 (SUPERPET)'s. A new version of the software or ROM is required to correct this fault.

A.E. Krause
Saskatoon, SK

Watch the CARDCO software that is cassette based for the VIC 20 and C-64. Copies are recorded on each side of the tape and only one copy may be good as the other has been destroyed from cross-talk or write-through on the tape. Test the copies to see if they function properly when you buy tapes recorded in this manner.

editorial

This issue of *TPUG Magazine* represents a milestone in its progress. We have now been publishing for more than half a year, which means that we have already outlived a substantial number of publications in this field. With this issue, we are moving our printing to a Web press from the sheet-fed process which we formerly used. This will allow us economically to increase our print runs and circulation, and is a significant step in the growth of this magazine. The change in printing process accounts for the fact that the appearance of this issue is slightly different than it was previously.

During the summer, we made some decisions concerning the scheduling of the issues in the coming months. We have decided that it would be sensible for *TPUG Magazine* to publish all ten of its issues in each year on a monthly schedule during the fall, winter and spring seasons, and to miss two months in the summer. This will improve the continuity of our coverage of club activities, since meetings also miss two months in the summer. It should also prove to be more convenient for most TPUG members, who are more likely to be computing during the dark evenings of winter than in the summer, and for our advertisers, whose sales tend not to justify advertising expenditures during the summer months. *TPUG Magazine* will therefore appear every month from this issue until June, 1985.

The July, 1984, issue contained a couple of significant errors which have persuaded us never again to attempt to put together a magazine at the same time as a TPUG Conference! (This is another good reason for not having a July issue!) A table of equations from John Shepherd's third article on forecasting with the 8032 accidentally got omitted. It appears in this issue. The documentation for library disk (C)M6, at the very end of the July issue, contained mistakes. Rather than trying to print corrections, we are republishing the entire documentation for this disk in the library section in the centre of this issue. One very mysterious error happened in the listing of the program which accompanied Peter Spencer's article on the NOS Translator. When we listed the program to a printer, it substituted a checkerboard graphics character in place of an exponentiation arrow wherever it occurred, and, amid the conferential chaos, we did not notice this substitution. So, if you are typing in this program, just type an up-arrow whenever you see a checkerboard such as the one in line 311.

* * *

TPUG members who missed the Conference have an opportunity to read about some of the activities in this issue. Many of the speakers have kindly rewritten their notes in the form of articles for us. In fact, we have more of this material than we have room to print in one issue of the magazine. Some of the articles (including the one I wrote myself!) will have to wait for a month or two until we have room for them.

* * *

I receive occasional letters from users of PET/CBM computers expressing some unhappiness about the fact that the vast majority of articles in recent issues of this magazine have been mainly about the VIC 20 and Commodore 64. Some people actually believe that I think that the PET is an obsolete machine, about which little should be published! No, folks, it isn't so! I am a PET user myself (in fact I am using one to write this Editorial), and I certainly do not regard it as obsolete. I am very much aware that Commodore Canada's most recent introduction into the computer market is the model 8296 which, despite its "B-machine" cabinet, is really just a further development of the PET line of computers. So I certainly do not reject articles because they are PET-related. However, *TPUG Magazine* cannot publish articles about the PET unless authors write them. If we are to publish more about the PET, or any other type of machine, the owners and users of these machines must first write about them and send the articles to us. Please!

I wrote at some length a few months ago about *TPUG Magazine's* copyright policy. In general, everything in the magazine is copyright, and cannot legally be copied without the permission of the copyright owner. The copyright to most of the material is owned by the magazine, but a few articles are owned by their authors. However, a few legitimate exceptions to this generality may occur. For example, Jim Butterfield wants people to feel free to reproduce his articles without having to ask permission. We are now printing a notice to this effect at the start of each of his pieces. Another possible exception would involve the publication of "benchmark" programs which are designed for comparing hardware. These programs are of little use unless they can be freely copied and redistributed by anyone who wishes to use them. So, if anyone wishes to send us some material which is not intended to be protected by copyright, please go ahead and do so. We are perfectly willing to discuss individual cases with authors.

David Williams

Important message to all BBS users

The TPUG BBS telephone number is. . .

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Its operating hours are. . .

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7 days per week.

The new password is. . .

humidity

THIS & THAT

Doris Bradley
Asst. Business Manager

It's Holiday Time

July has barely started and already visitors from around the world are dropping into the office. In the past few days members from Saskatoon – Saskatchewan, Horseheads – New York, Rio de Janeiro (Brazil), Jeddah, (Saudi Arabia), St. Michael (Barbados), Port of Spain, (Trinidad), and Kuala Lumpur (Malaysia) have come in. Don't forget to at least give us a call if you get to Toronto!

Mr. Tisser of Rio de Janeiro accomplished a lot of business related to his C-64 while he was here in Toronto scooting around in his rented car between TPUG and Commodore. But on his first visit to Commodore he stopped at a phone booth and phoned Commodore to check on its exact location. Happy to know that he was headed in the right direction he sped off leaving behind the papers he had pulled from his pocket. It was later when he went to pay for his purchases at TPUG that he realized his credit card must have been in with those papers. Back to the phone booth with haste, but no sign of his losses. Everyone's faith in humanity was soon restored though. A man from Oregon found the credit card in the booth and personally delivered it to the Commodore address on the accompanying slip. Canada, U.S.A., **Rio de Janeiro**– a real hands across the border act.

Magazine Labels

Have you noticed the new mailing labels on your TPUG Magazine? The printing is smaller and so we are now able to put that extra information that you've asking for on the top line. From left to right you have (1) Your membership number followed by a letter representing the type of membership you have i.e. Regular, Associate or Student; (2) Your renewal date; and (3) Your "zone number" for mailing purposes in the United States or internationally. The acquisition of our new Mannesmann Tally high-speed printer has made this possible.

Organization Bylaws

From time to time I am asked to send a copy of TPUG's bylaws to other computer clubs who are getting organized administratively. My standard reply states that we use a by-law which the province of Ontario provides as a starting point for incorporated groups such as ours, and although it may not be very appropriate for clubs outside Ontario I send a copy along. A few months ago I came across a book "Making Things Happen: The Guide for Members of Volunteer Organizations" by Joan Wolfe which, as well as providing many helpful hints on programs, publicity, board meetings, committees, officers etc., has an appendix entitled Organization Bylaws. I highly recommend it. The book is published by Brick House Publishing Co., Inc., 34 Essex Street, Andover, Massachusetts 01810.

Post-dated Cheques

A number of you send a post-dated cheque along with your first renewal notice. If you do so, would you please include a warning of some sort or other so that we don't inadvertently deposit the cheque before the appropriate day. We catch most of them, but occasionally one slips through and then we have to ask for a replacement cheque since the bank will not honour the cheque if it is submitted again.

Another problem which arises is that, since your cheque is post-dated, your renewal does not get processed before the time we send out a second renewal notice. Upon receipt of the second notice, a number of you return the second notice with an additional cheque. The result – your renewal is paid twice and someone has to contact you to see if you wish a credit memo for the second renewal or if you wish to have another year added on to your membership.

Please note these pitfalls and try to avoid them!

A Riddle

What does a graphics programmer like to drink?

4040 disk drives

Those of you who have or who are interested in having a 4040 disk drive are probably aware that they are not being made any more and that it is almost impossible to buy a new one. Some months ago, one of our members from New York called for some leads on where to find one. Later he added a note to an order for disks – "I finally found a 4040 at Muntz Electronics in Honolulu". It's amazing what lengths someone will go to for a 4040!

In the last few issues of *TPUG Magazine* there has been an ad indicating that the club was looking for 4040 dual disk drives, and a 9090 hard drive. The office now has all the disk drives we need, but the phone calls keep coming in regarding used 4040's for sale. I have recently started to make a note of people who wish to buy or sell 4040 or 9090 disk drives in the hopes of matching up a few. It is not my intention to run a year-round trader's corner, but for the next month or so I may be able to provide some help in this one area i.e. 4040's and 9090's.

TPUG BBS

The TPUG bulletin board system is alive and well. Elsewhere in this magazine you will find the current password for members to use when accessing the board. It seems that most of the difficulties encountered in using the BBS are associated with first getting established as a user of the board. When you first sign on you will be asked to leave your name, address, membership number, and user code. This "user code" is your personal password of up to 6 letters, numbers or characters. This code prohibits others from signing on in your name. Within a few days your information will be validated by the office, and you will be logged on as a user of the BBS *Please be sure to keep track of exactly how you enter in your name and user code when you first sign on.* If you sign on as Charles Jones and then try to sign on as Charlie Jones, you won't get on. Every day I have to

continued overleaf

deal with at least one person who is having trouble – please, be more precise and more careful!

Other Computer Clubs

Nashville Commodore Users Group meets at the Cumberland Museum, Nashville, every third Thursday of the month at 7:00 p.m. Contact Dave Rushing 615/331-5408.

64 Users Group meets at the LBJ Hilton in Dallas, on the 1st Thursday of each month at 7:00 p.m. Over 300 C-64 owners from the north Texas area attend.

Yarmouth Commodore Users' Group started this January. Most members have either VIC's or 64's. There are two groups, the "Juniors" (teenagers) and the "Seniors", which each meet twice a month. For more information contact Peter Winkels, P.O. Box 157, Yarmouth, Nova Scotia.

VIC 20 Programming Contest

Last call for your entry to the VIC 20 programming contest! The deadline for entries has been extended to October 2nd, so you still have time to enter. There are two sections to the contest: one for programs written in BASIC, and the other for programs in Machine Language (or another language). The prizes are expected to be expanders for the VIC 20. The co-ordinating committee for the VIC 20 chapter will be the judges.

Conference Disk Order

We have an orphan disk order for 10 disks for the C-64 plus $4 for mailing. Unfortunately, the person placing this order did not fill in his/her name, address and membership number. I understand that the person in question has a photocopy of the order, so if you haven't received your 10 disks that you were expecting, take a look to see if YOU are the one. If you are, please contact the office, and we'll straighten the matter out.

Lost and Found

A windbreaker was left at the June VIC 20 meeting at York Public Library. Please call the office for further details.

Programmers of Computer Games

We have received literature encouraging programmers of games of action, strategy and learning to submit programs for possible publication to Epyx Inc., Software Acquisitions, 1043 Kiel Court, Sunnyvale, CA 94089.

Farming Software

I have received information about a commercial Farm Accountant program. It is a double entry general ledger for the Commodore 64. Contact Digipac, 907 River St. E., Prince Albert, Sask. S6V 0B3 for further information.

Southernmost Member?

A recent letter from J. Graeme McKenzie of Otautau, New Zealand indicates that he might be the one! He lives a few miles north of 46 degrees south, and is just a little south of Steven Darnold who is no doubt our most southerly writer.

Most Easterly Member?

I'm not quite sure how to determine which member lives the furthest east, but we have one claimant to the title – A. F. MacNeil of Riyadh, Saudi Arabia. What do you think?

Youngest Member?

Recently Robyn Tricia Holmes of Winnipeg, Manitoba, who is 8 years old, wrote us a letter and applied for membership in TPUG. I don't recall an application from anyone younger – am I correct?

New Chapters?

The club is looking into the possibility of starting two more chapters. If you would be interested in a Commodore 64 meeting in Etobicoke please contact Martin Polasek, 743-5296. If you would be interested in an educator's group north of Metropolitan Toronto call Ralph Magel 1-416-895-3930.

Programming Contest

The first place winner of the programming contest was **Conrad Fujimoto**, for his program *Nightcrawler* for the Commodore 64. **Gerald Desilets** won second prize for *Invaders* for the VIC 20. A technical prize was awarded to **Gordon Lui-Yee** for the use of the Commodore window in his entry. More details next month.

Tapes – They are a Problem!

The saga of the difficulty in getting Commodore Education Software and PET Library tapes continues. Our plan to copy them here in the office using a disk-to-tape program has not been successful, so we are still ordering our tapes from Richvale Telecommunications. For those of you who have been waiting for weeks and months, all I can say is we are still trying to get your tapes. I can assure you that as soon as we get them, we ship them.

The tapes that we get in bulk for the VIC 20 and the Commodore 64 do not cause us as many problems. We do try to keep them in stock at all times, so they are shipped out quite quickly. Unfortunately, some of you do have a slight alignment problem with your datasettes and find difficulty in using our tapes. You may be able to run commercial software tapes, which only hold a couple of programs and use one side of the tape, quite successfully, and yet not be able to run our doublesided tapes. This results in the return of tapes for replacement, which is a problem for both you and us. In testing tapes returned to us, the error rate is under 2% for those tapes which we get mass duplicated. When we looked into this problem, several people had returned tapes 2 or 3 times blaming us for our poor quality tapes when, in actual fact, their datasette was the problem.

We're still trying to figure out a solution. If anyone out there has some technical know-how or ideas he/she would like to provide, drop us a line or give Chris Bennett a phone call. From where I sit, it seems that the best wish I could make for those of you who have problems with tapes is that you will be able to get a disk drive.

Answer

A graphics programmer drinks Sprite or Hires Root Beer. Does anyone have a different answer? If so send it along.

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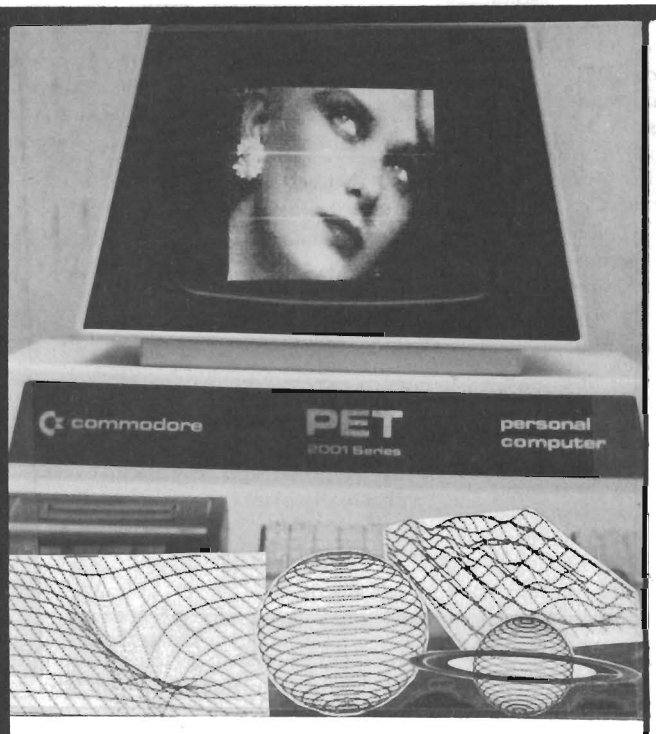

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HELP !

Do you have anything for this column? The three headings are:
(1) Helpful Hints,

(2) Who's Got the Answer? and

(3) "PET" Pals Wanted.

Just send your contributions (including answers to any questions which have appeared) to:

Toronto PET Users Group
Dept. Help
1912A Avenue Rd., Ste. 1
Toronto, Ontario, Canada
M5M 4A1

Please let us know if you wish your full address published.

S.O.S. from Doris Bradley: If you follow the HELP column regularly you will be aware that there are many people out there with questions. On the other side of the coin, we do have some very knowledgeable and helpful members who pitch in and provide information, technical help etc. Just recently Clayton W. Dewey K8CKD volunteered to answer questions from HAM operators. His offer got me thinking about one of the biggest problems I have—where to find someone who can answer a specific question. What I'd like to do is to set up a Manager file of those members who could be called upon occasionally to provide some assistance (indicating their area(s) of expertise). If you might consider volunteering, drop me a line or give me a call and let's discuss it. I would only provide you with one inquiry a month (unless you indicated otherwise).

helpful hints

A few months ago I had problems with the MSD CPI printer interface. It took many unsuccessful attempts before I finally got a reply from MSD. I spoke with Mrs. Cherryl Gabberel, who kindly sent me an upgrade ROM, free of charge. I am now fully satisfied with the performance of my interface. The source of my difficulties in contacting MSD was the fact that they had moved. Their new address is MSD Inc., 10031 Monroe Dr., Ste. 206, Dallas, Texas 75229.

Jean-François Ostiguy
St-Lambert, Quebec

My Gemini 10X printer was accidently turned on before the computer while using a Cardco? G interface. The Cardco manual warns that the computer must always be turned on first. The warning isn't strong enough. It should also state that damage to the printer may result from not heeding it. My printer is now being repaired. Please warn other TPUG members.

Howard Verschell
Brooklyn, New York

(?) Need a program that can dump the graphics screen of a C-64 to an Epson RX-80 printer: Need a source of red ribbons for this printer-Stephen Laskey, New Brunswick

A program to do this will be printed in Micro Magazine, July through September 1984. The program will dump either HIREs or MULTI mode graphics to various printers: Epsons, Star (Gemini), C.Itoh (Prowriter), NEC (TEC), You can get a copy on 1541 disk either through MICRO or the author for $15 U.S. Colored ribbons (red, blue, green, brown) for various printers are available from: Printer Ribbon Supply Co., 4587 Ridgegate Dr., Duluth, Georgia 30136.

M. J. Keryan
713 Loucst Dr.
Tallmadege, OH 44278

I have a program from Cardco that does a screen dump either from a program line or from a programmable key. It also has a Banner Program. "Printer Utility" on tape is $19.95 and on disk it is 10 dollars more. It will work with most popular printers. In fact, my Gemini 10-X emulates the Epson so well, I have to answer the prompt for printer with Epson.

Clayton W. Dewey
607 E. Dowland St.
Ludington, MI 49431

(?) Looking for a HAM Radio MSO mailbox-Jim De Zorzi, Ontario

Mailbox 64 is a MSO program for the Commodore 64, 1541 disc drive and printer. It works with the Kantronics, AEA, and MFJ interfaces. I have the above system set up on 144.920 (2 meters) and it works well. This program can be obtained from Richard J. Moore WD4NCN, RT#4, Box 290, Reidsville, NC 27320—phone 919-951-2629. The cost is $25 U.S. and Richard was not only very prompt in sending the disk to me, but he is very helpful if you need to call him for help.

Marvin Lowman WB8NQB
Inwood, West Virginia

(?) My Gemini 10 printer has lost its descenders-J. M. Keri, British Columbia

There is a solution other than "purchasing" a new print head for your printer. Many Geminis (including mine) were produced with faulty print heads. After a few months of use, both the top two and bottom two pins of the print head become stuck, therefore causing characters to be printed without descenders, as well as without tops (i's and j's are not dotted). If you contact Star Micronics, they will take your name and address and send you a new print head free of charge.

Kevin Boardman
Richardson, Texas

If there is an X on the end of your printer name there should be no problem. My print head was replaced under the 90 day warranty at Supertronics, College St., Toronto.

Paul Aitchison
Brantford, Ontario

(?) How to obtain either emphasis or double strike while in elite mode—Ira Friedman, New York

Your problem cannot be solved. The Gemini 10 and 10X printers support emphasized printing in the pica mode only. The printer ignores the emphasis control codes if it is in the elite (96 column) mode. Your only solution would be either to backspace and actually print over your document, or try the double-strike mode combined with the unidirectional mode.

Kevin Boardman
Richardson, Texas

(?) Can I expand the C-64 to 128K or higher through bank switching?—Jim McCoy, Florida

I feel there is a simpler and more efficient

solution to your problem. Richvale Telecommunications is producing a system which they call Monolith RAM System. It features enhanced graphics and sound commands, BASIC 4.0, a machine language monitor, as well as memory expansion in increments of 128K, 256K, and 512K. In addition, all memory is available to BASIC. The package also provides a processor slot designed to allow the new 68000 32 bit microprocessor to be added to the C-64 system, as well as allowing it to address all available memory.

Kevin Boardman
Richardson, Texas

(?) Need a typing program for the 4032 PET – Judy Rockefeller, New York

Commodore is producing TYPE RIGHT for the 40 column PET, the 80 column CBM and the Commodore 64. We no longer can sell it as we signed a contract with Commodore computers for the production and marketing of this software. However, if you write or call the following you can get it: Fisher Scientific, EduMart, 1458 No. Lamon Ave., Chicago, IL 60651 – phone 1-800-621-4522. Alternatively, you can contact: Computer Systems Division, Commodore Business Machines, 1200 Wilson Drive, West Chester, PA 29380

Helen Barron
Barron Enterprises
714 Willow Glen Rd.
Santa Barbara, CA 93105

(?) Want to plot the performance of stocks with charts – L. D. Couch, California

I believe our Stock HELPER may fill the bill. This program calculates three moving averages; the span of each is selectable by the user. We advertise this program for weekly use, but some customers use it daily. We plan a new version this fall; among the proposed features is plotting moving averages.

Melvyn D. Magree
(M)agreeable software, inc.
5925 Magnolia Lane
Plymouth, Minnesota 55442

(?) Want to replace the MPS-801 printer's built-in character set in hardware (4K EPROM, type 2732) – Ilan Ogen, New York

I have sorted out what is where in this chip, and actually designed a new character set with descenders. If you want more details, contact me directly.

Paul Blair
Compuchart
35 Calder Cres.
Holder ACT, 2611
Australia

(?) Why does the Commodore Editor/Assembler system not allow macro's? – Ward H. Zimmerman, North Carolina

This bug has been found and corrected, along with assorted other wildlife. (See also MIDNITE Gazette #18) Commmodore USA has a copy of the revised Assembler suite, which includes SCROLL!

Paul Blair
Holder ACT, Australia

PET-Pals

I would enjoy corresponding with one or more Canadian C-64 TPUGers who are *not* interested in computer games. Interests other than computing which we could share are photography, single-engine light-plane flying, and travelling. I have also worked in various volunteer organizations these past 35 or so years.

Mrs. Marge Paulie
1560 Lincoln St., #12
Eugene, OR 97401-3962

Are there enough owners of Madison Computer's Z-RAM board who are interested in forming an associate's correspondence group to deal with the peculiar problems of utilizing the Z-RAM board, both its extra memory and its CP/M? I am willing to organize such a group. If you are interested, please send your name, address, phone number, and, if relevant, Compuserve ID to:

Richard W. Jones
1205 Rogers Place
Irving, TX 75060
214-986-6913

I would like to find a French-speaking VIC 20 user with whom I can correspond and exchange programs, particularly in French.

Lonnie F. Smathers
P.O. Box 785
Greenwood, SC 29648

I would like to correspond with someone in Phoenix, Arizona who has a C-64.

Ron Hoogenkamp
124 Shaftesbury Ave.
Bedford 6052
Western Australia

I am interested in meeting anyone in the Niagara peninsula who is interested in exchanging ideas, information, and software for the VIC 20 and C-64.

Dennis Lachance
17 Chaplin Ave.
St. Catharines, ON L2R 2E4
416/684-9735

Questions

I am seeking to contact anyone who has developed a stock control system using CBM equipment which is suitable for a very complex stock (shoes in fittings from AAAA to EEEE and sizes from 1 to 17), and probably using bar code marking systems.

John Gilmour
1187 Glenhuntly Rd.
Glenhuntly, VIC 3163
Australia

I am a genealogist. Is there someone with a similar interest who does have some public domain software and could make it available without costing an arm and a leg? Alternatively, can someone point me in the direction of a commercial piece of software which is relatively inexpensive?

Gwen Platt
Dunnellon, FL

Is there some help to adapt Speed Script (Compute!'s Gazette) for use with a RS232 type printer?

S. Usprich
1052 Talbot St.
London, ON N6A 2W1

I have a Commodore 64 and I am particularly interested in interfacing with sensors (such as photogates or temperature probes). Does anyone have any information on this subject?

John R. Bridge
Sequin, Washington

I own a Commodore 64. Can someone direct me to where I can purchase in Canada the programme "The Think Tank" sold by Mirage Concepts, Inc., 2519 W. Shaw Ave., No. 106, Fresno, CA 93711?

Murray R. McEniry
Ste. 203, 8 Main St. E.
Hamilton, ON L8N 1E8

I have a Panasonic RF4800 Shortwave Radio capable of receiving code from amateur radio operators. Does a program exist on tape to demodulate the code into written language on a monitor? My equipment consists of a C-64, Datasette, and Amdek Color I monitor.

Ronald Melanson
1595 Avenue Maria
Bathurst, NB E2A 3G5

I have a CBM 4016 (upgraded to 4032) which I would like to use to do some scientific calculations requiring 'double precision' accuracy. Can it be done on this machine? If so, HOW? Secondly, I would like to interface this unit with the real (analogue) world. Is there any literature, books etc. that deals specifically with the CBM 4016 interfacing?

Peter Maritan
49 Floradale Dr.
Mississauga, ON L5B 1G1

I have a VIC 20 + 16K, and a VICMODEM sent to me by relatives in the States. Because B.C. has an odd-ball telephone system, the modem doesn't work. No local Commodore dealer knows how I can get this modem going – they all say "Ah, that's a U.S. modem – you'll have to buy one of *ours*, along with our modular telephone!" Then I saw the article on p.76 of the October TORPET, and thought my troubles were over! Not so! No local dealer ever heard of the VIC-1605 adaptor, mentioned my Mr. Mroczkowski!

Can anyone tell me where I can get a VIC-1605? Or barring that, a description of the adaptor, so I can have one made? Surely I'm not the only one having this trouble!

C. A. Radley
14475 Mann Park Cr.
White Rock, B.C. V4B 3A7

The Commodore 64 has become a permanent part of my life and my son shares this fixation (he is 15). We are moving to Florida within the year and wish to locate near: (1) a user's group, and/or (2) a high school with 64's.

Frederick G. Urchenko
59 Rhodes Street
New Hyde Park, NY 11040

I have a 4032, single disk drive and printer. I would dearly like at the moment to find a simple general ledger which could be applied to my system.

Ian Clothier
RMB 1320, Reedy Cr.
Broadford, VIC
Australia 3658

Using WordPro 3+ on the C-64 frequently when I try to memorize a file, I get a "Write file open" error. Professional Software Inc., who markets Steve Punter's program doesn't know how to tell me to close the file from within the program. Can someone help? I initialize diskettes whenever I change them in the drive. Sometimes changing the file name and resaving will work.

Connie
P.B. & C.L.
Archambault
55 Country Club Drive
Meriden, CT 06450

I am using a C-64, hooked up to a 4040 disk drive and a 8023 printer via a C-64 link. In using the Continental "Home Accountant" program I am unable to print hard copy reports or checks. Early in the program you are asked for your printer's condensed mode and regular print ASCII codes. Continental was unable to help me – they said they were unfamiliar with the hookup. Commodore told me to use the numbers supplied in the printer's manual for the requested codes (SA=13 & SA=15). There is space allotted for code entries of 5 numbers for each mode (condensed and regular). I have tried every combination of the two numbers suggested by Commodore. Can anyone help?

A. W. DeLisi
5 Eagle Nest Road
Chelmsford, MA 01824

I am interested in acquiring a complete version of Pascal for my Commodore 64. Though I know that there are not many versions available for the 64, I am in need of the most complete version available. Can someone help?

I am also interested in Commodore's Simon's Basic extension for the 64. I was on back order for it for several months but finally cancelled the order. Where can I get it without delay?

Kevin Boardman
1714 Yale Boulevard
Richardson, Texas 75081

I have been looking for over a year for a Pascal software package for my 64. I am a masters student in Computer Systems Management and utilize the VAX-11's Pascal version at school. Ideally, I'd like to come as close to this extension as possible so I can complete my programming assignments at home. Can anyone send me some information on available Pascal versions?

Mary Ann Amesbury
Rochester, New York

I have discovered a most dangerous situation while using the Commodore word processing programme entitled "The Word Machine" on my Commodore 64.

A sequential file, call it "ABC", was stored on a disk. I wanted a second file with the same name on the same disk so I called the second file **"ABC". On the SAVE command using "The Word Machine", the computer gave the message "Document already exists-replace it?". Perplexed at this, I said "yes" and got the message "space not found". But the worst thing was that the disk was wiped clean, completely empty.

I found that using * anywhere in the file name, front, back, or alone, completely wiped out everything on the disk just as a disk formatting command would do, but does so almost instantaneously.

I have no idea why this happens and I would be interested in learning if anyone can explain this dangerous situation. Mean-while, no * in any of my file names.

Charles Rowe
1205-3360 Paul Anka Drive
Ottawa, ON K1V 9S2

How does one obtain the various print styles which exist on the Okidata Microline 92 Printer while running the Easy Script word processor for the C-64?

The printer is hooked up via the Card? +G Centronics Parallel Printer Interface with Graphics (for the C-64 and VIC 20 computers) by Cardco Inc. and the 1541 disk drive.

Before loading Easy Script it is supposedly necessary to type the following command: Open 4,4,24: cmd4: print"lock": print#4: close4 – this locks the interface into the graphics mode with line feed. It is then necessary to select serial from the choice of RS232, Centronics, – serial since the interface is plugged into the serial port.

So far so good, but no luck accessing the various print styles of the printer except in BASIC programs.

Mary Brigito
Old Forge, New York

In reference to the VIC 20, we are looking for an interface and screen dump for the

Transtar 315 (colour). Would any of these interface/connections work? (1) "The Connection", from Tymac; (2) "InterPod" from Limbic Systems; (3) Card/? +G or Card/? B, from Cardco. Someone from Transtar stated "We know of no hardware for Commodore that will support the Transtar 315 directly. Therefore a driver would have to be written before you can achieve screen dumps." Is there anyone that may have written a driver for "screen dump" to the Transtar 315, or from it?

Tony Bannister
R.R. #1
Lakeside, ON N0M 2G0

In what order should I turn on my computer equipment? I've seen this question answered in different ways, the most recent, was, "If your equipment is connected to a power strip it is all right to turn them on all at once." A letter in June 1984 Compute! says that Commodore has issued an update bulletin concerning the proper order for turning on computer and peripheral devices – Computer, disk drive, printer. Does anyone have the definitive answer on this?

T. W. Willoughby
Portland, Oregon

Has anyone built a Z80 card for the C-64? If so how much does it cost to make it. Could a self-produced Z80 card overcome the Commodore disc format problem? Could a cheap 'black box' Z80 be interfaced with the C-64?

Garth Usick
Regina, Saskatchewan

Does anyone know of a computer-aided telephone system for hearing impaired individuals (HII)? I am interested in buying or developing such a system which would make the telephone easier or possible for them. I imagine an "answer" modem on the HII's C-64 and words spelled out on the monitor/TV. A touch-tone phone instrument could spell out words using two keystrokes for each letter; for example "A" = 2 + 1, "B" = 2 + 2, "C" = 2 + 3, "D" = 3 + 1, . . . I personally have software skills only (BASIC + ML), but do not understand electronics and communications. I welcome ideas, help, encouragement, etc.

Brian Schott
Division Sciences Dept.
Georgia State University
Atlanta, GA 30303

I have a Canadian payroll program written by a friend for the Apple computer, which I would like to convert to Commodore BASIC for the C-64. I'm looking for someone who could revise the program for me so it will run on my C-64. Please contact me indicating an approximate cost for conversion.

Max D. Mowrer
Box 56
North Weyburn, SK S0C 1X0

I would like to start keeping handicaps for our local golf club (200 members) but my suppliers here can not come up with suitable software. Does someone know where I can get such a software package. I would like to be able to print out the members' handicaps in alphabetical order or individually.

Harry J. Scholten
2175 Atlin Ave.
Prince Rupert, BC V8J 1E9

I am using a C-64 and would like a monochrome monitor that provides good resolution with an 80 line screen. Can anyone offer some suggestions as to what brands would be more suitable?

J. G. Housego
R.R.#1
Ashburn, ON L0B 1A0

I have the following equipment – CBM 8032, 8050 disk drive, 8023 printer, BPI Inventory Control/Accounts Receivable. How can I speed up the print out. I have a 25 page print out from I/C that takes one hour. Also reports from A/R take a long time. Is this due to the 8032 or 8023P? Would a different printer help?

Harvey Secor
1004 Robin Rd., SE
Rio Rancho, NM 87124
505/892-8765 or 268-6509

I have a C-64 with a Cardprint/ +G interface and an Olivetti PR-2300 ink jet printer. I would like to know if anyone has a high resolution screen dump program for this combination, and if it is possible to print over the same line (i.e. disable the line feed function after a carriage return command). This combination lists a program fine but I can't seem to make the programmable print head dance to my music.

John P. Twardy
270 Barbourtown Rd.
Collinsville, CT 06022

I have a Gemini printer with an ADA 1800 interface. Is there a commercial or public domain program for downloading the PET graphic set to the printer? I know there is one by Cardco for the C-64, but I'm happy with my "orphan" 2001 with graphic ROM!

Candy Jens
Wall, New Jersey

CALENDAR OF TPUG EVENTS

Fall Schedule

ANNUAL BUSINESS MEETING — Thursday, October 4, at Leaside High School, Bayview & Eglinton Aves. at 7:30 p.m. in the auditorium. Regular members are voting members.

BRAMPTON CHAPTER — Central Peel Secondary School, 32 Kennedy Rd. N. on the third Tuesday of the month at 7:30 in the Theatre (tentative)

Tue. Sept. 18	Tue. Nov. 20
Tue. Oct. 16	Tue. Dec. 18

CENTRAL CHAPTER — Leaside High School, Bayview & Eglinton Aves. on the second Wednesday of the month at 7:30 p.m. in the auditorium for **PET/CBM**

Wed. Sept.12	Wed. Nov. 14
Wed. Oct. 10	Wed. Dec. 12

COMAL GROUP — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the fourth Thursday of the month at 7:30 p.m. in the auditorium

Thu. Sept.27	Thu. Nov. 29
Thu. Oct. 25	Thu. Dec. 27

TPUG's COMAL Chapter was formed to support all Commodore computer owners using COMAL (presently C-64 and PET/CBMs).

COMAL is the computer language designed to REPLACE BASIC! After 10 years of development, COMAL has become one of the most complete, well thought out languages available on any microcomputer. Features like RUN-TIME compiling for speed, immediate syntax checking, auto-indenting and program structuring, AUTO and RENUM, MERGE, long variable names, understandable error messages, make for easy building and maintenance of programs.

Because the C-64 has great graphic, sprite and sound capabilities, many keywords were created to take advantage of them, unlike BASIC. Faster "turtle" graphics than CBM-LOGO are available FREE! Forget PEEK and POKE!

The sound key words are available on the new COMAL cartridge along with 30K free memory, external procedure calls for huge programs, upper-lower case listings, better MERGE-ing, more disk commands, auto-LINKing of machine code, plus many more features in a 64K language!

If COMAL interests you, get an introductory language disk for your machine, COMAL textbook(s) and start programming. For help and information, join the COMAL CHAPTER!

COMMODORE 64 CHAPTER — York Mills C.I., 490 York Mills Rd., (east of Bayview) on the last Monday of the month at 7:30 p.m. in the cafetorium (tentative)

Mon. Sept.24	Mon. Nov. 26
Mon. Oct. 29	Mon. Dec. 17

COMMUNICATIONS GROUP — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Wednesday of the month at 7:30 p.m. in the Story Book Room (adjacent to the auditorium).

Wed. Sept. 5	Wed. Nov. 7
Wed. Oct. 3	Wed. Dec. 5

EASTSIDE CHAPTER — Dunbarton High School, (from the traffic lights at Highway 2 and Whites Rd. — go north on Whites Rd. to first street on the left) on the second Monday of the month at 7:30 p.m. (tentative)

Mon. Sept.10	Mon. Nov. 12
Mon. Oct. 15	Mon. Dec. 10

FORTH CHAPTER — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the second Tuesday of the month at 7:30 p.m. in the Story Book Room (adjacent to the auditorium).

FORTH is a high-level programming language which is radically different from more familiar ones such as BASIC. Its stack-orientation, its use of reverse-Polish notation and its indefinitely extensible vocabulary (which has the effect of making many programs one word long!), give it a "flavour" which is very different from those of other languages. The fact that its word-definitions are compiled, as opposed to BASIC programs which are interpreted at run time, makes FORTH a much faster language than BASIC. It is therefore a suitable language for applications which require fairly high speed, but which would be unbearably complex to program in machine language. The fact that users of FORTH tend to accumulate sets of word-definitions suiting their individual interests enables them to use these words repeatedly in different applications, eliminating the need to write similar or identical pieces of code into different programs.

Versions of FORTH are available for all types of Commodore computer (including a public-domain version for the PET/CBM which is in the club library), so it is entirely appropriate that TPUG should start a meeting group devoted to exploring the uses of this language. Meetings will start in September, 1984, in the Story Book Room at York Public Library, 1745 Eglinton Ave. West (just east of Dufferin). The meetings will probably be on the second Tuesday of each month, from 7:30 to 9:30 p.m.; see the calendar in *TPUG Magazine* for exact information. Since we will probably all be beginners at FORTH, at least the first few meetings will be at that level.

Tue. Sept.11	Tue. Nov. 13
Tue. Oct. 9	Tue. Dec. 4

HARDWARE CHAPTER — York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Friday of the month at 6:30 p.m. in the Story Book Room (adjacent to the auditorium).

continued overleaf

The many enquiries concerning user-port and hardware topics which were made at the *1984 TPUG Conference* made it clear that they are very interesting to many members. However it is also clear that many people feel an understandable sense of cautious reluctance about meddling with wires and other things which are attached to their computers.

The user-port and hardware meeting will be intended to give TPUG members hands-on experience of hardware hacking – in the best sense of the word – and to encourage them to share their expertise in this area. Plans at present are very tentative, but the meetings are expected to be very interesting.

The Story Book Room at York Public Library, 1745 Eglinton Ave. West (just east of Dufferin) has been booked for this meeting on the evening of the first Friday of each month, commencing in September. Because of staffing problems on Friday nights (the room was not available on other evenings), the meetings will have to end by 8:30 p.m.. They are therefore scheduled to start unusually early – at 6:30 p.m..

Fri. Sept. 7	Fri. Nov. 2
Fri. Oct. 5	Fri. Dec. 7

MACHINE LANGUAGE CHAPTER (6502) – Call Jim Carswell at 416/531-9909 for additional information.

SuperPET CHAPTER – York University, Petrie Science Building (check in Room 340). Use north door of Petrie to access building. On the third Wednesday of the month at 7:30 p.m.

Topics for fall 1984: interfacing and applications, OS/9, SuperPET languages.

Wed. Sept.19	Wed. Nov. 21
Wed. Oct. 17	Wed. Dec. 19

VIC 20 CHAPTER – York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Tuesday of the month at 7:30 p.m. in the auditorium

Thu. Sept. 6	Tue. Nov. 6
Tue. Oct. 2	Tue. Dec. 4

WESTSIDE CHAPTER – Clarkson Secondary School, Bromsgrove just east of Winston Churchill Blvd. (south of the QEW) on the third Thursday of the month at 7:30 p.m. in the Little Theatre for **PET/CBM/VIC 20/Commodore 64**

Thu. Sept.20	Thu. Nov. 15
Thu. Oct. 18	Thu. Dec. 20

Are you interested in organizing some other interest group in the Greater Toronto area? Please let the club office know, by mail, phone, or TPUG bulletin board.

TPUG Associate Club Chapter Meetings

CANADA

Edmonton Commodore Users Group
—meets at Archbishop Jordan High School, Sherwood Park on the last Friday of each month at 7 p.m.

Contact Bob Kadylo 403-465-3523

Guelph Computer Club

—meets at Co-operators Insurance Assoc. on the 2nd Wednesday of each month at 7:30 p.m.

Contact Brian Grime 519-822-4992

London Commodore Users Club

—meets at Althouse College of Education, main auditorium on the third Monday of each month at 7 p.m.

Contact Dennis Trankner 519-681-5059

Sarnia C-64 Users Group

—meets at Lambton College on the first Sunday of each month at 7:30 p.m.

Contact J. C. Hollemans 519-542-4710

Commodore Users Club of Sudbury

—meets at Lasalle High School in the cafeteria on the last Thursday of each month at 7 p.m.

Contact Tim Miner 705-566-9632

PET Educators Group (Windsor)

—meets at Windsor Separate School Board Media Centre, 1485 Janette Ave. on the 3rd Wednesday of each month (not July & August) at 7 p.m.

Contact John Moore 519-253-8658

UNITED STATES

Commodore Houston Users Group (Texas)

—meetings—**Clear Lake Chapter**—Nassau Bay City Hall, NASA Road #1, on the 1st Wednesday of each month at 7 p.m.

—**Central Chapter**—Farrish Hall, University of Houston main campus

—**NW Chapter**—Bleyl Jr. High School, 10,000 Mills Rd. (Cypress-Fairbanks SD), on the 3rd Thursday of each month at 7:30 p.m.

—**Klein Chapter**—Hildebrandt Middle School, 22,800 Hildebrandt Rd. (Klein ISD), on the 3rd Tuesday of each month (except July & August) at 6:30 p.m.;

Contact Mary F. Howe 713-376-7000

Genesee County Area PET Users Group (Michigan)

—meets at Bentley High School on Belsay Rd. on the 3rd Thursday of each month at 7 p.m.

Contact Gordon Hale 313-239-1366

Greater Omaha Commodore 64 Users Group

—meets at South Omaha campus of the Metropolitan Technical Community College, 27th and Q Streets in Room 120 of the Industrial Training Center on the first Thursday of the month at 7 p.m.

Contact Bob Quisenberry 402-292-2753

Manasota Commodore Users Group

—meets on the 2nd and 4th Thursdays of the month at 7 p.m.

Contact Robert O. Bronson 813-747-1785

Michigan's Commodore 64 Users Group

—meets at Warren Woods High School in Warren on the 3rd Tuesday of each month at 7 p.m.

Contact Chuck Ciesliga 313-773-6302

Mohawk Valley Commodore User's Group

—meets at the Clara S. Bacon School in Amsterdam, NY at 7 p.m. on the second Tuesday of the month

Contact William A. Nowak 518-829-7576

Russellville CUG, Inc. (Arkansas)

—meets at Oakland Heights Elementary School on the 3rd Thursday of each month at 7 p.m.

Contact Bob Brazeal 501-967-1868

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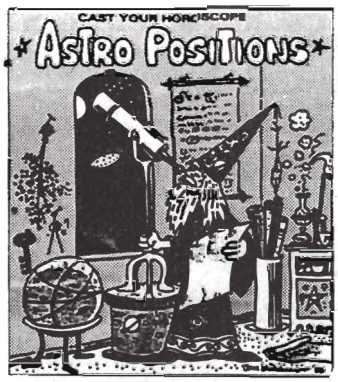

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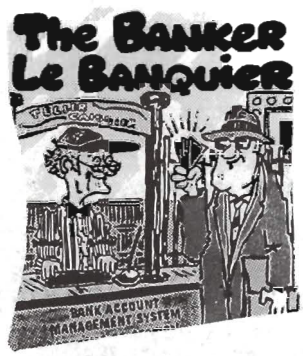

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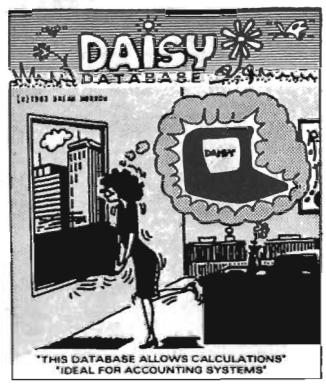

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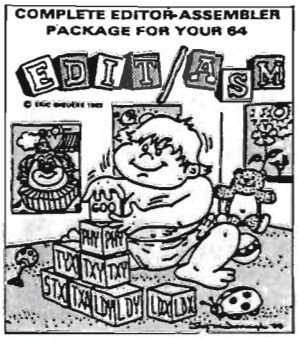

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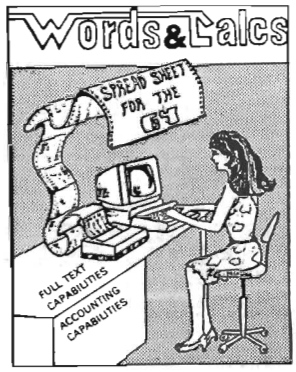

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SuperPET 6809 Assembler -- Part III

Brad Bjorndahl
Bramalea, ON

This, the third article on the assembler project 'PITS' will begin to examine some of the assembler techniques used to produce a structured and modular program.

The Waterloo 6809 microAssembler has a number of features to ease the admittedly trying task of writing assembler code. First is the editor which is used to write assembler routines and to save them on disk as 'source files'. Second is the assembler itself which is designed to assemble source files independently of externally defined addresses (e.g. ROM addresses), to save the assembled source code on a disk 'object module' file and to produce a file of the original code with its machine language translation displayed beside it. The listing below shows a partial example of the translation for the mainline routine. With the assembler so designed, a programmer may break up the source program into parts corresponding to the separate modules of the program.

Third is the linker which pulls ('links') all the separate object modules together to produce an executable program called a 'load module'. The linking process also resolves the memory addresses that the assembler omitted because the assembler only deals with one source file at a time. The linker also produces two files on disk: an 'exp' file which lists the memory addresses that it had to resolve and a 'map' file giving details of memory locations of all the program modules. Fourth is the monitor which reads a load module on disk and writes it to memory and which provides useful debugging commands for setting break points, changing register values, etc.

In summary, writing assembler programs on the SuperPET involves editing source files, assembling them to produce object modules, linking object modules into one load module, and running the load module with the monitor.

