

THE TORPET

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CALENDAR

WESTSIDE CHANGE

The next Westside Chapter meeting at Sheridan College will be on the 18th of November the **3rd Wednesday** in November. Please take note of this change!

REGULAR CENTRAL CHAPTER

The next regular meeting of the Central Chapter will be on Wednesday Dec. 9th. and the 2nd Wednesday of each month thereafter. But please take note of the following announcement of the Super Copy Session.

SUPER COPY SESSION - NOV 4

The November 4 meeting at Leaside (which is the first Wednesday - the next one is Remembrance Day) will be devoted entirely to copying the club library. All the library disks will be available, and a large number of stations with disks will be set up, each one with portions of the library.

Elsewhere in this copy of the TORPET listings of the contents of each of the club disks is displayed. Pick the ones you want copies of, and bring the appropriate number of blank disks so you can obtain copies for your own library.

There will be **NO OTHER PROGRAMME**. The whole evening will be set up to allow you to get copies of the programmes you want.

This meeting will be **CLOSED**. It is the policy of the club that the library is available to members **ONLY**. You may, however, purchase a membership (\$20) at the door, or an associate membership (\$10) to gain admittance to this meeting. This meeting will be open to both full members and associate members at no charge.

The club has over 1400 programmes in its library, and this is your chance to get copies of those disks that you are interested in.

MACHINE LANGUAGE GROUP

The M L group meetings this year are taking place under the guidance of Jim Carswell. Jim Butterfield has agreed once again to attend.

Place - George Brown College
Casa Loma Campus
(Same as last year.)
Dates: Friday Nov 13/81 7.00 pm
Friday Dec 4/81 - 7.00 pm
Friday Dec 18/81 - 7.00 pm
Friday Jan 8/82 - 7.00 pm
2nd Friday of every month thereafter

For further information, call Jim Carswell at 531-9909

FLEX FILES

BY Dr. George Piasecki

FLEX FILE consists of several programs which together can print a MAILING LIST and do FILE MAINTENANCE. It is written in Basic and Machine Language by Michael Riley and is sold by AB COMPUTERS.

Printout can be done by a CBM or ASCII printer (NEC Spinwriter). You can select the printer device number and line feed if your printer requires one. The DATA BASE program allows you to collect data in the format you create. You can have up to 42 fields. Record size is 250 characters. The data can be sorted by several KEY FIELDS which you choose.

The COMMANDS that are available are ADD, REPLICATE, CHANGE, DELETE, NEXT, PREVIOUS, GOTO, FIND, TRANSFER to another program, USER (if you would like to add a subroutine) and EXIT. These commands allow you to quickly find a record, modify it, and browse backwards and forwards from the record in view. You can find a record with a 'wild card' format by partial name followed by an asterisk. It allows field data to be identical such as same last name (eg. SMITH).

You can then use the above DATA BASE to create MAIL LABELS. When a record size is 127 characters (typical for a mailing list) each disk can handle over 1000 records (about 2800 with the 8050 drive). The MAIL LABELS program allows you to create, change and save the FORMAT for future use. You can choose the number of label across, the number of lines per label, and can have up to 3 fields per line. You can then PRINT ALL, or select ONE or a COMBINATION of TYPES of record, or REPEATS of one record for printing.

The REPORT WRITER program allows the DATA BASE to be OUTPUT in a FORMAT you can easily create. The format can be saved but when brought back can be changed quickly and easily by SCREEN COMMANDS.

The changes can be in HEADER LINES; TITLES for columns; SELECTION of record criteria; POSITION and CONTENTS of columns (taken from field data); and CALCULATE COLUMNS INFO (can put FIELD contents into COLUMNS and on these perform arithmetical operator, log, and trig functions). The columns may be related mathematically with other columns. You can have a column showing a RUNNING TOTAL as each record is printed. This is done by doing a cumulative ARITHMETICAL ADD to a particular column on SUCCESSIVE RECORDS (passed from row to row). Another routine allows you to Right and Left JUSTIFY from the decimal point. At the end of the report a TOTAL and/or AVERAGE can be calculated for any column.