The PITS program is broken up into four parts corresponding to four source files. I have chosen to prefix all PITS files with 'pits' for easy identification. The Waterloo assembler requires all source files to be suffixed with '.asm'. The first source file, called 'pits.asm', contains the mainline routine, a finishing subroutine and many reserved data areas. Another source file called 'pits_island.asm' contains all the island building routines and another called 'pits_move.asm' contains all code to move the player and zombies. Lastly is 'pits utility.asm' which contains the general utility subroutines for which I did not provide a design in the last two articles. The modularity of source code allows a programmer who does not like my island building procedures, or who has their own utility programs, to replace mine, using simple editor commands. The only constraint is that parameter passing methods and data area usage remain the same. Changes and re-assembly are limited to one relatively small file. If any module is changed then all must be linked again but this step is very easy after it has been set up once. By the same token, if I write a program that can use, say, the PITS utilities then it is a simple process to copy them.

Refer to the listing again. First note that anything placed after a semicolon is treated as a comment. The lines which begin with 'xref' list the addresses which are referenced (i.e. needed) in this source file but are defined elsewhere, such as ROM or another source file. The lines which begin 'xdef' list addresses which are defined in this source file but referenced elsewhere. In this way the assembler is told which addresses to let the linker provide (xref) and which to provide to the linker (xdef) for use in other object files. The addresses are for both subroutines and data.

The first executable statement (all the previous are assembler directives) is 'jsr initstd_'. This is a jump to a subroutine which is provided in ROM to initialize I/O for the keyboard and screen. Note that the assembler has set the address to 0000 since it is xref'd and the linker will provide the correct address later. Farther down at location 0016 the statement 'jsr finish_game' is given an address of 0239 which is the location that can be seen near the end of the listing. The assembler 'knows' that 'finish_game' is located within this source file so that the address is available.

Most of the mainline can be compared directly to the 'pseudo-program' design of the mainline. The statement 'loop' is an assembler directive and is not translated. It is used as a location to branch back to from an 'until' directive. Such LOOP-UNTIL structures can be nested as shown; the assembler is smart enough to know where to branch to.

A zero value conventionally signifies false so that 'clr game_end' will clear (i.e. zero, set false) the contents of the game end location. To set the 'game end' flag to true, a subroutine need only increment the contents with the statement 'inc game_end'.

In order to provide the 'finish_game' subroutine with information on how the game ends, I have included a 'game status' indicator which is initialized to a space. The statement "lda#' '" loads the 8 bit A register with the immediate value of 20 (hex). This value is stored via 'sta_game status'. To have both a flag and an indicator may seem redundant but when the program needs to know only if the game has ended (and not why) it is simply necessary to check with a 'tst game_end' instruction. The 'tst' will simply look at a location and set condition codes according to the contents. In the same way the program checks to see if the player is 'sick_of_game' with a simple 'tst'. The last mainline executable statement is 'swi' which is equivalent to a stop. In fact it is one of the three available software interrupts. It will pass control back to the monitor.

The remainder of the mainline routine defines a number of

continued overleaf

data areas (using assembler directives). The symbol 'max len' is put 'equal' to 50 (hex). Whenever the symbol 'max_len' is found, the assembler will replace it with '$50'. The next directive 'fcb' (i.e. form constant byte) tells the assembler to set aside one byte of memory with contents $50. The directive 'rmb' means 'reserve memory bytes' so that there is a 'buffer' 80 (= 50 hex) bytes long. The location counter in the listing jumps from 20 to 70 to allow room for the buffer.

The same directives are used to specify dimensions of the arrays which hold the zombie and pit addresses and counters. The maximum dimension is equated to 40 (hex). Since island positions are stored as row/column addresses of two bytes each, their dimensions must be doubled. The directive 'max + max' accomplishes this very nicely. Other arithmetic and logical operations on assembler symbols are also available. *TPUG*

Listing of the PITS mainline routine

```
0000           ;                          p 'pits.asm'
0000           ;
0000           xref initstd_, tputcurs_, printf_  ; ROM routines
0000           xref create_island, move_y_z, cmd_input
0000           ;
0000           xdef y_pos
0000           xdef max_z, z_pos, z_move_ctr, z_life_ctr
0000           xdef max_o, o_pos, o_depth
0000           xdef game_end, game_status
0000           xdef buffer, buff_len
0000            ;
0000 BD 00 00     jsr initstd_
0003              loop ; until the player is sick of the game
0003 BD 00 00       jsr create_island ; create the island
0006 7F 02 36       clr game_end      ; set game_end flag to false
0009 86 20          lda #' '          ; and status to space
000B B7 02 37       sta game_status
000E                loop
000E BD 00 00         jsr move_y_z    ; continue moving
0011 7D 02 36         tst game_end    ; until the game ends
0014 27 F8          until ne
0016 BD 02 39       jsr finish_game ; display end of game messages
0019 7D 02 38       tst sick_of_game
001C 27 E5        until ne
001E 3F           swi               ; stop
001F            ;
001F 0050         max_len   equ $50
001F   50         buff_len  fcb max_len  ; max length of I/O buffer
0020              buffer    rmb max_len  ; an I/O buffer
0070              y_pos     rmb $02      ; current position of Y
0072              y_new     rmb $02      ; new position of Y
0074 0040         max       equ $40      ; an absolute upper limit
0074   40         max_z     fcb max      ; upper limit of zombies
0075              z_pos     rmb max + max   ; current zombie positions
00F5              z_move_ctr rmb max     ; number of moves for each Z
0135              z_life_ctr rmb max     ; number of lives for each Z
0175   40         max_o      fcb max     ; upper limit of pits
0176              o_pos      rmb max + max ; positions of pits
01F6              o_depth    rmb max     ; zombie depth of pits
0236              game_end   rmb $01     ; flag to indicate end of game
0237              game_status rmb $01    ; how game was lost
0238              sick_of_game rmb $01   ;
0239            ; ---------------------------------------------
0239            ;                          finish_game
0239            ;
0239 0239         finish_game equ *
0239 CC 18 01       ldd #$1801
023C BD 00 00       jsr tputcurs_
                              etc. .......
```

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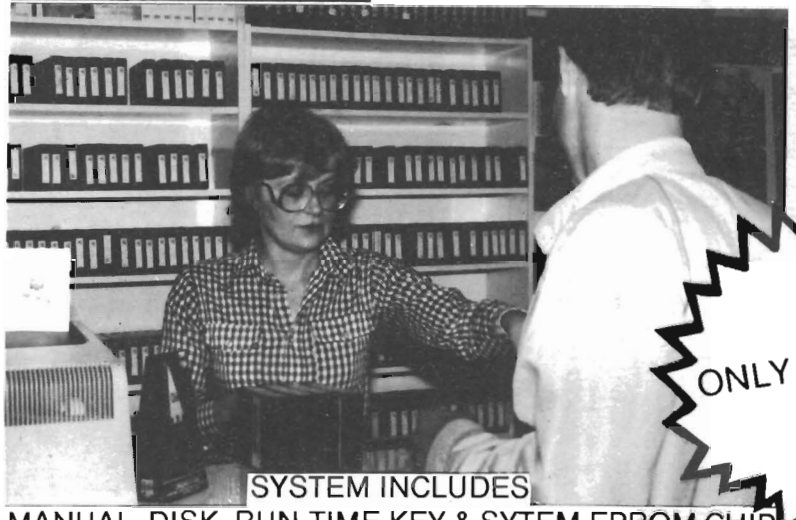

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6. Amount

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3. Membership expiry date
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5. Category*
6. Type*
7. Number of films hired by member
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THE BEGINNER AND THE DISK - Part III

Or: Things Mother Commodore Never Told You

David A. Hook
Barrie, ON

Welcome to the third part of a series devoted to the elementary aspects of disk drive handling. We have been focussing on the 1541 serial drive, because its manual is atrocious and also because the Commodore 64 computer has become so popular. In Part I, we dealt with diskette care, formatting and initializing. Part II centred on the DOS WEDGE programs (and related BASIC 4.0 commands) to check errors, and how to get disk directories (non-destructively).

This installment looks at some more disk commands, and touches on the "wild card" and "pattern matching" characters, that can be so useful to you.

Loading a Program

If you have got this far, you will surely know how to LOAD in a program. Depending on the machine, you can call in a normal BASIC program like this:

LOAD "0:RATAFRATZ",8	(on all machines, from Drive #0)
LOAD "1:RATAFRATZ",8	(on all machines, from Drive #1)
DLOAD "RATAFRATZ"	(BASIC 4.0, from Drive #0)
DLOAD "RATAFRATZ",D1	(BASIC 4.0, from Drive #1)
/RATAFRATZ	(DOS WEDGE in effect)

Even with a single disk drive such as the 1541, it's better to use the prefix '0:' to designate Drive #0. The drive tries harder when you do it. The BASIC 4.0 commands only apply to PET/CBMs or to C-64s with hardware such as The BUSCARD (Batteries Included) or C-64 Link (Richvale Telecommunications) installed. As discussed last issue, if you don't have these commands, then it's extremely helpful to LOAD and RUN the appropriate WEDGE program when you start-up.

There is another type of "program file" stored on the disk as a "PRG" type. It could be a machine language routine, or a high-resolution picture, or a sprite image. Regardless of what it is, it most certainly will cause a problem if you treat it as a BASIC program. A normal LOAD command, as given previously, will often send your machine into a tizzy. We need to get technical here for a few moments:

If you have PET/CBM equipment, a LOAD of a program file will put it back in exactly the same location that it was saved from, whether it truly is BASIC, or a special type of file, as mentioned above. The following comments don't really apply to you.

Starting with the VIC 20, and continuing with the C-64, the location where the normal "start-of-BASIC" resides is more likely to be moved around. For the VIC 20, it floats based on how much expansion memory is installed. With the C-64's flexible architecture, the "start-of-BASIC" location is often "played with" by a programmer. Thus the BASIC LOAD command is a "relocating" type. These machines automatically place the program wherever BASIC expects to find it, regardless of what location it had been SAVEd from (this parenthetical remark is here to avoid ending the previous "sentence" with a nasty preposition. A picky editor may still conclude that the remark itself ended with the word "preposition", if not a preposition itself. But, then, what can you expect from a man who not only knows what an "octothorpe" is, but also knows that "octothorpe" itself is an obsolete term). *(Editor's Note: Just to prove how tolerant I am, I'll let that remark pass!)*

Since machine language and picture files are only useful in the *same* spot from which they were SAVEd (is that better?), there must be a special provision to restore them to their proper home. This is the purpose of the modified version of the LOAD command, which you may have seen in other people's work (look at the LISTing of the C-64WEDGE program before you RUN it). Some people call this a "non-relocating" or a "direct object-code" LOAD. Call it what you want, but here's how to do it:

LOAD "0:ML CODE", 8, 1	(from Drive #0, for VIC 20 and C-64)
%ML CODE	(with C-64WEDGE in effect)

Note that there is no "DLOAD" or other BASIC 4.0 command to handle this function. The "secondary address" of "1" designates the non-relocating format. With tape files, you can prepare the same special type when the file is SAVEd, so that a "normal" LOAD will put it back in its place. With disk, there's only one way—you can only specify this on LOADing, not when you SAVE it.

Wild Cards and Pattern Matching

No this is not another digression into Poker and How to Wallpaper Your Kitchen. Time for some more computer jargon—just try to drop these babies into your next cocktail party chatter!

With a number of the disk commands, it is possible to check for common characters in the names, or to "default" to match the first file found which matches the characters as far as you've typed. Let's hark back to tape storage for an example. If you SAVEd a program called "INVENTORY 1", then another called "INVENTORY 2", you will then want to reLOAD them at some future date. You could say:

LOAD "INVENTORY 1"

This would fetch the first program with the exact title as above. More precisely, it would LOAD in the first one it found with the first eleven characters of the name that matched I-N-V-E-N-T-O-R-Y-space-1. Something called "INVENTORY 12" would LOAD if that's what it found first. So, the character matching is done *for as long as the file name that you typed.*

If you rewound the tape fully and entered:

LOAD "INV"

the computer would LOAD the first program that started with I-N-V. In order to get "INVENTORY 2" into memory, you would have to type out the whole thing. (Even then, if "INVENTORY 29" was found first, the latter is the one you'd get).

We could say that there is a "pattern match" policy in effect: the computer matches all the characters in the filename that *you* typed. If the filename that it finds is longer, but matches as far as you have gone, then the remaining characters match anything, i.e. the characters that you *didn't* type.

If we now turn to the disk's handling of pattern matching, we find that it is somewhat different. The filename you try to LOAD must match *exactly*, or else an error condition results. Trailing spaces, if they show that way in the directory, must be included to get the program back. The asterisk character, ("*"), or multiplication sign, serves as the "match whatever follows" trick. You could call this a "don't care" symbol because you will be ignoring what follows.

Using the same two files as with tape:

LOAD "INV*" , 8

will LOAD the first program found on the disk that starts with I-N-V, and has any other characters following the first three. Without the asterisk, only the exact name, "INV", would be sought. If "INVENTORY 2" preceded "INVENTORY 1" in the disk directory, then it would be the one LOADed.

Pattern matching is useful for other disk commands. You might want to get a directory of all filenames starting with "INV". Here's the way:

LOAD "$0:INV*" , 8	(Drive #0, for all machines)
>$0:INV*	(With a WEDGE installed)
@$0:INV*	(alternate command, with a WEDGE)

Remember that the LOAD command will destroy any BASIC program in memory, whereas the WEDGE versions just deliver the matching names to the screen. The BASIC 4.0 commands: DIRECTORY and CATALOG do not permit any pattern matching, due to a mistake made when they were put into the PET/CBM Read-Only-Memory chips. Both The BUSCARD and C-64LINK implement the pattern matching feature properly, I believe.

Wild cards are like their counterpart in poker, as certain characters in the *middle* of filenames can be ignored, to provide matching against any character in that position. Again, a directory is a good way to demonstrate this feature.

LOAD "$1:ACCT ????.BAS", 8	(Drive #1, for all machines)
>$0:ACCT ????.BAS	(With a WEDGE installed)
@$0:ACCT ????.BAS	(alternate command, with a WEDGE)

Perhaps you have a bunch of files on the disk identifying customer accounts with a four digit number (in the positions marked by the question marks, "?"). Each filename has the suffix ".BAS" appended to it. You only want to see these matching files, but don't care which account numbers they are. The wild card symbol does the trick.

As with the pattern match, other disk commands can take advantage of this.

Saving a Program

As before, you've done this successfully without this article to help you. A couple of points are worth noting. First, you can't use the asterisk or question mark as a legal character when you need a filename—for the reason that they're reserved for pattern matching and wild card uses. Second, no matter what anyone tells you, *do not* use the "SAVE with replace" feature that the manual says is OK. This is denoted by a prefix "@" before the drive number in the filename specification. It is not reliable, and never has been, from the first disk drive that Commodore produced. Some strange things happen to files SAVEd in this way. It is far better to scratch the old file, then reSAVE the current version in two steps. Disregard this at your own risk—don't bother telling me that it blew up, as I've heard that song before! *(Picky Editor's Note: Jim Butterfield insists that "@"—sign replacement is perfectly safe. Believe whom you wish!)*

Anyhow, here are some of the possible commands:

SAVE "0:RATAFRATZ" , 8	(on all machines, from Drive #0)
SAVE "1:RATAFRATZ" , 8	(on all machines, from Drive #1)
DSAVE "RATAFRATZ"	(BASIC 4.0, from Drive #0)
DSAVE "RATAFRATZ" , D1	(BASIC 4.0, from Drive #1)
–RATAFRATZ	(C-64 WEDGE in effect)

The BASIC 4.0 commands will only function with a suitably equipped machine: PET/CBM, or C-64 plus The BUSCARD or C-64LINK.

That's enough for this month. Keep those cards and letters coming in. Your questions are welcome, through the Editor, and will help to keep us on track. *TPUG*

BENNETT'S TUTORIAL - Linking Techniques

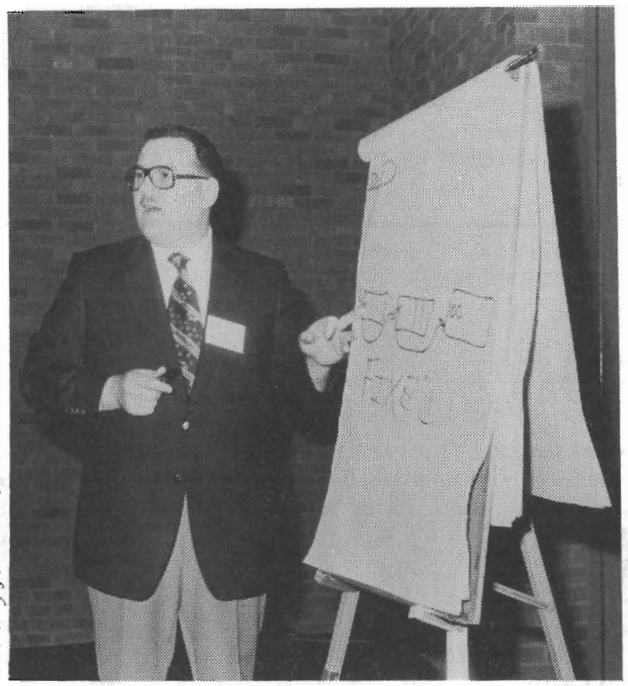


Photo by John Easton

Chris Bennett,
TPUG Business Manager

This month's tutorial deals with linking (chaining) BASIC programs together. Many applications are too large to fit in memory. In order to get around this, we break the task into small modules. Each BASIC module handles a specific function (Update, Print, Sort etc.) and is small enough to fit in the available space.

This linking and chaining is accomplished by the 'LOAD' command. When a 'LOAD' is executed from BASIC, the program in memory at the time is completely overlaid by the new program. This is similar to the way things are done in direct mode. Typing LOAD"ABC",8 followed by LOAD"DEF",8 will cause the program 'ABC' to be loaded and then program 'DEF' to be loaded over the top of 'ABC'. In direct mode, the top of BASIC is set after each 'LOAD' command. However, if the 'LOAD' is executed from within a BASIC program, the top of BASIC is not reset but remains equal to the value set by the initial 'LOAD'.

There are two methods of linking programs together. One preserves the BASIC variables, the other does not. Let us look at the version that keeps the variables intact.

Link with Variables Preserved

If you wish to pass data between programs, then the first program loaded must be the largest. To call other program modules, just LOAD them from within BASIC. Do not issue a 'CLR' command since this deletes all variables. The top of BASIC is defined when the first program is loaded. Variables are then added just above this point. If a larger program is loaded, it will overwrite not only the original BASIC program but also some of the variables. It is for this reason that the top of BASIC must be set to accommodate the largest program that will be used.

One way to do this is to make the first program artificially large by added many REM statements. The size of all programs can then be checked on the disk directory to ensure that the first program is the largest.

The other way, which is a little easier, is to set the top of BASIC with two POKE statements. First, we must look at the number of blocks each program takes on the directory. Then we add 4 (PET/CBM) or 8 (Commodore 64) to this number and enter the following as the first statement in the first program loaded:

```
poke 45,0: poke 46,Blks+8: clr          (Commodore 64)

poke 42,0: poke 43,Blks+4: clr          (PET/CBM, BASIC 4.0)
```

One important consideration is for strings that are defined within the BASIC code. If you define as follows:

```
100 a$="This is a string"
```

The data 'This is a string' is imbedded within the BASIC code. If a new program is loaded and A$ is referenced, the data will no longer be found. To fix this problem, the string must be forced into upper memory. This is done by defining all strings as follows:

```
100 a$="This is a string"+""
```

The plus sign above forces concatenation of the two strings with the result being placed in upper memory. The two quotes in a row after the plus sign are a NULL string which causes no change in the length or value of the original.

(Editor's Note: Other information such as DATA statements and DEF FNs may also give trouble.)

One of the problems with the above method is that the space assigned to variables is equal to the amount of space left when the largest program is in memory. It also means that once a variable is defined, it remains in memory forever.

NOTE: Since the above pokes reset the top of BASIC, the program in memory appears artificially large. Therefore, never save a program after it has been run. The correct procedure is to load the program, make any changes to the BASIC code and then save the program. This will assure that the correct top of BASIC is maintained.

Link with Variables not Preserved

The second method of linking programs does not preserve data. Each program, when loaded, sets the start of variables to coincide to its own end of BASIC. The only restriction is that all data must be cleared with the 'CLR' command. The first statement in ALL programs being chained must be as follows:

continued overleaf

```
poke 45,peek(174)
poke 46,peek(175)
clr: restore                (Commodore 64)

poke 42,peek(201)
poke 43,peek(202)
clr: restore                (PET/CBM, BASIC 4.0)
```

These statements reset the top of BASIC pointers (45/46 or 42/43) to the end of the current program just loaded (174/175 or 201/202). This is done automatically for us when we load a program from disk and then type RUN in direct mode.

NOTE: When editing or changing programs that use this second technique, *always* save the changed program to disk and then load it back in before testing. The load pointers (174/175 & 201/202) are not changed when you modify a program. If you increase the size by adding more commands and then RUN, the top part of the BASIC program will be overwritten by your variables. However, when you load a program, these pointers are set correctly. *TPUG*

Conference Special

MENU HANDLING — Part 1

John Easton
Toronto, ON

Menu creation in this era of User Friendliness is fast becoming virtually a necessity to the efficient usage of the multi-faceted functions expected of each new whiz-bang 'Recipe Riter' program one might be wanting to share with an increasingly 'friendly' oriented (as opposed to computer literate) end user.

My work at times entails the job of providing 'computer assisted information' to crowds at exhibits and fairs around the country. In such an environment, one must not only consider the complete novice to computers (with SIMPLE and CONTINUOUS instructions), but must at the same time be ever wary of the whiz kid hackers who love nothing better than to break into your current 'Cultures of Ontario' program leaving a few 'cultural' messages of their own (invariably just prior to a personal demonstration for one's impressionable Director of the Purse Strings).

Got the picture? Whichever way one approaches the problem, the ultimate idea is to provide a continuously interactive environment between the user and the information (i.e. computer). This interface must be both IDIOT proof and BULLET proof, yet maintain an aura of friendliness and encouragement to the user. And remember — occasionally you, as chief overseer, just might want to get at the program yourself, so though you've bolted everything down as protection, it's a wise move to allow SOME means (short of pulling the plug on the whole setup — not conducive to healthy disks) of turning off the damned thing! No Virginia, you can't get at the power switch — see, we've taken it out. (You know, after a Joystick, the power switch seems to be the next thing every kid higher than the table-top seems to reach for.)

So, let's break the problems down into approachable chunks:

1. Menu structuring.
2. Simple prompting routines.
3. Bulletproof input.
4. Program chaining (dynamic loads with or without parameter-passing).
5. Statistical Data gathering (a useful endeavour should one be interested in researching the effectiveness of your program).

MENU STRUCTURING GUIDELINE

1. Menus are to be user friendly, not programmer friendly.
2. Menus should be formed in tree structures, with menus getting more precise towards the outer branches.
3. Movement between menus should be planned to allow the user fast access paths.
4. Each menu should have a specific theme.
5. There should be only one main menu.
6. The only exit from the program should be through the main menu.
7. Each menu should have a choice (or control key) to allow the user to go directly back to the main menu.
8. The user should always have the option of returning to the previous menu.
9. Menus should preferrably have no more than 8 choices. Large menus should be split up.
10. Menu choices should be short and clear.
11. Only one menu should be on the screen at a time.
12. Each menu should have a meaningful title.
13. Titles and Prompts should always be located in the same position.
14. Very large menu structures should have a "help" facility which can help guide the user to the area they want.

SIMPLE PROMPTING ROUTINES

A few years ago Commodore issued a simple guideline to prospective programmers wherein they suggested that certain standard screen formats should be adopted. In particular, the display of Status Information in standard locations certainly eases the process of walking through an unfamiliar program. By Status Information we mean all that 'User Friendly' stuff on a screen that gives a continuous indication to the user of where he or she is in the program (STATUS) e.g. — title, page, record #, mode, etc., and what he/she might be expected to do next (PROMPTS).

Status lines seem to work best on the top two screen lines, and Prompt lines should be reserved for the bottom two. Of course one needn't use two lines if your style keeps things simple enough for one line, but like I said, these are suggested areas — and as long as you are consistent, the average user will quickly adapt to your style and reward your thought-

fulness with praise of the program's friendly manners. Much more important to you as a programmer will be the decided decrease in 'help' phone calls and/or apparent program malfunctions (due usually to user unfamiliarity with whatever your clever program might be expecting at any particular moment).

And on the subject of prompts, a pet peeve of mine is the familiar request to TOUCH ANY KEY TO CONTINUE. To the neophyte literal-minded novice user, this means just what it says — and try as one might, it's usually quite impossible to find the ANY key. To experts like you and me on the other hand, such a message provides a challenge to try every combination of Escape, Reset, Stop and Control keys that one can reasonably expect to find on any standard keyboard. All in all, neither of these approaches result in the desired input. The most accessible key of all is generally the Space-bar (yes Melissa — it has *no* label), and any keyboard-literate person can find this key with no effort. Why not do yourself and your public a favour, be *specific* in your prompts, and even then be prepared to intercept the wrong input with a noticeable signal (screen-flash, bell, etc.) and a friendly request again for the correct input.

INPUT

To your average parent at a local fair, the necessity of terminating any input with a RETURN or ENTER key is just beyond their experience. Whenever you really *must* gather input in this manner, remember to prompt for the required key *very prominently* — like why not flash the whole bottom screen line.

Most casual user-oriented information programs can be structured to run quite easily from a Menu (and that is, after all, what we're about in this discourse) without the need of a single Input operation. Using the GET function, it is always possible to test for incorrect responses, but on finding an acceptable response, the program can then move on immediately to whatever next step is expected. It is of course a nice touch, in the case of any drastic reaction, to politely acknowledge the input (perhaps on the Status Line) and request confirmation of that action (perhaps on the Prompt Line) prior to executing it. And yes, it is possible to structure a Double-Get (or for that matter a Triple), in the case of perhaps selecting a menu item higher than the value 9, but more on that later. *TPUG*

A COMMERCIAL NOTE

Jim Butterfield
Toronto, ON

I've been asked lately if I'm going commercial. People who have seen some of my free programs seem to wonder if I'm going to start charging for them. No worry: but this is an appropriate time to outline some of the "commercial" activities in which I am becoming involved.

First: I don't work for Commodore, and never have. I do consulting work for Commodore, however, and have been asked to make presentations on their behalf from time to time. The fact is, I like their computers.

Second: the videotape. Many readers know that I was involved in a television series about a year ago: "Bits & Bytes" and "The Academy on Microcomputers", produced by TV Ontario. About the time we wrapped up that series, I was approached by PF Communications who asked if I would be interested in doing a videotape specifically on the Commodore 64.

That sounded like a good idea to me. The TVO series had to be general in nature; when you deal with a wide variety of machines you can't get too intimately involved in the working of any one machine. A video series that concentrated on a single machine, the Commodore 64, could get down to specifics. It sounded like something worth trying. I don't believe that you can teach programming with conventional videotape format; this would be especially difficult if the student used a computer connected to a TV set. But you can make a user feel much more at ease with the computer, and you can give a glimpse of the machine's potential.

Comments I have received on the videotape have been generally favorable. I did wonder, however, about one user group who reported, "Our older members really liked it." Hmmm. And I wasn't sure about the viewer who suggested I didn't match up to Jane Fonda; maybe next time I'll wear leotards.

Third: the book. Brady should be publishing my machine language book around mid-August. I've been presenting machine language as a series of eight evening sessions to the club for at least five years now. (Would it surprise you to learn that my book has eight chapters?) It amazes me that virtually all books today either treat the processor chip as a disembodied thing not connected to a real computer, or bury the reader in a mishmash of maps and mathematics.

Machine language isn't hard. Sometimes machine language programs can grow to be complex or long-winded, but the language itself isn't hard. And machine language needs to be used with the computer's environment. The user needs to link to input and output routines, and to understand the tools available for doing such jobs as inspecting and changing memory.

I frequently dwell on the subject of Commodore machine compatibility; if you keep away from the special tricks, they all work in the same way. And so I wanted to write the book to apply to all Commodore machines—PET/CBM, VIC 20, C-64, the new Plus-4 and Commodore 16, and even the B series to a limited extent. (The problem with the B series is the absence of a good monitor and extra complexity in siting the code).

Fourth: the pocket diary book. This is a great subject for gags. When I tell friends that I'm writing a diary, they often reply, "True confessions, huh?" Not quite.

I don't know about other people, but I like to carry around notes on the computers I'm using. Favorite POKEs, character sets, machine language reference, and so on. I might be on a bus or plane when an idea strikes me, and it's a great help to whip a set of notes out of my pocket to follow up on it. I was talking with a publisher some time ago (Copp Clark Pittman) and wondered out loud why nobody had thought of putting out a diary with reference data in it. After all, they have gardener's diaries, cat lover's diaries, and such; why not a Commodore owner's diary?

For my part, it was idle chatter; but the publisher took it seriously, researched the matter, and suddenly to my surprise asked for about 30 pages of notes to be inserted as a reference section. I supplied material, and also suggested that by checking with Karl Hildon, some of the material that had been so beautifully typset in *The Transactor's* reference issue could be attractively adapted. I understand that Karl has been most helpful.

Still, when people ask, "How do you write a diary?", I tend to reply, "I started with January; the next month was a toss-up between August and February, and so on. I'm still trying to decide how many Christmas days to have. . . "

Fifth: the spell check program. I'd been using a simple spelling check program of my own design to help proofread material for a resource book that I was preparing for the TV Ontario series. *Pro Line Software* asked if they could use it. I said yes, but they would need to dress it up in a commercial package; mine was a minimal program for my own use. They did so. Occasionally I must explain to callers that the program sold commercially is only partly mine; it's adapted from my code. I can't answer all details of how the commercial program works in every situation.

Have I gone commercial? I don't think so. The bulk of my stuff is still available through TPUG or other outlets, free.

By the way, I don't mind people making money from programs. But with money comes obligations: if you take cash for it, you must support and service it. If you do things as entertainment or recreation or just for the heck of it, there's no reason to look for revenue; you've had your fun.

And all of my free programs come with a money-back guarantee.

One last note: both my football team and baseball league play a very tight schedule. We've had to turn down numerous challenges; we're holding out for the Byte Bowl. *TPUG*

TPUG COMAL COURSE - Part II

Borge Christensen
Tonder, Denmark

2. ROCK AROUND THE CLOCK AT HOME AND IN SCHOOL.

Clear the workspace (NEW) and the screen. Type in the following program (use AUTO, if you like). You do not need to indent the lines. The interpreter will do that by itself.

```
0010 PROC POINTER(HOUR)
0020   MOVETO 150,100
0030   SETHEADING HOUR*30
0040   FORWARD 50
0050   BACK 50
0060 ENDPROC POINTER
0070 //
0080 PROC CLOCK
0090   FOR H:=1 TO 12 DO POINTER(H)
0100   PLOTTEXT 70,30,"ROCK AROUND THE CLOCK"
0110 ENDPROC CLOCK
0120 //
0130 SETGRAPHIC 0
```

Switch to turtle graphics by typing RUN and give the command

CLOCK

You should get a picture like this: (see fig.1)

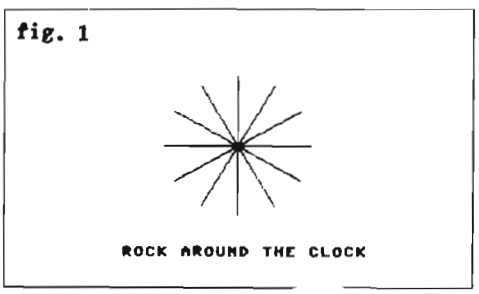


fig. 1

Let us take a closer look at the procedures:

POINTER(1)	**A call to POINTER. Value of actual parameter is given by the numeric constant 1.**
PROC POINTER(HOUR)	**The formal parameter HOUR is set to 1, and the turtle is moved to**
MOVE TO 150,100	**the position (150,100)**
SETHEADING HOUR*30	**The turtle is set to point its head to the direction 1*30 degrees, and**
FORWARD 50	**a line of length 50 is drawn.**
ENDPROC POINTER	**All done! Return.**
PROC CLOCK	
FOR H:=1 TO 12 DO POINTER(H)	**The procedure POINTER is called 12 times with actual parameters 1, 2, . . . , 12.**
PLOTTEXT 70,30, "ROCK AROUND THE CLOCK"	**The given text is plotted, starting from position (70,30)**
ENDPROC CLOCK	**All done.**

Clear the workspace (NEW) and the screen. Then enter and RUN this program:

```
0010 PROC SIDE(LGTH)
0020   FORWARD LGTH
0030   RIGHT 90
0040 ENDPROC SIDE
0050 //
0060 PROC BOX(LGTH,ANGLE)
0070   MOVETO 150,100
0080   SETHEADING ANGLE
0090   FOR I:=1 TO 4 DO SIDE(LGTH)
0100 ENDPROC BOX
0110 //
0120 SETGRAPHIC 0
0130 //
0140 FOR ANGLE:=10 TO 360 STEP 10 DO
0150   BOX(50,ANGLE)
0160 ENDFOR ANGLE
```

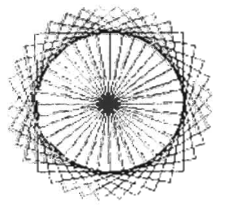
Note the FOR loop:

```
FOR ANGLE:=10 TO 360 STEP 10 DO
  BOX(50,ANGLE)
ENDFOR ANGLE
```

In this case you do not need to type in the keyword DO nor the name ANGLE following ENDFOR. This latter keyword may be typed in as NEXT, if you like. The assignment token ":=" may be typed in as "=".

The procedure BOX uses two formal parameters to give the length of the side and the angle to tilt the box respectively. A procedure can have as many parameters as the line length will allow.

fig. 2



3. THE TURTLE HUNTS ITS OWN TAIL.

The program that you wrote in the last chapter hopefully gave you this picture: (see fig.2)

The same picture may be generated in a more elegant way if you apply the following program. Clear the workspace (NEW) and the screen (press <CLR>) and enter these lines (use AUTO):

```
0010 PROC BOX(LGTH,ANG)
0020  HOME
0030  SETHEADING ANG
0040  FOR I:=1 TO 4 DO SIDE(LGTH)
0050  IF ANG<360 THEN BOX(LGTH,ANG+10)
0060 ENDPROC BOX
0070 //
0080 PROC SIDE(LENGTH'OF'SIDE)
0090  FORWARD LENGTH'OF'SIDE
0100  RIGHT 90
0110 ENDPROC SIDE
0120 //
0130 SETGRAPHIC 0
```

Type RUN and enter this command:

```
BOX(60,0)
```

to get the picture. In the procedure SIDE the name LENGTH'OF'SIDE is used for the parameter. In CBM COMAL a name may use up to 78 characters. The first one must be a letter, the following may be letters, digits, or the special characters "'" and " ". As you can see from my programs, I often use rather short names for parameters and variables. But I always am very careful with the names of my procedures, because by doing this I can make even large programs self documentary. However, in large programs, it is also important to pick up good and sometimes long names for the global variables, i.e. such variables that are used in a lot of procedures and in the mainlines of the program.

Now it is time to take a close look at the procedure BOX:

PROC BOX(LGTH,ANG)	**Formal parameters are the length of the side and the tilt angle.**
HOME	**Sends the turtle home.**
SETHEADING ANG	**Start in the direction given by the value of ANG**
FOR I:=1 TO 4 DO SIDE(LGTH)	**Draw four sides of length LGTH.**
IF ANG<360 THEN BOX(LGTH,ANG+10)	**Draw another box; same length of side as before but with 10 added to the angle.**
ENDPROC BOX	**All done.**

The sensational line in the procedure is as you may have guessed

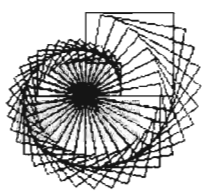
```
IF ANG<360 THEN BOX(LGTH,ANG+10)
```

In that line the procedure calls itself by recursion. Recursion is known to be one of the most powerful tools of high level programming. In its simple form it is very easy to understand:

continued overleaf

BOX(60,0)	The calling statement. Actual parameter values are 60 and 0.
PROC BOX(LGTH,ANG)	LGTH is set to 60 and ANG to 0, and the box is drawn according to the specifications.
IF ANG<360 THEN BOX(LGTH,ANG+10)	Since it is true that ANG is smaller than 360,
PROC BOX(LGTH,ANG)	procedure BOX is called again, LGTH still 60, but ANG now 10.
IF ANG<360 THEN BOX(LGTH,ANG+10)	It is still true that ANG<360, so
PROC BOX(LGTH,ANG)	BOX is called again with a value of 20 for ANG; LGTH still 60, etc., etc., until ANG finally assumes a value of 360.

fig. 3



And do not get confused over the many parties ANG has to play. A new version (or incarnation) of it is set up, each time the procedure is called anew!! The COMAL interpreter knows the trick from its birth.

Now try to change the line, where BOX is called recursively, such that each time a new call is evoked the length of the side is made one unit shorter. Then the program should generate this picture: (see fig.3)

4. LITTLE BOXES ON THE HILLTOP...

Clear the workspace and the screen and type this program in:

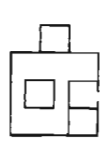
```
0010 PROC HOUSE(X,Y)
0020  SHACK(X,Y)
0030  WINDOW(X+10,Y+20)
0040  DOOR(X+40,Y)
0050  CHIMNEY(X+20,Y+60)
0060 ENDPROC HOUSE
0070 //
0080 PROC SHACK(X,Y)
0090  BOX(X,Y,60)
0100 ENDPROC SHACK
0110 //
0120 PROC WINDOW(X,Y)
0130  BOX(X,Y,20)
0140 ENDPROC WINDOW
0150 //
0160 PROC DOOR(X,Y)
0170  BOX(X,Y,20)
0180  BOX(X,Y+20,20)
0190 ENDPROC DOOR
0200 //
0210 PROC CHIMNEY(X,Y)
0220  BOX(X,Y,20)
0230 ENDPROC CHIMNEY
0240 //
0250 PROC BOX(X,Y,LGTH)
0260  MOVETO X,Y
0270  FOR I:=1 TO 4 DO
0280   FORWARD LGTH
0290   RIGHT 90
0300  ENDFOR I
0310 ENDPROC BOX
0320 //
0330 SETGRAPHIC 0
```

Switch to turtle mode with RUN and enter the command:

HOUSE(30,20)

This is the picture you ought to get: (see fig.4)

fig. 4



Look at the procedures one by one, and for each one locate the part of the drawing that it is responsible for. Note how easy it is to place the individual parts of the house relative to its lower left corner by utilizing the fact that parameters are local. You do not have to worry about the many X's and Y's. One procedure at a time will do. By the way, how many assignments can you find in the program?

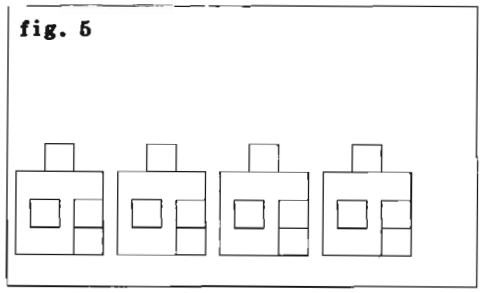
Now add these lines to it:

```
0330 PROC STREET
0340  HOUSENO:=0; ONE'MORE:=TRUE
0350  WHILE ONE'MORE DO
0360   HOUSENO:+1
0370   PLACE:=(HOUSENO-1)*70+5
0380   HOUSE(PLACE,20)
0390   ONE'MORE:=(PLACE+140<319)
0400  ENDWHILE
0410 ENDPROC STREET
0420 //
0430 SETGRAPHIC 0
```

Type RUN and give the command:

STREET

to get this picture: (see fig.5)



In procedure STREET the WHILE loop is used. We might have used recursion again, but then I had never come to demonstrate the loop structures of COMAL. The syntax of the WHILE loop can be pictured like this:

WHILE <Boolean expression> DO

<block of statements>

ENDWHILE

The lines in the block of statements between WHILE and ENDWHILE are indented on the listing to point out the range of the loop. Execution of the block of statements is repeated as long as the Boolean expression in the WHILE statements returns a value of TRUE. In the example the Boolean expression is the variable ONE'MORE which in it self flags the value of the expression PLACE+140<319. If the latter is TRUE, there is room for one more house. The soft brackets around the expression are not really needed. They are put there to make the line more readable.

Now try to replace lines 340-400 by:

```
0340 HOUSENO:=0
0350 REPEAT
0360   HOUSENO:+1
0370   PLACE:=(HOUSENO-1)*70+5
0380   HOUSE(PLACE,20)
0400 UNTIL PLACE+140>=319
```

RUN the program the way you did before. The syntax of the REPEAT loop is displayed below:

REPEAT

<block of statements>

UNTIL <Boolean expression>

The structure is almost self explanatory. The statements between REPEAT and UNTIL are executed repetitively, until the Boolean expression in the UNTIL statement returns af value of TRUE. Some desktop academics do not approve of the REPEAT loop. I think the above example could convince anyone of it advantages over the WHILE loop in many cases. On the other hand there are situations, where the REPEAT loop cannot be applied. You should have both in a good high level programming language. In version 2.00 of COMAL-80 for the C-64 the LOOP – EXIT WHEN – ENDLOOP structure has also been implemented.

The usual FOR – ENDFOR (NEXT) loop has already been used in several contexts.

Since I am a teacher, I must give you an exercise to end my first article about high level programming in COMAL:

Modify the house-drawing program, such that houses of different sizes may be drawn. Thus the head of HOUSE must be changed to become:

PROC HOUSE(X,Y,S)

You have to change all relevant actual and formal parameters to make the new houses similar to the original one. Thus the house "built" by the command

HOUSE(30,20,30)

should in all its dimensions be half as big as the one drawn above. Finally you can try to modify STREET to draw smaller and smaller houses "up the street".

My next article will be about branching in COMAL. *TPUG*

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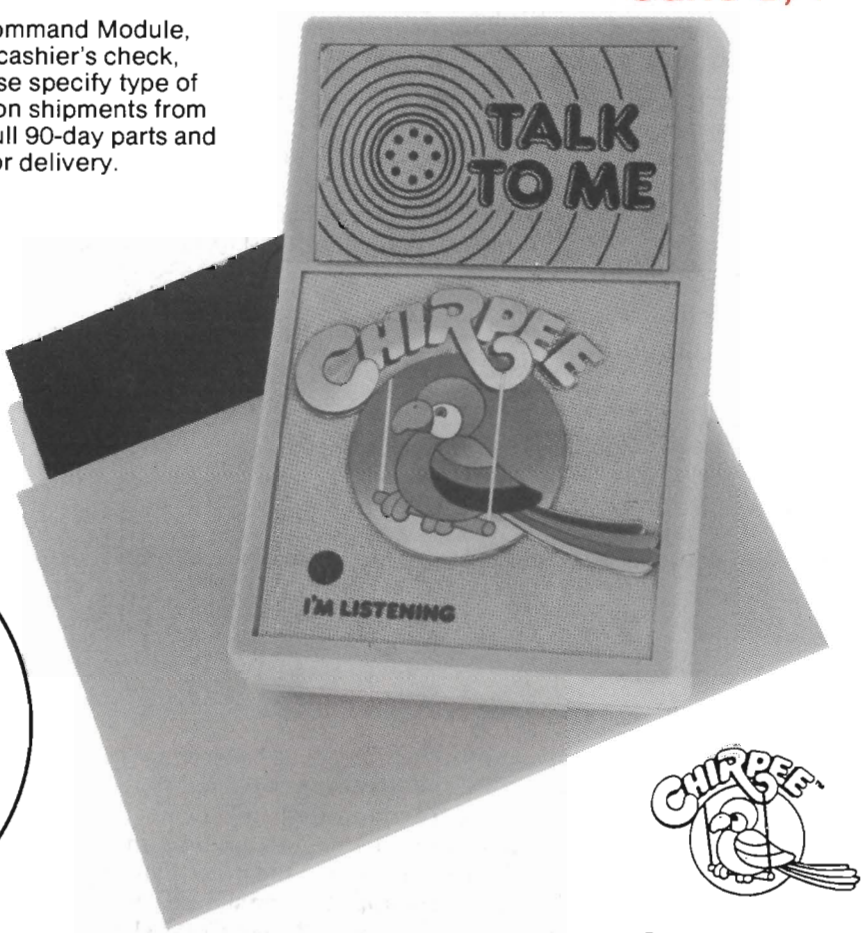

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TPUG CONFERENCE 1984

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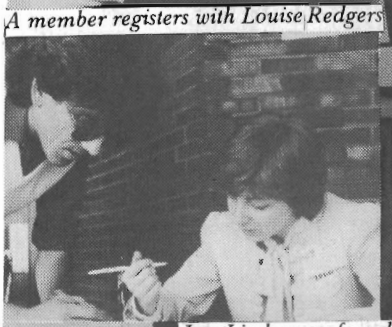
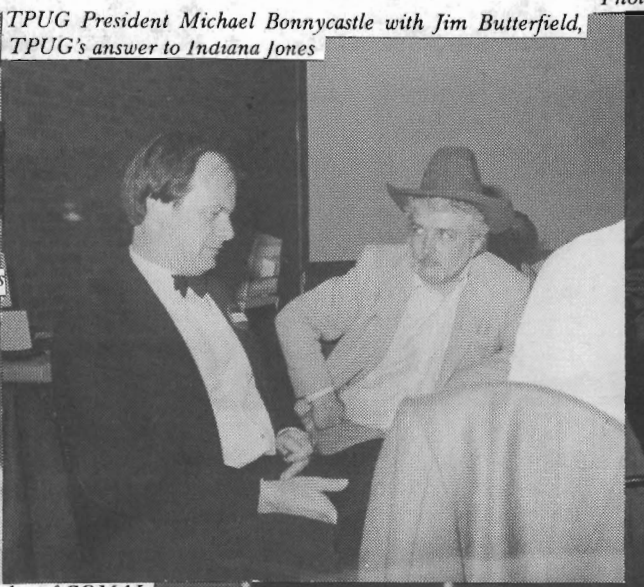
A member registers with Louise Redgers



TPUG President Michael Bonnycastle with Jim Butterfield, TPUG's answer to Indiana Jones



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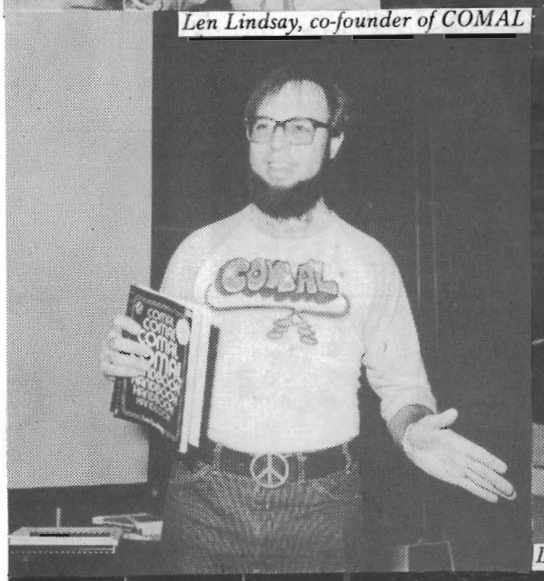

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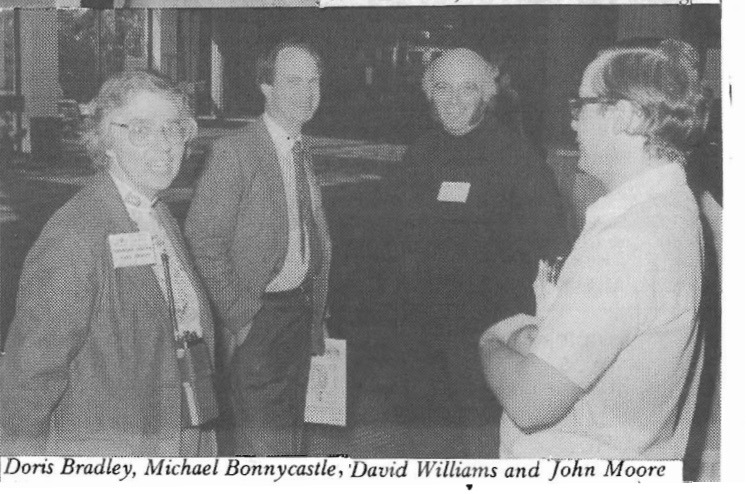
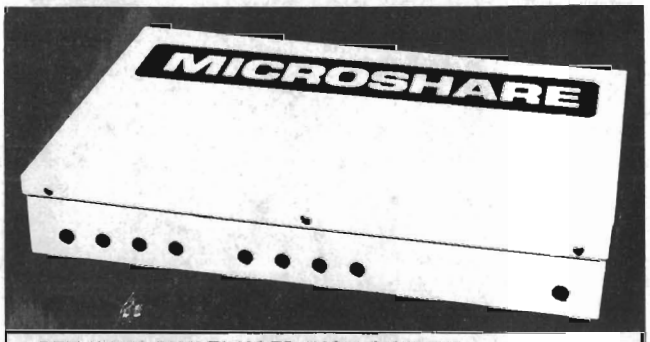


Doris Bradley, Michael Bonnycastle, David Williams and John Moore

MICROSHARE



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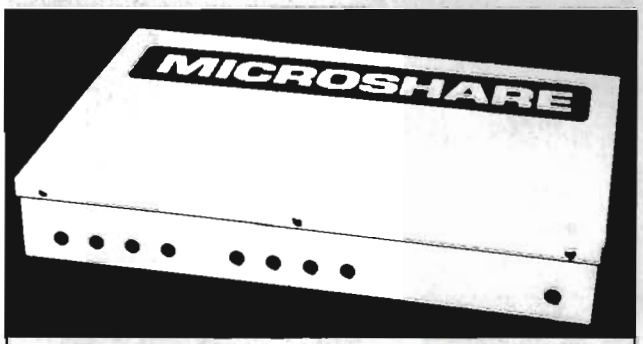

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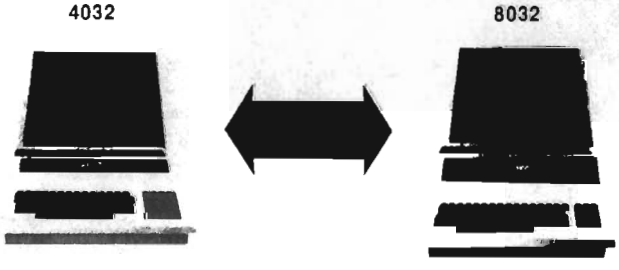

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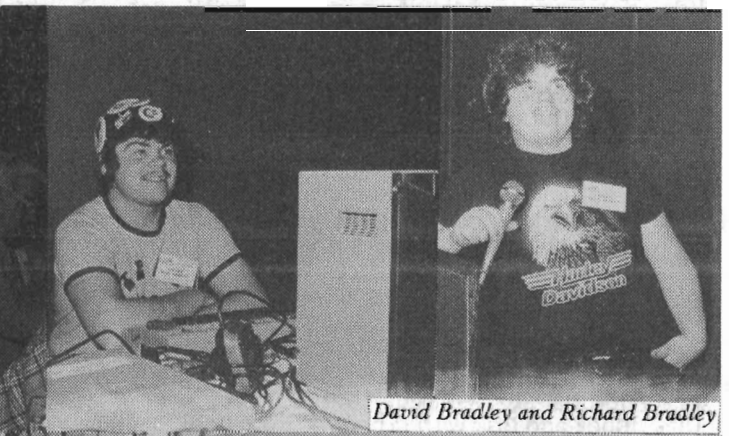
Mr. and Mrs. Peter Fontilius, TPUG members from the Netherland Antilles



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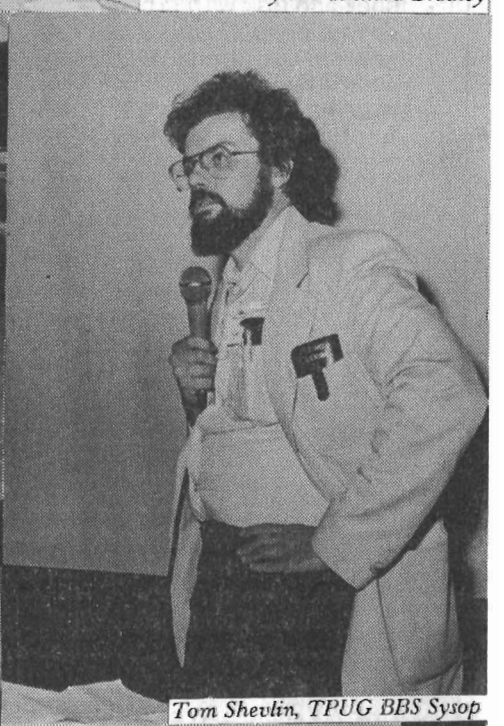

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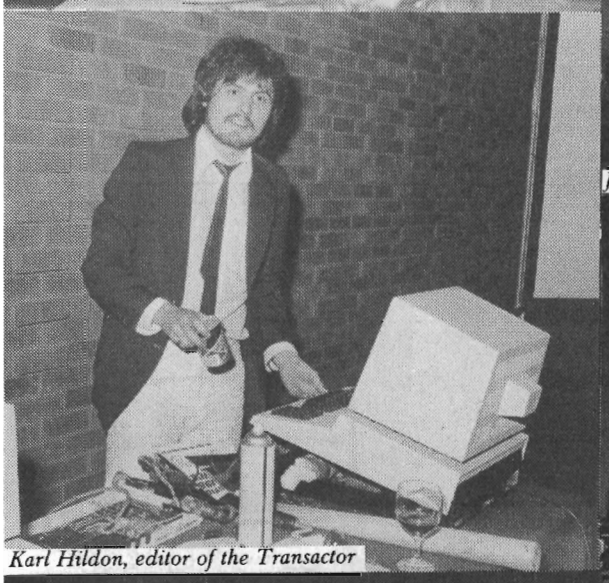


Karl Hildon, editor of the Transactor

Paul Higginbottom

Lyman Duggan, TPUG founder

PORTABLE SOFTWARE: AN OVERVIEW

D.D. Cowan and T. A. Wilkinson

Computer Science Department and Computer Systems Group,
University of Waterloo
and
WATCOM Systems Inc.

Introduction

Various groups at the University of Waterloo and WATCOM Systems have been producing portable software for a number of years and have found this approach to software development provides substantial productivity improvements without sacrificing the quality or required efficiency of the final product.

What is Portable Software?

Portable software is a difficult concept to define precisely but the following informal definition would be useful:

A program is portable if the effort required to move it into a new computing environment is much less than the effort required to re-program or re-implement it for the new computing environment.

Two questions immediately follow from this definition:

(i) what is much less effort, and

(ii) what is an acceptable performance level from the portable software?

Worst-case experience in our research laboratory indicates that a well-designed portable software system should only require about 10% of the lines of source code to be changed.

Being portable is not really enough for a software system, it must also perform adequately. For example, a program must meet accuracy, speed or memory requirements as well as portability in order to be a satisfactory solution to a problem.

Why write Portable Software?

Creating software is a labour-intensive activity and hence software is one of the most expensive components of a modern computer system. In fact it is a well-known historical trend that the cost of hardware is decreasing dramatically while the cost of software is increasing for reasons of complexity of software functions and inflation.

Any technique that can make software developers significantly more productive and hence reduce the cost of software production is worth pursuing. Writing portable software is such a technique.

Portable software also has a substantial impact on the productivity of the users. Since the software is the same for several machines, the user does not have to learn new techniques or commands to perform the same tasks. For example, every machine has its own editor with its own idiosyncrasies; a user who is switching between editors must remember these differences and conventions. A portable editor would solve these problems, since there would be only one set of commands to learn and these would not depend on the machine. In effect the user is provided with an environment which remains constant no matter what computer is being used, a so-called "portable environment".

An Approach to Software Portability — the WSL Approach

All portable software is written in a systems programming language called the Waterloo Systems Language (abbreviated to WSL and pronounced "whistle") which is available on a large number of computer systems. The methods used to make WSL available on such a set of computers are discussed in a later section.

WSL is a language which resembles Pascal and C in that it has control structures which facilitate structured programming, requires all variables to be declared and allows the creation of new complex types. WSL also has extra control structures which allow simplified constructs for some program segments which are sometimes awkward in other languages.

An application or system program written in WSL is translated by a WSL compiler into the machine language of the machine for which the program is intended to operate.

WSL is available for a number of computer systems and this set of computers is called the WSL port-set. It would appear that software written on one member of the port-set should be immediately portable to another member of the port-set. In practice this statement is not true as almost every useful program has certain portions which are not portable and must be rewritten before the program can be moved successfully.

Experience with the WSL Approach

The WSL System is also portable and is currently operational for about 15 different computer systems ranging from mainframes such as the IBM 370 with VM/CMS and the DEC VAX with VMS to microcomputers such as the IBM Personal Computer with DOS and the Commodore 64. The WSL systems currently implemented generate code for a wide variety of machine types including: the Intel 8086/8088, Motorola 68000 and 6809, the MOSTechnology 6502 and 6510, the DEC PDP/11 and VAX, and the IBM 370 and Series/1.

There are a number of software packages which have been implemented using WSL and portable software methodology.

Language interpreters for APL, BASIC, COBOL, FORTRAN and Pascal have been written and are available on about eight different computers. Compilers for the language C and all the languages mentioned previously except APL are also operational.

A database system called WATFILE has also been created, it runs on two different mainframes and a microcomputer and is being ported to several other machines.

continued overleaf

Several word-processing and text-formatting packages have also been prepared in WSL and are being ported to several different computers.

The Issues in Creating Portable Software

Introduction

There are three basic issues which must be addressed when developing portable software:

(i) the language being used;
(ii) operating system services; and
(iii) design

Standard Language

In order to be able to move a software system from one computer to another, the programming language used must be available for both computers. If this is not the case then obviously the software will have to be rewritten and by our definition it would not be considered portable. In order to implement the software, the programmer can choose either a language such as FORTRAN which has been standardized and is available on a large number of computers or use a language which has been moved or "ported" to a number of computers. So-called standard languages are not really standard because the standards committee left a number of features to be implemented at the discretion of the compiler writer. Hence it is quite difficult to write portable software using standard languages, although there are exceptions to this statement.

Standard Library

Although a standard language is a necessity for portable software, it is not enough. Programs usually "escape" to the operating system to obtain services such as input-output of files, memory management, and interrupt and exception handling. The language structure or interface that allows these "escapes" must be indentical or constant for every operating system with which the portable program communicates, otherwise there is a significant part of the program that is non-portable. How can we maintain a constant interface? Either the operating system can be moved from machine to machine or a library can be constructed which maps the interface used in the portable program into the interface defined by the operating system. Such a mechanism is often called a library and there must be one such library for each operating system being considered.

Design

Virtually all programs contain some portions or features which are non-portable; these features are usually said to be system dependent. The objective in designing such a program is to minimize and isolate the system dependencies. Minimizing these dependencies reduces the amount of code to be rewritten and isolating them in modules makes them easy to locate and change. Design of a program is the most critical issue in portability; bad design may nullify all the advantages gained from use of a portable systems programming language and library.

An Example — A Line-Drawing Program

Proper design of portable software requires that code be placed in modules and that the interfaces to these modules be constructed carefully. The example in this section is intended to illustrate these design principles.

Suppose it is desired to construct a program which will draw straight lines between two points defined by their x-y co-ordinates on the screen of a computer. The program must operate on a wide variety of equipment ranging from a microcomputer screen to a terminal connected to a minicomputer or a mainframe. Each position on the different screens may be addressed and may be either an entire character or a single point or pixel; the screens may have different numbers or rows and columns. Such a program could form the base for a simple graphics package which will permit the drawing of figures composed of straight lines.

A conventional approach to constructing this program might consist of choosing a particular microcomputer and then implementing the routines using the operating system services that allow addressing and manipulation of individual screen points. As soon as this program is ported to another micro or a mainframe the system dependencies will likely start to appear and they will probably be scattered throughout the code. For example, the method of addressing points and turning them on or off might vary.

In order to isolate the code the following approach could be considered. Define a virtual screen which has a grid of 32000 rows each with 32000 points with each point addressable. To draw on the screen the program would call a routine which would pass the x-y co-ordinates of two points lying in the range 0 to 31999. The interface to this routine would always appear to be constant since its useful range of parameter values would always be the same. Such an interface is often called a virtual terminal interface. Of course, the body of the called routine would vary since the points being passed would be mapped onto many different types of screens. By constructing the program in this way the code which must vary between different computers is isolated in a module and well-defined by the interface.

Machine-Dependent Libraries

Individual computer systems have many features which make them different. For example, they support or have available many different graphics and character terminals, different methods of performing floating-point arithmetic and other special hardware features.

It is important that a library be created which interfaces to these non-standard features to avoid duplication of effort in the development of programs, and so that they are accessed in a standard manner. Such libraries are also an effective method for isolating many of the non-portable portions of a software system and for emulating features not available on a specific computer system.

Machine-dependent libraries may be segregated into two classes depending upon the number of computers on which they are implemented. Some libraries would be available on a single computer system because they implement a feature which is highly machine or operating system dependent, while other such libraries would be available on

a number of machines in the port-set because the features they use are available on a number of machines or operating systems.

Degrees of Portability

Software systems vary in their degree of portability and might be characterized as highly portable, moderately portable and weakly portable.

Highly portable programs are ones that are almost independent of the characteristics of the computer systems on which they are implemented. Programs such as text formatters which manipulate files of characters can be placed in this category. These types of programs can usually be moved to a new computer system with very few modifications.

Moderately portable programs are those which have one or two characteristics which are usually tightly bound to the particular computer configuration. An editor which interacts with both dumb line-at-a-time and full-screen terminals or a sort routine which makes use of the block move capabilities or other special features of the instruction set are two examples of programs which fall into this category.

Weakly portable software systems are those which interact with the computer configuration in several different ways and hence require a careful design effort to minimize these interactions. An operating system is an excellent example of weakly portable software. Weakly portable software can still be designed to be highly portable. For example, it is only necessary to change 10% of the WATSYS operating system to move it to a new computer.

Other Approaches to Software Portability

High-level Languages

High-level languages have been used in the development of portable software and, in fact, the use of WSL is a high-level language approach. High-level languages can be divided into two groups for our purposes. Some languages are made available on a wide variety of computers by porting the implementation. Other languages are made available on a wide variety of computers by the implementation of a language description presented in a standards document. The first approach might be described as standardization by implementation and the second as standardization by committee.

In the first approach, the syntax and semantics of the language are defined by the portable compiler. Since the same compiler is implemented on all the machines of the port-set the language definition is identical from machine to machine. However, the programmer must be careful in writing portable software using this technique in that it should be ensured that the implementation of the algorithm is also portable. In other words, the language standardization by implementation can be rigorous, and software written using this approach should be quite portable.

Macros

Macros are another method of implementing a standard "high-level" language. The language is defined as a set of macro-instructions which expand into another base language, such as assembly language. The macro-instructions are processed by a translator called a macro-processor which translates them into the base language. The base language is normally processed by a compiler or assembler into machine language. Portable versions of the SNOBOL language and the RATFOR language were developed using this method to achieve portability. In the case of RATFOR the base language was PFORT, the portable subset of FORTRAN.

For each new computer system added to the port-set it is necessary to re-write the macro-instructions in terms of the base language available on the new computer system.

Emulators

If computer systems were always the same, then portability would not be a problem. This similarity of systems can be achieved by creating a layer of software called an emulator between the actual computer and the running program. The emulator simulates the instruction set of an "ideal" computer and all software is written either using this instruction set or in a high-level language which is then translated to this instruction set.

In order to move software from one computer system to another it is necessary to create an emulator for the new system. Of course, placing this layer between the programs and the computer system may produce a degree of inefficiency because each instruction of the ideal computer must be interpreted into the actual machine instructions each time an emulated instruction is executed.

Performance

Because portable programs are written to be independent of any particular computer system they normally do not take advantage of special system features and hence are somewhat inefficient. In fact, this inefficiency is often cited as the reason for avoiding the use of portable software. However, most inefficiencies can be eliminated from portable software without sacrificing its most important property, portability. The following discussion is restricted to software that is compiled and runs directly in machine code; emulators will not be considered because they introduce a degree of inefficiency that is not easily eliminated.

There are two types of inefficiency namely, execution speed and memory requirements. In the case of execution speed the 90/10 rule has often been observed; that a program spends 90% of the execution time in 10% of the code and so this 10% needs to be examined for inefficiencies. Software monitors which measure where a program spends its time can be used with great success to isolate any segment of code that is impairing performance. These segments are often relatively small and by re-writing them, either in the high-level language or assembler, the efficiency problem can be reduced or removed.

Documentation Management

Having the same portable application program available on a number of computer systems leads to serious documentation problems. Each system type requires documentation about the application program and the peculiarities of the interface between the application and the target computer

continued overleaf

system on which it runs. Information about the computer system relates to such topics as log-on procedures, file-naming and usage conventions, graphics capabilities and keyboards. Construction of portable documentation, that avoids scattered specific system references and which isolates all system references so that they can be changed easily, is a difficult problem. Once documentation is printed and bound it becomes quite expensive to alter.

One approach involves using two manuals, a program tutorial and reference manual which is independent of the computer system and a user's guide which is system dependent. By suitable cross-referencing the tutorial and reference manual can be kept system independent and needs to be written only once, while the user's guide needs to be produced for each target system. This approach has been applied fairly successfully to a number of systems; the documentation for a database system called WATFILE is a good example of this style.

Conclusions

Writing portable software is a practical method of improving the productivity of the program developer, the documentation writer and even the end user. Tools such as portable system-programming languages and portable libraries are available for a wide variety of computer systems, making it possible to implement software that is portable over a large port-set. Once it is written, portable software can be tailored to specific machines for reasons of efficiency without having a serious impact on its portability properties. Although tools for portability are important, portable software must be constructed so that the non-portable portions are minimized and placed in isolated modules. In other words, modularity and interface design are essential components of portability. *TPUG*

FORECASTING WITH THE 8032

Here is Table I, which was omitted from Forecasting—Part III

John Shepherd
Islington, ON

In the following models, "x" is the calculated variable, "t" is the time period, "L" is the period of seasonality, and "a, b, c, d, etc.", are the coefficients of the least squares multiple linear regression equation that best fits all the data.

Program "forcst glm.8" has the following models:

(1) Simple linear

x = a + b*t

(2) Linear plus additive seasonality

x = a + b*t + c + d + e + f + etc., for L+1 terms
The coefficients from c on are functions of t. For example, if L=12, all are zero in Jan., all except c are zero in Feb., all except d in Mar, etc.

(3) Linear plus simple additive trigonometric seasonality

x = a + b*t + d*sin(2*pi*t/L) + e*cos(2*pi*t/L)

(4) Linear plus extended additive trigonometric seasonality

x = a + b*t + c*sin(2*pi*t/L) + d*cos(2*pi*t/L) + e*sin(4*pi*t/L) + f*cos(4*pi*t/L)

(5) Linear plus additive and multiplicative trigonometric seasonality.

x= a + b*t + (c + d*t)*sin(2*pi*t/L) + (e + f*t)*cos(2*pi*t/L)

(6) Linear plus extended additive and multiplicative trigonometric seasonality.

x = a + b*t + (c + d*t)*sin(2*pi*t/L) + (e + f*t)*cos(2*pi*t/L) + (g + h*t)*sin(4*pi*t/L) + (i + j*t)*cos(4*pi*t/L)

(7) Simple quadratic

x = a + b*t + c*t*t

(8) Quadratic plus additive seasonality

x = a + b*t + c*t*t + d + e + f + g + etc., for L+2 terms
(As in model 2, above, except quadratic)

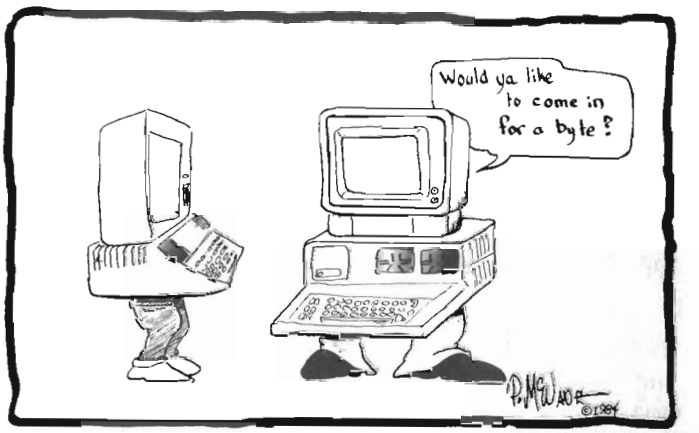
(9) Quadratic plus simple additive trigonometric seasonality

x = a + b*t + c*t*t + d*sin(2*pi*t/L) + e*cos(2*pi*t/L)

(10) Quadratic plus extended additive trigonometric seasonality
(As in model 4, above, except quadratic)

(11) Quadratic plus additive and multiplicative trigonometric seasonality
(As in model 5, above, except quadratic)

(12) Quadratic plus extended additive and multiplicative trigonometric seasonality.
(As in model 6, above, except quadratic) *TPUG*



FILESORT

Jim Butterfield
Toronto, ON

The program FILESORT (versions for PET/CBM 4.0 and C-64) takes a sequential file from disk, sorts it, and writes a sorted file back to disk. No big deal, except that it's useful.

Most useful files are made up of *records*, each one of which tells about something: a person, a part, a transaction or whatever. Each record contains one or more *fields* – detail items such as name, phone number, part number, price, date, as suits the record. A 'conventional' sequential file is one where every record has the same number of fields and every field ends with a return character. The last character on a sequential file must be a carriage return. In simple data systems, all records have the same number of fields, and that's what FILESORT is expecting.

Suppose you have a file in which the fields are: (1) First name; (2) Surname; (3) City; (4) State, Province, or Country; (5) Zip or Postal Code; (6) Area Code. The sample files that come with FILESORT are set up this way, for example, so you must tell the program the file name and then respond to FIELDS PER RECORD with a value of 6. Now: You might want to sort by field 4 (State, etc.); but that's not enough. Lots of people come from "NY". So, within each State or Province, you want to sort by City, field 3. Maybe for your task, that's not enough. There might be lots of people from Mississauga, Ontario (in fact, I notice that there's one person from Mississsauga with five s's – but that's another story). For those within the same city you might want to sort by surname . . . and so on. FILESORT allows you to do all this.

Eventually, you'll be asked OUTPUT FILE NAME? You may change diskettes if you like; the sorted file will be written to disk with the name you give. *It will replace any existing file of the same name*, so be careful. Maybe you should always use TEMP for temporary file. If you don't really want to write to disk, or would like to check the sorted file first, respond with an asterisk character. That will bring the file out to the screen, after which you'll be asked for a name again. If you type the asterisk a second time, the program will quit and not write disk at all.

Maximum file size is about 100 blocks for a PET/CBM 4.0, about 175 blocks for a "un-klooged" Commodore 64, and less than 90 for a C-64 with overhead junk and programs in it. If you're not sure a file will fit, try it: you'll be told if it's too big. The sort is very fast; much faster that the time taken to read or write the file (even if you have an IEEE disk).

A small and simple report generator is included (written in BASIC) to allow you to see the sort of data processing power that's available with a good sorting package. *TPUG*

C-64 "Filesort" is on disk (C)TA. Other versions will soon be in the library.

RECORD SPLIT

Helen Olsen
Bellerose, NY

Here is a suggestion concerning relative records which cross block boundaries. *(See "Curing the Single-Floppy Bug" TPUG Magazine, May 1984).* To detect whether or not a record crosses a boundary, do the following:

At the beginning of your program:
LINE 1) A = 254/ LENGTH OF RECORDS: B = LENGTH OF RECORDS/254

After print # statements:

LINE 2) C=RECORD NUMBER/A:C=C-INT(C):IF C<B THEN IF C<>0 THEN FOR I=1 TO (LONG DELAY YOU NEED FOR SPLIT RECORD): NEXT

For example, record length=50.

Line 1) A=254/50=5.08. The number of records a block will hold:

B=50/254=0.196850. This is the percentage of a block needed for a whole 50 byte record.

For record #60:

Line 2) C=60/5.08=11.811023:C=0.811023. After record #60 is written, the block it is written to (12, in this case, but it doesn't matter) is 0.811023% filled.

C is >B, all of record #60 is in the block, so the long delay is not needed.

For record #61:

C=61/5.08=12.007874:C=0.007874. Since C, the percentage of the block used, is less than B, the percentage of a block needed for a whole record, all of record #61 is not in this block. Record #61 is split so run the long delay.

The reason for 'IF C<>0' in line 2 is that, occasionally, a record will exactly fill the remainder in a block. For instance, with 50 byte records, record #127 does this. 127/5.08=25. C=0. This is less than B but record #127 isn't split. If you don't care about running the long delay unnecessarily on rare occasions, then 'IF C<>0' can be left out (my preference).

The formula works for any record length. (Less than 254, of course). *TPUG*

DOODLE SKETCHPAD - a review

Doodle – A C-64 Machine Language color sketchpad program by Mark R. Rubin

REQUIRED HARDWARE: Commodore 64, disk drive, joystick

PRINTERS SUPPORTED: Commodore 1525, C.ITOH 8510 or NEC 8023, most Epson or Star Gemini, most OKIDATA with Graphics#1030

Available from City Software

Price: $39.00 U. S.

Mike Martin
Phoenix, AR

After experimenting with several 'joystick draw' type programs from magazines, I had achieved a high frustration level. While they were fun, they weren't useful or practical. Luckily, my local dealer suggested the **Doodle** program. My primary usage is for drawings output to a printer for use in a bulletin for a local Lodge. Working within my budget (I pay for computer, software, paper, ribbon and donate my time: they pick up the rest) I find that this program was perfect.

The program is very similar to the **Lisa** or **Macintosh** drawing programs. It offers fill, the usual joystick drawing in nine line widths and the full complement of C-64 colors. It plots squares and circles with full control of dimensions (e.g. bending a circle into an oval). Parts of drawings can be put in a temporary memory and duplicated anywhere on the screen, even overlapping if desired. These images can also be rotated ninety or one hundred and eighty degrees, reversed like a photo negative and stretched horizontally or vertically, enlarged or reduced. The image is enlarged by doubling pixels and spaces, so the effect is not like a "zoom lens", with your choice of proportions, but rather by a set scale. You can double or halve the height or width several times.

A joystick is necessary with this program: there is no provision for 'stepping off the pixels' from the keyboard, as with other similar programs. I had some difficulty in getting the lines to go consistently in the direction I wanted, even using the nine drawing speeds. I often had to back up and erase a line. If the line was jagged, retracing it was difficult unless you went to a wider line or brush width. You are drawing on two planes, with your choice of changing both brush and paper color. When drawing with both brush and paper, you leave a shadow in the background matching your line.

There are several outstanding features in this program. First is the LETTERING mode. This allows full use of the keyboard characters and almost full use of the graphics characters. (A few of the keys used with the Commodore Key are reserved for command choices). The best part of this feature is that the standard Commodore letters and graphics may be used in almost any size, and rotated ninety or one hundred and eighty degrees. Again, size is controlled by doubling or halving numbers of pixels and the characters and graphics may be enlarged to even full screen size. Add to this the fact that they can be printed over each other, or layered, and you can do almost anything with them. You use the cursor controls to go for normal spacing or to position any letter or line with the joystick, moving it pixel by pixel in any direction. I find that in most cases, I don't bother with the joystick drawing or plotting: I just use the graphics characters to rough-in my drawing. Then I use the ZOOM function to expand the drawing and edit, pixel by pixel, for fine detail work, or to clean up my mistakes. The joystick manipulates the cursor, the screen scrolls and the firebutton turns each expanded pixel on or off.

Doodle includes a perfectly proportional screen dump in two sizes. The printed version starts at the left vertical side of the screen and prints it at the top of the page. The small image takes up a quarter of a page and the large image is full page, with 8" as height and 11" as width. So if you wish to create a letterhead, you will need to create it, then memorize it and turn it sideways on the screen so it will print properly at the top of a page.

Programs are included to change the printer configurations in the main program (set it once and it will always power up that way), send or eliminate the line feed to match your printer and instructions on using the drawings in your own basic programs. Saving a doodle to disk requires thirty-seven blocks, so you can save eighteen doodles to a disk. The joystick is used to select a doodle from the directory to load. In each of the ten modes, pressing RETURN brings up a menu for the commands in that mode. Pressing RETURN again brings back your sketch.

My only problems with the program are that it plots just in the narrowest line, and I could have used a plot feature for triangles. This fact aside, I consider it well worth the money and would recommend it without hesitation. *TPUG*

BASIC FOR BEGINNERS

Regena
Cedar City, UTAH

I appreciated the invitation to speak at the TPUG Third Annual Conference. I enjoyed meeting the founders of the users group and many of the current officers and magazine personnel. Rosemary Beasley and Tom Shevlin gave us a "White Van" tour of Toronto which I am sure was more enjoyable than the commercial trolley car tours could be.

I am a monthly columnist for *COMPUTE!* publications. In my columns I discuss beginning BASIC programming for various microcomputers. I have also written five books, published by *COMPUTE!* Books, and I am a freelance author for other publications. I started programming with my first computer, a Christmas gift, in 1980. In 1982 I joined the Commodore world with a VIC 20. Then, about a year ago, I got a Commodore 64.

Whereas some of the speakers discussed benefits of other programming languages or the pitfalls or disadvantages of BASIC, my topic was what *can* be done with BASIC. I like working in BASIC because it is fairly easy to understand and because it is "built-in" with most microcomputers – you don't need to buy anything extra to program. I also like to tell beginners that there really isn't a "right way" or a "wrong way" to program. If your program does what *you* want it to do, then you are a successful programmer. If your program works, then it is "correct". I like people to have fun with their computers.

During my presentations I tried to show a variety of things that can be done in BASIC with no extra peripherals (other than a datasette or disk system to store the program). Since other sessions in the Conference discussed business applications, graphics, word processing, file processing and commercial products, I decided to show educational programs. I picked a variety of subjects to indicate that computers may be used in any subject area.

The videotape I showed contained VIC 20 programs from issues of *COMPUTE!'s Gazette* and from my recently released book, *BASIC Programs For Small Computers (Things To Do In 4K Or Less).* All the programs shown were written in BASIC with no memory expansion.

The program I showed on the Commodore 64 was actually a compilation of sample screens from selected programs in my book, *The Commodore 64 Teacher,* soon to be published by *COMPUTE!* Books. The book will contain fifty educational programs. The subjects shown included touch-typing, counting objects, matching shapes, mathematics, music, Roman numerals, Morse Code, International Code Flags, grammar, geography, history, homemaking, art, physiology and reading a flight schedule.

The music and graphics capabilities of the VIC 20 and Commodore 64 can make programming a lot of fun plus enhance educational programs. For example, in a program to teach touch-typing using the computer, a bunch of words about How To Place Your Hands is not as understandable as a picture on the screen with the placement of the hands and the fingers labelled with the correct keys to be pressed.

You can use custom characters and high-resolution graphics, but the programming is a bit more intricate. Beginners may prefer to use the built-in graphics characters on the keyboard. I like to sketch the pattern on graph paper (use the chart in the manual that comes with the computer) then within each square fit in a keyboard graphics character. You can draw hands, animals, cars, mazes, maps, musical symbols, trains – whatever you want. Use children's coloring books, if you need ideas for pictures. Other good sources of pictures are needlepoint designs or counted cross stitch patterns.

On the Commodore 64 you can use sprites for high-resolution graphics rather than redefining the character set. If the objects don't need to move, you can place all the sprites invisibly on the screen, then enable the sprites as needed. For example, in a music program to learn the names of the key signatures with flats, the flats can be drawn as sprites and all the flats drawn invisibly on the staff. As each problem appears with a random number of flats, that number of sprites is enabled with one POKE statement – it's a little faster than drawing each flat for each problem.

Any time you use graphics and wait for a student's answer, you should avoid INPUT because the student could enter too long an answer or move the cursor anywhere on the screen or receive error messages that mess up the graphics. An alternate method to receive input is to use the GET command, which scans the keyboard to see which key is pressed. For example, if you want the student to press the f1 function key to continue,you can use such coding as:

```
100 GET A$:IF A$<>CHR$(133)
    THEN 100
```

The program will stay at Line 100 until the student presses f1. Another way to do the same thing is to actually use the function key instead of CHR$(133). Type a double quote mark, then press f1, then type another double quote mark (you will see a symbol between the quotes).

Commodore computers have what is called a "keyboard buffer" which keeps track of ten keys which have been pressed. If the student had previously pressed f1 then the program encountered Line 100, there would be no pause because A$ from the keyboard buffer would be the f1 key. To clear the keyboard buffer or to make sure there aren't ten strange keys ahead of the key pressed at this point in the program, you can use:

```
90 FOR I=1 TO 10:GET A$:NEXT I
```

or you can use:

```
90 POKE 198,0
```

on either the VIC 20 or the C-64.

Programming statements that can save memory and time are the ON-GOTO and ON-GOSUB statements. I'll let you get the details from your own manuals, but essentially if you have a

continued overleaf

situation where you are using quite a few IF-THEN statements such as:

```
200 IF N=1 THEN 3000
210 IF N=2 THEN 3040
220 IF N=3 THEN 3080
230 IF N=4 THEN 3120 etc.
```

one statement can replace all the IF-THEN statements:

```
200 ON N GOTO 3000,3040,3080,3120
    etc.
```

This is a conditional branching statement that depends on the value of N. You may use a numeric expression instead of N.

If you are loading a program and want it to automatically run, you can use the SHIFT key with the RUN/STOP key. If you press these two keys together, you can then load and automatically run a program from cassette. If you have the diskette system, type LOAD "TITLE",8 then press the SHIFT with the RUN/STOP key. Use your own title between the quotes.

We could probably go on forever discussing little programming tips and oddities but it's time to end. The main objective of my presentation was to give you a few ideas so you can go ahead and use your computer for a variety of applications in BASIC, and I hope you enjoy your computer. *TPUG*

OS-9 FOR THE SUPERPET!

TPUG is currently planning to implement the popular 6809 operating system "OS-9" on the SuperPET. OS-9 greatly expands software availability and the hardware capabilities of this computer while at the same time preserving access to the Waterloo languages and programs. The methods of implementation are for the most part resolved. A prototype will be available in September. Though club members will support OS-9 on an ongoing basis, particularly Avy Moise who is doing most of the programming, Microware, the distributors of OS-9, will provide much of the documentation and continuing support.

The cost of OS-9 to club members will be around $150 (US), which will include the cost of a hardware modification that will not affect the normal operation of the SuperPET. Because every copy requires the purchase of a license from Microware Inc., a limited number of copies will be available through TPUG which is sponsoring the project on a cost recovery basis. To reserve your copy please mail $68.09 to TPUG. (1912A Avenue Rd., Suite 1, Toronto Ont., M5M 4A1, Canada). In the unlikely event that TPUG does not proceed with OS-9, your deposit will be refunded.

What does OS-9 offer?

* A true operating system with the features of UNIX and the simplicity and command style of Commodore BASIC;
* Multi-tasking and multi-user environment;
* Ability to redirect and 'fork' input and output to printers or to other devices;
* Flexible command interpreter which allows users to define and create custom commands;
* File management structure to permit multi-level directories similar to what is now available in MS DOS;
* Time and date stamp for all directory entries (files);
* File access privileges may be restricted by the owner of a file.

Extensive software is available for OS-9 all of which will run on SuperPET OS-9.

System Software Provided with OS-9:
assembler, editor, command (shell) library monitor, symbolic debugger

Available Languages (compilers):
BASIC, Pascal, CIS-Cobol, 'C', FORTH, 6809 Assemblers . . . and others.

Available Application Programs:
Word processors and spelling checkers, inventory and accounting applications.

Public Domain:
Terminal emulation, utilities etc.

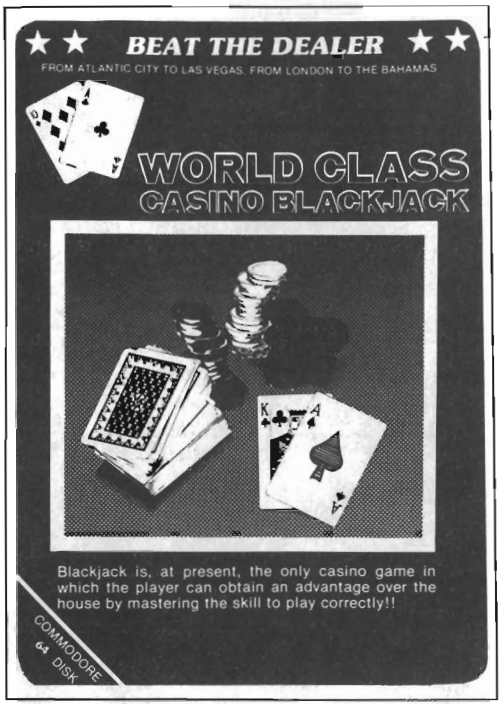
TPUG will participate in the acquisition of public domain software and assist users in the conversion of commercial software so that it will operate on Commodore drives. We can also predict that club members will write various device drivers for hard disks, new printers etc.

Portability and Expandability

* SuperPET OS-9 programs will run on all OS-9/based microcomputers.
* Programs developed under OS-9 for other computers (such as the Radio Shack Color Computer) will run on the SuperPET.
* OS-9 will give users direct access to hardware drivers that could operate devices such as parallel printers, additional serial ports, hard drives etc.
* There will be source code compatibility to versions of OS-9 that are planned for the Motorola 68000.

Those of us in TPUG who are involved with the installation of OS-9 are excited about the prospects of new applications with this operating system. We are certain that it will prolong the utility of the SuperPET but we do urgently need your support.

Gerry Gold (416) 667-3159/225-8760
Avy Moise (416) 667-3954/667-9898



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SPRITE PROGRAMMING

Loren Wright
Drakut, MA

Many books take an approach to teaching graphics programming that is immediately bewildering to the reader. She/he is overwhelmed with POKE, PEEK, AND, and OR instructions, without ever getting a chance to understand the concepts behind these. A better approach is to first learn the capabilities of the graphics system. Then learn how each feature is controlled, and finally learn how the POKE, PEEK, AND, and OR instructions work to control the features.

A sprite is a movable object block that can be controlled independently of other graphic images, including other sprites. Each of the eight sprites can be located at one of 256 vertical and 512 horizontal positions. Since the screen is only 320 by 200 pixels, the extra range of sprite positions allows them to be brought smoothly on and off the screen. Each sprite has its own color register, which can be programmed with any of the 16 colors.

A sprite definition consists of sixty-three bytes of data. Except for simple geometric patterns, sprite definitions are best programmed with a sprite editor program. A sprite editor allows you to see what the sprite image looks like while you make changes. You can also store your results on disk and retrieve them for use in your programs. There may be many sprite definitions stored, but each sprite only uses one definition at a time. The definition assignments are controlled by one-byte pointers located in an area of screen memory that is not displayed. (Only 1000 characters appear on the screen at once, but 1024 are allocated, so bytes 1016-1023 are allocated to sprite definition pointers).

Other features of the sprite system include vertical expansion, horizontal expansion, background priority, and multicolor mode. All of these features, as well as the high-order horizontal position bits, are controlled in the same way that sprites are enabled and disabled. There is a single register for each feature, and each bit in the register, like an on/off switch, controls that feature for its corresponding sprite.

There is also a sprite enable register, with a bit for each sprite. When you want a given sprite to appear on the screen, you must set its enable bit (make it a 1), and when you want it to disappear you clear its enable bit (make it a 0). Since this is the most often used sprite procedure, I will use it as an example, but the same procedure is used to control the other sprite features mentioned.

Bits in a binary number are numbered from right to left from 0 to 7, and the numbers of the sprites controlled correspond exactly:

Bit number:	7	6	5	4	3	2	1	0
	0	0	0	1	0	1	0	0
Sprite no.:	7	6	5	4	3	2	1	0

A 1 in a particular bit position means that sprite is enabled, so in the above example, sprites 2 and 4 will appear on the screen.

Our problem is to enable sprite 3, without disturbing the enable conditions of the other sprites. You could figure out what the proper number is and POKE it into the enable register, but that would only work for this particular set of circumstances. To develop a general procedure that will work, no matter what the contents of the enable register, you need to understand how the OR operation works on the bit level. When two numbers are ORed, the digits in each position of the two numbers are considered together, and the result is determined by the truth table for the OR operation. To understand it better, you may want to substitute in your head 'true' for the 1's and 'false' for the 0's.

Truth Table for OR

A	B	A OR B
0	0	0
0	1	1
1	0	1
1	1	1

To set bit 3 in the enable register, we take the number in the enable register (with a BASIC PEEK), and OR it with a special number called a mask. In this case, the number is binary 00001000. The result of the OR operation is stored back into the enable register (with a BASIC POKE).

```
  00010100
OR 00001000
  00011100
```

To confirm this result, take the two bits in each column, and use the table to determine the result. Try other numbers with this mask, and you will see that, no matter what the contents of the register, the result will be a 1 in the desired position.

Many BASICS do not allow OR and AND operations on the bit level, but fortunately Commodore's does. In BASIC, you would enable sprite 3 with the following statement (V=53248):

```
POKE V+21,PEEK(V+21) OR 2↑3
```

Exponentiation is very slow in BASIC, and it gets slower the higher the power you use. I usually set up an array at the beginning of my graphics programs that consists of the powers of two:

```
FOR I=0 TO 7: P(I)=2↑I: NEXT I
```

The following statement can be used to enable sprite S, and it doesn't matter which ones are already enabled:

```
POKE V+21,PEEK(V+21) OR P(S)
```

Similarly, sprite S can be expanded vertically with the following statement:

```
POKE V+23,PEEK(V+23) OR P(S)
```

Other graphic features, such as bit map mode, multicolor mode, and screen blanking, are enabled by setting individual bits in control registers.

Clearing bits is accomplished by using the AND operation on the bit level. Again, we start with sprites 2 and 4 enabled:

Bit number:	7	6	5	4	3	2	1	0
	0	0	0	1	0	1	0	0
Sprite no.:	7	6	5	4	3	2	1	0

This time we want to disable sprite 4

continued overleaf

without disturbing the enable conditions of the other sprites. We could just POKE the register with 2↑2 or 4, but that would only work for this special case. We take the contents of the register and AND it with a mask consisting of all 1's except a 0 in the position we want to clear:

```
    00010100
AND 11101111
    00000100
```

Truth Table for AND

A	B	A AND B
0	0	0
0	1	0
1	0	0
1	1	1

Try different numbers with this mask, and you will see that it doesn't matter what's there. The result will be the same as the original, except for the 0 in the desired position.

The decimal equivalent of 11111111 is 255, so the mask is 255-2↑4, or 239. Sprite 4 is disabled with the following statement:

```
POKE V+21, PEEK(V+21) AND (255-2↑4)
```

If you add another array at the beginning of your program for disable masks,

```
FOR I=0 TO 7: P(I)=2↑I: M(I)=255-P(I): NEXT I
```

you can use a general statement to disable sprite S:

```
POKE V+21, PEEK(V+21) AND M(S)
```

To turn multicolor mode off for sprite S, you can use the following statement:

```
POKE V+28, PEEK(V+28) AND M(S)
```

1's in an AND mask have the effect of preserving the contents of the corresponding bits in the other number. If we want to change two or more bits at a time, we do an AND followed by an OR. Let's say we want to disable sprite 5 and enable sprite 4. The AND mask contains all 1's except 0's in positions 5 and 4:

```
    01100111
AND 11001111
    01000111
```

With the OR mask, 0's have the effect of preserving bits in the other number, so the mask consists of all 0's except 0 and 1 in positions 5 and 4. The AND operation has already made sure there are 0's in positions 5 and 4, so these 0's allow the new contents to pass.

```
    01000111
OR  00010000
    01010111
```

Since this pair of operations is more complicated, it might be a good idea to follow it through bit by bit using the truth tables.

In BASIC, the contents of address X would be changed as above with the following statement:

```
POKE X, PEEK(X) AND (255-2↑5-2↑4) OR 2↑4
```

Multicolor pixels are changed with a procedure similar to this, but I won't go into that here. Multicolor mode is another conceptual thing that I'll save for another article.

Although collisions are only detected, and not controlled, like the other features, there is a bit for each sprite in each of the collision registers. If a bit is set, the corresponding sprite has been involved in a collision, and this is detected with the AND operation. This time the mask consists of all 0's except 1's in the positions being tested.

```
    xxxxxxxx
AND 00010000

    00010000 if sprite 4 in collision
    00000000 if sprite 4 not in
             collision
```

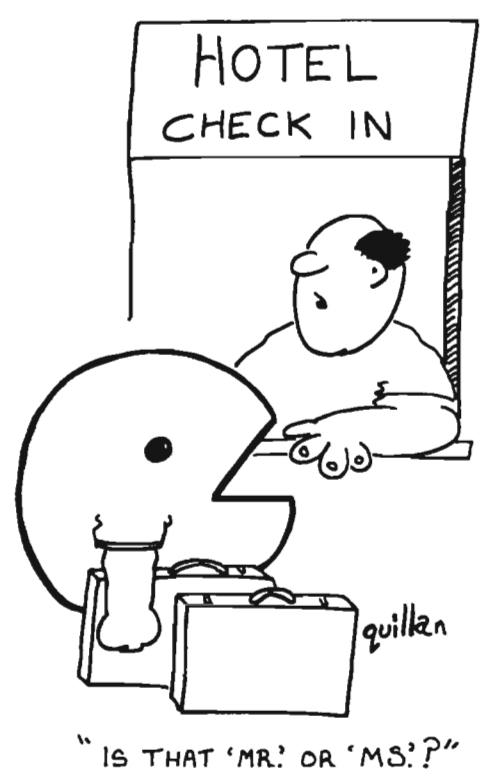
BASIC interprets any non-zero number as true, so you can use the following test to see if sprite 4 has been involved in a collision with another sprite:

```
IF PEEK(V+30) AND 2↑4 THEN . . .
```

Incidentally, V+31 is the sprite-to-background collision register, and it can be tested in the same way.

Collision detection from BASIC only works effectively for a few sprites with predictable collision patterns. More sprites or unpredictable collision patterns require a little machine language, but fortunately there is a very powerful interrupt capability.

This isn't all there is to sprite programming, but you'll find that knowing all about ORs and ANDs and thinking in binary will make it all a lot easier to understand. *TPUG*



TPUG SEMINARS

Jim Butterfield
Toronto, ON

Topic 1 — Basic Tips & Techniques

A collection of handy odds and ends. For beginners, there's the simple but useful shifted keys: Shift-Return for "Don't do it but exit to the next line"; and Shift-Space which can be useful for generating indented programs if you know the trick.

A major thrust was in the subject area of "program flow". It's hard to define precisely, but a good program tends to flow smoothly from start to end. A bad program is jerky: it hops around from one place to another. Yes, you have loops to repeat things with. But when you make a program decision, try to do it this way: either execute a group of instructions or hop over them. This way, the two branches of the program still follow the same flow.

Subroutines, by the way, are OK in this context. Calling a subroutine doesn't interrupt the flow, since when RETURN is encountered you'll continue from the point where GOSUB left off. In fact, subroutines are recommended: they will often help you group your program into logical "modules".

Pay more attention to variables. Beginners often write fixed numbers into their programs without thinking that a variable could also be used. You tend to get stuck with this kind of coding habit after a while, and completely forget that a statement such as FORJ=1TO5 can also be coded FORJ=XTOY. It's a worthwhile exercise to pick through a program, and everywhere a number appears (except when it's a line number), see what would happen if you substituted a variable. Would the program take on more flexibility? Don't get into a rut; look at all the numbers. You might be surprised that PRINT#1 can be written and PRINT#A . . . and such a change might bring new flexibility to your output.

Some time was spent discussing neat screen printing. I hate the TAB() function, since it doesn't work to the printer; use it, and you're stuck on the screen forever. Instead, use the string functions to form a new string that will always be the same length. That way, the new string will always print in exactly the same columns on screen or printer. For example, to convert a name N$ to exactly 14 characters in length, we could type:

```
PRINTLEFT$(N$+"              ",14);
```

It doesn't matter whether the name was short or long, and whether it's going to screen or printer. Now it will occupy exactly fourteen characters, and whatever prints behind it will be neatly aligned.

To summarize: There's a thing called programming style. It can't be formally defined, but as you develop your skills, you'll notice it. You'll start to feel good about your programs.

Topic 2 — Elementary File Handling

No matter whether you're reading or writing, no matter whether your file is on tape or disk, you'll go about the file handling job the same way.

Once, near the beginning of your program, you'll say OPEN. That makes contact with the file. After the computer has set up communications, we can write to or read from the file as much as we wish. To write, we use the PRINT# statement — be sure to spell PRINT out and put the # symbol next to it. To read, we normally use the INPUT# statement, although occasionally we use GET# when we want to examine the file character by character. When we're finished with the file, we wrap it up with a CLOSE statement.

When you say OPEN, you need to give a lot of detail about the file — what device it's on, perhaps its name, and possibly other things. After the file is opened, you can refer to it by its key number — its "logical file number". You pick this number; it can be anywhere from 1 to 127. Numbers over 128 are possible but have a special purpose.

For a first cut, it's interesting to create a file by using direct statements (no line number). That slows everything down so that you can see things working as your type. For example:

```
OPEN3,1,1,"DATAFILE"
```

. . . will open a write file to cassette tape. The 3 is our key number, of logical file number; it's the only number we'll use again in referring to the file. The first 1 is the device number, indicating that tape is involved. The second 1 indicates (in the case of tape) that we want to write data to the file.

If you don't have a cassette, or would rather use disk, you would type instead:

```
OPEN3,8,2,"0:DATAFILE,S,W"
```

We are using the same logical file number of 3. The device number is now 8, for disk. The following number is called a "Secondary Address" — it's used internally by the disk to keep track of a file. You may give it any number from 2 to 14; you won't need to use it again, but the disk will use it.

From this point on, it doesn't matter if we have disk or tape. Whatever the device, we communicate with it over logical channel 3. So we can print some data:

```
PRINT#3,"FIRSTRECORD"
PRINT#3,"MOREDATA"
PRINT#3,34*15
PRINT#3,"THAT'S ALL"
```

It's interesting to notice that the tape or disk hasn't moved while we have been doing this. The data is being held in a "buffer" until there's enough to write — 191 data characters for tape, 254 data characters for disk.

To wrap it all up, and force the buffers to be stored to tape or disk, type:

CLOSE3

That's it. The tape or disk will move, and the file is ended.

To read the file, we must write a program since INPUT# won't work as a direct statement. So code one of the following lines:

Tape: 100 OPEN4,1,0,"DATAFILE"
Disk: 100 OPEN4,8,6,"0:DATAFILE,S,R"

We've picked a different logical file number, but that doesn't matter; this number is for our own internal usage. Now to get the data:

110 INPUT#4,A$
120 PRINTA$
130 IFST=0 GOTO110
140 CLOSE 4

That's it. Back comes your data, and you've done your first read of a sequential file.

Topic 3 — Introduction to Machine Language

First, learn about the bits: the ones and zeros, the voltages (on or off) that flow through the wires of the computer. Get used to the binary notation that we use to record these bits. This is the true inner fabric of the computer. It's a good idea to learn how the two main "buses" — groups of wires — run through the computer and connect everything in "memory" to everything else.

We use hexadecimal notation for our own convenience, not the computer's. We should gain familiarity with it, and how it converts to decimal.

Now for the processor — the logic, arithmetic and control centre of the computer. It contains internal storage called registers; we need to become familiar with them. In particular, there's the PC register, the "program counter" that says from where in memory the computer will get its next instruction. The three data registers A, X, and Y are important, too: that's where we do all the work.

To handle data, we must "load" information into a data register, A, X, or Y, from memory. Later, we may wish to "store" information from any of the three into memory. While the data is in the register, it may be processed in other ways.

Some simple load and store commands are checked out (LDA to Load the A register, STX to Store the X register, for example). The instructions which do this are all coded in binary, but we use more easily readable "mnemonics" to plan the sequence of instructions that makes a program.

Soon, we're ready to look at the subroutines that are built into ROM to help us. We learn that a subroutine call to hexadecimal address FFD2 (JSR$FFD2) will cause the contents of the A register to be printed as an ASCII character, and that similar subroutines are available for input.

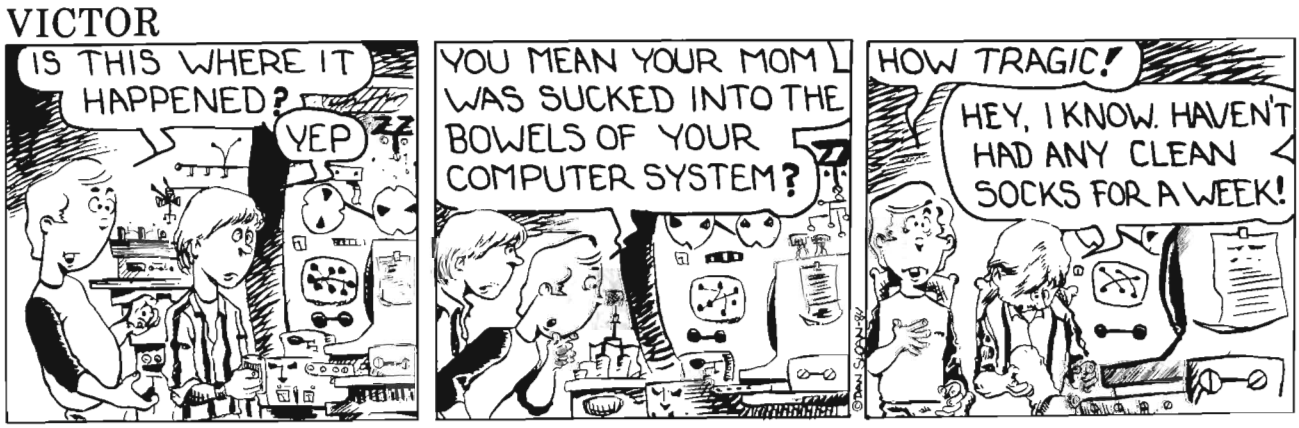
Flags become of interest. A decision often comes in two parts: the test (say, a comparison), and what to do based on the test (branch or jump). These two parts are connected by means of "status flags" which hold the result of the test so that it can be checked. There are four testable status flags, named Z, C, N and V. It takes some time to get used to their roles.

Machine language itself isn't the only objective of the short, one-day session. What must be learned is the computer environment: how to interface with the real computer itself, tapping its input and output, testing its internal memory locations.

There's another skill involved, too: learning to deal with the tools of the trade. The Machine Language Monitor (MLM) is a new way of talking to the machine; it's awkward for the beginner, but soon proves to have many advantages over the old PEEK/POKE environment.

A difficulty area: many beginners get wrecked on some simple rules of siting and loading their programs. There's a pointer in zero page called SOV for Start of Variables. If you're new to machine language, watch this one carefully after a program load sequence.

In a single day, you can't cover machine language exhaustively. But you can show some first steps, and point out that it really isn't so hard or so mysterious as it's rumored to be. *TPUG*



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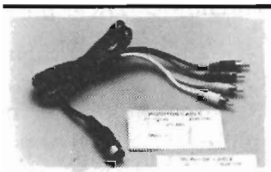

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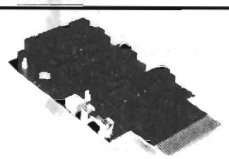

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What else should we do to make next year's conference even better?

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See TPUG insert for expanded C-64 documentation

COMAL programming manual by Borge Christensen
see page 46 for details .....

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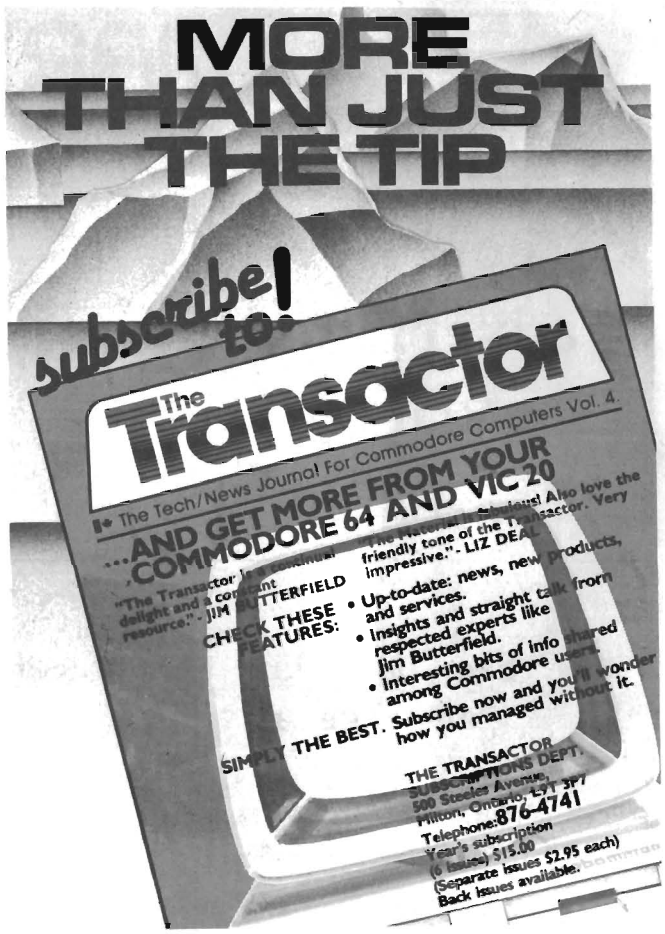

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SHOPPING TIPS FOR COMPUTERISTS

Photo by John Easton

Jim Strasma enjoys a good joke at this year's Conference, as Jim Butterfield and Guy Wright (of "RUN") decide who will tell him he laughed at the wrong line. . .

Jim Strasma
Lincoln, IL

Where can you buy good software? Jim Strasma, editor of the "Midnite Software Gazette", discusses four possible resources:

My favorite place to shop for computer programs is at a nearby full-line Commodore dealership. Such stores may be familiar with the programs they sell, able to help you choose an appropriate package, and able to train you in its use. They will also usually let you try it out before you buy, at least in the store, and perhaps even in your own home or office. This is a huge advantage, and can save you from many foolish purchases.

On the other hand, local dealers have to pay and charge more for their programs than other sources, selection is sometimes limited, and such dealerships are very scarce in many areas.

Another local software source is a discount store that sells Commodore products. Most discount stores feature low prices and a cheerful refund on any purchase you don't like, as long as you return it within about ten days.

The disadvantage of a local discounter is that there is rarely any way to try a product before you buy it, and you'll be lucky to find a clerk at all, let alone one who knows anything about computers.

A third alternative, and the first one open to many people in remote areas, is a mail order dealer. Typically, mail order houses feature low prices, home delivery (but check the cost), and convenient ordering by phone, often toll-free. They may also be the first to get the latest programs and updates, due to their large sales volumes.

The worst thing about mail order is usually the wait for the package to arrive. At best, it will be a couple of days; at worst it can take three months or more. Unfortunately, some mail order houses will lie about what's in stock and there's usually no way for you to tell. It's also possible you'll be sent the wrong product, accidentally or on purpose. At best, this adds another delay to the process. At worst, you'll discover Master Card and Visa are not on your side in such disputes, and will insist on being paid for any such purchases from an out-of-state supplier unless the supplier is within 100 miles of your home.

Good mail-order vendors may have people trained to help you use programs they sell, and the best even offer refunds if you are unsatisfied with what you have ordered. The worst may take your money and run. (If the deal sounds too good to be true, it probably is). Others bend the truth heavily in touting their products, and hide their profits in such hidden extras as large shipping fees.

One other alternative is to buy directly from the company that developed the program. No one will know more about it, and you'll always get the latest version.

Unfortunately, many software companies no longer sell directly to consumers (some don't even sell directly to dealers!) and if they do sell direct, nearly all charge the full list price, to avoid competing with their dealers. They will also have fewer selections than most dealers, and are unlikely to steer you to a competing product. Shipping delays and refund policies will vary, as with other mail order sources.

How can you recognize the good software sources from the bad ones?. . .

Here are a few helpful questions:

1) *How long have they been in business?* The only mail order house I use has been in business continuously since about 1979. The only way a mail order company stays in business that long is by doing something right.

2) *What is their background in computers?* Some are skilled hobbyists themselves, perhaps with a degree in computer science; others were selling washing machines last year, and will be selling stereos by mid-Winter.

3) *If ordering by mail, will the company ship C.O.D?* This adds a bit to your cost, but guarantees you won't pay for a product until you receive it.

One other way to keep up is through user group meetings and review magazines such as our *Midnite Software Gazette.* (Sample copies are available from **P.O. Box 1747, Champaign IL 61820 USA.**) Fellow users and readers with good and bad experiences with a particular dealer or mail order house will be glad to tell you about it, and can save you many headaches. *TPUG*

Jim Strasma, editor of the "Midnite Software Gazette", regular columnist in "RUN" magazine and author of several books about Commodore computers, has been an honorary member of TPUG and one of its most devoted fans since he first spoke at a Westside meeting in 1980.

"POOR DEVIL GOT CARRIED AWAY WITH HIS FLIGHT SIMULATOR AND TRIED TO PARACHUTE OUT!"

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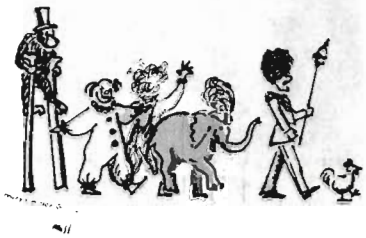
We are introducing a new feature in *TPUG Magazine – New Products Announcements.* As a source of information we use news releases sent to TPUG Magazine by various soft and hardware manufacturers and distributors. We hope that our readers will find this new feature useful. Please, write to us if a particular product arouses your interest and you would like to see a more thorough review of it in subsequent issues of our magazine.



Hardware

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LIGHT PEN from Creative Electronics

Creative Electronics introduces **LIGHT PEN** with almost single pixel accuracy for the VIC 20 and the C-64. It also comes with two programs to help the user get started and learn the **LIGHT PEN** potential.
The price for the **LIGHT PEN** is $14.95 U.S. Contact Creative Electronics, 1714 Sandalwood Thousand Oaks, CA 91362.

★

CARDPRINTER/DM1 from Cardco Inc.

The **CARDPRINTER/DM1** is a 40 column impact (not thermal) dot matrix printer that uses standard machine paper and standard two color ribbon. The **CARDPRINTER/DM1** is fully interfaced for the VIC 20 and Commodore 64 and it includes the full Commodore graphics character set.

Some features of the **CARDPRINTER/DM1** are:
* fast 50 characters per second
* obeys all standard print commands
* prints all characters normal or reversed
* special listing capability featuring smart listings
* easy to use high resolution graphics functions
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* full tab set features
* printer utility program tape included
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Cassette tape with a screen dump and banner headline programs is also supplied with the printer.

Retail price for the **CARDPRINTER/DM1** is $149.95 U.S. Contact: Cardco, Inc., 313 Mathewson, Wichita KS 67226

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AutoPrint MODEM/PRINTER INTERFACE from Microperipheral Corporation

The Microperipheral Corporation introduces the **AutoPrint** which is a modem and printer interface in one enclosure designed for Commodore 64 and VIC 20. **AutoPrint** features: autodial, autoprint and off-line/on-line parallel printer interface capabilities.
AutoPrint modem/printer interface comes with computer - printer and phone connect cables as well as terminal program and a free CompuServe demo-pack.
Suggested retail price is $179.95. U.S. Contact: The Microperipheral Corporation, 2565 – 152nd Avenue NE, Redmond WA 98052.

CARDETTE from Cardco, Inc.

CARDETTE cassette interface allows using cassette player/recorder with VIC 20 and Commodore 64. It emulates all the functions of the $75.00 data cassettes. The package includes all necessary cords and cables to hook up to most standard cassette player/recorders.

NOTE: Due to the extensive use of auto level control on recording functions *some* player/recorders will not produce tapes that can be read by the VIC 20 Datasette.
For price and availability contact: Cardco, Inc., 313 Mathewson, Wichita KS 67214.

★

RAMDISK-64 from P Technologies

The **RAMDISK-64** for the Commodore 64 is a cartridge containing 64K bytes of RAM used to emulate a disk drive. **RAMDISK-64** is therefore a very fast "electronic" disk drive from which 8K program can be loaded in less than 1 second. Another application of **RAMDISK-64** is as extra 64K bytes of memory for data storage.

RAMDISK-64 uses the C-64 expansion slot with either a motherboard or an optional extender board from P Technologies.
The price for the **RAMDISK-64** is $149.00 U.S. Contact: P Technologies, 1555 Riverpark Drive, Suite 206, Sacramento CA 95815

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SPIKE-STOP from Dynamic Development Co.

SPIKE-STOP is a surge suppressor. It protects all equipment connected to all the 115 VAC outlets on one breaker circuit. (This means that one SPIKE-STOP plugged into any wall outlet will protect every outlet on the same breaker, including extension outlet strips.) **SPIKE-STOP** features: high pulse power capability, high peak power dissipation, fast response time and low clamping voltage.
Mail order retail price for **SPIKE-STOP** is $14.95 U.S. Contact: Dynamic Development Co., P.O. Box 582, El Toro, CA 92630

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CARDKEY/1 from Cardco, Inc.

The **CARDKEY/1** provides an additional programmable 16 keys to either the VIC 20 or C-64. This is a separate pad that plugs into the joystick port of the computer.

Retail price for **CARDKEY/1** is $39.95 U.S.

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Software

SUPERBASE 64 from Precision Software (USA), Inc.

SUPERBASE 64 is the database management and information retrieval system for the Commodore 64. The system comes with a user programmable interface.
SUPERBASE 64 allows user to design record layouts and either work entirely from the menu options or write his own special programs. Those with no programming experience can just use **SUPERBASE** 64 command set or buy one of the pre-programmed application templates.
The manual for **SUPERBASE** 64 is very thorough, and the material is well presented.
SUPERBASE 64 retails for $99.00 U.S. For nearest dealer contact: Precision Software (USA), Inc., Suite 1100, 820 Second Ave. New York, NY 10017, (212) 490-1825

SOFTSMITH'S WORDSMITH 64 from Softsmith Corporation

SOFTSMITH'S WORDSMITH 64 provides Commodore users with a new word processing. It features full-screen text display, powerful text editing and printing commands and a special convenience provided by the ability of **WORDSMITH** 64 to keep two files in the computer at once. With this capability it is possible to transfer information from one file to other as well as within both files.
Suggested retail price for **SOFTSMITH WORDSMITH** 64 is $39.95 U.S. For nearest dealer contact: Softsmith Corp., 2935 Whipple Rd. Union City CA 94587.

AUTO64DIRECTORY from George Earl Software

AUTO64DIRECTORY (TM) is a disk-based program for use with the Commodore 64 computer. By "hiding" the utility in unused memory, the RESTORE Key instantly brings back fourteen disk commands of **AUTO64DIRECTORY**. The program is available after July 1, 1984 from: George Earl Software, 1302 So. General McMullen Dr. San Antonio, Texas 78237 for the price of $29.95 U.S.

GRAND MASTER CHESS from Advantage Computer Accessories, 1020 Meyerside Dr. Unit 8, Mississauga, Ont. L5T 1K7. This chess program for C-64 has been designed for both beginners and experienced players. It provides many hours of chess play as an opponent and as an instructor helping to increase the user's understanding of the game.
Retail price for the **GRAND MASTER CHESS** is $39.95 Cdn.

TODDLER TUTOR, PRIMARY MATH SERIES, MATH TUTOR from Comm Data Computer House, Inc., 320 Summit Ave. Milford, MI 48042.

Comm Data Computer House, Inc. has added speech to its best selling educational software: **TODDLER TUTOR, PRIMARY MATH SERIES** and **MATH TUTOR.** These programs, using the Voltrax "Votalker" software speech synthesizer, were developed for Commodore 64 (disk and tape) and VIC 20 (tape only). They are aimed at helping preschooler and elementary school children learn basic math and recognition skills.
TODDLER TUTOR, designed for children from preschool through second grade, assists youngsters in learning the alphabet, numbers, colours, and in developing memory skills. Suggested retail price $29.95 U.S.
PRIMARY MATH SERIES is a sequence of programs that help students in first through fourth grades learn single and double digit addition and subtraction. Suggested retail price $29.95 U.S.
MATH TUTOR for grades three through six teaches column addition, complex subtraction, multiplication, and division. Suggested retail price $29.95

MATCHMAKER and **EASYREADER** series from American Educational Computer

Commodore Business Machines Ltd, Scarborough, Ontario, is now offering the AEC software across Canada. All AEC software is compatible with the Commodore 64. Initial products include the **MATCHMAKER** series and **EASYREADER** series.

MATCHMAKER series includes programs designed to reinforce learning English grammar, foreign languages (Spanish and French), history, geography and science.

EASYREADER series have been designed to involve both parents and students in the learning process. It includes following programs: Learn About Sounds in Reading, Learn About Words in Reading (1 and 2), Reading Comprehension Skills (1,2 and 3).
For further information, contact: Richard McIntyre, National Sales Manager: (416) 499-4292

FISHIER DE NOTES from Smoky Mountain Software

FISHIER DE NOTES is the French version of GRADE MANAGER 2 PLUS, a complete grade accounting, calculation, reporting and analysis system for teachers using Commodore computers. It is the same program as the English version, except all screen prompts, all report headings, and the User's Guide have been translated into French.

FISHIER DE NOTES is available on tape or disk for VIC 20, Commodore 64, PET and CBM computers for the price of $29.95 U.S. Contact: Smoky Mountain Software, 13 Catatoga Path, Brevard NC 28712

ENHANCE YOUR COMMODORE-64

RAMDISK-64

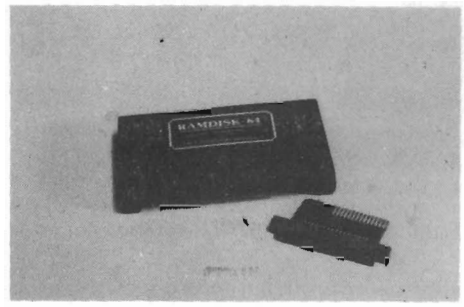
The RAMDISK-64 is a cartridge containing 64K bytes of RAM used to emulate a disk drive. No more long waits for program saves and loads. Use Ramdisk-64 as a second disk drive. Or use the 64K bytes as extra memory for large and data intensive software.

FEATURES:

- 64 kbytes of dynamic RAM
- Includes software to emulate a disk drive
- Loads an 8 kbyte program in less than 1 second.
- Does not use COMMODORE-64 RAM space
- System reset does not erase files in RAMDISK-64.
- Small size only 3"x5.5"x0.5"
- Useable with other cartridges

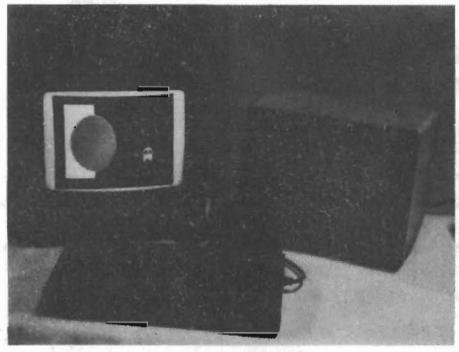
APPLICATIONS:

- Time saver where disk usage is high:
  - Software development
  - Large programs using overlays
- Software requiring large data storage. Use with data bases or spreadsheets. Save multiple graphic screens.
- Use as a second drive. Minimize diskette swapping.



MORE ABOUT DISK EMULATION SOFTWARE

- Allows 16 directory entries or 63.5 kbytes of storage.
- Compatible with BASIC commands OPEN, CLOSE, GET#, INPUT#, PRINT#
- Supports PRG and SEQ files
- Treat RAMDISK-64 as device 15, user changeable.
- OTHER FEATURES TOO NUMEROUS TO MENTION HERE.



VIDEO-80

The VIDEO-80 is a high-quality 80-column cartridge.

FEATURES:

- 80 columns x 25 lines display
- 256 character set with full Ascii and reverse letters
- Flicker-free crisp display even during scrolling
- Compatible with BASIC and the KERNAL
- Includes customizing video routines like scrolling, insert and delete line, address cursor, and screen blank
- DUAL SCREEN: Connect the normal C-64 video output to a color monitor AND connect the VIDEO-80 video output to a B/W or green screen monitor. Text will appear on the B/W or green screen monitor and the color graphics on the color monitor. A NECESSITY FOR GAME DEVELOPERS AND GRAPHICS PROGRAMMERS.
- Compact size only 3"x5.5"x0.5".

APPLICATIONS:

- Word Processing
- Spreadsheets
- Terminal Emulation
- Software Programming. Eliminate irritating line wrap around.
- Graphics development. Use VIDEO-80 for text and C-64 video output for color graphics simultaneously.

The RAMDISK-64 and VIDEO-80 use the COMMODORE-64 expansion slot. An optional extender board ($10) or motherboard is required.

PRICES

	Cdn.	U.S.
RAMDISK-64	$349.00	$199.00
VIDEO-80	$259.00	$149.00
Extender Board	$10.00	$10.00

Calif. residents add 6% sales tax. Add 5% shipping and handling. VISA, MasterCharge, COD accepted. Personal checks require two weeks to clear. Order by phone or mail.

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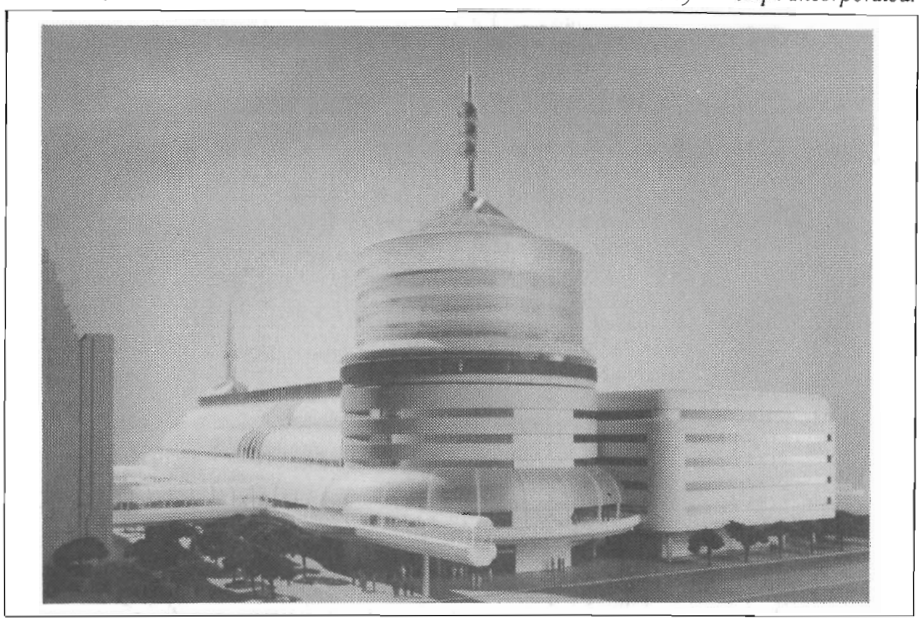
COMPUTER MUSEUM LAUNCHED

A model of the Computer Museum. *Photos by Lenscape Incorporated.*



Marya Miller
Mount Albert, Ontario

The Computer Museum of Canada was officially launched at noon on June 6, 1984, by its originator, Abe Schwartz. Before you get too excited, it will be the summer of 1986 before the twelve million-dollar building is actually completed and open to the public – if everything goes according to plan.

An enthusiastic press conference disclosed that the Computer Museum hopes to cover every conceivable area of computer technology: the history of the computer, how computers work, social issues such as privacy, and job creation and loss, and current and future computer uses. It plans to have a collection of reference materials and computerized databases and visitation programs for educational institutions. The "highlight" of the Museum will consist of computers which visitors can operate in a hands-on situation.

It professes both practical and lofty aims and ideals: to "make Canadians comfortable with technology", to encourage the "climate required for Canadian advanced-technology industries to compete internationally" and to "recognize and honour Canadian achievements, to inspire other Canadians. . . "

Even the building itself will be one of the new "intelligent buildings", which use computers to run energy and security systems, control internal communications and provide the office automation for the people working in it. Designed by Matsui Baer Vanstone Freeman, one of the first architectural firms in Canada to use computer-aided drafting and design, 100,000 square feet will be allotted for the museum portion of the building, with a projected 45,000 square feet of exhibit space planned. The actual site has not been finalized yet, but the Harbourfront area is the admitted favourite.

The project team debated the name of the new complex at great length, considering terms such as "Computerium" and "Computer Exploration Centre", but finally decided that when the name appeared on lists of "things to do in Toronto", the word "computer" would indicate the content and the word "museum" would say, "this is a place to which the public is invited".

Mark it down in your calendars – Computer Museum of Canada, summer of 1986. *TPUG*

advertiser's index

classified

For Sale: Commodore PET 4032 (Fat 40), 4040 drive and 8010 modem, Paperclip, Oracle, Jinsam and lots of misc. software, discs, cables. $2500.00 or best offer for all or can be sold separately. A. Rondeau, Box 119 Sta. 'A', Ottawa, Ont., K1N 8V1 (819) 685-1693

COMMODORE 4022 TRACTOR PRINTER. Upgraded to bi-directional. Excellent condition. 2 years old. Comes with manual and IEEE cable. Asking $550.00. Call (613) 962-8901

Used C-64 Software available-1. Wordpro3+64 Disks and manual, 1. Practical disks and manual. 1. Mini Jini Data base cartridge, Applications disk and manual $25.00 each or $55.00 for all including shipping—My original cost over $200.00. Kevin Mitchell, 2390 Lake Meadow Circle, Martinez, Calif. 94553

SuperPET with Paperclip and 4040 disk drive rarely used, with back issues of Transactor, complete and extra documentation. Prefer to sell both as system. Best offer, Oshawa (416) 728-6829 — between 5 and 8 p.m.

FOR SALE: Commodore 2001/B, 32K RAM, 2031, and 4023 printer. Lots of software and books. Asking $875 call (201)-531-1952 ask for Richard.

WANTED Simple business inventory, mail order, program for small business. Have PET Basic 4.0 80 col, 8050 disk drive, 2022 printer. Horton 100 S. Hathaway Street Santa Ana, California 92701 (714) 547-1189.

Sell: 24K board with 3 expansion slots for VIC 20 $55.00. Super expander cartridge $25.00. Gorf game cartridge $8.00. VIC 20 programers Ref. guide $5.00. All cartridges are like new, they have not been used very much. Michael Ulik, 211½ S. Minn. Ave., St. Peter, MN 56082 USA

For Sale:CBM 2001 32K, 2040 upgraded to 4040, software and accessories. Best offer. Frank Kurth evenings, (416) 385-2624

This space is limited to TPUG member wanted or for sale items only.

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Missing Key™

A reset System
Restores your BASIC Program.

After programming for hours you press RUN for a final check of your work — the computer locks up. You press RUN, STOP. . . nothing — you press RESTORE. . . nothing — you look for the missing key but it isn't there. You have to turn off your computer and lose hours of work!!

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- Press the "Missing Key™" and the computer resets itself from any lockup, and your BASIC program is restored.
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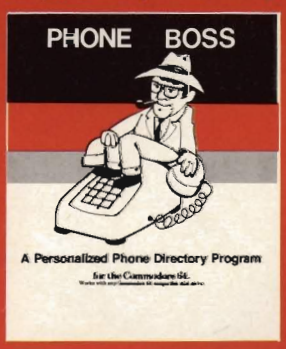

The user has complete control of 15 category titles and entries.

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TPUG INFORMATION PACKAGE

& Library Listings for the C-64

TPUG Inc.
1912A Avenue Rd., Ste. # 1,
Toronto, ON M5M 4A1
CANADA (416) 782-8900
(416) 782-9252

listings for the Vic 20, PET & CBM available on request . . .

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Membership Fees

The membership fees for 12 months in the Toronto PET Users Group (a non-profit organization) have been set as follows:

Regular member (attends meetings)	$30 Can.
Student member (full-time, " ")	$20 Can.
Associate (Canada)	$20 Can.
Associate (U.S.A.)	$20 U.S.
Associate (Overseas--sea mail)	$30 U.S.
Associate (Overseas--air mail)	$40 U.S.

A **regular** member attends the monthly meetings in the Toronto area (approximately 10 per year) and is the only type of member with voting privileges at the annual meeting. A **student** member by definition is a full-time student at a public or high school, a community college or a university, and attends the regular meetings around Toronto.

Associate members, because of distance and/or time restrictions, are not able to attend regular meetings. Fees are in U.S. funds, except in Canada, where they are in Canadian funds.

The fees for **visitors** attending a regular meeting are $5 for adults and $2 for students. **Family** members accompanying a regular or student member to a meeting pay $2 each.

As of February 1984, all members receive 10 monthly issues of TPUG Magazine, an independent Commodore magazine, which is the official publication of the Toronto PET Users Group. Prior to this date, members received the TORPET.

Also, members have access to the club library of programs on disk or tape. There are several ways of obtaining these disks or tapes:

1. Take a blank disk to a club meeting and get the monthly disk copied onto it. (The disk will be returned to you the following month.) Alternatively, the monthly disk may be purchased at the meeting at a special price.

2. Attend the annual conference where most club disks are available for a modest charge.

3. Find a friend or dealer etc. and copy their disks.

4. Order disks or tapes through the mail from the club office (see p.4).

In addition to the above, TPUG provides a bulletin board modem system for members, 416/429-6044 (24 hours a day, 7 days a week), and a yearly computer conference.

TPUG Contacts

Board of Directors		
President	Michael Bonnycastle	416/654-2381
Vice-President	Chris Bennett	416/782-9252
Vice-President	Gord Campbell	416/492-9518
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Asst. Bus. Man.	Doris Bradley	416/782-8900
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Editor	David Williams	416/782-1861
Asst. Editor	Sandra Waugh	416/782-1861
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C-64 Chapter	Louise Redgers	416/447-4811
Comal Chapter	Donald Dalley	416/742-3790
	Victor Gough	416/677-8840
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	Richard Bradley	416/488-4776
Eastside Chapter	Kelly Grinton	416/839-7284
	Joyce Topley	416/683-4898
Forth Chapter	David Williams	416/782-1861
Hardware Chapter	David Williams	416/782-1861
Machine Language	Jim Carswell	416/531-9909
SuperPET Chapter	Gerry Gold	416/225-8760
VIC 20 Chapter	(Doris Bradley)	416/782-8900
Westside Chapter	John Easton	416/251-1511
	Al Farquharson	519/442-7000
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French	Baudouin St-Cyr	c/o416/782-8900
PET	Mike Donegan	416/639-0329
SuperPET	Bill Dutfield	416/224-0642
VIC 20	Craig Bonner	416/663-4025
	Chris Covell	416/925-9296
Bulletin Board	Tom Shevlin	c/o416/782-8900
Conference	Doris Bradley	416/782-8900

Club Chapters

In response to the many requests from other user groups, we now have two ways in which other Commodore clubs can associate with TPUG.

The first is to take out an associate membership for the club at $20 per year. In this case, the club will receive one issue of TPUG Magazine each month and the club will have access to TPUG's library of over 4,000 programs.

The second way is to have **a number of your members (at least 15) join TPUG at one time (covered by one cheque).** The associate membership fee in this case is reduced by $5 (only $15 per person for those groups using the Canadian or U.S. postal system, and $25 for overseas groups). Then a copy of TPUG Magazine will be mailed to each individual member who will also have individual access to the library. If 25 or more people join, then we will supply the club with one free monthly disk each month. This can be either the VIC 20, the Commodore 64 or the PET/CBM disk. If 45 or more people join, then 2 free disks are sent out. If 60 or more members are enrolled, then all 3 monthly disks are supplied. All disks are sent Air Mail for speedy service.

We hope that this group rate will enable other clubs to serve their members better. Many clubs are putting out their own newsletters. If it is possible, we would like to receive copies of your newsletter. These help us to know what is happening in other clubs, and from time to time, we will reprint articles from them in TPUG Magazine. Permission to reprint articles published in TPUG Magazine will normally be granted with the expectation that a credit will be given to TPUG. For author-copyrighted material the group wishing to use the material will have to contact the author to obtain permission to reprint.

Another advantage of belonging to TPUG is the centralized pooling of programs for all the Commodore machines. This results in a much larger program library since many good programs are only distributed locally whereas the TPUG library is distributed all over the world.

More than 2,000 members of the groups listed below are currently taking advantage of the group rate.

Canada

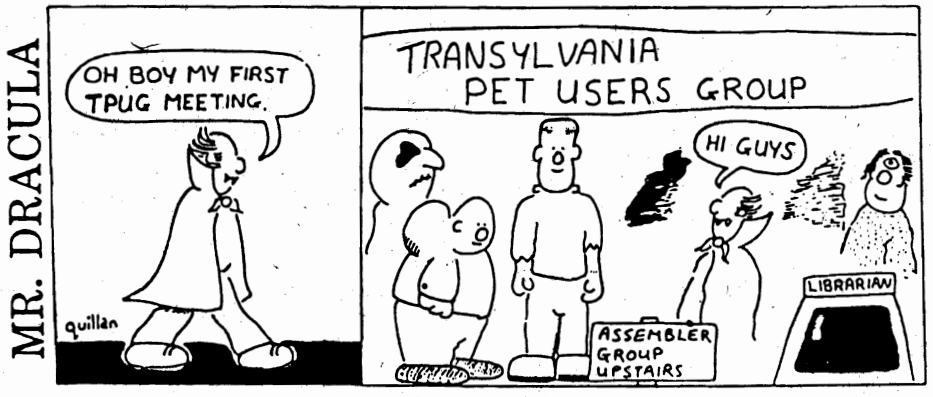
Barrie User's Group (Ontario)
Bruce C64 User's Group (Ontario)
Chaleur Commodore Club (New Brunswick)
Commodore Users Club of Sudbury (Ontario)
Commodore Users Group of Masset (British Columbia)
Commodore Users of Edmonton (Alberta)
COMVIC (Bracebridge, Ontario)
Groupe 64 de Chicoutimi (Quebec)
Guelph Computer Club (Ontario)
Indian Affairs Teachers Using Computers (Ontario)
London Commodore Users Club (Ontario)
Ottawa 6502 User Group (Ontario)
Riverdale Computer Club (Toronto)
Sarnia C64 Users Group (Ontario)
Saskatoon Commodore User's Group (Saskatchewan)
Timmins Computer Club (Ontario)
Windsor PET Educators Group (Ontario)
Winnipeg PET Users Group (Manitoba)

United States

Boston Computer Society (Massachusetts)
Colorado Commodore Computer Club
Commodore Houston Users Group (Texas)
Commodore Users Society of Greenville (S. Carolina)
Commodore Users Group of Rochester (New York)
The Commodore Users Group of St. Louis (Missouri)
Commo-Hawk Commodore Users Group (Cedar Rapids IA)
Compuclub of Oregon
Genesee County Area Pet Users Group (Michigan)
Greater Omaha Commodore 64 Users Group (Nebraska)
Huntsville Alabama Commodore Komputer Club - HACKS
Lehigh Valley Commodore Users Group (Pennsylvania)
Manasota Commodore Users Group (Florida)
Michigan's Commodore 64 Users Group
Mohawk Valley Commodore User's Group (New York)
Peninsula Commodore-64 Users Group (Virginia)
Russellville Commodore Users Group (Arkansas)
Sacramento Commodore Computer Club (California)
S.C.O.P.E. (Dallas, Texas)
Southern Minnesota Commodore Users Group
Toledo Ohio Group (Ohio)
Tri-City Commodore Computer Club (Washington)
Westmoreland Commodore User's Club (Pennsylvania)

International

Baden Computer Club (West Germany)
Hawkes Bay Commodore Users Group (New Zealand)
Trinidad Assoc. of Commodore Owners - TACO
Zweibrucken Commodore Computer Club (West Germany)



Calendar of TPUG Events

ANNUAL BUSINESS MEETING - Thursday, October 4, at Leaside High School, Bayview & Eglinton Aves. at 7:30 p.m. in the auditorium. Regular members are voting members.

BRAMPTON CHAPTER - Central Peel Secondary School, 32 Kennedy Rd. N. on the third Tuesday of the month at 7:30 in the Theatre (tentative)

Tue. Sept. 18	Tue. Nov. 20
Tue. Oct. 16	Tue. Dec. 18

CENTRAL CHAPTER - Leaside High School, Bayview & Eglinton Aves. on the second Wednesday of the month at 7:30 p.m. in the auditorium for **PET/CBM**

Wed. Sept.12	Wed. Nov. 14
Wed. Oct. 10	Wed. Dec. 12

COMAL GROUP - York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the fourth Thursday of the month at 7:30 p.m. in the auditorium

Thu. Sept.27	Thu. Nov. 29
Thu. Oct. 25	Thu. Dec. 27

Commodore 64 CHAPTER - York Mills C.I., 490 York Mills Rd., (east of Bayview) on the last Monday of the month at 7:30 p.m. in the cafetorium (tentative)

Mon. Sept.24	Mon. Nov. 26
Mon. Oct. 29	**Mon. Dec. 17**

COMMUNICATIONS GROUP - York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Wednesday of the month at 7:30 p.m. in the Story Book Room (adjacent to the auditorium).

Wed. Sept. 5	Wed. Nov. 7
Wed. Oct. 3	Wed. Dec. 5

EASTSIDE CHAPTER - Dunbarton High School, (from the traffic lights at Highway 2 and Whites Rd. - go north on Whites Rd. to next traffic lights and turn left) on the second Monday of the month at 7:30 p.m. (tentative)

Mon. Sept.10	Mon. Nov. 12
Mon. Oct. 15	Mon. Dec. 10

FORTH CHAPTER - York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the second Tuesday of the month at 7:30 p.m. in the Story Book Room (adjacent to the auditorium).

Tue. Sept.11	Tue. Nov. 13
Tue. Oct. 9	**Tue. Dec. 4**

HARDWARE CHAPTER - York Public Library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Friday of the month at 6:30 p.m. in the Story Book Room (adjacent to the auditorium).

Fri. Sept. 7	Fri. Nov. 2
Fri. Oct. 5	Fri. Dec. 7

MACHINE LANGUAGE CHAPTER (6502) - Call Jim Carswell at 416/531-9909 for additional information.

SuperPET CHAPTER - York University, Petrie Science Building (check in Room 340). Use north door of Petrie to access building. On the third Wednesday of the month at 7:30 p.m.

Wed. Sept.19	Wed. Nov. 21
Wed. Oct. 17	Wed. Dec. 19

VIC 20 CHAPTER - York Public library, 1745 Eglinton Ave. W., (just east of Dufferin) on the first Tuesday of the month at 7:30 p.m. in the auditorium

Thu. Sept. 6	Tue. Nov. 6
Tue. Oct. 2	Tue. Dec. 4

WESTSIDE CHAPTER - Clarkson Secondary School, Bromsgrove just east of Winston Churchill Blvd. (south of the QEW) on the third Thursday of the month at 7:30 p.m. in the Little Theatre for **PET/CBM/VIC 20/Commodore 64**

Thu. Sept.20	Thu. Nov. 15
Thu. Oct. 18	Thu. Dec. 20

Are you interested in organizing some other interest group in the Greater Toronto area? Please let the club office know, by mail, phone, or TPUG bulletin board.

Submitting Programs

Programs for the PET, CBM, SuperPET, VIC 20 and Commodore 64 can be sent to us either on disk or tape (though we prefer disk). If you submit a disk, we will send you the "disk of your choice" from the TPUG library, once your program(s) have been accepted. If you submit a tape, "the tape of your choice" will be sent. It is a good idea to put your membership number directly on the tape or disk you submit just in case it gets separated from its letter or envelope.

Send all submissions to the club office (see p. 4)

Magazine Back Issues

Back issues of the TORPET (issues 1 to 26 - up to and including January 1984) are available for $2.00 each from the club office (except for issues #1, #2, and #3 which are $1.00 and issues #7, #12 and #14 which are $3.50. Our first issues were relatively small: #1, #2 and #3 - 4 pages; #4 - 8 pages; #5 - 16 pages. All the rest include 24 or or more pages.

Back issues of TPUG Magazine (first issue dated February 1984) are available from the club office for $2.95).

TORONTO PET USERS GROUP INC.
1912A Avenue Rd., Ste. 1
Toronto, Ontario
M5M 4A1

416-782-9252 **416-782-8900**

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Province/State _____

Postal/ZIP Code _____

The prices indicated include postage and handling as well as Ontario Provincial Sales Tax (if applicable). Make cheque or money order payable to: **TPUG.**

Disks

To order club disks by mail, send **$10.00** for each 4040/2031/1540/1541 disk (4040 format), and **$12.00** for each 8050/8250 disk (8050 format). We do honour purchase orders from school boards.

If you wish to order the total library to date for a specific computer (PET, SuperPET, VIC 20 or Commodore 64), contact the club office to find out how many disks there are currently. The cost is $8.00 per disk (4040 format) and $10.00 per disk (8050 format).

These disks are for use with a _____ computer and a _____ disk drive.

Please send me the following:

3 Letter/No. Code	Description	4040 or 8050 Format	Price
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
		Total	.00

Tapes

To order **VIC 20** or **Commodore 64** library tapes, send **$6.00** for each tape. If you wish to order the total library to date for the VIC 20 or Commodore 64, contact the club office to find out how many tapes there are currently. The cost is $5.00 per tape.

To order **PET/CBM** or **Commodore Educational Software** tapes, send **$10.00** for each tape.

These tapes are for use with a _____ computer and a datasette.

If for a PET computer - what model _____ - BASIC - 1.0 ( ), 2.0 ( ), 4.0 ( )?

3 Letter/No. Code	Description	Price
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
	Total	.00

Note: We recommend you photocopy this page in order to keep this Information Package intact.

TPUG Library

Programs that run on one machine do not necessarily run on another. Because of this fact, our library has been divided into 5 sub-libraries:

"C" Commodore 64 **"V"** VIC 20
"P" PET/CBM **"S"** SuperPET
"O" Old TPUG prior to March/83

If you wish to order disks or tapes from our library, please make sure that the programs you order are compatible with the machine you own.

Disk Identification

The disks within a library are organized according to a two-character code. The first character is the CATEGORY code (B for business, U for utility, etc.) The second character is a sequence number to separate all the disks in the same group. For example, E1 is Education disk number one, U9 would be Utilities disk nine and UA would be Utilities disk ten. The LIBRARY to which a disk belongs is indicated by a library code in brackets. For example (C)B3 would be the third Business disk in the Commodore 64 library.

The **Category Codes** are:

A Assembler/Machine language
B Business
C Communication
E Education
G Games
L Language
M More Monthlies
N Mathematics/Science
S Music
T TPUG Monthly Releases
U Utilities
X Best of Series
Z Miscellaneous

To further document programs on disk or tape, there are PROGRAM codes on all the releases since February 1983. A period plus the program code is appended to the end of each program name on the disk or tape.

The **Program Codes** are:

.Z All Commodore machines or unspecified
.P All PET/CBM machines
.4 40-column PET/CBM, 9" screen
.F Fat 40, 40-column PET/CBM 12" screen
.8 80-column CBM
.S SuperPET/S9000

.V VIC 20
.C Commodore 64
.B B series (available soon)

.D Data or Sequential files
.L List-Me file (one-line documentation)
.W Word processing files

All disks/tapes described in this catalogue follow these conventions.

List-Me Copyright

'List-Me' files (one-line documentation) are on all the disks/tapes which have been added to the library since March 1983. These 'List-Me' files are subject to the following:

"Copyright (C) 198?, Toronto PET Users Group Inc." This means that it is all right to copy 'List-Me's, but they are not to be sold or published for profit.

Disk Format

Over the last few years, Commodore has released a number of disk drives for their wide variety of computers. These include the 2040, 4040, 2031, 8050, 1540, 1541, 8250 and 2031SL.

These drives can be divided into two major groups. One is the 35-track, 170K disk drive found in the 2040, 4040, 2031, 2031SL, 1540 and 1541. The second is the 77-track, 500K disk drive found in the 8050 and 8250.

The 2040 disk drive is the original version available for the PET. It contained DOS version 1.0. The 4040 came out next with DOS 2.0 and uses 6 less sectors than the 2040. **This 4040 format is now the standard which we use in copying disks in the 35-track format.** A 4040 disk can be read by the 2031, 1540, 1541 and 2031SL disk drives. However, it is possible that **some of these single disk drives may not be able to WRITE programs onto one of our disks** because of a difference in timing.

The 8250 disk drive is a double-sided version of the 8050 and can read an 8050 disk. Since the 8250 disk takes twice as long as the 8050 disk to format, **in the 77-track format, we distribute only 8050 disks.**

Tape/disk of the Month

There are now three libraries which have monthly releases: **VIC 20, Commodore 64, PET/CBM.** (The SuperPET library often has a monthly release as well.)

Monthly releases can be obtained by those attending a club meeting at a special price. In addition to a selection of programs submitted by members from all around the world, a monthly release often contains programs demonstrated at the meeting. (At the VIC 20 meeting a version on tape is available for $5.00.)

These tapes and disks of the month may be obtained individually by members from the club office. To save the necessity of constantly having to order the current monthly disk/tape, members can order any number of months in advance and the disks or tapes will be sent automatically.

The request must include:
1. Membership number.
2. Return address.
3. Whether tape or disk is desired (disk format).
4. Which library is desired.
5. Sufficient payment for the # of disks or tapes ordered.

These monthly disks/tapes are coded with a **"T"**. The series from T1 through TJ covered meetings up to May 1982 and was retired and the contents merged into the appropriate category disks. Please indicate if you wish the new **"M"** series (more monthlies) for the Commodore 64 to be included in your disk/tape of the month order.

Commodore 64 Library

Librarians - David & Richard Bradley 416/782-8900

The following disks and tapes are specifically for the Commodore 64. In March 1983, we started releasing a monthly C-64 disk and tape to coincide with our monthly C-64 meetings. Though this computer has been available for only a short time, the program library is building quickly and now contains more than 1200 programs. Programs on disk and tapes released since February 1983 have program codes. A period plus the **Program Code** is appended to the end of each program name on the disk or tape.

.C Commodore 64
.Z All Commodore machines or unspecified
.D Data of Sequential files
.L List-Me (one-line documentation)
.W Word processing files

NOTE: Only **ONE TAPE** is required for each C-64 listing.
Some are available only on disk. **"(disk only)"** appears under the title. In addition, **beginning with the January 1984 release, programs which will not work on tape are marked with an "*". These are not included on the tape version of the listing.**
There are three new program disks in Comal - (C)L3, (C)L4, (C)L5.

Games...

(C)G1 - PICTURES 1
(disk only)

LIST-ME (C)G1.L	This file contains information about the programs on this disk. To access it, LOAD and LIST it.
CONT.LDR.ML	Sit back and watch the pictures.
HI RES LOADER	See the picture you want to see.
SCREEN	The rest of the files on this
CONT.LDR.PAL	disk except for "SCREEN" &
SPIRAL.1	"CONT.LDR.PAL" which are loaded
SUE	by "CONT.LDR.ML" and "HI RES
KAREN	LOADER" are high resolution
SNOOPY	pictures. By themselves they will
ALBERT	do nothing. But if you load
DOLLAR	either "CONT.LDR.ML" OR "HI RES
DIP	LOADER" you should be impressed.
SNAIL	Some good pictures are:
DES.1	"ALBERT", "RACCOON" & "WINSTON".
7-3HILL	NOTE: If you are under 18 years
MUSIC	of age, do not look at "NUDE".
MAP	"
DIANE	"
WILLY	"
RACCOON	"
SINCOS1	"
WATCH	"
WINSTON	"
MICROMETER	"
NUDE	"

(C)G2 - PICTURES 2
(disk only)

LIST-ME (C)G2.L	This file contains information about the programs on this disk. To access it, LOAD and LIST it.
CONT.LDR.ML	Sit back and watch the pictures.
HI RES LOADER	See the picture you want to see.
SCREEN	The rest of the files on this
CONT.LDR.PAL	disk except for "SCREEN" &
SQUEEZE	"CONT.LDR.PAL" which are loaded
TEX	by "CONT.LDR.ML" and "HI RES
HOPALONG	LOADER are high resolution
GUY	pictures. By themselves they will
FIG1	do nothing. But if you load
FIG2	either "CONT.LDR.ML" or "HI RES
FIG3	LOADER" you should be impressed.
MOUND2	Some good pictures are:.
EYES	"FRIENDS", "SATELLITE" & "EYES".
FRIENDS	NOTE: If you are under 18 years
SINCOS2	of age, do not look at "NUDE.REV"
SATELLITE	"
DONALD.DUCK	"
VM.THINGS	"
SESAME.ST	"
NUDE.REV	"
VIS.ROSETTE	"
VIS.G1A	"
XMAS CARD.1	"
4HILL5	"

(C)G3 - EMULATOR GAMES 1
(1 disk/tape)

PET EMULATOR.C	Configures your 64 to run most BASIC PET programs.
LIST-ME (C)G3.L	The List-Me file for (C)G3.
OSC LUNAR	Try and land safely on the moon.
STAR WARS	With limited ammunition destroy the fighters.
STAR TREK	Search the galaxy for enemy craft...then destroy them.
LUNAR LANDER 1	Try and land safely on the moon.
LUNAR LANDER 2	Try and land safely on the moon.
SUPER STAR TREK	Search the galaxy for enemy craft...then destroy them.
ELIZA	Find out what is really bothering you.
KLINGON CAPTURE	Catch the Klingon, don't kill him!
EASY DUNGEON	Find the Holy Grail and get out again!
PLANET PROBE	Take a picture of the planet, then try to get away.
AFO WITH SOUND	Shoot down the AFO before he gets you!
ATARI II	Shoot the enemy ships...not your own!
STAR WARS TRANIN	Shoot the enemy before he shoots you!
DEEPSPACE	Destroy hostile vessels or be killed!

(C)G4 - EMULATOR GAMES 2
(1 disk/tape)

PET EMULATOR.C	Configures your 64 to run most BASIC PET programs.
LIST-ME (C)G4.L	The List-Me file for (C)G4.
HUNTER SATELLITE	Intercept the enemy satellite-- the faster the better!
STARBASE&UFO	Shoot down the UFOs in the allocated period of time.
SPACESHOOTER	Get the target in your sights then blow him/her away!

continued

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SUPERLANDER	Computer failure! You have to land the ship yourself.
C.C.STARWARS INS	Instructions for "C.C.STARWAR".
C.C.STARWAR	Try and destroy Darth Vader before he destroys you!
HANGMAN 1	Pick a category, then guess the word or you get hanged.
HANGMAN 2	You guess or the computer guesses your words!
HANGMATH	Solve the mathematical problem or get hanged.
MATH IQ	Test yourself! You have fifteen minutes to do 20 problems.
ANDROID NIM	Try and get the last Android. (has neat sound!)
REVERSE	Reverse the numbers to reach your objective.
3D TIC-TAC-TOE	Play the computer. Get 4 in a row to win--if you can.
NIM	Try and take the last item.
BAGELS	Supply the pattern specifications--then find the pattern.
REVERSE #S	Reverse the numbers to reach your objective.
BINGO	Play Bingo against your computer!
BAGELSX2	You guess the computer's pattern and it guesses yours.
STARS	Track down the computer's number between 1 & 100.
MASTERMIND	Guess the pattern as economically as you can.
CRYPTO	Helps you solve simple substitution cryptograms.
KENO	Pick numbers--then see how many of them get picked.
MAGIC SQUARE	To win light all the numbers except 5.

(C)G5 - EMULATOR GAMES 3
(1 disk/tape)

PET EMULATOR.C	Configures your 64 to run most BASIC PET programs.
LIST-ME (C)G5.L	The List-Me for disk (C)G5.
BRAIN STRAIN	Reverse the squares to reach the objective.
PIGS	Move all the pigs to the opposite row.
CRAPS ODDS	Discover the odds of your winning at the crap table.
LETTER 15	Sort the letters.
CONCENTRATION	Find the matching patterns.
FAMOUS PHRASES	Find the famous phrase.
GUESS IT	The computer will guess your number every time!
TIC-TAC-TOE	Play Tic-Tac-Toe on your computer.
JOTTO	Guess the five letter words.
HORSE RACE	Pick your favourite horse then watch the race.
ARROW	Get as many points as you can in the allocated time.
POKER	Play Poker with your computer.
DEFLECTION	Deflect the ball so it will hit the targets.
BATTLESHIPS	Play Battleships on your computer.
BREAKOUT	Keep the ball in play and try to breakout!
ROBOT CHASE	Try to escape from the robots.
DAMBUSTERS	Bust the dam before you get shot down!
LABYRINTH	Set the maze parameters then try and find your way out!
BOWLING	Bowl on your computer.
BLACK JACK 1	Play Black Jack on the computer.
BLACK JACK 2	" " " " " "
BLACK JACK 3	" " " " " "
SOLITAIRE	Play Solitaire on your computer.

(C)G6 - EMULATOR GAMES 4
(1 disk/tape)

PET EMULATOR	Configures your 64 to run most BASIC PET programs.
LIST-ME (C)G6.L	The List-Me file for (C)G6.
OTHELLO	Play Othello with your computer!
TOKER	Try and consume the contents of the bong!
KENTUCKY DERBY	Pick a horse and watch the race.
RACETRACK	Pick a horse and watch the race.
CHECKERS 1	Play Checkers with your computer.
CHECKERS 2	" " " " "
MOTORCYCLE	See how many buses you can jump!
PETALS & ROSE	Can you figure out the puzzle?
CHASE ROBOT	Try and get away from the robots.
SNAKES	Try and outlast your opponent.
TARGET	Hit the target!
GO-MOKU	Play Go-Moku on your computer.
ROULETTE	Play Roulette on your computer.
AWARI	Try and get all the beans!
LIFE WAR	Try and get as many cells as possible.
FLIGHT SIMULATOR	Go on a simulated flight on your computer.
BLACK BOX	Probe the box in search of the balls!
BOMBER	Bomb enemy installations.
PRO FOOTBALL	Play Football on your computer.
SKI	See how far you can make it down the mountain.
PINBALL	Play Pinball on your computer.
DUCKSHOOT	Shoot down as many ducks as you can.

(C)G7 - EMULATOR GAMES 5
(1 disk/tape)

PET EMULATOR	Configures your 64 to run most BASIC PET programs.
LIST-ME (C)G7.L	The List-Me file for (C)G7.
STOCK	Play the stock market on your computer.
CRAZY 8'S	Play Crazy 8's on your computer.
KILLER BUNNIES	Get away from the killer bunny!
FAWLTY	Look for the body of the murder victim.
CARD SNAP	Play Card Snap against your computer.
DEPTH CHARGE	Destroy the enemy subs before they get you!
CARDS UTILITY	Need cards for a game? Look no further.
GRUNGY TOWERS	Look for the body of the murder victim.
BREAKOUT	Play Breakout on your computer.
DRAW POKER	Play Poker on your computer.
SUBMARINE	Destroy the enemy before they get you.
BILLIARDS	Play Billiards on your computer.
CLUE	Search for clues by questioning potential suspects.
DRAGON MAZE	Try and get through the maze.
GUNNER	Shoot down the enemy!
DICE PIG	Roll the dice but beware of the ace.
OSERO	Capture the enemy's pieces.

(C)G8 - EMULATOR GAMES 6
(1 disk/tape)

PET EMULATOR	Configures your 64 to run most BASIC PET programs.
LIST-ME (C)G8.L	The List-Me file for (C)G8.
YAHTZEE	Play Yahtzee on your computer.
BOWLING	Bowl on your computer.
BLACK JACK 4	Play Black Jack on your computer.
HORSES	Bet on the horses.
BRIDGE BID TRAIN	Learn to play Bridge with your computer.
SOLITAIRE POKER	Play Poker with yourself on your computer.
WUMPUS	Search for the Wumpus!
SLOTS JACKPOT	Try and beat the one armed bandit.
TREES	Try and keep the trees alive.
KNIGHT TOUR SOL	Watch the knight move around the chess board.
ARTILLERY TRAP	Try and hit the enemy.
CHECKERS 3	Play Checkers on your computer.
BASKETBALL	Play Basketball on your computer.
MUGWUMP	Find the Mugwumps!
SINNERS	Capture the baddies!
GOLF	Play Golf on your computer.

(C)G9 - EMULATOR GAMES 7
(1 disk/tape)

PET EMULATOR	Configures your 64 to run most BASIC PET programs.
LIST-ME (C)G9.L	The List-Me for (C)G9.
OHARE'S #1	Search for treasures but beware!
OHARE'S #2	" " " " "
OHARE'S #3	" " " " "
WIZARD'S CASTLE	Look through the castle for treasure.
TRIP TO ATLANTIS	Tour Atlantis and pick up treasure as you go.
KING TUT	Search for treasure in and around the grave of Tut.
SORCERER'S CASTLE	Look through the castle for treasure.

(C)GA - EMULATOR GAMES 8
(1 disk/tape)

PET EMULATOR	Configures your 64 to run most BASIC PET programs.
LIST-ME (C)GA.L	The List-Me for (C)GA.
BLOCKADE	Avoid the robots and fences to escape!
SEABATTLE INST	Instructions for Seabattle.
SEABATTLE	Try and win the battle.
PIRATE ADVENTURE	Search for treasure!
WILL O' WISP	Look through the forest for trinkets.
PET NUC PWR PLNT	Run a nuclear power plant.
BASEBALL 7.4	The Blue Jays take on the Expos.
SUPERTREK/16NR	Look around the galaxy for the enemy.
PINBALL	Play Pinball on your computer.

Miscellaneous...

(C)C2 - COMMUNICATION 2
(disk only)

LIST-ME (C)C2.L	The List-Me file for this disk.
--PET/CBM TERM'LS	Following 3 programs are basic
AUTODIAL TERM	terminal programs for 40- or
TERMINAL.R12	80-column PET/CBMs.
TERMINAL/16K	
--SUPERPET TERM'L	Following program is basic
TERMINAL.S12	terminal program for SuperPET.
--C64 TERM'LS	Following program is basic
TERMINAL.64	terminal program for C-64.
AUTOTERM/1650.C	A terminal program for the C-64 that takes advantage of the autodialling on the 1650 modem.
--VIC TERM'L	Following program is a basic
TERMINAL.VIC	terminal program for the Vic.
--MACHINE LANG.	Following files are programs
TERM.R12	in Machine Language which are
INTELCOM3/40	automatically loaded and used by
INTELCOM3	the above basic programs. It is
INTELCOM4	not recommended that you LOAD
TERM.R12/16	these programs in any other way.
TERM.64	
AUTODIAL ML	
SUPERCOM	
TERM.VIC	
TERM.64.C	
--IEEE MODEM TERM	Following program is a basic
TERMINAL.I12	terminal program for PET/CBMs which are equipped with IEEE modems.
TERM.I12	
--INSTR'N FILES	
AUTODIAL INST (SEQ)	
INTELCOM (SEQ)	
TERM INST/WP 1	
TERM INST/WP 2	
RS232 DOC (SEQ)	
--OTHER PRGMS	
FREQ GENERATOR!	Generates modem noises.
VT52.BASIC	Term program to run 8032/8010 as a VT52
CBM 8010	Simpe basic terminal program for 8010 modem.
COMM PRIMER	Communications presentation.
8010 MODEM DRIVR	Terminal program for 8010.
LOGGER	As per 'CBM 8010' plus log to disk.
MORSE TUTOR	Test your morse capability.
MORSE-BTTRFLD	More more code.
TERMINAL DOC	Description of terminal functions.
TOKENIZER	Tokenizes programs downloaded as sequential files.

(C)X2 - BEST EDITORS 1
(1 disk/tape)

LIST-ME (C)X2.L	The List-Me file for (C)X2.
SPRITE BOOT.C	Design your own sprites!
SCROLL.DATA.D	Loaded by "SPRITE BOOT.C".
SPRITE EDITOR.D	" " " "
SAMPLE SPRITES.D	Can be loaded by "SPRITE BOOT.C".
SPRITE INSTR.C	Instructions for "SPRITE BOOT.C".
SPRITE MAKER.C	Another Sprite Editor.
SPRITEMAKER.C	Yet another Sprite Editor.
SPREDIT.C	Still another Sprite Editor.
SPED.C	One more Sprite Editor.
CHAR BOOT.C	Design your own character set(s)!
ROTATE.DATA.D	Loaded by "CHAR BOOT.C".
STANDARD SET.D	" " " "
CHAR EDITOR.D	" " " "
CHAR INSTR.C	Instructions for "CHAR BOOT.C".
CHRED.C	Another Character Editor.
CHAR DISPLAY.C	Display big characters.
1525 CHAR.EDIT.C	Edit the 1525's characters.
CHARGEN PEEK.C	Look at the Character Generator.
CHARACTER GEN.C	Generate your own characters.

See Order Form p.4

(C)L2 - COMAL 1 (disk only)

BOOT C64 COMAL	LOGO BOOK SAMPLE	JIFFY/DEMO
C64 COMAL 0.14	SNOWFLAKE	QUICKSORT/DEMO
----------	SPRITE/TURTLE	JOYSTOCK/DEMO
ERROR MESSAGES FILE	SQUIRAL	PADDLE/DEMO
----------	MUSIC	DISK GET/DEMO
COMAL ERRORS	BOUNCE	LOGICAL OPS/DEMO
----------	SPRITE/DESIGNER2	----------
FILE GENERATOR	LANDER	SPRITE DATA FILES
----------	CREATE LANDER	----------
GENERATE ERRFILE	SKY FALLING	LANDER SPRITES
----------	CREATE SKY	SKY SPRITES
AUTO BOOT PROG	READ DIRECTORY	----------
----------	PRINT DIRECTORY	END OF COMAL
HI	EXPRESSION	DEMO PROGRAMS
----------	UTILITIES	
SEQ DATA FILES	RECURSIONS	
----------	FORMATTER2	THE FOLLOWING
INFORMATION84MAR	FILE TO PRINT	TWO PROGRAMS
HELP-COMAL	FILE TO SCREEN	ARE WRITTEN IN
HELP-GRAPHICS	DISK COMMANDS	BASIC
HELP-SPRITES	C64 COMAL INFO	-----
----------	REMOVE COMMENTS	DO NOT LOAD
COMAL PROGRAMS	SEE ROLL/DEMO	THEM INTO
----------	SEE PAGE/DEMO	COMAL.
SEE INFORMATION	CURSOR/DEMO	----------
SEE INSTRUCTIONS	VALUE/DEMO	1541BACKUP(FREE)
	SHIFT/DEMO	SINGLE FILE COPY

(C)X1 - BEST DEMOS 1 (disk only)

LIST-ME (C)X1.L	The List-Me file for (C)X1.
BOOT UK1.C	Great demonstration of the 64's capabilities.
KEY.D	Loaded by "BOOT UK1.C".
SCROL.D	" " " "
DEMO FIN.D	" " " "
BOOT2.D	" " " "
HUFO.D	" " " "
MUSIC2.D	" " " "
SPRITES.D	" " " "
BOOT UK2.C	Another great demonstration of the 64's capabilities.
MUSIC.D	Loaded by "BOOT UK2.C".
LAND.D	" " " "
DEMO.D	" " " "
BOOT CLYDE.C	Clyde shows you what your 64 can do.
DEMO GUTS1.D	Loaded by "BOOT CLYDE.C".
DEMO C000.D	" " " "
DEMO.13.D	Loaded by "BOOT CLYDE.C" and "NUCLEAR DEMO.C".
DEMO.13.D	Loaded by "BOOT CLYDE.C".
NUCLEAR DEMO.C	Learn about the 64 and a nuclear power plant.
C64 CDN DEMO.C	More 64 capabilities are demonstrated.
BOUNCE M/C.D	Loaded by "C64 CDN DEMO.C".
SPRITE.DATABIN.D	" " " " "
CHRISTMAS.C	Merry Christmas from Commodore Canada.
CHRISTMASMUSIC.D	Loaded by "CHRISTMAS.C".
CHRISTMASCODE.D	" " "
CHRISTMASROOT.D	" " "

(C)83 - CONTEST (disk only)

LIGHT CYCLES.C	Force your competitor to crash while he trys to make you crash. Joysticks are optional...
VOYAGER VI.C	An unmanned robot probe capable of radioing all information to earth in single frame photos monitors and traces all planetary radio wave sources and displays cross sectional scans at 10 degree intervals. Sit back and watch the action...
40 RADIUS.D	A data file used by "VOYAGER VI.C"
60 RADIUS.D	A data file used by "VOYAGER VI.C"
SPHERE.1.D	A data file used by "VOYAGER VI.C"
10 DEGREES.D	A data file used by "VOYAGER VI.C"
20 DEGREES.D	A data file used by "VOYAGER VI.C"
30 DEGREES.D	A data file used by "VOYAGER VI.C"
45 DEGREES.D	A data file used by "VOYAGER VI.C"
60 DEGREES.D	A data file used by "VOYAGER VI.C"
70 DEGREES.D	A data file used by "VOYAGER VI.C"
80 DEGREES.D	A data file used by "VOYAGER VI.C"
90 DEGREES.D	A data file used by "VOYAGER VI.C"
120 RADIUS.D	A data file used by "VOYAGER VI.C"
150 RADIUS.D	A data file used by "VOYAGER VI.C"
180 RADIUS.D	A data file used by "VOYAGER VI.C"
ET.PLOT.D	A data file used by "VOYAGER VI.C"
GLOBE.D	A data file used by "VOYAGER VI.C"

(C)U1 - UTILITIES (1 disk/tape)

LIST-ME (C)U1.L	This file contains information about the programs on (C)U1. To access it, LOAD and LIST it.
1541 BACKUP.C	Copy the entire contents of one disk to another using your 1541 disk drive. For instructions see page 44 of the Nov/Dec TORPET.
64 MEM CHART.C	A chart of the Commodore 64's memory layout.
64 RENUMBER.C	A simple renumbering routine. It doesn't change a GOTTO or GOSUB so you'll have to change them manually. To set ranges use REM statements at the beginning of each routine using this format: 10 REM*10*.
BASE.C	Converts numbers from one base to another. For example: FF base 16 is 255 base 10.
C-64 WEDGE.C	Loader programs for "DOS 5.1".
C64 PET SCREEN.C	This routine will reconfigure the video chip so the screen starts at $8000 (like the PET), so PET programs that don't normally work, due to POKEs and/or PEEKs to the screen, should work.
C64 TINY-AID.C	Adds functions such as search and replace, renumber, delete line ranges, kill a program in memory, append programs and more...
CHECK DISK.C	Checks a disk that you have just formatted to ensure that all the blocks on the disk are good. If bad blocks are found, the program tells the BAM not to use them.
COLOUR BAR 2.C	Displays square of each colour available on the 64 on the screen and then cycles through the background and border colours.
COLOUR COMBO.C	Displays every possible combination of screen and character colours so you can see which ones are readable.
COPY FILE.C	Copy any one file from 1 disk to another using your 1541 disk drive
COPY FILES.C	Copy as much or as little of the contents of one disk to another using your 1541 disk drive.

continued

COPY-ALL.C	Copy programs from one 1541 to another 1541. Needs 2 1541 disk drives--1 should be changed to device #9 using "DISK ADD CHNGE.C"
DEC DUMP.C	Performs a decimal dump on any program that you specify from disk
DEMO JOYSTICK.C	Test the mechanism of your joystick to be sure that it is in working order.
DIALER.C	Hold the phone in front of your VDT speaker, choose a number and the 64 will dial the number for you. Note: If your exchange does not support touch tone dialing, this program will not work.
DIR.C	Allows you to look at the directory, send disk commands and examine the disk status.
DISK ADD CHNGE.C	Change the device number of your disk drive. For more detailed information see "HOW TO USE.C".
DISK LOG.C	Displays the file name. If the file is a program it tells the start and finish address. If it is a sequential file it tells you how many bytes long it is. Output can be directed to the screen or a printer.
DISKVIEW 2.C	A very useful program that lets you do things such as trace blocks, unscratch a file, look at the Block Availability Map and much more.
DISPLAY T&S.C	Allows a programmer to examine the contents of a block by specifying the particular track number and sector number which identifies that block.
DISSAMBLER.C	Disassembles any section of the Commodore 64's memory to your printer or your VDT.
DOS 5.1	Loaded by "C-64 WEDGE.C". Don't load it yourself, it won't work.
DUMP .C	Performs a decimal dump on any program you specify from disk.
EMULATOR	Reconfigures your 64 to run most BASIC PET programs. Loaded by "PET EMU BOOT.C".
FORMAT.C	A useful little program that rounds numbers to 3 decimal places and lines up the decimal point.
HOW PART TWO	Gives instructions for: "PERFORM TEST.C", "SEQ FILE.C" and "RANDOM FILE.C".
HOW TO USE.C	Gives instructions for: "C-64 WEDGE.C", "COPY-ALL.C", "DISK ADD CHNGE.C", "PRINTER TEST.C", "VIEW BAM.C", "DISPLAY T&S.C", and "CHECK DISK.C",
INTERMOD.C	Calculates intermodulation products for all combintions of frequencies you input.
J/20 MORSE R/T.C	Transmit morse code using your Commodore 64.
JOY 2.C	Test your joystick to be sure that everything inside is OK.
LISTER.C	LIST a program from your disk to your printer or your VDT.
LISTER 2.C	LIST a program from your disk to your printer or your VDT.
LOCKDISK 64	Protects your programs. Autoruns programs and won't let you break out.
MENU.C	Loads the directory of a disk then lets you pick the program you want by number. After you choose the program it is automatically loaded and run.
MOVING SIGN.C	Input a message and then watch it displayed in big characters across your VDT.
PCB PRINTER.C	Prints programmable character grids so you can design your own character sets on paper.
PERFORM TEST.C	Allows anyone to test the electronic and mechinical capabilities of the 1541 disk drive.
PET EM.C	A limited PET emulator program. Moves the screen so that PET programs with screen POKEs will work.
PET EMU BOOT.C	Boots "EMULATOR" which reconfigures your 64 to run most BASIC PET programs.
PET EMULATOR.C	Reconfigures your 64 to run most BASIC PET programs.
PETLOAD PRGM.P	Load programs saved on a Commodore 64 into a PET/CBM with BASIC 4.0.
PRINTER TEST.C	Prints a listing of the characters in a format that allows easy checking of the mechanical and electronic capabilities of the printer.
PROG CONVERT.C	Converts a Commodore 64 or VIC 20 program so it will LOAD into a PET. Useful for people with a 64 at hoome and PETs at school.
PRG FUNCTION.C	Allows you to assign words and/or values to each function key. They will remain until you power down or press RUN/STOP RESTORE.
RANDOM FILE.C	To find out how to manipulate random files list and explore this program.
RND COLR BARS.C	Produces random colour bars on your VDT.
SCREEN.C	Test your joystick to be sure that everything inside is OK.
SEQ FILE.C	To find out how to manipulate sequential files, LIST and explore this program.
SPARKLE.C	If you are bothered by screen "noise" during GET and INPUT statements, this program should eliminate it.
SUPERMON INST.C	Instructions for "SUPERMON V2.C". LOAD and RUN this before you attempt to use "SUPERMON V2.C".
SUPERMON V2.C	A Machine Language monitor, lets you assemble Machine Language by hand.
TIMER.C	Measure the amount of time spent by a radio or television station on news, sports, ads or whatever.
VICLIST.C	LIST a program from disk to printer.
VIEW BAM.C	Allows a programmer to examine the contents of the sectors which make up the block availability map or BAM. For more information see "HOW TO USE.C".
WEDGE-64-$9000.C WEDGE-64-$C000.C WEDGE-64.$7000.C WEDGE-64.$8000.C	An enhanced wedge program for the Commodore 64. Commands supported: ">ADJUST", ">AUTO", ">COLD", ">COLOUR", "DEL", ">DS", ">HELP", ">HEX", ">HUNT", ">LOOK", ">MEM", ">MERGE", ">N", ">OFF". ">RENUM",

continued

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">SAVE", ">START", ">SEND", ">$", AND ">/".
The 1st one loads at $9000 providing you LOAD it as follows:
"WEDGE-64-$9000.C",8,1
To activate it enter: SYS 9*4096
The 2nd one loads at $C000 providing you LOAD it as follows:
"WEDGE-64-$C000.C",8,1
To activate it enter: SYS 12*4096
The 3rd one loads at $7000 providing you LOAD it as follows:
"WEDGE-64-$7000.C,8,1
To activate it enter: SYS 7*4096
The 4th one loads at $8000 providing you LOAD it as follows:
"WEDGE-64-$8000.C",8,1
To activate it enter: SYS 8*4096

Education...

(C)E1 - TUTORIALS 1
(1 disk/tape)

PONZO TUTOR-1.C	BASIC C64 tutorial: PRINT, FOR/NEXT INPUT, GOSUB
PONZO TUTOR-2.C	BASIC C64 tutorial: CURSOR, STRINGS DIM, GET
PONZO TUTOR-3.C	BASIC C64 tutorial: PEEK, POKE, TI$ FILES, RND, CMD, SYS, MLM
PONZO TUTOR-4.C	BASIC C64 tutorial: MEM MAP, BASIC MEM usage, quiz
PONZO TUTOR-5.C	6510 Machine language. Covers: The A, X & Y registers, LDA, LDX, LDY, TAX, TYA, TXA, TAY, INX, DEX, INY, DEY, INC, DEC, ASL, SEC, CLC, STA, CPX, BNE, EOR, ADC & SBC.
PONZO TUTOR-6.C	6510 Machine Language continued. Demonstrates ways of applying what "PONZO TUTOR-5.C" teaches.
PONZO TUTOR-7.C	6510 Machine Language continued. Covers: BMI, BPL, CLV, JMP, BVC, BCS, BEQ, BNE, BMI, BPL, BVS, CLD, CLI, SED, IRQ, SEI, JSR, RTS, ROR, ROL, PHA & PHP.

(C)E2 - TUTORIALS 2
(1 Disk/tape)

LIST-ME (C)E2.L	This file contains information about the programs on (C)E2. To access it, LOAD and LIST it.
SPRITES TUT-1.C	A tutorial program that teaches things about sprites such as: How to read sprite data and put it in memory. How to point a sprite to the data that you have put in memory. How to enable a sprite so you can see it on your VDT. How to make a sprite a specific colour. How to move a sprite horizontally and/or vertically. How to allow a sprite to travel across the Most Significant Bit. How to expand sprites...
SPRITES TUT-2.C	The sprite saga continued. This tutorial covers how to make multi-coloured sprites.
GRAPHIC TUT.1.C	A tutorial program that teaches you how to take advantage of the graphics capabilities or your Commodore 64. Covers things such as: Where screen memory starts. Where character memory starts. How to poke to the screen. How to select different memory 'Banks'. How to turn on multi-colour character mode & a bit on on Bit Map Mode.
GRAPHIC TUT.2.C	More on graphics. This tutorial covers how to move the standard character set into RAM where you change it. Also demonstrates some things that can be done in Bit Map Mode.

(C)E3 - MANUAL PRGS 1
(1 disk/tape)

LIST-ME (C)E3.L	Documentation for this disk/tape.
REF.PAGE 20.1	The programs on this disk/tape
REF.PAGE 45.1	have been typed in from both the **Commodore 64 Programmer's Reference Guide** and the **Commodore 64 User Guide.** Each file is named
.	
.	
.	
REF.PAGE 123.1	so that you can tell which book it
REF.PAGE 123.2	is out of and what page it is on
.	in that book. Also, if there are
.	two programs on a page you will
.	find that the first program on the
USER.PAGE 43.1	page has a '.1' after it and the
USER.PAGE 44.1	second has a '.2' after it.
.	For example: **'REF.PAGE 20.1'**
.	means that this program comes from
.	the Programmer's Reference Guide.
USER.PAGE 146.1	It is on page 20 and is the first
USER.PAGE 147.1	program on that page.

(C)E4 - 6510 OPCODES
(disk only)

LIST-ME (C)E4	Documentation for this disk.
6510 OPCODES.C	
ADC.D	**Mastering 6510 Opcodes**
ADCQ.D	Forward
AND.D	To use this program you will need
ANDQ.D	to have some prior knowledge of
ASL.D	machine language. This program is
ASLQ.D	designed to teach you the Opcodes
BCC.D	of the 6510, and their operations.
BCCQ.D	You will need to know about the
BCS.D	Accumulator, the X & Y registers,
BCSQ.D	the stack, and all the flags. If
BEQ.D	all this completely boggles your
BEQQ.D	mind then we suggest you not con-
.	tinue with the program, as you
.	will become frustrated.
.	Richard Bradley, author
.	
D1.W	WordPro documentation.
D2.W	WordPro documentation.
D3.W	WordPro documentation.
D4.W	WordPro documentation.
D5.W	WordPro documentation.
INST.LIST.D	Sequential file of all the WordPro files.
INST.LIST.PRT.C	Program to print "INST.LIST.D".

Music/Sound...

(C)S1 - MUSIC/SOUND 1
(1 disk/tape)

LIST-ME (C)S1.L — The List-Me file for (C)S1.
THE KANON.C — Song--The Kanon--very long.
BACH FUGUE.C — Song--The Little Fugue--even longer
ENTERTAINER.C — Song--The Entertainer--3.5 minute setup time.
YESTERDAY.C — Song--Yesterday--Can't remember, I heard it yesterday.
BACH DUET.C — Song--Bach Duet--not too long.
ORGAN.C — From manual with mods. Many versions--best I could find.
DIXIE.C — Song--Dixie (by Jim Butterfield).
TWINKLE.C — Song--Twinkle, Twinkle Little Star (by Jim again).
YANKEE.C — Song--Yankee Doodle Went to Town.. (Jim again).
GUNFIRE.C — Sound--a machine gun sound effect.
PONG.C — Sound--a typical Pong game sound.
RAYGUN.C — Sound--a raygun sound effect.
SIREN.C — Sound--a siren sound effect.
ALIEN.C — Sound--an alien spaceship sound effect.
BELL.C — Sound--a bell sound effect.
BOMB.C — Sound--bomb falls then explodes, stand clear!
CLAP.C — Sound--thunder clap sound effect.
PIANO.C — Compose/save/load music from piano keyboard.

(C)S2 - MUSIC/SOUND 2
(1 disk/tape)

LIST-ME (C)S2.L — This file contains information about the programs on (C)S2. To access it, LOAD and LIST it.
RAINBOW.C — "Over The Rainbow" from the classic film "The Wizard of Oz". Not only plays the song, but also displays the lyrics on your VDT so you can sing along.
MUSICBOX DNCER.C — Plays the song "Music Box Dancer" Suggested speed setting: 100.
BACH PRELUDE.C — Plays the "Bach Prelude". Suggested speed setting: 125.
BACH INVENTN#8.C — Plays Bach's Invention #8 in F. Suggested speed setting: 100.
MORNING BROKEN.C — Plays the song "Morning Has Broken" by Cat Stevens.
FROSTY.C — Plays the theme song from "Frosty The Snowman". To adjust the speed list line 260.
SOUNDER.C — Experiment with the SID chip. See all current register values on your VDT.
MUSICMASTER.C — Converts your 64 keyboard into a dual keyboard.
ORGAN.C — Play songs on your 64 keyboard.
SIDMON.C — Examine your SID chip on your VDT and experiment with 64 sound.
MUSIC LESSON.C — Learn about lines and spaces on the treble clef. Converted by Steven Darnold.
FUGUE.C — Plays a condensed version of "BACH FUGUE". The ADSR can be varied if you so desire.

(C)S3 - MUSIC/SOUND 3
(1 disk/tape)

LIST-ME (C)S3.L — This file contains information about the programs on (C)S3. To access it, LOAD and LIST it.
SOUND TUT-1.C — A tutorial on creating sound and music on the Commodore 64 written by Professor Peter Ponzo. It covers Attack, Decay, Sustain, Release (ADSR), waveforms and how to use them.
SOUND TUT-2.C — The second of Peter Ponzo's tutorials on sound and music for the Commodore 64. This one is a continuation from "SOUND TUT-1.C" and covers filtering and ring modulation.
PETER PIPER.C — Plays the song "PETER PIPER". Suggested speed setting: 50.
SOUND/RING MOD.C — Turns your keyboard into an organ that demonstrates the effects of proper use of ring modulation.
SOUND/PHASE.1.C — Turns your keyboard into an organ that demonstrates the effects of proper use of phase shifting.
DIALER.C — SID produced tones will dial the phone (*) for you. Hold your phone in front of of the speaker on your VDT and select the number you want. (* Your exchange must support touch tone dialing for this program to work.)
RAGTIME.C — Plays a song by Joplin and since we were unsure of the exact name we called it "RAGTIME".
SOUND EFFECTS.C — Experiment with the SID chip. When you like what you have done you can print out the current values of the registers of the SID chip.
AMERICAN FLAG.C — Displays the flag of the United States of America and plays its national anthem.
RETUNER.C — Gives you the high and low POKEs for chromatic scale if you want to tune you 64 higher or lower than your manual suggests.
BIRTHDAY.C — Plays Happy Birthday and displays the words to the song. To change the name edit lines 500 and 510.

Business...

(C)B1 - BUSINESS 1
(1 disk/tape)

LIST-ME (C)B1.L — LIST this file for descriptions of programs on this disk/tape.
INTEREST.C — Do various investment calculations.
BOOKKEEPING.C — Assists in summarizing cheques & cash payments from a business.
LUMP SUM.C — Analyse what will happen to your investment over several years.
BOND YIELD.C — Calculate bond values such as current yield, yield to maturity and more.
FICA TAX.C — A F.I.C.A. estimator.
STOCK OPTION.C — Compute theoretical value of a European type put or call option using the valuation formulas of Black and Scholes.
STOCK LIST.C — Keep track of your stocks.
LOAN.C — Compute loan amount, payments & number of payments.
IREG CASH FLOW.C — An aid in the analysis of uneven

continued

See Order Form p.4

	cash flow.
INVESTMENT.C	Which is better? The bank or that investment...
INVENTORY.C	Keep track of inventory.
GROWTH CALC.C	Calculate compound annual growth.
DECISION MAKER.C	Got a tough decision to make? Look no further.
FINANCIAL CALC.C	Do financial calculations.
PORTFOLIO.C	Keep track of your stock holdings.
MORTGAGE.C	Calculate your mortgage payments.
MORT SCHED.C	See your mortgage payment schedule.
MORT CALC.C	See what your monthly payment will be.
MORTGAGE.Z	Calculate anything to do with your mortgage.
MEMORANDA.C	Keep track of important dates & appointments (disk).
INVOICER.C	Make up invoices to send to all your clients (disk).
DATES.C	Keep track of dates and appointments.
MILEAGE.C	See how fuel efficient your car is.
MARKS.C	Teachers, keep track of your students' marks (tape).
GROWTH RATE.C	See how much you've been growing
DAY OF WEEK.C	From the date, find out what day of the week that something happened.
CALENDAR.C	Generate a calendar for any month since the birth of Christ.
TYPING TEST.C	Test your typing accuracy and speed.
BUSPRCASHROI.C	Calculate price/volume or cash flow.
APARTMENT.C	Is buying that apartment building worth it?
COPS BASE TAPE.C	Presently this program is set up to keep track of policemen but it can be easily modified to keep track of whatever you want simply by changing the data statements in the program (tape)
COPS BASE DISK.C	Same as above but disk version.

(C)B2 - BUSINESS 2
(1 disk/tape)

LIST-ME (C)B2.L	LIST this file for descriptions of programs on this disk/tape.
WORD PROCESSOR.C	Simple word processor for C-64.
EASY EDIT.C	" " " " "
TYPEWRITER.C	Write letters etc. using this simple word processor (tape).
TYPER.C	A very simple word processor.
TEXT EDITOR.C	Simple word processor for C-64.
MINIWORDPRO.C	Write letters etc. using this simple word processfor for your C-64 (disk).
FOOD PRICES.C	Keep track of food prices so you can compare & save.
HEATING COSTS.C	Investigate & compute how much you should be paying to heat your home.
MONEY EXCHANGE.C	See how much your currency will be worth before you take a trip to another country.
PROPERTY EVAL.C	Find out how much you are spending on your home.
WEIGHT WATCHER.C	Keep track of your dieting efforts & make a chart of your progress.
MEMORANDA.C	Keep track of important dates & appointments (disk).
LIFE EXPECT.C	Find out how long you should live. The results are based on your habits.
TEMP CONVERT.C	Do temperature conversions, check the wind chill equivalent temperature and more.
REG'D SUPPLY.C	Design a basic power supply BEFORE smoke appears.
BIO-COMPAT.C	Check to see if you and that special someone are compatible.
BIO-PLOTER.C	See your biorhythm on your monitor.
BIO-PRINTER.C	See your biorhythm on your monitor, or use your printer.
CAR COST MILE.C	Find out how much that car will cost you in the long run.
RECIPE SIZER.C	Convert recipes to suit the number of people that you have invited to dinner.
ADDRESS BOOK.C	Keep track of your friends' (or enemies') phone numbers.
RECORDINGS.C	Keep track of your records and tapes.
LIBRARY CARDS.C	Keep track of your books and literature.
CHECKBOOK.C	Keep track of your hard-earned money.
MAG INDEX.C	Keep track of your magazines.
BIOTHYTHM.C	See your biorhythm on your monitor in colour.

Monthly Releases...

(C)TS - MARCH 1983
(1 disk/tape)

LIST-ME (C)TS.L	The List-Me file for (C)TS.
MONTANA.C	Play Montana on your 64! (Instructions included)
MONOPOLE.C	Play the world's most popular board game on your 64!
LABYRINTH.C	Find your way out of the maze.
PIANO.C	Compose/save/load music from piano keyboard.
DISKVIEW.C	General disk looker/modifier with unscratch.
SPRITE-BOOT.C	Sprite editor with: SAVE, LOAD, ROTATE etc.
SCROLL.D	Loaded by "SPRITE-BOOT.C".
SPRITE ED.D	" " " "
DOS.BOOT.C	DOS wedge commands with extensions.
DOS 5.1.D	Loaded by "DOS.BOOT.C".
DOS.INST.L	List-Me file of instructions "DOS.BOOT.C".
COPY-ALL.C	Butterfield's ubiquitous copy program.
1541 BACKUP.C	Copy the contents of 1 disk to another using your 1541.
SUPERMONV1.1.C	Machine Language monitor.
SPRITE MANIP.C	Shows Sprites moving. (Instructions if you LIST it!)
TERMINAL.C	Turn your 64 into a terminal! (Modem not included)
TERM.D	Loaded by "TERMINAL.C".

(C)TT - APRIL 1983
(1 disk/tape)

LIST-ME (C)TT.L	The List-Me file for (C)TT.
PONZO TUTOR-1.C	BASIC C64 tutorial: PRINT, FOR/NEXT, INPUT, GOSUB
PONZO TUTOR-2.C	BASIC C64 tutorial: CURSOR, STRINGS, DIM, GET
PONZO TUTOR-3.C	BASIC C64 tutorial: PEEK, POKE TI$, FILES, RND, CMD, SYS, MLM
PONZO TUTOR-4.C	BASIC C64 tutorial: MEM MAP, BASIC MEM usage, quiz
PROG CONVERT.C	Does a conversion from C-64/VIC to PET.
PADDL TEST.C	Test that the paddles are working.
PRNT PADDLES.C	See & print the values of the paddles.
TERMINAL DOC.C	Provides instructions for "TERMINAL.64".
LISTER.C	Is a lister for C-64 and VIC programs.
1525CHAR.EDIT.C	Generates special characters for 1525.
KAT $ MOUSE.C	Maze allows 1 player to elude a smart cat.
CLIFFY.C	As Math problems are answered a man walks off a cliff.
MIN2.INS.C	Instructions for "MINOTON 2.C".
MINOTON 2.C	You must track down the Miniton--you are in caves.
TIME VEN INST.C	Instructions for Time Adventure.
TIME VEN SETUP.C	Set up a file for Time Adventure.
TIME ADVENTURE.C	Game that you make yourself using "TIM VEN SETUP.C".

(C)TU - MAY 1983
(1 disk/tape)

LIST-ME (C)TU.L	The List-Me file for this disk.
PONZO TUTOR-5.C	6510 Machine Language. Covers: The A, X & Y registers, LDA, LDX, LDY, TAX, TYA, TXA, TAY, INX, DEX, INY, DEY, INC, DEC, ASL, SEC, CLC, STA, CPX, BNE, EOR, ADC & SBC.
PONZO TUTOR-6.C	Machine Language continued. Demonstrates ways of applying what "PONZO TUTOR-5.C" teaches.
PONZO TUTOR-7.C	Machine Language continued. Covers: BMI, BPL, CLV, JMP, BVC, BCS, BEQ, BNE, BMI, BPL, BVS, CLD, CLI, SED, IRQ, SEI, JSR, RTS, ROR, ROL, PHA & PHP.
BACH FUGUE.C	Song--The Little Fugue--very long.
ENTERTAINER.C	Song--The Entertainer.
TERMINAL.64.2.C	Terminal program with download for the 64.
TERM.64.D	Machine Language loaded by "TERMINAL.64.2.C".
NIGHTMARE PARK.C	Try to get through the park alive.
WHEEL FORTUNE.C	Try your luck against the wheel.
YESTERDAY.C	Song--Yesterday.
C-64 GRAPHER.C	Math graphing program.
64 H-R PLOT M/L	Machine Language for "C-64 GRAPHER.C".
BLACKJACK.C	Blackjack for all machines.
BIRTHDAY.C	Birthday Game for C-64 only.
TWIN BAGELS.C	Bagels game for all machines.
SUBMARINES.C	Submarine game for all machines.

(C)TV - JUNE 1983
(1 disk/tape)

LIST-ME (C)TV.L	The List-Me file for (C)TV.
SLIDESHOW.C	See a slide show, pick the pictures you want to see.
HRSUPP.D	Machine Language loaded by "SLIDESHOW.C" & "HRTEST.C".
HRSUPP/BASIC.C	A BASIC loader of "HRSUPP.D".
HRSUPP.SRC.C	Source code for "HRSUPP.D".
HRTEST.C	A display of graphics--very nice!
DRAGON.D	Picture of a dragon, loaded by "SLIDESHOW.C".
TANK.C	Picture of a tank, loaded by "SLIDESHOW.C".
POLISH.D	Picture of a Polish computer, loaded by "SLIDESHOW.C".
BLITHER.D	Picture of a violin, loaded by "SLIDESHOW.C".
UNCLE.D	Picture of Uncle Sam, loaded by "SLIDESHOW.C".
GLOCKENFLUTE.D	Picture of a Glockenflute, loaded by "SLIDESHOW.C".
RATRUN.C	Find the cheese in a computer-generated maze.
SPACE NIM.C	Interesting new verison of the popular game Nim.
BIO-COMPAT.C	Are you compatible with that special someone?
BIO-PLOTER.C	Plot your Biorhythm.
BIO-PRINTER.C	Print your Biorhythm.
HANGMAN.C	Guess the word correctly or kill the man.
A STORY.C	Type a few words for the computer, and see a story.
SUPERMON.C	Machine Language monitor, for assembly by hand.
SUPERMON INST.C	Instructions for "SUPERMON.C".
SOUND HELPER.C	Learn how to make sound using the SID chip.

(C)T1 - SEPTEMBER 83
(1 disk/tape)

LIST-ME (C)T1	List-Me for (C)T1 disk/tape.
ADDRESS BOOK.C	Your own computerised telephone book.
AFO.C	Kill the invading aliens with balloons.
BLACK JACK.C	Play Blackjack against the computer.
CHARACTER GEN.C	Interesting character generator.
CIRCLES.C	Fun with circles.
COPY FILE.C	Disk to disk copier for the 1541 (Butterfield).
COPY-ALL.C	Copy all for the 64(Butterfield).
CROSS-REF.C	Cross reference your BASIC programs (Butterfield).
DIALER.C	Dial the phone with your 64.
DISK LOG.C	Disk logger program (Butterfield).
EASY EDIT.C	Simple wordprocessor for the 64.
EASY MATH.C	Learn easy Mathematics (add and subtract).
FROSTY.C	Frosty the Snowman's theme song.
HELI.C	Watch the helicopter fly around your screen.
HIRES.BOOT.C	Boot for "HIRES.D".
HIRES.D	Data for "HIRES.BOOT.C".
HRSUPP.D	Data for "SLIDESHOW.C".
KEYBOARD INTRO.C	Learn about your keyboard.
KSCOPE.C	A Kaleidoscope for the 64.
LOCKDISK.C	Make your BASIC program autorun (Butterfield).
LOTTERY DRAWER.C	Large random number generator.
SPRITE EDIT.C	A Sprite Editor.
PET EM.C	Simple PET Emulator (Butterfield)
PET EMULATOR.C	PET Emulator that does not require a loader.

continued

See Order Form p.4

PROG CONVERT.C	Convert programs from VIC/64 to PET (Butterfield).
REVERSE.C	The game of Reverse.
RONNIE.D	Picture of Reagan, loaded by "SLIDESHOW.C".
SLADY.D	Picture of a lady, loaded by "SLIDESHOW.C".
SLIDESHOW.C	Shows 2 pictures, "RONNIE.D" and "SLADY.D".
SOUTRAINS.C	Keep the trains rolling on down the line (game).
SPARKLE.C	Eliminates screen junk during GET statements etc.
STAR TREK.C	Star Trek adventure.
SUPERMON.V2.C	Supermon with nice colours (Butterfield).
TOKER.C	Game of Toker with some colour added by Jim Butterfield.

(C)T2 - OCTOBER 83
(disk only)

LIST-ME (C)T2	List-Me for this disk/tape. "LIST" this do not "RUN" it.
COL PICT BOOT.C	See a colour picture of 'Diane'.
DIANE.D	Picture of 'Diane' loaded by "COL PICT BOOT.C".
COLOUR PICT.D	Loaded and used by "COL PICT BOOT.C".
DIANE DATA.D	Colour data loaded and used by "COL PICT BOOT.C".
MOTION.C	Very good looking high resolution display that creates the illusion of motion.
MAP BIN.D	File used & loaded by "MOTION.C" Don't try to load it yourself.
SCRCLR ASM.D	File used & loaded by "MOTION.C" Don't try to load it yourself.
WORD PROCESSOR.C	Simple word processor for C-64.
BOOT MATH.C	Test your math skills while enjoying some neat C-64 music and sound.
MUSICA.D	File used, loaded by BOOT MATH.C
POLLY STR.D	" " " " " "
MATH.D	" " " " " "
PZ BOOT.C	Choose 1 of the 5 games listed in the menu, get minimal instructions, wait for game to be loaded--then play the game.
TOWERS.D	A game loaded by "PZ BOOT.C".
THIRTEEN PEGS.D	" " " " " "
E PUZZLE.D	" " " " " "
SWITCH.D	" " " " " "
PEGSOL.D	" " " " " "
	Note: These 5 games can be loaded without the BOOT, but keep in mind that PZ BOOT.C has some instructions for each game.
JUMPING JACK.C	Jump the holes to live & prosper; fall in a hole & you die.
SOUND EFFECTS.C	Design your own sound effects.
SITTING DUCK.C	Shoot the elusive ducks--5 points per duck. To fire, press any non-destructive key.
DUCK DATA.D	Data needed & loaded by "SITTING DUCK.C".
COIN FLIP 1.C	See your 64 flip either heads or tails.
COIN FLIP 2.C	See your 64 flip either heads or tails--see a summary of results.
COIN FLIP 3.C	See a summary of results only.
CHARGEN PEEK.C	See what all your 64's characters are made of.
CHAR DISPLAY.C	Pick a character, then see it enlarged.
STRING THING.C	Tidies up the INPUT statement (Butterfield).
VISIBLE.C	See your Commodore 64 at work.
FORMAT.C	Format numbers so the decimal point lines up.
I BOOT.C	Boot program for a surprise.
SYS 40784.D	Loaded & used by "I BOOT.C".
CC B.D	" " " " " "
IADOREMY64.D	" " " " " "

(C)T3 - NOVEMBER 83
(1 disk/tape)

LIST-ME (C)T3.L	This file contains information about the programs on (C)T3. To access it, LOAD and LIST it.
SUPERTREK.C	Guide the Enterprise around the galaxy. Object: kill all Klingons before the time runs out. The sound, the colour & the graphics are superb! (Watch out for the built-in commercials. Rating (out of 10): 10.
CLOCK.C	Set the time in hours and minutes Then the time will be continuously displayed on your VDT. To get rid of the clock, hit RUN/STOP RESTORE. To restart enter SYS 832
RAINBOW.C	Plays "Over the Rainbow" from the classic motion picture "The Wizard of Oz". Also displays the lyrics so you can sing along...
DOS IN BASIC.C	Displays the disk directory. To load a program simply move the cursor beside the program name and press return.
COLUMN CALC.C	A visicalc type program written entirely in BASIC. Converted to the 64 by Steven Darnold.
COMBINAT WARS.C	Save your warp speed starship by correctly answering the multiplication questions torpedoed at you.
TYPING PRACT.C	Test your keyboard manipulation skills. Has 10 levels of difficulty. The graphic display is very helpful.
NON EXEC.Z	Tells you what lines of a pure BASIC program are unexecutable.
SAMPLE.D	This file is meant to be examined by "NON EXEC.Z".
CAVES.C	Search the caves for treasure. Write down any words that you come across. They may be magic! Beware of the goblins. Good luck.
SD FILE COPIER.C	Copy any selection of programs from one disk to another. Requires one 1541 disk drive.
ALARM CLOCK.C	Set the time in hours and minutes. Then the time will be continuously displayed on your VDT. Set the alarm but don't count on it waking you. To get rid of it hit RUN/STOP RESTORE. To restart enter SYS 832.
DISK MENU 64.C	Reads the disk directory then allows you to load any program from the disk.
SPELLING GAME.C	Test your spelling ability. If you do well enough you are rewarded with a game.
CHECKBOOK.C	Keep your checkbook balanced. If you need help, go to the 2nd menu and press "3".

continued

BALANCE.D	A data file used by "CHECKBOOK.C" Don't attempt to load it yourself, it won't work.
TRCOUNTER.D	A data file used by "CHECKBOOK.C" Don't attempt to load it yourself, it won't work.
LONG DIVISION.C	Test your ability to do long division.
MAIL.C	Versatile mail list program. Works only with disk. Prints business and Christmas labels.
SUPERKEY.C	Gives your keyboard BASIC keywords on each letter. To get a keyword, press "f1" followed by the character. "f3" will delete a keyword. "f5" LISTs. "f7" RUNs.
GRAFIX INSTR.C	Instructions on how to use "GRAFIX RTNS.C". LOAD and RUN this before you attempt to LOAD "BOX.C", "DESIGN.C" or "GRAFIX RTNS.C".
GRAFIX RTNS.C	Be sure to load this as follows: LOAD "GRAFIX RTNS.C",8,1
BOX.C	Makes use of "GRAFIX RTNS.C" so be sure you have loaded it properly before attempting to RUN this program.
DESIGN.C	Makes use of "GRAFIX RTNS.C" so be sure you have loaded it properly before attempting to RUN this program.
MOVING SIGN.C	Type in the message you want to have displayed and press return. Then your message will be scrolled in big letters horizontally across your VDT.
WEDGE-64.$7000.C WEDGE-64.$8000.C WEDGE-64.$9000.C WEDGE-64.$C000.C	An enhanced wedge program for the Commodore 64. Commands supported: ">ADJUST", ">AUTO", ">COLD", ">COLOUR", ">DEL", ">DS", "HELP", ">HEX", ">HUNT", ">LOOK", ">MEM", ">MERGE", ">N", ">OFF", ">RENUM", ">SAVE", ">START", ">SEND",">$"? & ">/". The first one loads at $7000 providing you load it as follows: **LOAD "WEDGE-64.$7000.C",8,1** To activate it enter: SYS 7*4096 The second one loads at $8000 providing you load it as follows: **LOAD "WEDGE-64.$8000.C",8,1** To activate it enter: SYS 8*4096 The third one loads at $9000 providing you load it as follows: **LOAD "WEDGE-64.$9000.C",8,1** To activate it enter: SYS 9*4096 The fourth one loads at $C000 providing you load it as follows: **LOAD "WEDGE-64.$C000.C",8,1** To activate it enter: SYS 12*4096
TOKENIZER.C	Converts a sequential file listing of a program back into an executable program.

(C)T4 - DECEMBER 83
(1 disk/tape)

LIST-ME (C)T4.L	This file contains information about the programs on (C)T4. To access it, LOAD and LIST it.
BLOCK MODIFIER.C	Utility - LOAD a block into memory, examine it, change it if you like and then SAVE it back to disk. WARNING: You can ruin a disk if you are not careful!
GALACTIC EMPIR.C	Game - Object: control more planets than any of your opponents. How?: send out fleets of ships to other star systems. Notes: Fleets move 3 units per year after 1 acceleration year in which they move only 2 units. Once a fleet has been launched they maintain radio silence and can not be recalled. Up to 10 people can play. May the force be with you...
GE.ENTERPRISE.D	A data file loaded and used by "GALACTIC EMPIR.C".
COPY SOME.C	Utility - Copy any selection of programs from one diskette to another. Requires 1 1541 disk drive. Note: Play it safe, put a write protect sticker on the original disk.
COPY SOME ML.D	A data file loaded and used by "COPY SOME.C".
BLACKCJACK.Z	Game - Play Blackjack against your Commodore 64. Notes: If you think 1 card is all you will need to win you can double your bet. If the dealer starts with an ace showing, you can get insurance. If your first 2 cards are of equal value you can split them and play two hands.
BIRTHDAY 2.C	Music/Sound - Plays Happy Birthday and displays the words at the same time. Then a cake is displayed. To almost blow out the candles hit "F1". To complete the job press "F3". Then "F1" gives the cake again or "F3" ends the program. To change the name to suit your party change line 2300 and line 2310.
LOAD ADDRESS.C	Utility - Display the load address of a program from disk.
CHRISTMAS.C	Misc - Merry Christmas from TPUG.
SQUARE ROOT.C	Utility - Enter any positive no. and the computer will tell you its square root.
TRIGONOMETRY.C	Utility - Find the cosine, sine, tangent, secant, cosecant or the cotangent of a number.
DISK TIDIER.Z	Utility - Go through a disk and scratch files that are no longer of any use to you - a real time saver.
COMMODORE LOGO.C	Misc - 8 Commodore logos of various colours are randomly displayed on your VDT.
LEMONADE.C	Education - Try and make your fortune selling lemonade. Factors to consider include temperature, the cost of ingredients, taxes and advertising.
CRAZY BOMBERS.C	Game - Can you handle a bomber? If you plan to play this game you better be able to. Object: Drop your bombs on the targets only. Notes: You are only allowed to miss 3 times. Beware of the death beam!
BANKER.C	Game - This program can act as the banker for a game such as Monopoly or Payday.

continued

COLR SEL TUTOR.C	Education - The selection of Commodore 64 colours for border, background, and characters is discussed and illustrated.
COLR SELECTOR.C	Misc - Experiment with the 4096 screen colour combinations of the Commodore 64.
PERSONAL ACCNT.C	Business - Keep track of where you are getting money and where you are spending it.
TAXMAN.C	Education - Pick a number. The taxman will take the multiples & factors of your number. The one with the highest total at the end of the game wins.
GRANDPRIX.C	Game - Avoid the walls & obstacles - "A" moves left. "S" moves right.
DBASE.C	Business - a disk-based data base for the 64.
SCREEN TEST.C	Utility - Pick the border, background and character colours. Then see if your combination looks good.
DOS.C	Utility - Do various disk operations such as format a new disk initialize a disk, copy a file, rename a file, check the error channel and more...
DOODLE.C	Misc - Sit back and watch the 64 doodle.
ARROW+.C	Game - Get as many points as you can by catching the boxes. Avoid the walls and your tail. Use the keyboard or a joystick.
EMPLOYER TAX.C	Business - Computer assistance for IRS Form 941 (Employer's Quarterly Federal Tax Return).
WORD PRO 64.C	Business - A tape-based word processor for the 64.
QUERK.C	Game - A game similar to Pacman. "J" moves left. "K" moves right. "I" moves up. "M" moves down.
JOGGER.C	Misc - If you jog 4-6 miles, this program will help you maintain a record of your running performance.
BACH INVENTN#8.C	Music/Sound - Play Bach's Invention #8 in F. Suggested speed 100.

(C)T5 - JANUARY 84
(1 disk/tape)

Note: Programs with an '*' following their name in this file will not work on tape. Therefore they are not included on the tape version of this disk.

Additional documentation for (C)T5 can be found in the February edition of TPUG Magazine.

LIST-ME (C)T5.L	LOAD and LIST this file for one-line documentation.
AUTOTERM/1650.C	*A terminal program for the 64 and the 1650.
TERM.64.D	*Machine Language program used by "AUTOTERM/1650.C".
WET PAINT.C	Paint the wall but avoid the other painters.
VIPER.C	Cath the *'s but avoid the walls or you die.
LIST FREEZER.C	Pause or stop a program listing using the shift key.
RASTER INTERPT.C	Demonstrates how Raster interupts can be used.
SIN DISK COPY.C	*Copy programs from one diskette to another.
JSTICK DOODLE.C	Use your joystick to draw Hi-Res graphics.
MILEAGE.Z	Find out how many miles/gallons your car is getting.
LIFESCORE.Z	See how long you should live based on your lifestyle.
RANDOM LOTT.C	Pick your numbers for LOTTO 64/9 and LOTTARIO.
MUNCHMATH.C	Test your mathematical skills. Beware of the ghosts.
WORD WORKER.C	Why use a pen when Word Worker can do it for you?
64 FAST POKES.C	See REMS within program for documentation.
4040 COMMANDS.C	*Do disk operations using your 4040 and IEEE interface.
THE GREAT FRED.C	The Great Fred will read your mind
LIST-ME VIC 2.L	LIST this file for documentation of the VIC 2 chip.
DEFINITION.C	Play Definition on your C-64.
TEXTMASTER.C	*A good disk-based word processor for small children.
TM-INSTRUCT 1.D	*LOAD this file into Textmaster & print it.
TM-INSTRUCT 2.D	*LOAD this file into Textmaster & print it.
TM-INSTRUCT 3.D	*LOAD this file into Textmaster & print it.
USING 64 WEDGE.C	Take advantage of all the features of 64 Wedge.
C-64 WEDGE.C	*This program boots 'DOS 5.1'.
DOS 5.	*Do various disk functions faster using this program.
FLAG BOOT.C	*Loads 'WORLD FLAGS.D' and 'SYS 40784.D'.
WORLD FLAGS.D	*A colour Hi-Res picture from the World of Commodore.
BOOT 25TH.C	*Loads '25th .D' and 'SYS 40784.D'.
25TH.D	*A colour Hi-Res picture from the World of Commodore.
SYS 40784.D	*A M/L program used by 'FLAG BOOT.C' & 'BOOT 25TH.C'.

(C)T6 - FEBRUARY 84
(1 disk/tape)

Note: Programs with an '*' following their name in this file will not work on tape. Therefore they are not included on the tape version of this disk.

Additional documentation for (C)T6 can be found in the March/April edition of TPUG Magazine.

LIST-ME (C)T6.L	LOAD and LIST this file for one-line documentation.
AFRICAN ADVN.C	Search the African Jungle for treasures and trinkets.
VISIBLE 64.C	Watch this demo and see what goes on inside your 64.
DM MASTER.C	Creates characters for Dungeons and Dragons.
OCTOPUS.C	Get the treasure while avoiding the Octopus.
WHEN SAINTS.C	Plays the song 'When the Saints Come Marching in'.
ADSR DEMO.C	Hear and see graphically what ADSR means.
U BOAT.C	Destroy as many ships as you can before they get you.
BOWLING.C	Bowl against a friend on the 64.
HEX PUZZLE.C	Solve the puzzle by moving the

continued

	characters around.
EGGS.C	Draw pictures and design shapes by laying eggs.
RAT RUN.C	Go through the maze without hitting the walls.
FANFARE.C	A Fanfare that you can use in your programs.
PRELUDE.C	Plays Bach's Prelude in C Major.
SOUND SETTER.C	Play around with your Commodore 64s SID chip.
LIFE.C	Make a design and then watch it 'Live'.
TRY THIS 1.LIFE	*A sample file that can be loaded into "LIFE.C".
TRY THIS 2.LIFE	*A sample file that can be loaded into "LIFE.C".
TRY THIS 3.LIFE	*A sample file that can be loaded into "LIFE.C".
TRY THIS 4.LIFE	*A sample file that can be loaded into "LIFE.C".
TRY THIS 5.LIFE	*A sample file that can be loaded into "LIFE.C".
TRY THIS 6.LIFE	*A sample file that can be loaded into "LIFE.C".
TRY THIS 7.LIFE	*A sample file that can be loaded into "LIFE.C".
LIST-ME LIFE.L	Documentation and bakground on the origins of Life.
STAR TREK INST.C	*Instructions and tips to help you win at Star Trek.
STAR TREK BOOT.C	*Loads and runs all files needed to play Star Trek.
STAR TREK V1.D	*The basic part of the Star Trek game.
STAR TREK ML 1.D	*Machine language program used by Star Trek.
STAR TREK ML 2.D	*Machine language program used by Star Trek.
STAR TREK ML 3.D	*Machine language program used by Star Trek.
STAR TREK ML 4.D	*Machine language program used by Star Trek.
83 ON TAX V1.Z	Do your income tax with the aid of your computer.

(C)T7 - MARCH 84
(1 disk/tape)

Note: Programs with an '*' following their name in this file will not work on tape. Therefore they are not included on the tape version of this disk.

Additional documentation for (C)T7 can be found in the May edition of TPUG Magazine.

LIST-ME (C)T7.L	LOAD and LIST this file for one-line documentation.
C64 BOOK SORT.C	*Use your computer to keep track of your books.
REL-SEQ CONV.Z	*Converts relative to sequencial files and sequential to relative files.
BETTER FILE.Z	*Enter, manipulate and save your crucial information.
SPIKE BOOT.C	*Loads and runs "SPIKE.D".
SPIKE.D	*Avoid the spikes and find the prize on the grid.
THIRSTY NELLAN.C	Get Nellan the cat some cool milk to drink.
PETMAN.C	Eat dots to advance - avoid the guards.
SWERVE.C	Go around the track and eat all the dots.
ATLANTIS ADVN.C	Find treasure in the ruins of Atlantis.
WESTWARD HO!.C	Go west in search of your fortune
OTHELLO.C	Play Othello against or with your Commodore 64.
SCRAMBLE.C	Avoid the scrambling obstacles or you will perish.
HANG MATH.C	Solve the multiplication problem or die.
CASTLE ADVN.C	Search the castle for treasures.
SNOOPY.C	Shoot down the Red Baron before he gets you!
LEMONADE STAND.C	Make as much as you can selling lemonade.
MUSIC LESSON.C	Andy will teach you about lines and spaces.
TICTACARITH.C	Get 3 in a row by solving the math problems.
FUNCT MACHINE.C	What is the machine doing to the numbers you input?
SPEED READ.C	Test your reading speed and comprehension.
LIFE EXPECTAN.C	Your Commodore 64 will predict how long you'll live.
THE VALLEY.C	Find treasure and battle monsters in the valley.

(C)T8 - APRIL 84
(1 disk/tape)

Note: Programs with an '*' following their name in this file will not work on tape. Therefore they are not included on the tape version of this disk.

Additional documentation for (C)T8 can be found in the May edition of TPUG Magazine.

LIST-ME (C)T8.L	LOAD and LIST this file for one-line documentation.
AUTO BOOT.C	*Allows you to load programs by entering their number.
DISK TIMER.Z	*Is your disk drive operating at the right speed?
SQUEEZER.Z	*Squeezes BASIC programs by deleting REMs and spaces.
ATOM HANDBALL.C	A game similar to Breakout. Very good, very fast.
PENT INST.C	Instructions for "PENTONIMOS.C". Read this first!
PENTOMINOS.C	Play Pentominos with the aid of your Commodore 64.
SPIRAL.C	Watch the characters spiral around the monitor.
LINCOLNSHIRE.C	Listen to your Commodore 64 play beautiful music.
RANDOM MUSIC.C	Your Commodore 64 will play pleasant random music.
KALEIDOSCOPE.C	Watch your Commodore 64 make colorful patterns.
64 MEM CHART.C	See graphically what is where inside your C-64.
LIFE2.C	Create a pattern and then watch it live or die.
ETCH A SKETCH.C	Draw high resolution patterns on your Commodore 64.
TRON.C	Play Tron on your Commodore 64.
DEFLECTION 2.C	Deflect the ball so it hits the targets. Good luck.

continued

See Order Form p.4

3 OF A KIND.C	Collect 3 words that contain a common letter to win.
BIG TIME.C	Enter the time and then see it displayed bigger.
HIRES PATTERN.C	Watch your Commodore 64 create a hi-res pattern.
SMOOTH SCROLL.C	An example of smooth scrolling on the Commodore 64.
SMOOTH SCROLL2.C	An example of smooth scrolling on the Commodore 64.
M/L MUSIC.C	*Listen to your Commodore 64 make beautiful music.
PLAY.D	*A data file loaded and used by "M/L MUSIC.C".
ENTER.D	*A data file loaded and used by "M/L MUSIC.C".
INVEN8.D	*A data file loaded and used by "M/L MUSIC.C".
SHEET MUSIC.C	*Watch and hear the C-64 play beautiful music.
SHEET DATA.D	*A data file loaded and used by "SHEET MUSIC.C".
LOTTERY NUMS.C	Pick your lottery numbers with the aid of your C-64.
TYPE SETTER.C	See what kinds of print your printer can print.
DISKETTE MOD.C	*Modify any portion of a diskette. Be careful!
BARRICADE.C	Play Barricade on your C-64.
MASTERMIND.C	Play Mastermind on your C-64.
MASTERWORD.C	Similar to Mastermind but you use words.
SHUFFLE.C	Play Shuffle on your C-64.
SLITHER.C	Play Slither on your C-64.
SLITHER4.C	Play a variation of Slither on your Commodore 64.
SLITHER DUEL.C	Play another variation of Slither on your Commodore 64.
NAMES UTILITY.C	*Creates name file used by "GRADEBOOK.C".
HOMEWORK.C	*A homework check program used with "GRADEBOOK.C".
ATTENDANCE.C	*An attendance checker program used with "GRADEBOOK.C".
REPORTER.C	*Another program that is used with "GRADEBOOK.C".
GRADEBOOK.C	*Teachers, keep track of your classes.
INFO.PM.D	*A Papermate file with documentation for "GRADEBOOK.C".
NME.BACKUP.D	*A backup of the names file used by "GRADEBOOK.C".
HWK.BACKUP.D	*A backup of the homework file used by "GRADEBOOK.C".
ATT.BACKUP.D	*A backup of the attendance file used by "GRADEBOOK.C".
GRD.BACKUP.D	*A backup of the grades file used by "GRADEBOOK.C".
NCOURSE.D	*A typical names file used by "GRADEBOOK.C".
HCOURSE.D	*A typical homework file used by "GRADEBOOK.C".
ACOURSE.D	*A typical attendance file used by "GRADEBOOK.C".
GCOURSE.D	*A typical grades file used by "GRADEBOOK.C".
64-PET INST.C	Tells you how to load 64 programs into a PET.
1525 COMMANDS.C	Shows you what commands to use with your 1525 printer.
LIST-ME LOTT.L	A List-Me file that gives instructions for "LOTTERY.C".
LOTTERY.C	Pick your lottery numbers using your Commodore 64.
LIST-ME 6/49.L	A List-Me file with instructions for "LOTTO 6/49.C".
LOTTO 6/49.C	Pick your Lotto 6/49 numbers using your Commodore 64.
TITLE PAGE.C	Print a title page for a report or assignment.
MUL MASTER.C	Test your mathematics on your Commodore 64.
HEX DEC BIN.C	Convert numbers from base 2, 10 and 16 to one another.
PROGRAM INFO.C	*Tells you information about the the programs on a disk.
DISK PRINTER.C	*Print out the directories of your disks.
CHANGE TITLE.C	*Change the header of your disk without re-formatting.
SPELL.C	*Test your spelling ability on your Commodore 64.
SPELL1.1/15.D	*A file loaded and used by "SPELL.C".
TYPE TUTOR.C	Test your keyboard manipulation skills on your Commodore 64.
BREAK OUT 1.C	Play Break Out on your C-64.
BREAK OUT 2.C	Play Break Out on your C-64.
COIL DESIGN.C	Design coils with the aid of your Commodore 64.
LARACTERS DEMO.C	See your Commodore 64's characters displayed.
UNICOPY INST.Z	*Instructions on how to use "UNICOPY.C".
UNICOPY.C	*Copy any part of a disk to another disk or a tape.

(C)T9 - MAY 1984
(disk only)

LIST-ME (C)T9.L	Load and list this file for one line documentation.
DIR SORT.C	*Alphabetize your disks using your 1541 disk drive.
BAM.C	*See where material is stored on your diskettes.
BLOCK FREE.C	*Tells you how many blocks free you have on your disk.
BOOT DOS.5.2.C	*This program loads and executes "DOS5.2.D".
DOS5.2.D	*A machine language program loaded by "BOOT DOS 5.2.C".
COCKROACH ID.C	*Copy all of one diskette to another using one 1541.
COCKROACH 1.C	*Copy all of one diskette to another using one 1541.
COCKROACH 2D.C	*Copy all of one diskette to another using two 1541's.
COCKROACH E.C	*Check your disk for bad tracks and/or sectors.
DIR READ.C	*Reads the directory of a 1541 disk into memory.
FAST BAM.C	*See where material is stored on your diskettes.
FAST ML.D	*A machine language program loaded by "FAST BAM.C".
FUNCTION KEYS.C	This program adds meaning to your function keys.
LOCK UNLOCK.C	*Lock a program on disk so that it can't be deleted.
RECOVER 1541.C	*Recover scratched files and programs using your 1541.
REL FILE BOOT.C	*A very good relative file handling system.
ULTRASORT/MC.D	*A machine language program loaded by "REL FILE BOOT.C".

continued

FILE MANAGER.D	*A program that is loaded and used by "REL FILE BOOT.C".
SPRITE DATA.C	Design sprites and then save the data statements.
SUPER MIND.C	Play Mastermind against your Commodore 64 in colour.
LABEL MAKER.C	Make labels for your disks or anything else.
COPY-ALL V2.C	*Copy all one disk to another using two 1541's.
BIG SET.C	Make use of characters 4 times bigger than normal.
SINE IN.C	See your name 'swing' down your monitor or TV set.
TINY DIRECTORY.C	*Print out disk directories in a 2 column format.
DISK MAP.C	*Do a complete check on any of your diskettes.
LIST-ME MAP.C	*Read this file before you use "DISK MAP.C"!!!!!!!
DIR LIST SORT.C	*Keep track of what program is on what diskette.
CHOPPER.C	*Fly a chopper around your monitor using a joystick.
CHOPPER.D	*A machine language program loaded by "CHOPPER.C".
STOCK.C	Play the stock market on your Commodore 64.
CLASS PROGRAM.C	*Keep track of your students' marks on your Commodore 64.
MULTI-AID.C	A great programming utility for your Commodore 64.
LIST ASCII $C0.C	List programs to your ASCII printer.
LIST ASCII $9D.C	List programs to your ASCII printer.

(C)TA - JUNE 1984
(1 disk/tape)

LIST-ME (C)TA.L	LOAD and LIST this file for one line documentation.
FAST BACKUP.C	This program will copy the entire contents of one 1541 disk to another using one 1541 disk drive, in about 4 minutes.
LUSCHER.C	*This program will show you 8 colour bars. You must pick the colour you have the most sympathy for twice, and then the program will tell you what your choices reveal about the real you.
LUSCHER.TEXT0.D	*These are
LUSCHER.TEXT1.D	* data files
LUSCHER.TEXT2.D	* that are
LUSCHER.TEXT3.D	* accessed by
LUSCHER.TEXT4.D	* "LUSCHER.C".
MEMORY DECODER.C	This program will decode any part of your Commodore 64's memory.
CONVERSIONS.C	This program will allow you to convert measurements of volume, distance, and temperature from one system to another.
LEGIBILITY.C	This program will let you look at various combinations of character and screen colour so you can make note of bad combinations.
DRIVER.C	Drive your car down the twisty road without going off the road into the ditch. Control your car with a joystick plugged into control port #2.
RESCUE.C	Send shuttles down to rescue survivors stranded on the planet below. Beware of the various mines that are orbitting the planet. Control your ships with a joystick plugged into control port #2.
SUB HUNT.C	Using your jet drop depth charges on the enemy's submarine as fast as you can.
STOMP.C	Avoid the stomping feet or die.
ARSONIST.C	Catch the arsonist and put his fires out as fast as you can.
MATH WHIZ.C	Your Commodore 64 will test your mathematical knowledge.
PRINTING.C	Print out messages and notes to yourself with the aid of your 64 and printer.
MULTI LABELS.C	Print out labels using your C-64 and your printer.
FILESORT.C	*Sort any sequential file on disk in any fashion you want.
BIGFILE.D	*This is a data file that is accessed by "FILESORT.C".
HUGEFILE.D	*This is a data file that is accessed by "FILESORT.C".
REPORT GEN.C	*This program will generate a report on the output file produced by "FILESORT.C" on either "BIGFILE.D" or "HUGEFILE.D".
BASIC MATH.C	Test your mathematical skills with the aid of your C-64.
HOME BUDGET.C	*Keep track of where your money is going with the aid of your C-64 and your 1541 disk drive.
KEYBOARD.C	This program will show you what some of the Commodore specific keys on your 64's keyboard do.
BATTLE HYMN 1.C	This program plays the Battle Hymn of the Republic over and over.
BATTLE HYMN 2.C	This program plays the Battle Hymn of the Republic over and over and over.

More Monthly Releases

Documentation for (C)M1 through (C)M5 appears in the June 1984 issue of TPUG Magazine, and for (C)M6, in the July 1984 issue. Alternatively, documentation for each of these disks can be obtained from the office ($2.00 each).

(C)M1 - MORE MARCH 1-84
(1 disk/tape)

LIST-ME (C)M1.L	LOAD and LIST this file for one-line documentation.
MASH.C	Land and pick-up injured soldiers in your chopper.
ELEC SRVC CALC.C	Design a house's electrical service requirements.
MAG INDEX.C	Keep track of your magazines with your computer.
DONKEY DONG.C	Play Donkey Dong on your C-64.
CLUB MAIL LIST.C	A mail list program for the C-64.
MOMO BOOT.C	*Watch the hi-res picture of a girl singing.
MOMO PICTURE.D	*Loaded and used by "MOMO BOOT.C".
MOMO SET.D	* " " " " " "
MOMO PRINT.D	* " " " " " "
MATH.C	Your C-64 will teach you math.
BOOT VALLEY V2.C	*Search for treasure and battle monsters.
CHARSET VALLEY.D	*Loaded and used by "BOOT VALLEY V2.C".
VALLEY BASIC.D	*Loaded and used by "BOOT VALLEY V2.C.
BRADLEY.D	*Can be loaded and used by "BOOT VALLEY V2.C".
SHEVLIN.D	*Can be loaded and used by "BOOT VALLEY V2.C".
DOW.D	*Can be loaded and used by "BOOT VALLEY V2.C".
KARNAK.D	*Can be loaded and used by "BOOT VALLEY V2.C".
IDEAL MASS.Z	Determine what your body mass should be.
STARS BAS PR.Z	Find stars.
FRENCH VERBS.Z	Learn about French verbs with your Commodore 64.
BASIC AID INST.C	Instructions on how to use "BASIC AID.C".
BASIC AID.C	A great utility that adds many commands to BASIC.
FILE COPY.C	*Copies files from one diskette to another.
SD COPY/ALL.C	*Copies files from one diskette to another.

(C)M2 - MORE MARCH 2-84
(1 disk/tape)

LIST-ME (C)M2.L	LOAD and LIST this file for one-line documentation.
BASEBALL INST.C	*LOAD and RUN this file before you try "BASEBALL.C".
BASEBALL.C	*Play Baseball on your C-64 against a friend.
BASEBALL DATA.D	*A data file loaded and used by "BASEBALL.C".
DISK DOCTOR.C	*Modify any part of a disk on your VDT.
PIC LOADER.C	*LOAD and RUN this program to see colour pictures.
COLOURS.D	*A
TITLE.D	* file
MARS.D	* loaded
BIPLANE.D	* and
SHIP.D	* used
LANDSCAPE.D	* by
AUTO.D	* "PIC
GIRL.D	* LOADER.C"
LIST-ME INVADE.L	Information you can use to alter "INVADERS.C".
INVADERS.C	Play Space Invaders on your C-64.
HORSE RACING.C	Bet on the horses and then watch the race.
DODGE CARS.C	Dodge the evil computer-controlled car.
SHOOTOUT RULES.C	Tells you the rules for "SHOOTOUT.C".
SHOOTOUT.C	Shoot at your partner before he shoots you.
R2DIVISION.C	R2D2 will teach you how to divide
COUNT 1-8.C	Learn to count from 1-8 with the Commodore 64.
C64 DT.C	Copy from disk to tape or from tape to disk.
DISKALC.C	*A Visicalc-type program that saves data to disk.

(C)M3 - MORE MARCH 3-84
(1 disk/tape)

LIST-ME (C)M3.L	LOAD and LIST this file for one-line documentation.
QUIK BOOT.C	*This program LOADs and RUNs "PAPER QUIK.D".
PAPER QUIK.D	*A good word processor for your Commodore 64.
P.QUIK INS.D	*Information file to be loaded into "PAPER QUIK.D".
HOLYHALTER 1.C	A demo of what can be done using lo-res graphics.
HOLYHALTER 2.C	A demo of what can be done using lo-res graphics.
HOLYHALTER 3.C	A demo of what can be done using lo-res graphics.
HOLYHALTER 4.C	A demo of what can be done using lo-res graphics.
HOLYHALTER 5.C	A demo of what can be done using lo-res graphics.
CENTRIPOD.C	A game very similar in theme to Centipede.
DISCAT.C	*A program that will allow you to organize your disks.
DCATMLP.D	*A data file loaded and used by "DISCAT.C".
PRGLIST.D	*A data file used and updated by "DISCAT.C".
HDRLIST.D	*A data file used and updated by "DISCAT.C".
ZERODEMFILES.C	*Clears "HDRLIST.D" and "PRGLIST.D".
DISKPRINT.C	*Prints the directory of your disks to a printer.
BIKE QUIZ INST.C	Instructions for the Bike Quiz programs.
BIKE QUIZ MON.C	Take a test on the rules of the road.
SERIAL PRINTER.C	Load to use "BIKE QUIZ PRNT.C" with serial printer.
BIKE QUIZ PRNT.C	Take a test on the rules of the road.

(C)M4 - MORE APRIL 1-84
(1 disk/tape)

LIST-ME (C)M4.L	LOAD and LIST this file for one-line documentation.
ET PUZZLE.C	Put ET together to hear a secret surprise ending.

See Order Form p.4

CAT AND MOUSE.C	Get out of the maze before you get eaten alive.
CONNECT 4.C	Try and get 4 in a row before your opponent does.
GOLF.C	Play 18-holes of golf on your Commodore 64. Fore!
STARTREK.C	Destroy the Klingons in the allowed period of time.
MATH MAZE.C	Answer the math questions to get through the maze.
THREEDOX.C	Try and get 4 in a row before your opponent does.
PLANE LANDER.C	Land a plane using your radar and supplied instruments.
BABY CARE.C	Maximize your time and sanity while caring for a baby.
FOREST WALK.C	Walk through the forest with your rifle and food.
AUTOBOOT.C	*LOAD programs from disk using the function keys.
WORD TEST.C	*Make tests comparing 2 things for your students.
BODY PARTS.D	*A data file that can be loaded and used by "WORD TEST.C".
HEAVEN.C	Plays the classic song Stairway to Heaven.
DISK MASTER.C	*Keep track of what is on all of your diskettes.
MILLION.C	Guess a number between 1 & 10,000 as fast as you can.
HYDRO DEMO.C	Find out how much electricity you are using.
SIAMESE.C	Prints a picture of a cat on your 1525 or MPS-801.
WARM PUPPY.C	Prints a picture of Charlie Brown's dog Snoopy.
THUMPER.C	Prints a picture of Thumper the rabbit.
SYNTH SOUND.C	Play your C-64 keyboard like would an organ.
TRIVIA.C	Play Trivia on your Commodore 64. Good Luck...

(C)M5 - MORE APRIL 2-84
(disk only)

LIST-ME (C)M5.L	LOAD and LIST this file for one-line documentation.
ROM EMULATOR.C	LOAD any version of the 64 into your computer.
SX1.D	Data files
SX2.D	loaded &
SX3.D	used by
SX4.D	"ROM EMULATOR.C"
R1 1.D	Data files
R1 2.D	loaded &
R1 3.D	used by
R1 4.D	"ROM EMULATOR.C"
R2 1.D	Data files
R2 2.D	loaded &
R2 3.D	used by
R2 4.D	"ROM EMULATOR.C"
R3 1.D	Data files
R3 2.D	loaded &
R3 3.D	used by
R3 4.D	"ROM EMULATOR.C"
ADVENTURE.C	Find treasure in the cave and return to the building.
ADVF 1.D	Data files
ADVF 2.D	loaded &
ADVF 3.D	used by
ADVF 4.D	"ADVENTURE.C"
.	Data files
.	loaded &
ADVF 31.D	used by
ADVKEYS.D	"ADVENTURE.C"
ADVSHOR.D	Data files
ADVMAP.D	loaded &
ADVTIM.D	used by
ADV OLD.D	"ADVENTURE.C"
ADVF 0.D	
ART SHOW.C	See a hi-res picture of Jim Butterfield.
LOGO.D	Data files
DISSOLVE.D	loaded &
JIMMY.D	used by
SIGNATURE.D	"ART SHOW.C"

(C)M6 - MORE MAY 2-84
(1 disk/tape)

LIST-ME (C)M6.L	LOAD and LIST this file for one line documentation.
STAR TREK INST.C	LOAD and RUN this program for info on "STAR TREK 84.C".
STAR TREK 84.C	Kill the Klingons in your 'new' starship Enterprise.
ADDING QUIZ.C	Test your adding ability and have fun as well.
REPEAT.C	Repeat everything your Commodore 64 does.
DOS COMMANDS.C	*Do many wild and wonderful things to your diskettes.
MATH MAGIC.C	Test your mathematical skills on your Commodore 64.
AUTOLINE PRINT.C	Make ranges of lines that all start the same way.
HAPPY NEW YEAR.C	Plays a song and flashes Happy New Year on your VDT.
HARMONIZER.C	*A program that allows you to create music on your 64.
RED RIVER.D	*A data file that can be used by "HARMONIZER.C".
STORYTELLER.C	'Hear' about a strange coloured mouse.
JOYSTICK DRAW.C	Draw on the hi-res screen using a joystick.
KEYBOARD BEEP.C	Makes your keyboard beep when any key is struck.
DOUBLE SPACER.C	Makes your Commodore 64 leave blank lines.
1526HIRESDUMP.C	Dump hi-res pictures to your 1526 Commodore printer.
DISK FIDDLER.C	*Fiddle around with your C-64's diskettes.
FRACTAL.C	Watch your Commodore 64 draw on the hi-res screen.
ARCADE.C	Play any of the available games on your Commodore 64.
LANDER.C	Land your space ship on the moon or perish.
COMPUTERS.C	Find out what computers can and cannot do for you.
THE BUS BARNS.C	park the buses by getting the math questions right.
THE WALRUS.C	Hear and see a sad story about a computer family.
ENCLOSURE.C	Helps you design cabinets for your speakers.
LOTTO RESULTS.C	Plug in the numbers and see if you won the lottery.
MATH FUN.C	*Solve the addition or subtraction questions or die.
SPRITES.D	*A data file loaded and used by "MATH FUN.C".
DVORAK.C	Converts your QWERTY keyboard to the DVORAK System.

(C)TA

By David Bradley

The following is a slightly abridged version of the documentation that was available at the TPUG Commodore 64 meeting. The only items which have been excluded are the start and finish addresses in both hexadecimal and decimal. If you need these, they are included in the complete version from the TPUG office for $1.00.

Note: Programs with a '*' in front of the name in this file will not work in tape therefore they are not included in the tape version of this disk.

ABBREVIATIONS USED IN THIS LIST-ME

BL – Block Length
PL – Program Length
FT – File Type
CL – Classification

New MENU System

The first 3 programs on this disk are menu programs. Simply LOAD "M*",8 and RUN. The names of the first 14 programs on the disk will be displayed. If what you want is not visible, select #15. This will LOAD the second menu program. If you still don't see what you want, again pick #15 to LOAD the third menu. From menu 3 you can LOAD the remaining programs or the prior menu programs. If response to this type of menu system is good I will do all of the disks like this.

A DIFFERENT MENU

To get the menu program into your Commodore 64 type in the following:
LOAD "M*",8 [RETURN]
After you RUN this program it will go to your disk drive, read the directory of the disk in the drive and display it on your monitor for you. Beside each program there will be a letter. All you have to do to LOAD a program is enter the letter that corresponds to that program name and it will be LOADed for you.
Any files that come up in reverse field are SEQ, REL, or USR files are LOADed and used by some other program on the disk.
Good luck. . .

LIST-ME (C)TA.L
Load as follows: LOAD "LIST-ME (C)TA.L",8
FT: PRG, CL: LIST-ME
This file contains one-line documentation of the programs on (C)TA. This file should be printed and kept close by your computer.

FAST BACKUP.C*
Load as follows: LOAD "FAST BACKUP.C",8
BL: 11, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive.
This program will copy the entire contents of one 1541 diskette to another, using one 1541 disk drive, in about 4 minutes.
When you run the program some numbers will flash in the top left hand corner of your monitor. Don't worry, the program is just setting itself up.
When the program says "SOURCE DISK" take the disk that you want to copy from, put it into your 1541 and press any key. The screen will clear and the LED on your 1541 will flicker. When the program is ready it will sound an alarm and display "DESTINATION DISK". Now take the source disk out of the drive and put a blank disk in. Once again the screen will clear and the LED on your 1541 will flicker.
Since there is too much on a diskette to fit into the memory of the C-64 all at once you must repeat this process a total of 3 times to copy an entire diskette.
NOTE: This program will NOT operate if there is a printer attached to your C-64. So if you normally have a printer hooked up, remove it before you attempt to make use of this program. *Don't worry* about the fact that the LED on the 1541 stays on sometimes when you are asked to exchange the diskettes. *This is normal* for this program.
When the program says "COPY COMPLETE" you are finished and the program is waiting for you to copy another diskette. If you don't want to copy any more the only way to get rid of this program is to turn your C-64 off.
The DESTINATION disk does not have to be formatted before you use this program. Be warned that anything that was on the DESTINATION disk will be replaced with the contents of the SOURCE disk. Also, just to be safe, put a write protect sticker on the SOURCE disk. That way if you mix up the diskettes you won't lose anything.
Good luck. . .

LUSCHER.C*
Load as follows: LOAD "LUSCHER.C",8
BL: 36, FT: PRG, CL: MISC
Equipment required: 1541 disk drive, MPS-801 or 1526 printer.
When the eight colour bars appear on the screen, look them over and decide which colour you like the best. Do not try to associate the colour with something else, such as a car or a dress. Just choose the colour for which you feel the most sympathy. Press the key corresponding to the letter under your selected colour and the colour bar will be erased to show that you have chosen that colour. Now look at the remaining colours. Choose the one which you now like the best and select it as before. Continue choosing colours until they are all gone.
When you have completed the first selection, you will be asked to do it all over again. Do not consciously try to reproduce your first selection. Just choose the colours as if you were seeing them for the first time. When you have completed the second selection, you will be given a very rough analysis of your colour preferences.
The principle of The Luscher Colour Test is that accurate psychological information can be gained about a person through his/her choice and rejection of colours. A simplified version of this test may be taken and interpreted quickly. However, despite the ease and speed with which it can be administered, it is a "deep" psychological test developed for the use of psychiatrists, psychologists, physicians and those involved with the conscious and unconscious characteristics and motivations of others. It is NOT a parlour game, and most emphatically it is not a weapon to be used in a general contest of "one-upmanship".
NOTE: For accuracy of results the program will display several colours before the test starts. At this time please adjust the tint, colour, brightness and contrast controls of your colour monitor or colour television. This test is best done when you are alone with your computer.
I would say "Good luck. . .", but this is not a program that requires luck. . .

LUSCHER.TEXT0.D*
Do NOT attempt to LOAD this file.
BL: 31, FT: SEQ, CL: DATA
This file contains information that is accessed and used by "LUSCHER.C".

LUSCHER.TEXT1.D*
Do NOT attempt to LOAD this file.
BL: 30, FT: SEQ, CL: DATA
This file contains information that is accessed and used by "LUSCHER.C".

LUSCHER.TEXT2.D*
Do NOT attempt to LOAD this file.
BL: 31, FT: SEQ, CL: DATA
This file contains information that is accessed and used by "LUSCHER.C".

LUSCHER.TEXT3.D*
Do NOT attempt to LOAD this file.
BL: 35, FT: SEQ, CL: DATA
This file contains information that is accessed and used by "LUSCHER.C".

LUSCHER.TEXT4.D*
Do NOT attempt to LOAD this file.
BL: 33, FT: SEQ, CL: DATA
This file contains information that is accessed and used by "LUSCHER.C".

MEMORY DECODER.C
Load as follows: LOAD "MEMORY DECODER.C",8
BL: 13, FT: PRG, CL: UTILITY
This program will decode any area of the

memory of your Commodore 64. When the program asks for the "STARTING ADDRESS" and the "FINISHING ADDRESS" be sure and input DECIMAL numbers (The start of BASIC normally on the Commodore 64 would be 2049).

Since a picture is worth a thousand words, here is a sample of what this program does:

→

ADDRESS	REL	DEC	HEX	CHR	MACH LANG
2083	000	87	57	W	???
2084	001	82	52	R	???
2085	002	73	49	I	EOR #$54
2086	003	84	54	T	
2087	004	84	54	T	???
2088	005	69	45	E	EOR $4E
2089	006	78	4E	N	
2090	007	32	20		JSR $5942
2091	008	66	42	B	
2092	009	89	59	Y	
2093	00A	32	20		JSR $4C47
2094	00B	71	47	G	
2095	00C	76	4C	L	
2096	00D	69	45	E	EOR $4E
2097	00E	78	4E	N	
2098	00F	32	20		JSR $4F42
2099	010	66	42	B	
2100	011	79	4F	O	
2101	012	68	44	D	???
2102	013	73	49	I	EOR #$45
2103	014	69	45	E	

CONVERSIONS.C
Load as follows: LOAD "CONVERSIONS.C",8
BL: 30, FT: PRG, CL: UTILITY
This program will allow you to do conversions from one measurement to another. You have 9 options that include temperature, distance, and volume conversions. A handy program to have around.

LEGIBILITY.C
Load as follows: LOAD "LEGIBILITY.C",8
BL: 5, FT: PRG, CL: UTILITY
This is a monitor legibility test. It displays sample characters in all of the colours available on the Commodore 64 and then you can change the background colour. With this program you can make note colour combinations that are not readable (for example, on a blue background red, blue, brown and grey 1 are very hard to decipher). Good luck. . .

DRIVER.C
Load as follows: LOAD "DRIVER.C",8
BL: 9, FT: PRG, CL: GAME
Equipment required: joystick.
In this game you are driving a car down a very twisty road. The object is to keep your car on the road. If you go off the road you crash, but you are allowed to start over as many times as you like. The farther you go, the harder it gets.
Use a joystick plugged into control port #2 to control your car. Good luck. . .

RESCUE.C
Load as follows: LOAD "RESCUE.C",8
BL: 20, FT: PRG, CL: GAME
Equipment required: joystick.
In this game you must rescue survivors from the planet and then get them back to your ship safely. You are the yellow circle that goes back and forth across the top of the screen. A joystick plugged into control port #2 controls your shuttles. To launch a shuttle from your ship pull down on the joystick. If you want to stop your shuttle at any time, press the fire button. Push the joystick up to lift off from the surface of the planet.
So far this must sound very simple. One thing I hadn't mentioned yet is that there are several different kinds of alien mines that are orbiting the planet and you have to avoid them. Luckily there are 3 levels of play so you can work your way up. Good luck. . .

SUB HUNT.C
Load as follows: LOAD "SUB HUNT.C",8
BL: 15, FT: PRG, CL: GAME
You are the pilot of an anti-submarine jet fighter. Your mission is to destroy the enemy submarine as fast as you can. Be sure not to hit the nuclear mine or everything in your area will be destroyed, including you!
To move your jet forward, use the ">" key. To backup (remember this is a very versatile jet), use the "<" key. Be careful not to sit idle too long or you will crash into the sea!
Good luck. . .

STOMP.C
Load as follows: LOAD "STOMP.C",8
BL: 9, FT: PRG, CL: GAME
You are presented with 8 boots. Your objective is to move your man past all of the boots without getting stomped.
Move your man left with the "<" key and right with the ">" key.
The longer you last the harder it gets.
Good luck. . .

ARSONIST.C
Load as follows: LOAD "ARSONIST.C",8
BL: 11, FT: PRG, CL: GAME
An arsonist is on the loose in your town. Your job is to catch him and put out as many fires as you can. You put out fires by touching the houses that are red.
Control your man as follows: "A" moves you up, "Z" moves you down, "<" moves you left, and ">" moves you right.
Good luck. . .

MATH WHIZ.C
Load as follows: LOAD "MATH WHIZ.C",8
BL: 7, FT: PRG, CL: EDUCATION
This program will allow you to be tested on addition, subtraction, multiplication, and/or division. It will also let you review multiplication tables.
The nice thing about this program is that it lets you select what the largest number that you want to be tested on will be and then it lets you decide how many questions you want.
Good luck. . .

PRINTING.C
Load as follows: LOAD "PRINTING.C",8
BL: 7, FT: PRG, CL: UTILITY
Equipment required: MPS-801 or 1525 printer.
This little program will allow you to use the C-64 keyboard for typing letters and printing them on the 1525 printer. This program was not written to serve as a word processor, but rather a quick means of putting some screen lines on paper.
Some things that you must remember are:
1. Type no more than two screen lines (one printer line) before printing. Print by pressing the RETURN key.
2. You can't use commas, colons or semicolons in your copy. If you do, the computer will drop everything after the punctuation. For example, if you entered "Mike Donegan, PhD" you would get an ?EXTRA IGNORED error.
3. After each printing you must press RETURN the second time to continue, the cursor down key for one line space, and the cursor right for two line spaces. To exit the program input two asterisks.
Good luck. . .

MULTI LABELS.C
Load as follows: LOAD "MULTI LABELS.C",8
BL: 16, FT: PRG, CL: BUSINESS
Equipment required: MPS-801 or 1526 printer.
This program will allow you to print as many of the same label as you like. You can edit the label in the program (lines 800,

810, 820, and 830 are what have to be changed) and then print it. If you always want the same label you can save the new program and then you will always have it. This is not meant to be a mailing label program. It is more suitable for printing disk labels or return address labels. And it works!

FILESORT.C*
Load as follows: LOAD "FILESORT.C",8
BL: 9, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive.
This program will sort conventional SEQuential files from disk and store the sorted results as a new disk file.
Files may have up to 20 fields per record. Records will be sorted in ascending or descending order on the key fields you specify.
Fields may be alphabetic or numeric. Numeric fields may contain signs and decimal points in the "usual" style.
Before using the simple demo program "REPORT GEN.C" sort one of the demo files "BIGFILE.D" or "HUGEFILE.D". They have 6 fields per record. Sort by 4,3,2, and 1. Process the resulting file with the sample program "REPORT GEN.C".
Warning: a file written by "FILESORT.C" will replace any file with the same name that is on your diskette. So look before you leap!
Good luck. . .

BIGFILE.D*
Do NOT attempt to LOAD this file.
BL: 45, FT: SEQ, CL: DATA
This is a sample SEQuential file that is meant to be used with "FILESORT.C"

HUGEFILE.D*
Do NOT attempt to LOAD this file.
BL: 120, FT: SEQ, CL: DATA
This is a sample SEQuential file that is meant to be used with "FILESORT.C"

REPORT GEN.C*
Load as follows: LOAD "REPORT GEN.C",8
BL: 4, FT: PRG, CL: DEMO
Equipment required: 1541 disk drive.
You should process the files that you have sorted using "FILESORT.C" with this program.

BASIC MATH.C
Load as follows: LOAD "BASIC MATH.C",8
BL: 32, FT: PRG, CL: EDUCATION
The purpose of this program is to help the user improve his/her knowledge of the basics of math. There are five parts to this program. They are addition, subtraction, multiplication, division, and quit.
The instructions for the first four are much the same. Suppose you selected addition. You will be requested to input a skill level from 1 to 50 (1 is easiest and 50 is hardest). Then you will be requested to add two numbers. If you get the answer right, you will hear a high pitched sound and the screen border will flash. If you answer incorrectly you will hear a low pitched sound and the correct answer will be displayed. The quit option will show you your percentage before the program terminates. Good luck. . .

HOME BUDGET.C*
Load as follows: LOAD "HOME BUDGET.C",8
BL: 14, FT: PRG, CL: HOME APPLICATION
Equipment required: 1541 disk drive, MPS-801 or 1526 printer.
This program will help you keep track of how and where you are spending your money.
You will be presented with a menu of 7 items. The first thing you have to do is to create the initial file. So, press "C". You have to enter twelve bill categories. These are totally up to you. A sample list might contain items such as heating, car, food, entertainment, bowling, phone, computer . . .you know, all the necessities of life. Once you have entered the categories the program will ask you to name the file that it is about to create. If you have 24 items you can make two separate files.

Once the file is written you will be returned to the menu. If this is the first time that you have used this program you will most likely have to write the monthly bills. So, press "W". The program will ask for the month that you are going to enter your bills for. Then the names of your bills will appear. All you have to do now is enter the amount of each bill beside its name.
Seeing as this is the first month all you have to do now is save the data that you have just entered to your disk drive. It might be a good idea to have a DATA disk just for use with this program. Anyway, press "S", name the file and the data is saved.
The next time you use this program you can load the data back by pressing "L". Then tell the computer the name of your data file. And presto! Your data is back.
The last three options that are available to you are view monthly bills (press "V"), see a bar chart of the trend of the bills (press "B"), and print out the trend of the bills (press "P").
Good luck and spend wisely. . .

KEYBOARD.C
Load as follows: LOAD "KEYBOARD.C",8
BL: 27, FT: PRG, CL: BEGINNER
This program shows you the Commodore 64's keyboard on your monitor or television and then it tells you what all of the "Commodore 64 specific" keys do and where there are on the keyboard.
Keys such as the cursor keys, the function keys, the INST/DEL key, and the RESTORE key are explained. A handy program for new C-64 owners/users.

BATTLE HYMN 1.C
Load as follows: LOAD "BATTLE HYMN 1.C",8
BL: 8, FT: PRG, CL: SOUND MUSIC
Equipment required: a monitor or television with audio output.
This program plays the "Battle Hymn of the Republic". According to the REM statements at the beginning of the program it is being played by two violins.

BATTLE HYMN 2.C
Load as follows: LOAD "BATTLE HYMN 2.C",8
BL: 8, FT: PRG, CL: SOUND MUSIC
Equipment required: a monitor or television with audio output.
This program plays the "Battle Hymn of the Republic". According to the REM statements at the beginning of the program it is being played by two electric guitars. *TPUG*

(C)M6

New MENU System

The first 2 programs on this disk are menu programs. Simply LOAD "M*",8 and RUN. The names of the first 14 programs on the disk will be displayed. If what you want is not visible, select #15. This will LOAD the second menu program. From menu 2 you can LOAD the remaining programs or the prior menu program. If response to this type of menu system is good I will do all of the disks like this.

EQUIPMENT ASSUMPTION

In the program description you should see a line that begins 'EQUIPMENT REQUIRED'. On this line will appear all the necessary peripherals that you will need to operate the program in question. Please note that it is assumed that you have a Commodore 64 and some sort of monitor or television set. Therefore these items will not be listed on this line.

LIST-ME (C)M6.L

This file contains one-line documentation for the programs on (C)M6. If you have a printer, print it out and keep it close by.

STAR TREK INST.C

LOAD as follows: LOAD "STAR TREK INST.C",8
BL: 27, FT: PRG, CL: INSTRUCTIONS

This file contains a lot of information that you will need to know BEFORE you attempt to play STAR TREK 84.C.
So, please LOAD and RUN this program first!

STAR TREK 84.C

LOAD as follows: LOAD "STAR TREK 84.C",8
BL: 131, FT: PRG, CL: GAME

This is another version of STAR TREK. It was written by Mike Omotani. Mike decided to add a lot of new commands to the game to make life for you, the captain of the Starship Enterprise, a bit easier. Many of the commands may be unfamiliar to many of you captains that are used to the Enterprise before Mike got his hands on it so the following is a list of the commands you will need to know to operate this 'new' Enterprise.
NAV – To set course.
SRS – For *short range sensor* scan.
LRS – For *long range sensor* scan.
PHA – To fire *phasers.*
TOR – To fire photon *torpedoes.*
SHE – Status of *shields.*
DAM – For *damage* control reports.
COM – To call on library- *computer.*
0 – Cumulative Galactic Record.
1 – Status Report.
2 – Photon Torpedo Data.
3 – Starbase Nav Data.
4 – Direction/Distance Calculator.
5 – Galaxy 'Region Name' Map.
6 – Inventory Of Devices On Board
WRP – To change warp speed.
SHD – To *discharge shields.*
RES – To *remain stationary.*
SHT – To *send out shuttle craft.*
SPM – To *send subspace message.*
SPJ – To use *space jump.*
DRD – To *send out droids.*
ROB – To *use damage repair robot.*
CLK – To *use cloaking device.*
LRP – To use *long range probe.*
MIN – To *detonate space mines.*
XXX – To resign your command.

This list of commands will mean a lot more to you if you LOAD and RUN STAR TREK INST.C.
Good luck. . .

ADDING QUIZ.C

LOAD as follows: LOAD "ADDING QUIZ.C",8
BL: 60, FT: PRG, CL: EDUCATION

This program will display adding questions of varying degrees of difficulty. Depending on the level called for, one or more of the digits in question will be blanked out.
The student's task will be to enter the correct digit(s).
Any number of questions at any level can be called for.

REPEAT.C

LOAD as follows: LOAD "REPEAT.C",8
BL: 17, FT: PRG, CL: GAME
When you are ready, a pattern of 4 numbers will be displayed. Immediately one will quickly flash. You must repeat that same number by pressing the same key as that number. If you get the correct number, it will be displayed again, followed by another number (watch closely because the second number could be the same as the first). Once again you must repeat the sequence – the first and the second etc. . . This continues until you've made 20 correct numbers in a row. The computer plays the sequence only once a turn.
Good luck. . .

***DOS COMMANDS.C**

LOAD as follows: LOAD "DOS COMMANDS. C",8
BL: 26, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive, MPS-801 or 1526 printer.

This program will read the directory of your disk into memory and allow you to do any of the following to or with the diskette in your drive.
You can LOAD any program, you can LOAD and RUN any program, format a new disk, validate the disk, rename a file on the disk, scratch a file from the disk, list the directory to your printer, or LOAD and LIST a program to your printer.
Good luck. . .

MATH MAGIC.C

LOAD as follows: LOAD "MATH MAGIC.C",8
BL: 63, FT: PRG, CL: EDUCATION

This program will test you on addition, subtraction, multiplication, or division at any of four levels (simple, easy, hard, and hardest of all). When you answer a question correctly you get some treasure. The treasure will be any one of a number of precious metals and gems. If you answer incorrectly you lose some of your treasure. If you lose all your treasure you will perish!
Good luck. . .

AUTOLINE PRINT.C

LOAD as follows: LOAD "AUTOLINE PRINT.C",8
BL: 6, FT: PRG, CL: UTILITY

You can use this program to print consecutive specified intervals. For example if you were writing a music program and you knew that you were going to need DATA statements from line 250 to line 550 numbered by 10's all you have to do is tell this program where to start, where to end and what the interval is and it will do it for you. Handy, eh?

HAPPY NEW YEAR.C

LOAD as follows: LOAD "HAPPYNEWYEAR. C",8
BL: 12, FT: PRG, CL: MUSIC SOUND
Equipment required: a monitor or TV with audio output.

This program displays (in big letters) 'Happy New Year' while flashing the screen by changing colours rapidly and playing that old time favourite 'Auld Lang Syne'. Great for New Year's Eve parties and get togethers.

***HARMONIZER.C**

LOAD as follows: LOAD "HARMONIZER.C",8
BL: 18, FT: PRG, CL: MUSIC SOUND
Equipment required: a monitor or TV with audio output.

This program allows you to make up your own songs and save them to disk as SEQuential files.
After you have saved your symphonies you can LOAD them back in and impress your Apple friends with the superior sound capabilities of your Commodore 64. Good luck. . .

***RED RIVER.D**

Do NOT attempt to LOAD this file.
BL: 26, FT: SEQ, CL: DATA

This is a sample song that can be LOADed into HARMONIZER.C. This file is the DATA for that old favourite 'Red River Valley'. Great to impress your relatives with when they ask you what your computer can do. Good luck. . .

STORYTELLER.C

LOAD as follows: LOAD "STORYTELLER.C",8
BL: 32, FT: PRG, CL: EDUCATION

This program will allow you to read about the varied adventures of a mouse, what he does, who he meets, and who his friends are.

JOYSTICK DRAW.C

LOAD as follows: LOAD "JOYSTICK DRAW. C",8
BL: 7, FT: PRG, CL: DEMO
Equipment required: joystick.

This program will allow you to draw on the hi-res page using a joystick plugged into control port #2.
To change screen colours, press the fire button. To change the border colours press fire while pulling back on the joystick. To change the colour of your lines press the space bar.
Have fun. . .

KEYBOARD BEEP.C

LOAD as follows: LOAD "KEYBOARD BEEP. C",8
BL: 2, FT: PRG, CL: MUSIC SOUND
Equipment required: a monitor or TV with audio output.

This small program will make your Commodore 64 beep every time a key is pressed. Just what you've been waiting for, eh?

DOUBLE SPACER.C

LOAD as follows: LOAD "DOUBLE SPACER.C",8
BL: 1, FT: PRG, CL: UTILITY

This program modifies your Commodore 64 so that it double spaces everything that it prints on your monitor.
LOAD it into a friends Commodore 64 and have a laugh telling them that it is broken. Heh heh.

1526HIRESDUMP.C

LOAD as follows: LOAD "1526 HIRES DUMP.C",8
BL: 4, FT: PRG, CL: UTILITY
Equipment required: 1526 printer.

This program will dump hires pictures (like those found on TPUG disks (C)G1 & (C)G2) to your 1526 printer.
Now you can decorate your computer room with pictures of Winston Churchill, Donald Duck, and/or all the gang from Sesame Street.

***DISK FIDDLER.C**

LOAD as follows: LOAD "DISK FIDDLER.C",8
BL: 7, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive.

With this program you can read any sector from any track into the memory of your Commodore 64. Once you have it in memory you can alter it and then re-save it back to your diskette.

FRACTAL.C

LOAD as follows: LOAD "FRACTAL.C",8
BL: 3, FT: PRG, CL: DEMO

This program draws an interesting shape on the high resolution page of your Commodore 64.

ARCADE.C

LOAD as follows: LOAD "ARCADE.C",8
BL: 18, FT: PRG, CL: GAME

This is a collection of several little games. You are presented with a menu that looks like this:
1. . . Three liner (use shift)
2. . . Six line wonder
3. . . Car drive
4. . . Russian roulette
5. . . Stars
6. . . Target
7. . . Quit
To play the game press the number that corresponds to the name of the game. Once you lose at one of the games you are zipped back to the menu and you are free to try another. Have fun. . .

LANDER.C

LOAD as follows: LOAD "LANDER.C",8
BL: 12, FT: PRG, CL: GAME

Your job is to pilot your landing craft from its launch platform to the base in the mountains. You must land on the red strip very gently and carefully.
You have 3 different thrust controls. f5 is the strongest and is handy to get you out of somewhere in a big hurry. f3 is not quite as strong and should be used most of the time. f1 is for very delicate navigation. You'll see once you start playing the game where you'll need it.
You also have lateral jet control. The '>' controls the right jet on your landing craft and the '<' controls the left jet.
You have a choice of how much fuel you want to take with you depending on how good a pilot you are. Good luck. . .

COMPUTERS.C

LOAD as follows: LOAD "COMPUTERS.C",8
BL: 14, FT: PRG, CL: DEMO

This program will tell you all of the things that computers can't do. (Note: if you think of other things besides what is already included in this program you can put them in by adding more DATA statements within the program and re-saving the program to a 1541 formatted diskette.)

THE BUS BARNS.C

LOAD as follows: LOAD "THE BUS BARNS.C",8
BL: 42, FT: PRG, CL: EDUCATION

You have been hired to park 12 buses. But before you can park any of them you have to answer the question displayed in the barn that you are to park in.
You can pick the type of question when you apply for the job. Have fun. . .

THE WALRUS.C

LOAD as follows: LOAD "THE WALRUS.C",8
BL: 19, FT: PRG, CL: SOUND MUSIC
Equipment required: a monitor or TV with audio output.

This program will play display the lyrics and play a song about a family that has lost their mother to a computer.
A sad tale indeed. . .

ENCLOSURE.C

LOAD as follows: LOAD "ENCLOSURE.C",8
BL: 26, FT: PRG, CL: UTILITY

This program is designed to compute the optimum enclosure volume for a specific bass driver (woofer) provided that three pieces of information are given. These are:
Free-air resonance (HZ)
Compliance volume (Cubic Metres)
Mechanical 'Q' of driver
The free-air resonance is the frequency at which the impedance of the driver is the greatest.

The compliance volume of the driver is the enclosure volume that will give a 0-db response at the free-air resonance of the driver. Don't confuse with the optimum enclosure volume.
The 'Q' is the tendency of the driver to peak in response at the driver's free-air resonance.
Some Considerations:
Large speakers have high compliance volumes. A speaker with a high 'Q' will have a peaky response unless the enclosure is highly damped. Finally, the enclosure must be resonance free; in other words, it shouldn't shake while music is being played through it. Also the enclosure doesn't have to have the shape of a box. A box shape is just for convenience. In fact, a hexagon-shaped enclosure has a smoother response than a box if you want to build it!.
Good luck. . .

LOTTO RESULTS.C

LOAD as follows: LOAD "LOTTO RESULTS.C",8
BL: 20, FT: PRG, CL: MISC

This program will check your lottery numbers to see if you have won your fortune. Just answer the questions and follow the instructions and you can't go wrong.
Note: When inputting a series of numbers, be sure to separate the numbers by commas. Then when you are done hit return to enter the series.
Good luck. . .

***MATH FUN.C**

LOAD as follows: LOAD "MATH FUN.C",8
BL: 29, FT: PRG, CL: EDUCATION

This program will test you on addition and subtraction skills. If you get an answer wrong you will be destroyed. So do your best to get the correct answer(s). Good luck. . .

***SPRITES.D**

Do NOT attempt to LOAD this file.
BL: 7, FT: PRG, CL: DATA

This file contains the sprites that are used by MATH FUN.C. It is LOADed and used by MATH FUN.C so don't try and LOAD it yourself, it won't work!

DVORAK.C

LOAD as follows: LOAD "DVORAK.C",8
BL: 9, FT: PRG, CL: UTILITY

This little program will change the keyboard on your C-64 from standard 'QWERTY' setup to the 'DVORAK' system. Great if you are familiar with the DVORAK keyboard. Living hell if you are not. This is another program that you could use to convince a fellow computer enthusiast that his C-64 is gravely ill. Heh heh.

(C)M7

LIST-ME (C)M7.L
This file contains one-line documentation for the programs on (C)M7. If you have a printer, print it out and keep it close by.

UTILITY.C
LOAD as follows: LOAD "UTILITY.C",8
BL: 28, FT: PRG, CL: UTILITY
This BASIC program contains the DATA that creates the MACHINE LANGUAGE (starting at $C000) that will enable DEMO.C, INS/DEL DEMO.C, and TEST SORT.C to function. The above mentioned programs are demos of what you can do with this utility. I suggest you LIST the demo programs before you RUN them as there is a lot of information provided in REMark statements that you will need to know before you can use this program.
Be sure that this program has been LOADed and RUN before you attempt to use any of the DEMO programs. Without this program they won't work. Good luck. . .

DEMO.C
LOAD as follows: LOAD "DEMO.C",8
BL: 29, FT: PRG, CL: DEMO
This program makes use of the routines available in UTILITY.C. To get the most out of it be sure and LIST this program as well as RUN it. That way you will be able to 'see' how things are used.

INS/DEL DEMO.C
LOAD as follows: LOAD "INS DEL DEMO. C",8
BL: 29, FT: PRG, CL: DEMO
This program makes use of the routines available in UTILITY.C. To get the most out of it be sure and LIST this program as well as RUN it. That way you will be able to 'see' how things are used.

TEST SORT.C
LOAD as follows: LOAD "TEST SORT.C",8
BL: 5, FT: PRG, CL: DEMO
This program makes use of the routines available in UTILITY.C. To get the most out of it be sure and LIST this program as well as RUN it. That way you will be able to 'see' how things are used.

TRUCK RUN.C
LOAD as follows: LOAD "TRUCK RUN.C",8
BL: 4, FT: PRG, CL: GAME
Equipment required: joystick.
You have been hired to drive your rig down a twisty mountain road that no truck has ever made it down before. If you crash you can try again by pressing f1.
Control your rig with a joystick plugged into control port #2. Good luck. . .

TAPE CAT INST.C
LOAD as follows: LOAD "TAPE CAT INST. C",8
BL: 6, FT: PRG, CL: INSTRUCTIONS
This program will tell you how to use TAPE CATALOGER.C.

TAPE CATALOGER.C
LOAD as follows: LOAD "TAPE CATA-LOGER.C",8
BL: 7, FT: PRG, CL: UTILITY
Equipment required: datasette, MPS-801 or 1526 printer.
This program will help you keep track of where your programs that you have stored on tape are. If you wish, and you have a printer, you can print out the name of the program and the position of the counter for all of the programs on any given tape. If you don't have a printer, write them down when they appear on your monitor. Either way you will have a record of what is on the tape and where it is.
NOTE: If the counter is between numbers, suppose it was half-way between 68 and 69, tell the computer that it is at 68. It is better to be a bit low than a bit high. If you are high, you will miss the program, if you are low you will have to wait a couple of seconds more for it to LOAD.
Good luck. . .

RIKI TIKI.C
LOAD as follows: LOAD "RIKI TIKI.C",8
BL: 19, FT: PRG, CL: GAME
Equipment required: joystick.
Deadly experimental mutant snakes have escaped from their cages! Only RIKI TIKI can stop them and it is up to you to help RIKI.
Use a joystick plugged into control port #1 to guide RIKI through the pit where the snakes have been cornered. Simply lead RIKI to a snake and he will automatically use his stun rod to capture the snake.
The pit is surrounded by an electric fence and the crazy guards that let the snakes escape are throwing more sections of fence into the pit all the time. The yellow snakes are VERY dangerous and might bite RIKI. Green snakes are not very big and they wouldn't do that much damage to society if they escaped so they are only worth 1 point. The light blue snakes would kill quite a few people before they perished naturally so they are worth 2 points.
The yellow snakes were sprayed earlier on in the chase so some are quite harmless while some are very aggressive. The point values of these snakes range from 1 to 9 points. Once in a while you will run into one that didn't get sprayed at all and he will kill RIKI and you lose 10 points.
Also, RIKI gets very excited every time he kills a snake and he runs faster. Good luck. . .

MOMMY SLITHER.C
LOAD as follows: LOAD "MOMMY SLITH-ER.C",8
BL: 57, FT: PRG, CL: GAME
Equipment required: joystick.
Help mommy slither the wonder snake find her eggs and return them to the nest.
Use your joystick plugged into control port #1 to move her out of the nest and guide her to her eggs. Don't let her touch the walls or herself or it is game over!
You get 1 point for reaching an egg and your body grows a new segment. Return to the nest with the egg and get 5 points and 3 new body segments.
But watch out for the bird of prey trying to steal the eggs. If he reaches the egg first you'll have to wait for a new egg to appear. If the bird touches mommy slither then she loses the egg she is carrying. Occasionally her tail will squash a new egg into the ground. If she has an egg one will show at the top of the screen. You have only 60 seconds. Good luck. . .

JOY 1S4.C
LOAD as follows: LOAD "JOY 1S4.C",8
BL: 7, FT: PRG, CL: UTILITY
Equipment required: joystick.
This program contains the DATA for a machine language program that reads joystick port #1.
This particular program will tell you if the fire button is pressed and which of the 4 directions you want to go.

JOY 1S8.C
LOAD as follows: LOAD "JOY 1S8.C",8
BL: 8, FT: PRG, CL: UTILITY
Equipment required: joystick.
This program contains the DATA for a machine language program that reads joystick port #1.
This particular program will tell you if the fire button is pressed and which of the 8 directions you want to go.

JOY 2S4.C
LOAD as follows: LOAD "JOY 2S4.C",8
BL: 7, FT: PRG, CL: UTILITY
Equipment required: joystick.
This program contains the DATA for a machine language program that reads joystick port #2.
This particular program will tell you if the fire button is pressed and which of the 4 directions you want to go.

JOY 2S8.C
LOAD as follows: LOAD "JOY 2S8.C",8
BL: 8, FT: PRG, CL: UTILITY
Equipment required: joystick.
This program contains the DATA for a machine language program that reads joystick port #2.
This particular program will tell you if the fire button is pressed and which of the 8 directions you want to go.

JOY 3S4.C
LOAD as follows: LOAD "JOY 3S4.C",8
BL: 9, FT: PRG, CL: UTILITY
Equipment required: 2 joysticks.
This program contains the DATA for a machine language program that reads both joystick ports.
This particular program will tell you if either fire button is pressed and which of the 4 directions either of you want to go.

JOY 3S8.C
LOAD as follows: LOAD "JOY 3S8.C",8
BL: 10, FT: PRG, CL: UTILITY
Equipment required: 2 joysticks.
This program contains the DATA for a machine language program that reads both joystick ports.
This particular program will tell you if either fire button is pressed and which of the 8 directions either of you want to go.

JOY 1C4.C
LOAD as follows: LOAD "JOY 1C4.C",8
BL: 8, FT: PRG, CL: UTILITY
Equipment required: joystick.
This program contains the DATA for a machine language program that reads joystick port #1.
This particular program will tell you if the fire button is pressed and which of the 4 directions you want to go.
The difference between this program and JOY 1S4.C is that this program will continue to send the same direction even after you have released your joystick.

JOY 1C8.C
LOAD as follows: LOAD "JOY 1C8.C",8
BL: 8, FT: PRG, CL: UTILITY
Equipment required: joystick.
This program contains the DATA for a machine language program that reads joystick port #1.
This particular program will tell you if the fire button is pressed and which of the 8 directions you want to go.
The difference between this program and JOY 1S8.C is that this program will continue to send the same direction even after you have released your joystick.

JOY 2C4.C
LOAD as follows: LOAD "JOY 2C4.C",8
BL: 8, FT: PRG, CL: UTILITY
Equipment required: joystick.
This program contains the DATA for a machine language program that reads joystick port #2.
This particular program will tell you if the fire button is pressed and which of the 4 directions you want to go.
The difference between this program and JOY 2S4.C is that this program will continue to send the same direction even after you have released your joystick.

JOY 2C8.C
LOAD as follows: LOAD "JOY 2C8.C",8
BL: 8, FT: PRG, CL: UTILITY
Equipment required: joystick.
This program contains the DATA for a machine language program that reads joystick port #2.
This particular program will tell you if the fire button is pressed and which of the 8 directions you want to go.
The difference between this program and JOY 2S8.C is that this program will continue to send the same direction even after you have released your joystick.

JOY 3C4.C
LOAD as follows: LOAD "JOY 3C4.C",8
BL: 9, FT: PRG, CL: UTILITY
Equipment required: 2 joysticks.
This program contains the DATA for a machine language program that reads both joystick ports.
This particular program will tell you if either fire button is pressed and which of the 4 directions either of you want to go.
The difference between this program and JOY 3S4.C is that this program will continue to send the same direction even after you have released either of your joysticks.

JOY 3C8.C
LOAD as follows: LOAD "JOY 3C8.C",8
BL: 10, FT: PRG, CL: UTILITY
Equipment required: 2 joysticks.
This program contains the DATA for a machine language program that reads both joystick ports.
This particular program will tell you if either fire button is pressed and which of the 4 directions either of you want to go.
The difference between this program and JOY 3S8.C is that this program will continue to send the same direction even after you have released either of your joysticks.

SLITHER WAR.C
LOAD as follows: LOAD "SLITHER WAR.C",8
BL: 12, FT: PRG, CL: GAME
Equipment required: joystick.
You must stay alive in a snake pen with 3 other snakes trying to get more space. If a snake touches itself, a wall, or a snake, it dies. Each snake gets longer as it moves.
You get 1 point for each segment you grow. 100 points for each of the 3 opposing snakes killed.
Control your snake using a joystick plugged into control port #1.

SLITHER DUEL 3.C
LOAD as follows: LOAD "SLITHER DUEL 3.C",8
BL: 12, FT: PRG, CL: GAME
Equipment required: 2 joysticks.
Use your joystick to move your snake around the screen.
If you touch a wall, yourself or your opponent's snake you are dead!
Press the fire button and you leave a hole in your snake's body.
You only have 5 holes per game. Good luck. . .

BRANDENBURG.C
LOAD as follows: LOAD "BRANDENBURG.C",8
BL: 94, FT: PRG, CL: MUSIC SOUND
Equipment required: a monitor or TV with audio output.
This program will play The Brandenburg Symphony. If this won't impress all those Apple owners out there, nothing will!

ORGANIC BOOT.C*
LOAD as follows: LOAD "ORGANIC BOOT.C",8
BL: 1, FT: PRG, CL: EDUCATION
In this program you will be given a selection of functional groups with which to practice your ability to name organic molecules from both 3-D diagrams and structural formulae.
Good luck. . .

ORGANIC NAMES.D*
Do NOT attempt to LOAD this file
BL: 45, FT: PRG, CL: DATA
This file is LOADed and executed by ORGANIC BOOT.C.

ORGANIC SET.D*
Do NOT attempt to LOAD this file.
BL: 9, FT:SEQ, CL: DATA
This is a DATA file containing the character set used by ORGANIC BOOT.C.

DENSITY CALC.C
LOAD as follows: LOAD "DENSITY CALC.C",8
BL: 23, FT: PRG, CL: EDUCATION
This program will give you practice at working out the density of substances.

RUTHERFORD.C
LOAD as follows: LOAD "RUTHERFORD.C",8
BL: 20, FT: PRG, CL: EDUCATION
This program is a computer assisted simulation of Rutherford's alpha particle experiment.
More detailed instructions are supplied within the program.

NOMENCLATURE.C
LOAD as follows: LOAD "NOMENCLATURE.C",8
BL: 46, FT: PRG, CL: EDUCATION
This program provides six different levels of nomenclature practice. At each level, you are asked to write formulae from given names and to write names from given formulae.
The computer will assist you to write formulae names by automatically subscripting numbers or converting them to roman numerals where appropriate.
It will also point out some errors and allow a second try at the question.

FOOTBALL INST.C
LOAD as follows: LOAD "FOOTBALL INST. C",8
BL: 12, FT: PRG, CL: INSTRUCTIONS
This file contains instructions and tips so that you might have a better chance at winning FOOTBALL 84.C.
Good luck. . .

FOOTBALL 84.C
LOAD as follows: LOAD "FOOTBALL 84.C",8
BL: 116, FT: PRG, CL: GAME
You are the head coach of a football team. You will be called on to plan offensive and defensive strategy to defeat your arch rival (a team controlled by your Commodore 64).

After you name the teams and choose the level of difficulty you have to decide what areas of the game your team is good at and what areas they are not so good at. You have five choices (rushing offence, passing offence, rushing defence, passing defence, and special teams) and ten 'strength points' to hand out. So if you wanted to stress the running game you might give 4 to rushing offence, 3 to rushing defence, and 1 to each of the remaining categories.

If you are on offence, you will be asked to input your offensive play. The play selection is as follows:

1. Line plunge
2. Trap play
3. Power sweep
4. Draw play
5. Screen pass
6. Short pass
7. Medium pass
8. Long pass
9. Sideline pass
10. Punt
11. Field Goal
12. Status
13. Timeout
14. Quit

If you are on defence, you will be asked to input your defensive play. The play selection is as follows:

1. Standard defence
2. Short yardage defence
3. 'Nickel' defence
4. 'Prevent' defence
5. Partial blitz
6. All-out blitz
7. Timeout
8. Status

NOTE: An invalid numerical response will display these menus for you. Also, don't take too long deciding what you are going to do or you will be assessed a delay of game penalty.

Be warned, your Commodore 64 is a very smart coach. Good luck. . . *TPUG*

(C)M8

LIST-ME (C)M8.L
Load as follows: LOAD "LIST-ME (C)M8.L",8
FT: PRG, CL: LIST-ME
This file contains one-line documentation of the programs on (C)M8. This file should be printed and kept close by your computer.

COUNTRIES QUIZ.C
Load as follows: LOAD "COUNTRIES QUIZ. C",8
BL: 9, FT: PRG, CL: EDUCATION
This program will test your knowledge of world geography. It will say something like "The country has 14 letters in it. What is your guess." Now you have to figure out the name of the country. Everytime you guess and are wrong the computer will tell you one more letter in the solution. When you get it right you can either quit the program or continue.
In case you don't get it, here is a sample of what might happen. I have been told that the country has 6 letters in it. Well, Mexico has 6 letters, I'll try that. The computer showed me a "T". Guess that counts out Mexico. Taiwan has 6 letters and it starts with "T", let's see if that is it. No, the computer showed me "TU". I'll bet it is Turkey. Let me see. Yes, the computer told me that I was absolutely right. Easy, eh?

MATH TUTOR.C
Load as follows: LOAD "MATH TUTOR.C",8
BL: 4, FT: PRG, CL: EDUCATION
This program will test your ability to do simple mathematical problems. To exit the program enter -1000 at any time when you are asked for an answer.
Good luck. . .

LOW RES DUMP.C
Load as follows: LOAD "LOW RES DUMP.C",8
BL: 2, FT: PRG, CL: UTILITY
Equipment required: MPS-801 or 1526 printer.
This little subroutine will print the contents of the screen to your printer. A handy thing to have when you are writing your own programs.

PRINTER GRAPH.C
Load as follows: LOAD "PRINTER GRAPH. C",8
BL: 3, FT: PRG, CL: BUSINESS
Equipment required: MPS-801 or 1526 printer.
This program will allow you to name your graph, then you decide what the maximum value on the graph will be, and finally how many entries there will be. Once you have entered the figures the graph that you have designed will be printed for you.

BARGRAPHS.C
Load as follows: LOAD "BARGRAPHS.C",8
BL: 4, FT: PRG, CL: BUSINESS
This program will allow you to name your graph then you decide what the maximum value on the graph will be, and finally how many entries there will be. Once you have entered the figures the graph that you have designed will be displayed on your monitor.

GB TO US.C
Load as follows: LOAD "GB TO US.C",8
BL: 2, FT: PRG, CL: BUSINESS
This program will convert British pounds into American dollars. Have a newspaper handy as you have to input the current exchange rate.

SOFT ACCOUNT.C
Load as follows: LOAD "SOFT ACCOUNT.C",8
BL: 18, FT: PRG, CL: BUSINESS
SOFT ACCOUNT is a savings account check. This program calculates your balance after you have made deposits and withdrawals. First you enter your last balance. Second you enter all deposits (up to five). Third you enter all withdrawals (up to five). After this you can decide whether you want it to figure your interest rate (as a decimal: eg. instead of entering 5.25% you would type .0525) and when you receive your interest (eg. yearly, bi-yearly, quarterly, monthly. If you do not use one of these exact words the computer will not understand you.) And that is all there is to it! Good luck. . .

1525 HI SCORE.C
Load as follows: LOAD "1525 HI SCORE.C",8
BL: 7, FT: PRG, CL: MISC
Equipment required: MPS-801, or 1525 printer.
This program will print you a chart that you can write your high scores on for various Commodore 64 games. A great thing to put up beside your computer just before you invite in a bunch of hot-shot game players.

ANAGRAM HELPER.C
Load as follows: LOAD "ANAGRAM HELP-ER.C",8
BL: 2, FT: PRG, CL: MISC
Have you ever been presented with a puzzle where you are given all of the letters in a word, but they are all scrambled? Well, this program will take the letters that you give it and display all the different possible ways that the letters can be combined. All you have to do is watch your monitor and write down any combinations that look like winners to you. What will they think of next?

NOW FOR SOMETHING COMPLETELY DIFFERENT
Equipment required: Epson RX-80, and "the connection" interface.
The following programs are designed to change type fonts on the Epson RX-80 printer when it is connected to the Commodore 64 using "the connection" interface. This is useful if you want to print in elite

italics but your word processor won't send escape codes. So what you would do is load in the desired type font, run the program and then load in your word processor.
The following is a list of the programs that are on this disk that are designed for this purpose:
PICA COND
PICA ITAL DBL
PICA ENLG EMPH
PICA ENLG
PICA COND ENLG
ELITE ENLARGED
PICA ITAL
PICA DBL
PICA EMPH
ELITE DOUBLE
ELITE ITAL
ELITE ITAL DBL
PICA EMPH DBL
PICA
PICA ITAL DBL EM
PICA DBL UNDER
ELITE
Good luck. . .

XREF GEN.C*
Load as follows: LOAD "XREF GEN.C",8
BL: 12, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive, MPS-801 or 1526 printer.
This program generates a list of all variable names used in a program and the statement numbers where they are used.
For this program to operate it requires an input file named "PRGLIST". In order to generate this file first load the program you wish to generate a cross reference for then execute the following in direct mode:
OPEN4,8,4,"0:PRGLIST,S,W":CMD4:
LIST (RETURN)
PRINT#4:CLOSE4 (RETURN)
Once disk activity has ceased then load "XREF GEN.C" again and let it do its thing. The cross reference table will be sent to your printer. Once you set the program in motion you don't have to sit and watch. Just don't forget to turn on the printer.

BLOCK MOD.C*
Load as follows: LOAD "BLOCK MOD.C",8
BL: 18, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive.
This program can be utilized to:
(1) read the disk's directory blocks.
(2) display any block as ASCII values.
(3) unscratch files.
(4) change the disk name.
(5) alter individual byte(s) with any block.
Be careful with this program because if you don't know what you are doing you can really make a terrible mess of your diskette! Good luck. . .

UNSCRATCH MAN.C*
Load as follows: LOAD "UNSCRATCH MAN.C",8
BL: 9, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive.
This program can be used to recover programs that have been accidentally scratched. All you have to do is tell it how many programs there are in each block that it shows you. Don't worry if this sounds hard; it isn't, as you will see.
Good luck. . .

UNSCRATCH AUTO.C*
Load as follows: LOAD "UNSCRATCH AUTO.C",8
BL: 8, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive.
This program can be used to recover programs that have been accidentally scratched. All you have to do is put the disk to be recovered into your 1541 and run this program. And when it is finished, all of the programs that were lost will be back.
Good luck. . .

MULTICOPY.C*
Load as follows: LOAD "MULTICOPY.C",8
BL: 15, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive.
This program will copy the entire contents of one 1541 diskette to another, and another, and another. From each pass (of 124 blocks) on the source disk, any number of destination disks can be written to.
NOTE: The destination disks have to be formatted before you use this program.

MICROS'N'CHIPS 1.C
Load as follows: LOAD "MICROS'NCHIPS1.C",8
BL: 77, FT: PRG, CL: EDUCATION
This is the first of some more excellent tutorials by Peter Ponzo. This one deals with address decoding.
A couple of things to note, when using any of these tutorial programs. To continue press any non-destructive key. To go back a bit in the lesson press the "@" key.
Good luck. . .

MICROS'N'CHIPS 2.C
Load as follows: LOAD "MICROS'NCHIPS2.C",8
BL: 77, FT: PRG, CL: EDUCATION
This is the second of some more excellent tutorials by Peter Ponzo. The title of this one is "Bring on the Chips!". A couple of things to note, when using any of these tutorial programs. To continue press any non-destructive key. To go back a bit in the lesson press the "@" key.
Good luck. . .

MICROS'N'CHIPS 3.C
Load as follows: LOAD "MICROS'NCHIPS3.C",8
BL: 77, FT: PRG, CL: EDUCATION
This is the third of some more excellent tutorials by Peter Ponzo. The title of this one is "Outside the Micro".
A couple of things to note, when using any of these tutorial programs. To continue press any non-destructive key. to go back a bit in the lesson press the "@" key.
Good luck. . .

MICROS'N'CHIPS 4.C
Load as follows: LOAD "MICROS'NCHIPS4.C",8
BL: 77, FT: PRG, CL: EDUCATION
This is the fourth of some more excellent tutorials by Peter Ponzo. The title of this one is "Interfacing to the World".
A couple of things to note, when using any of these tutorial programs. To continue press any non-destructive key. To go back a bit in the lesson press the "@" key.
Good luck. . .

MICROS'N'CHIPS 5.C
Load as follows: LOAD "MICROS'NCHIPS5.C",8
BL: 79, FT: PRG, CL: EDUCATION
This is the fifth of some more excellent tutorials by Peter Ponzo. The title of this one is "More On Memory".
A couple of things to note, when using any of these tutorial programs. To continue press any non-destructive key. To go back a bit in the lesson press the "@" key.
Good luck. . .

MICROS'N'CHIPS 6.C
Load as follows: LOAD "MICROS'NCHIPS6.C",8
BL: 80, FT: PRG, CL: EDUCATION
This is the sixth of some more excellent tutorials by Peter Ponzo. The title of this one is "The Big Picture".
A couple of things to note, when using any of these tutorial programs. To continue press any non-destructive key. To go back a bit in the lesson press the "@" key.
Good luck. . . *TPUG*

(C)M9

LIST-ME (C)M9.L
Load as follows: LOAD "LIST-ME (C)M9.L",8
FT: PRG, CL: LIST-ME
This file contains one-line documentation of the programs on (C)M9. This file should be printed and kept close by your computer.

GEMINI CHAR.C*
Load as follows: LOAD "GEMINI CHAR.C",8
BL: 25, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive, and a Gemini printer.
This utility is used to design your own characters for the Gemini, test them and then store the data in a disk file. A normal font is provided as a starter file to be loaded by the program into the printer.
The printer will not print dots which are adjacent to each other on a horizontal line. Leave a space between them. All vertical

dots will print.
If a character requires a descender (a portion below the line), press f1. Two marks will indicate which dots are above and below the line.
To test the design on your Gemini printer press "P". The character will be printed with and without underline. Press "T" to print all characters. All of the data is automatically stored in memory. If you don't want the data stored, or you want a new grid, press "N".
When you quit ("Q"), you can save all the data to disk. This file can be loaded by this program into the printer any time you want the new character set.
Two data files are included on this disk. One is a normal font and the other is a customized computer font.

COMPUTER FONT.D*
Do NOT attempt to LOAD this file.
BL: 24, FT: SEQ, CL: DATA
This file can be loaded and used by "GEMINI CHAR.C".

NORMAL FONT.D*
Do NOT attempt to LOAD this file.
BL: 24, FT: SEQ, CL: DATA
This file can be loaded and used by "GEMINI CHAR.C".

DISKVIEW 3.C*
Load as follows: LOAD "DISKVIEW 3.C",8
BL: 83, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive.
With this fantastic utility program from Peter Ponzo you can do any of the following:
1. Load block into computer
2. See ASCII of above block
3. Modify above block
4. Store above block in RAM
5. Write block in RAM to disk
6. Block Availability Map
7. Disk Commands
8. Trace Blocks
9. Unscratch a File

The program contains detailed instructions within itself for any functions that are tricky (unscratching a file for example).
The main difference between this version and "DISKVIEW 2.C" is that this one provides a nicer directory (including starting track and sector and loading address), and the ability to modify a block by entering a string.
Good luck. . .

FILE/BOOT.C*
Load as follows: LOAD "FILE BOOT.C",8
BL: 3, FT: PRG, CL: BUSINESS
Equipment required: 1541 disk drive, MPS-801 or 1526 printer, joystick.
There are five programs in this series. They are "FILE/BOOT", "FILE/MASTER", "FILE/EXPLAIN", "FILE/TITLES", and "FILE/SORT" It. It then loads "FILE/SORT" and "FILE/MASTER". In "FILE/MASTER", select menu item 7. This allows you to create a number of titles such as "name", "address", etc.
When you are satisfied with the titles you have created, "FILE/TITLES" will save the titles in a title-file (with a name you specify) then it will automatically reload "FILE/MASTER".
Once you have the title-file created hit the space bar. You will be asked for the name of the title-file that you wish to load. Enter the name and drive and, during loading, the titles you have created will be displayed. You may then choose menu item 1 and enter data under the various titles which you created on your title-file.
Menu items include data display, recall and save, search and sort. Since sorting in BASIC is very slow, the program loads "FILE/SORT" to handle this part of the program.
Before you use "FILE/MASTER" for anything really important (like keeping track of your stamp collection or friends' phone numbers), play with it for a bit to familiarize yourself with how it works and what it can do.
Good luck. . .

FILE/MASTER.D*
FILE/EXPLAIN.D*
FILE/TITLES.D*
FILE/SORT.D*
Do NOT attempt to LOAD these files.
These programs are loaded and used by "FILE BOOT.C".

ASTERIX.C
Load as follows: LOAD "ASTERIX.C",8
BL: 20, FT: PRG, CL: PRINTER PIC
Equipment required: MPS-801 or 1526 printer.
This program will print a picture of "ASTERIX". Hang it up around your computer room for a bit of variety.

NOEL.C
Load as follows: LOAD "NOEL.C",8
BL: 29, FT: PRG, CL: PRINTER PIC
Equipment required: MPS-801 or 1526 printer.
This program will print out a picture of the Virgin Mary. Print it out and put it up around the house or the office at Christmas time.

SNOOPY PILOT.C
Load as follows: LOAD "SNOOPY PILOT.C",8
BL: 11, FT: PRG, CL: PRINTER PIC
Equipment required: MPS-801 or 1526 printer.
This program will print out a picture of that terror of the skies, Snoopy,

LUCKY LUKE.C
Load as follows: LOAD "LUCKY LUKE.C",8
BL: 36, FT: PRG, CL: PRINTER PIC
Equipment required: MPS-801 or 1526 printer.
This program will print out a wanted poster. On the poster is the notorious "Lucky Luke". Ten gallon hat and all!

SMURF.C
Load as follows: LOAD "SMURF.C",8
BL: 34, FT: PRG, CL: PRINTER PIC
Equipment required: MPS-801 or 1526 printer.
This program will print out a picture of a Smurf.

DEER.C
Load as follows: LOAD "DEER.C",8
BL: 33, FT: PRG, CL: PRINTER PIC
Equipment required: MPS-801 or 1526 printer.
This program will print a picture of a deer.

HORSE.C
Load as follows: LOAD "HORSE.C",8
BL: 14, FT: PRG, CL: PRINTER PIC
Equipment required: MPS-801 or 1526 printer.
This program will print out a picture of a horse's head.

BAMBIE.C
Load as follows: LOAD "BAMBIE.C",8
BL: 17, FT: PRG, CL: PRINTER PIC
Equipment required: MPS-801 or 1526 printer.
This program will print out a picture of that adorable little fawn, Bambie.

LIFE IS.C
Load as follows: LOAD "LIFE IS.C",8
BL: 47, FT: PRG, CL: PRINTER PIC
Equipment required: MPS-801 or 1526 printer.
This program prints out a picture those unforgettable characters from the "Life is.." series of cartoons.
NOTE: it prints the woman first, then after you re-adjust your printer it will print out the man. Then you have to do a bit of cutting to put them beside each other. Hey, computers can't do everything for you.

DISK MASTER V2.C*
Load as follows: LOAD "DISK MASTER",8
BL: 49, FT: PRG, CL: UTILITY
Equipment required: 1541 disk drive, MPS-801 or 1526 printer.
This program will help you keep track of where your programs are. Once you have entered your disks into this program you can print out all sorts of information about your personal program library.
The first thing you have to do to use DISK MASTER is to format a new disk. This is the disk that you will use as the master directory disk.
In case you don't know how to format a disk, here is how to do it. First take a new (blank, nothing on it) disk and put it into your 1541 disk drive. Enter the following:
OPEN15,8,15,"N0:DISK NAME,ID" [RETURN]
CLOSE 15 [RETURN]
The DISK NAME can be up to 16 characters in length and the ID should always be different for every disk that you have. If you have more than one disk with the same ID you could run into trouble eventually. The best thing you can do is take one of them and copy the entire contents of the

disk to another disk. NEVER use any program that changes the ID. It may appear to work, but sooner or later you'll find out that it did some really strange things to your disk.
After you have formatted a disk copy DISK MASTER onto that disk. Be sure to name it DISK MASTER or it won't work properly.
It is important that the master disk be in the drive when you run the program. Especially if you are updating.
If you have any trouble load and run "DM INST.C" and read the information there very carefully.
The difference between this version and the first version to appear in the TPUG library is this version is faster and much easier to use.
Good luck. . .

DM INST.C*
Load as follows: LOAD "DM INST.C",8
BL: 9, FT: PRG, CL: INSTRUCTIONS
Equipment required: 1541 disk drive.
If there is anything about DISK MASTER that you are not clear about load and run this program. It should help you understand it a bit better.

WINTER SCENE.C
Load as follows: LOAD "WINTER SCENE.C",8
BL: 31, FT: PRG, CL: DEMO
This program will display a winter scene. Then a cross country skier will make his way down the hill (he falls once) and display a sign that says, "MERRY XMAS".

SUPER PAC HUNT.C
Load as follows: LOAD "SUPER PAC HUNT. C",8
BL: 38, FT: PRG, CL: GAME
Equipment required: joystice.
The ghost monsters have finally blown their stack. They are chasing you all over the place. Your mission is to escape the ghost monsters and live to get to the next level. Your score increases everytime you eat a dot. If you eat all of the dots on a level you are advanced to the next level where the ghost monsters are even faster.
If you are playing by yourself use a joystick plugged into control port #1 or specify what keys you would like to use.
If there are 2 players, player one uses control port #1 and player two uses control port #2. Or you can specify keys that you want to use. *TPUG*

(C)MA

A DIFFERENT MENU
To get the menu program into your Commodore 64 type in the following:
LOAD "M*",8 (RETURN)
After you run this program it will go to your disk drive, read the directory of the disk in the drive and display it on your monitor for you. Then all you have to do is, using the cursor keys, move the yellow bar onto the name of the program that you want to load and press f3.
If you want to look at another disk press f7.
Good luck. . .

LIST-ME (C)MA.L
Load as follows: LOAD "LIST-ME (C)MA.L",8
FT: PRG, CL: LIST-ME
This file contains one-line documentation of the programs on (C)MA. This file should be printed and kept close by your computer.

ART SHOW.C*
Load as follows: LOAD "ART SHOW.C",8
BL: 8, FT: PRG, CL: DEMO
Equipment required: 1541 disk drive.
This program will show you some pictures created on the Commodore 64. They are all very good and each shows in a different way the graphic capabilities of the C-64.
NOTE: You can load and edit these pictures if you have a Koala pad.
Have fun. . .

LOGO.D*
Do NOT attempt to LOAD this file.
BL: 1, FT: PRG, CL: DATA
This file is loaded and used by ART SHOW. C.

DISSOLVE.D*
Do NOT attempt to LOAD this file.
BL: 9, FT: PRG, CL: DATA
This file is loaded and used by ART SHOW. C.

PIC A GRAPHICS.D*
PIC B GIRL.D*
PIC D ETLANOCE.D*
PIC H STARSAOK.D*
PIC F ODEON.D*
PIC G MOON.D*
PIC L CFTR 4.D*
PIC J THATSIT.D*
Do NOT attempt to LOAD these files.
BL: 40, FT: PRG, CL: DATA
They are pictures that are loaded by ART SHOW.C.

SNOOPY DEMO.C
Load as follows: LOAD "SNOOPY DEMO.C",8
BL: 11, FT: PRG, CL: DEMO
Watch Snoopy land his Sopwith Camel while Charlie Brown jumps for joy.

ALPHASORT.C*
Load as follows: LOAD "ALPHASORT.C",8
BL: 17, FT: PRG, CL: BUSINESS
Equipment required: 1541 disk drive, MPS-801 or 1526 printer.
This program allows you to type in lists of anything, in any order. When you are finished it will sort these items. Then you can save them to disk, look at them on your monitor, or print them out on your printer.
To add to an existing file load the old file in and then go to the add section.
When the program asks you if you want instructions be sure and answer "YES". There is information there that you will need to know.

PRINT6/49.C
Load as follows: LOAD "PRINT6 49.C",8
BL: 5, FT: PRG, CL: MISC
Equipment required: MPS-801 or 1526 printer.
This program will print out 100 lists of 6 random numbers from 1-49. Once they are printed you can go through them and decide which ones you want to use.

EYE OF KADATH.C
Load as follows: LOAD "EYE OF KADATH.C",8
BL: 124, FT: PRG, CL: GAME
You, and only you, know the secret that will prevent the rise of a power so dark and evil, that to dwell on it will bring madness!
To prevent this unimaginable spawn of horror you must do the following:
1. enter the labyrinth caverns.
2. find the hidden and guarded 'Eye of Kadath'.
3. return the 'Eye' to its rightful place.
4. invoke the elder powers.
5. destroy the gate through which this unspeakable evil will gain dominion over all the earth!
All of these tasks must be accomplished before the dark star is once again in conjunction with Arctarus – an event only 15 days away! Only if you accomplish this will mankind survive!
Good luck. . .

CONIFER GUIDE.C
Load as follows: LOAD "CONIFER GUIDE.C",8
BL: 92, FT: PRG, CL: EDUCATION
This program will ask you a series of questions about the tree sample that you have collected. Answer the questions by pressing the number corresponding to the sample provided. After you have answered the questions the program will tell you what kind of tree the sample comes from, what the leaves are like, where the tree likes to live, what the bark is like, what the cones the tree produces are like, what the average size of the tree is, the characteristics of the wood, what trees of this kind are used for, and any other noteworthy information.
Good luck. . .

FUNNY CAR.C
Load as follows: LOAD "FUNNY CAR.C",8
BL: 18, FT: PRG, CL: GAME
Ever wonder what it is like to race a car with 1500 horse power? Well, here is your chance. All you have to remember is to shift gears (engine redlines over 8000 revolutions per minute), watch your oil pressure, and get a clean start.
First gears is f1, second is f3, third is f5, and fourth is f7. Good luck. . . *TPUG*

(C)MB

A DIFFERENT MENU
To get the menu program into your Commodore 64 type in the following:
LOAD "M*",8 (RETURN)
After you run this program it will go to your disk drive, read the directory of the disk in the drive and display it on your monitor for you. Beside each program there will be a letter. All you have to do to LOAD a program is enter the letter that corresponds to that program name and it will be LOADed for you.
Any files that come up in reverse field are SEQ, REL, or USR files and are LOADed and used by some other program on the disk. Good luck. . .

LIST-ME (C)MB.L
Load as follows: LOAD "LIST-ME (C)MB.L",8
FT: PRG, CL: LIST-ME
This file contains one-line documentation of the programs on (C)MB. This file should be printed and kept close by your computer.

FAME.C
Load as follows: LOAD "FAME.C",8
BL: 75, FT: PRG, CL: GAME
This game is set in the days of old, in a land of knights and dragons.
You act out the role of a young knight on his quests. Each quest can earn him fame and this in turn will help him climb the status ladder.
There are ten grades of knight. You start at level one and hope to reach level ten and win.
You start with 90 gold pieces at a friendly castle where items can be purchased and help given.
Encounters can result in danger, fame, gold, or nothing. Knights try to gain fame at least equal to the current fame target. On entering a friendly castle with this fame you can then upgrade your knight.
You will spend 1 gold piece for food at the end of each day. A day is usually 3 or 4 moves.
When in a friendly castle weapons can be purchased and upgraded to give your knight a better chance in combat.
Good luck. . .

SHEARS SCORING.C*
Load as follows: LOAD "SHEARS SCORING. C",8
BL: 49, FT: PRG, CL: MISC
Equipment required: 1541 disk drive, MPS-801 or 1526 printer.
If you are going to be having a sheep shearing contest and were wondering how you were going to keep score, well, look no further. This program uses the official points system.
After you input the name of the farm where you are having the contest, the date, the class and stage, the number of sheep there are to be shorn, and position the paper in your printer you will be presented with a menu that looks like this:

Shears System

1 input time and penalties
2 print quality points only
3 print results
4 clear sheet
5 save data on disk
6 restore data from disk
7 print checksheet
8 alter faults penalties
9 quit

And may the best woman/man win! Good luck and good shearing. . .

BIBLE CLUES.C
Load as follows: LOAD "BIBLE CLUES.C",8
BL: 48, FT: PRG, CL: EDUCATION
This program will give you some clues to some bible items or people and you have to type the name of that item or person. You will be timed by a clock starting at 75 seconds. You will get the number of points showing when you hit return after typing a correct answer. Each game has five sets of clues for each of up to six players to answer.
Here is a sample question:
Clue #1: Gospels
Clue #2: In Bethlehem
Clue #3: Place where animals are kept
Clue #4: Mary and Joseph slept here
Clue #5: Birthplace of Jesus
The answer is a stable or a barn.
Easy, huh?

QUIET AFTERNOON.C
Load as follows: LOAD "QUIETAFTER-NOON.C",8
BL: 58, FT: PRG, CL: DEMO
This program shows what happened one "Quiet Afternoon".

LINE SPIKES.C
Load as follows: LOAD "LINE SPIKES.C",8
BL: 118, FT: PRG, CL: DEMO
Sit back for 10 minutes and find out what can happen to your sensitive electronic equipment if you don't have protection from electrical surges.

FLASHCARDS.C*
Load as follows: LOAD "FLASHCARDS.C",8
BL: 18, FT: PRG, CL: EDUCATION
Equipment required: 1541 disk drive.
This program will allow you to make up flashcards and save the information on your 1541 disk drive. You enter the information that is supposed to be on one side of the card in such a way that it is a clue as to what is on the other side. An example of what might be on side one is:

The Commodore 64's CPU is the. . .
And on the other side would be "6510".

I can see it being used all over the classroom for everything from mathematics to home economics.

MULT CHOICE.C*
Load as follows: LOAD "MULT CHOICE.C",8
BL: 21, FT: PRG, CL: EDUCATION
Equipment required: 1541 disk drive.
You can use this program to make up multiple choice tests. Once you make up the questions you can save them to either tape or disk. A very handy program for teachers to have.

MULTI QUIZ.C
Load as follows: LOAD "MULTI QUIZ.C",8
BL: 11, FT: PRG, CL: EDUCATION
Using this program you can make up your own tests. You can put in your own questions by changing the data that begins at line 500 in the program.
Instructions for the program are presented to you in a test format so you can be tested on what this program is capable of doing.
Good luck. . .

NAME THE NOTES.C
Load as follows: LOAD "NAME THE NOTES. C",8
BL: 14, FT: PRG, CL: EDUCATION
You will be shown notes in different positions on the treble and/or bass clef. Name the note as fast as you can. The correct answer will be given if you press the space bar. If you want to stop type "S". Twenty notes must be answered correctly.
Good luck. . .

UKULELE.C
Load as follows: LOAD "UKULELE.C",8
BL: 25, FT: PRG, CL: EDUCATION
This program will either show the notes and finger positions of chords that you request or show you chords and ask you to name them.

CND PROV CAPS.C
Load as follows: LOAD "CND PROV CAPS.C",8
BL: 19, FT: PRG, CL: EDUCATION
This program will test your Canadian geography. It will say something like, "The capital of the Yukon is?" You have to type in the answer, "Whitehorse".
Easy, eh? Good luck. . .

EARLY SETL.C
Load as follows: LOAD "EARLY SETL.C",8
BL: 26, FT: PRG, CL: EDUCATION
This program will help you to learn the general locations of early Nova Scotian settlements.
When the settlements appear on the screen try to memorize their location and group of origin.
Good luck. . .

CITIES.C
Load as follows: LOAD "CITIES.C",8
BL: 28, FT: PRG, CL: EDUCATION
This program will show and test you on the

cities in Nova Scotia or the bodies of water around Nova Scotia.
Good luck. . .

COUNTIES.C
Load as follows: LOAD "COUNTIES.C",8
BL: 19, FT: PRG, CL: EDUCATION
This program will test on the counties and capitals of Nova Scotia. You can answer by typing in the answer or you can choose from four possible answers.

IDENTIFIER.C
Load as follows: LOAD "IDENTIFIER.C",8
BL: 2, FT: PRG, CL: UTILITY
This program will look at your Commodore 64 and tell you what version of the C-64 you have.

EARTH DEMO.C
Load as follows: LOAD "EARTH DEMO.C",8
BL: 32, FT: PRG, CL: DEMO
This program will display a very good demo of how sprites and modified characters can be combined to make good-looking graphic effects.

DAYS OF OUR LIFE.C
Load as follows: LOAD "DAYSOFOURLIFE.C",8
BL: 17, FT: PRG, CL: MISC
This program gives you facts about a date of interest to you. All you have to do is enter today's date and then the date that you are interested in.
For example, today (when I did this) was June 9, 1984. I was born on July 30, 1965. After I entered that, my Commodore 64 told me that I was 18 years, 10 months, and 9 days old. It tells me how long I have slept, eaten, studied and relaxed in my life time. It also tells me that I can retire in 2030.

STOCK.C
Load as follows: LOAD "STOCK.C",8
BL: 30, FT: PRG, CL: GAME
This program plays the stock market. You will be given $10,000 and may buy or sell stocks. Stock prices will be generated randomly. A table of available stocks, their prices, and the number of shares in your portfolio will also be displayed.
At the bottom of the chart you will see the stock's initials. Here you indicate whether you wish to buy, sell, or do nothing. To buy type in the number of shares you wish to buy. To sell type in the number of shares you wish to sell with a minus sign (−) in front. To do nothing enter 0 and press return.
A brokerage fee of 1% is charged on each transaction. If a stock's value drops to zero it may rebound to a positive value again. You cannot buy stock when the price is at zero.
To end type "9999" in for IBM stock.
Good luck. . . *TPUG*

New Additions To The TPUG Library

(Access to library available to TPUG members only)

NOTE: Each List-Me File includes the following notation:
"Copyright ©1983 by Toronto PET Users Group Inc."
"OK to copy but is not to be sold or published for profit"

The **LIBRARY** to which a disk/tape belongs is indicated by the library code in brackets. This code appears as the first character in the three-character identification code:

(C) Commodore 64 (P) PET/CBM (V) VIC 20 (S) SuperPET

If you wish to order disks or tapes from our library, please make sure that the programs you order are compatible with the computer you have.

(S)TF -MAY 1984

This disk has been supplied by ISPUG and contains the material referred to in SuperPET Gazette, Vol 1, #12, pages 197-206. This summary of most files on the disk. Text Files that appear in this issue of the Gazette are marked with an '*'.

21	"filename-std:e"	SEQ	This file contains the naming conventions to be used by ISPUG & TPUG (read with MicroEditor). We would appreciate all contributions to be named using these conventions.
8	"copy.bu"	SEQ	A basic utility to facilitate the making of multiple copies of a disk.
2	"preface:e"	SEQ	* Introductory article on printing the APL character set
44	"pete-article:e"	SEQ	*Terry Peterson's on printing APL characters.
69	"peterson:aws"	PRG	Terry's workspace. Version 1.0 Software!
28	"zeller-article:e"	SEQ	*Steve Zeller on printing APL character set
47	"aplchars1:aws"	PRG	Steve's workspaces for V1.1 APL.
58	"aplchars2:aws"	PRG	
60	"aplchars3:aws"	PRG	
23	"beck-article:e"	SEQ	*Reg Beck on APL character set, directory file
5	"apl.chrs"	SEQ	Reg's workspaces/assembly language programs.
2	"typeapl:men"	PRG	—described in his text file.
18	"typeapl.asm"	SEQ	
1	"typeapl.cmd"	SEQ	
33	"aplchrset:aws"	PRG	
31	"aplchr:aws"	PRG	
8	"sdump:au"	PRG	Jim Swift's screen dump to printer.
2	"adump:men"	PRG	Dumps any SEQ file on disk to printer from main menu. Set for 'ieee4'. Change one line in .asm file for other printers, reassemble, and relink. List directory to screen first with dir:men, loaded from menu.
16	"adump.asm"	SEQ	source files for adump:men
1	"adump.cmd"	SEQ	
1	"type1:men"	PRG	Sets FX80 for enhanced print from main menu. Load before you load the APL character set.
1	"delay.asm"	SEQ	subroutines for above Reg Beck's programs.
1	"delay.b09"	SEQ	

3	"disp.asm"	SEQ	
1	"disp.b09"	SEQ	
5	"read16.asm"	SEQ	
1	"read16.b09"	SEQ	
15	"beck-notes:e"	SEQ	Details on how to use the Beck programs.
19	"loader:au"	PRG	Loads alphabetized directory and asks what WS you want to load.)LOAD in APL.
2	"dir:men"	PRG	Load from main menu. Two-column directory to screen. Give it 0 or 1, hit RETURN to scroll directory and to return to menu. (Eric Brandon)
9	"U16-BASE2-2K"	PRG	Connely's unloading of BASE ROMs
9	"U17-BASE2-2K"	PRG	with APL character set. ROMs are as numbered.
17	"U16/17-4K"	PRG	A ditto 4K unloading.
48	"dos-support:aws"	PRG	Menu-driven DOS program for APL. V1.1.)LOAD in APL. (Reg Back)
6	"describe.may/84"	SEQ	A longer version of this index
5	"connely-stuff:e"	SEQ	On the BASE 2 material.
6	"help:e"	SEQ	A note on how to get it.
1	"reset:men"	PRG	Load from main menu. Resets to whatever language/facility is resident in the upper 64. Works with all but APL or COBOL, which use bank 15, where this one loads. You may overwrite it with APL or COBOL after it is used.

TPUG SuperPET group thanks ISPUG for making this disk available. *TPUG*

(P)TA -JUNE 1984

(1 disk/tape)

LIST-ME(P)TA.L	Documentation for disk (P)TA.
MULT REGR ANAL.8	Business – multiple regression program.
LONGLEY REG.D	Data – some sample data for use with 'MULT REGR ANAL.8".
PROGRAMMER AID.8	Utility – program to carry out some common programmer calculations.
DEFINE KEYS-S.Z	ASM-PAL assembler source for "DEFINE KEYS-0.8".
DEFINE KEYS-0.8	Program to allow 17 upper-case keys on the 8032 to be defined as program function keys.
PGM BUILDER.8	Program builder for the 8032.

Files for "PGM BUILDER.8"

R1.51000	FILE.P-Left, centre or right justify a text field.
R1.51200	FILE.P-String input from disk.
R1.51500	FILE.P-Blinking get routine.
R1-51600	FILE.P-Hyper print routine.
R1.51700	FILE.P-Print and underline.
R1.51800	FILE.P-Sliding print.
R1.51900	FILE.8-Print-At routine.
R1.52000	FILE.P-Kernal for File 1/0, Get Text, and Pagination.
R1.53500	FILE.P-Flashing cursor routine for use with 'get'.
R1.54000	FILE.P-Pop the stack to remove a return address.
R1.54200	FILE.P-Translate tables for use with an ASCII printer.
R1.55000	FILE.P-Print-Using routine, relocatable.
R1.55400	FILE.P-Convert decimal to hex and vice-versa.
R1.55500	FILE.P-Format financial data neatly.
R1.55800	FILE.P-Print-Using simulation in BASIC.
R1.56000	FILE.P-Erase remaining lines from program.
R1.56100	FILE.P-Save screen image.
R1.56500	FILE.P-Line input routine.
R1.58000	FILE.8-Draw a border around the screen.
R1.58100	FILE.8-Draw a border around the screen – different.

(V)TA -JUNE 1984

(1 disk/tape)

LIST-ME (V)TA.L	LIST this file for description of programs on (V)TA.
DIAL INST.V	Instructions for Autodial program below.
DIAL.V	Autodialler for 1650 Modem, requires terminal program.
DT RENAME.V	Removes spaces from files saved by disk-to-tape program.
ACCOUNTANT8K.V	A small business program with limited features.
D & D CHAR GEN.V	A character generator for advanced Dungeons & Dragons.
DISC DOCTOR.V	Allows various disk commands to be easily used from one program
PERIODIC TABLE.V	A quiz program on the periodic table.
DEFUSE.V	Try and defuse the bomb before it explodes (keyboard).
HOME ENERGY8K.V	Work out your home energy statistics with this program.
WEATHERMAN.V	This program will tell you about the weather when you feed in data.
R1.58200	FILE.8-Draw any shaped box or window anywhere.
R1.58600	FILE.8-Miscellaneous 8032 POKEs.
R1.58800	FILE.8-8032 Cursor facilities as subroutines.
PGM BUILDER.8	Utility – Program builder – BASIC version.
PGM BUILDER GT.8	Utility – Program builder – Petspeed version.
CHOMPER TITLE.Z	Game – a Pacman-like game, title animated, instructions included.
CHOMPER.Z	Game – a Pacman-like game, speeds up on each board.
INTEGRATION.8	Math – integration. Enter formula and calculate value.
FILTERS.Z	Electronics – calculate bypass filter component values.
FURY.P	Game – animated space shoot game.
DEATH LANE.P	Game – car race game. Dodge the obstacles and shoot the targets.

YAHTZEE!.V	The game of Yahtzee on your computer.
SCREEN STORY.V	Tells about the moving screen in a creative way.
MUPPET MUSIC.V	The theme from the Muppet Show.
OTHER WORLD16K.V	A 67 block long adventure for the VIC 20.
FAMILY TREE8K.V	This program allows you to build your family tree.
DONKEY KING(J).V	Similar to the arcade game (joystick).
SMURF SONG.V	Play Smurf music.
HELP BILLY.V	A program for pre-schoolers to determine the parts of Bill's body.

These programs are meant to help you create your own games.

GAME MAKER1.V GAME MAKER2.V GAME MAKER3.V	The programs create the characters and assist you. You do the rest.

CONFERENCE SPEAKER DISK

Keith Falkner
Toronto, ON

This is the "Speaker Disk". The software hereon is applicable to: 40-column PET, 80-column PET, and C-64. TPUG regrets that no material was submitted for the VIC 20.

Files on this disk came from Falkner, Easton, Bennett, Wright, and Rybolt. TPUG also received about twenty programs of significant power but limited appeal, for which there is no room. These are scientific applications by A. E. Krause of the University of Saskatchewan. They all require an 8032 computer and a 4040 or 8050 dual drive. Most require some specific scientific instrument, attached to the computer on the IEEE-488 bus.

INDEX TO PROGRAM DESCRIPTIONS

The work of:	Works on:
Keith Falkner	C-64, 40-col PET
John Easton	C-64 or any PET
Chris Bennett	any machine
Loren Wright	C-64 (sprites)
Tom Rybolt	C-64 (color)

Color display is needed for Rybolt's.

Files by KEITH FALKNER

PRES.REPORT.4C

presents "Formatting a Report", and shows how a BASIC program can present information neatly in columns on numbered pages with headings.

PRES.SEQFILES.4C

shows how to handle sequential files in a BASIC program, and how to be sure that any error conditions are covered.

PRES.REPSTAFF.D
PRES.REPSALES.D

sample input data files for . . .

PRES.REPSAMP.4C

reads sequential files and prints . . .

PRES.REPREPTS.D

two reports about the data.
These all run on 40-column PET and C-64.

Files by JOHN EASTON

These illustrate convenient ways to list choices in menus, and how to load one program from another. These run on C-64 or any PET, either 40- or 80-column, adapting themselves to the machine and display in use. Clever! All programmers with a serious attitude toward the writing of business programs should study these programs, because the techniques required to implement nested menus are extremely well presented.

Start with the program "BOOT". Some of the choices you can make lead to errors: "FILE NOT FOUND", because John could not include all the programs listed in the menus. So study the directory first. (John is more devout than some, as you might tend to notice.)

Files by CHRIS BENNETT

REL FILES 2.0

shows how to program relative files in a VIC 20, C-64, or "Upgrade ROM" PET, (i.e. ### COMMODORE BASIC ### PET).

REL FILES 4.0

shows how to program relative files in a machine with Version 4 BASIC, i.e. a current PET. Some accessories provide Version 4 BASIC for the VIC 20 and C-64

THESE PROGRAMS WRITE ON THE DISK, SO COPY THEM TO ANOTHER DISK TO TRY THEM, OR YOU RISK DESTRUCTION OF YOUR VALUABLE SPEAKERS' DISK!

Files by LOREN WRIGHT

SUPER DEMO 4 independent sprites are animated & combined.
COMBO DEMO A jumbo flying saucer is made from sprites.
PRIORITY BARS Sprites pass before, behind, or between others.
PRIORITY RINGS The above two ideas are used together. Cute!
BIRD FLIGHT Very professional scene with good animation.
DATA COLLISIONS Sprites bump into or pass through the text.

BITMAP CALC.OBJ This subroutine loads into $C100-$C2FF. (I wonder what it does!)

Files by TOM RYBOLT

WUBICS CUBE

If your thumbs are tired from playing with RUBIC'S CUBE, but you still haven't had enough, here's the program for you! The program is well presented, and has optional instructions with excellent illustrations.

MWUBIC

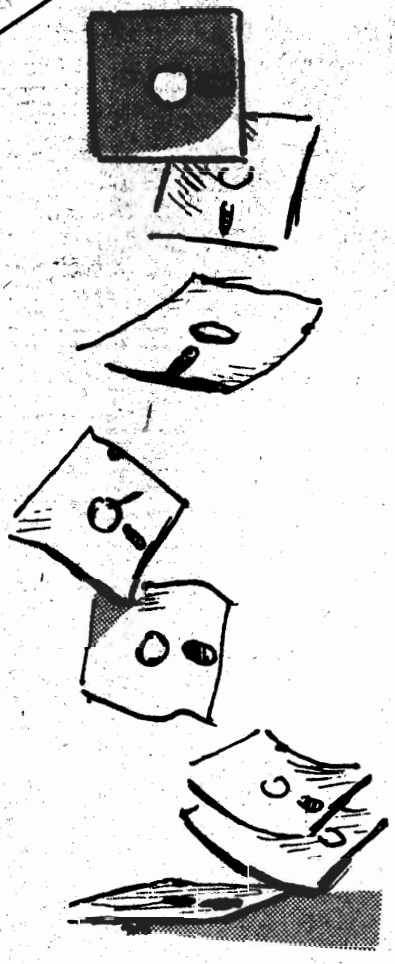
This is a machine-language subroutine for the above program. The routine has different entry-points for different purposes, so the BASIC program says SYS FL to cause a 'front left' move, and SYS CU to turn the whole 'cube up', et cetera. This is good programming practice.

Thank you from TPUG

Many of us worked hard to present the 1984 TPUG Conference, and we are already at work on the 1985 TPUG Conference. On behalf of 1984 Conference Chairman Gordon Campbell, thank you for your participation in the conference. About one thousand people attended, and many of you told us we were doing something right. Members came from widespread states, several Canadian provinces, and a few flew in from abroad. There were no disasters, no serious injuries, and almost no losses. In 1985, expect: the same site, the same general timing, easy transportation into Toronto, and (please) fewer problems with equipment for us speakers! Thank you all very much, friends! *TPUG*

NOTE: If you want the scientific applications submitted by A. E. Krause, watch for them in the PET library. We expect them to show up on the September 1984 disk-of-the-month.

librarian's corner



Chris Covell
Toronto, ON

During the summer all of the old monthly VIC 20 disks are phased out. The programs are sorted into categories, and then placed onto category disks; to be available sometime in September.

This means that the 'T' series will no longer be available, but will start fresh with the new year. The disk (V)V1 is also being removed from the library, due to the high content of non-English programs. The programs which are usable, will be transferred to a new games disk.

Certain programs should be mentioned, as questions are always being asked about them.

First of all, on terminal programs:

There is a working terminal program, including upload/download now available. The program can be found on (V)T9. It is called 'TERMINAL8K.V'. It requires an additional 8k of memory as noted in the name. Once loaded, this program will automatically load 'TERM.VIC'. This is the machine language portion of the program. You must have a disk drive to download! The program uses Punter protocol which is found on many PET and C-64 BBS'S such as the TPUG BBS. Instructions on uploading, and downloading, can be found on the BBS in most cases.

Should you wish a terminal program, but do not have memory expansion, there is one on (V)TN called

VICTERM.

The turtle graphics programs which were not working on (V)V8, and (V)X1, have been corrected, and the new tapes and disks now contain working versions of the program.

The utility program on (V)X1 called 'VICAID4.REL' has also been corrected.

For a wordprocessor, try 'VIC EDITYPE 8K.V' on (V)TU. The only type of spreadsheet we have is 'TINY PLAN 8K.V' appearing on (V)TU. The best machine language assembler/disassembler we have is 'MICROMON@$0E003K', or 'MICROMON@$30008K', if you have an 8K expander. If you have no expander, you can still use 'TINYMON1 FOR VIC' on (V)V2. Tinymon is not a full featured assembler but a machine language monitor.

When submitting programs, please document the program as much as possible, and be sure to clearly indicate on the disk/tape what memory expansion, and equipment is required. Disk is preferred over tape for submitions, and is processed faster.

If you have any ideas for the library, or the librarians, be sure to write a letter to us, and explain your suggestions.

Thanks for the support, and keep on sending in those submissions! *TPUG*

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