SELECTION of records is indeed another powerful feature. It allows you to LOGICALLY LINK the following 4 parameters: FIELD#; EQUALITY TYPES; ARGUMENT; and LOGICAL CONNECTIONS.

1. FIELD#:(You choose the field).
2. EQUALITY TYPES:(You select one of the following eight)
 - a) EQUALS (identical each character)
 - b) LESS THAN (numerically)
 - c) GREATER THAN (numerically)
 - d) PRECEDES (alphabetically)
 - e) FOLLOWS (alphabetically)
 - f) NOT EQUAL TO (not identical to)
 - g) PATTERN MATCHES (?='wild character', *='wild ending')
 - h) INCLUDE IN (field characters to argument characters)
3. ARGUMENT:(any alpha-numeric string; eg. could be an A.B, ABC, etc. entered by you in the original DATA BASE in a FIELD you could have designated as TYPE).
4. LOGIC CONNECTIONS: (AND;OR; THEN PRINT) - Choosing the AND or OR allows you to go

back and create a 2nd LINKING of the ABOVE 4 PARAMETERS. When you have completed the desired LOGIC LINK you choose the THEN PRINT command.

OTHER PROGRAMS:

CREATE A SEQUENTIAL FILE:

This is done from the RANDOM ACCESS FILE. This allows you to dump your original DATA BASE file, change the record size; and the fields.

LOAD FROM A SEQUENTIAL FILE:

Use this to reload the created sequential file into the new random access file. (A very useful procedure to avoid the re-entering of data if you decide to change your Data Base format.

ALPHABETICAL ORDERING:

Used to return the loaded sequential file to correct alphabetical order. It can also be used to Sort a Field that was not previously designated as a KEY field.

The FLEX FILE programs come on disk with a 28 page manual. There is no ROM protection. The manual is easy to follow and has on 2 pages Program Information and a list of variables used. The program is 'User Friendly'. Once the formats have been saved you do not have to refer to the manual to make complex choices, the questions appear on the screen.

When ordering it is requested that one specify the ROM type of your Disk and Machine (32K recommended)

I have used it on a program that requires: 15 fields, a sort on 6 key fields, rapid finding of a record to update specific fields, and an all and selective printout. It works very well and so far I have not encountered any disaster producing bugs. Occasionally after a write, my disk error light will stay on but I am able to continue to add records without any obvious problem. The error light will go out and may come on again with the writing of subsequent records.

To me this program is worth its weight in gold. At a price of \$60.00 in U.S. funds it appears underpriced relative to the other Data Base software that is currently available.

Dr. George Piasecki

BULLETIN BOARDS

by Gord Campbell

MODEM 80 PURCHASES

A bulk purchase of Modem 80's has been arranged. I will be arranging for delivery to the participants.

The club has purchased four modems for use by the members. These will be rented for \$20 per month on a first come, first served basis. I am administering the rentals. Call me at 492-9518 any evening until 11:00 p.m. if you are interested. This will let you find out what the bulletin boards are all about, and give you the capability of swapping programs over the phone lines.

NEW 4032/4016 PET CONVERSION TO 80 COLUMNS

by Dieter Demmer

The new models coming from Commodore (identified by the 12 inch C.R.T.) called 4016/4032 can be 'easily' converted to an 80 column machine. Here is how you can do it.

First the jumper configuration must be changed using either new jumpers to convert the PET permanently or using toggle-switches in case you want to keep both, a 40 column and an 80 column alternately. Jumper 1 goes to 2, and 3 goes to 4 (located at front right of board). This changes the dot-clock rate and the video shift-register load frequencies. Secondly the two jumpers marked 40 and 80 go to the 80 position (located front center of board). These jumpers change the addressing of the odd/even screen memory to incorporate the second 1000 words of screen-ram. Now five I.C.s have to be installed in the locations that are free on the printed circuit board:

Qty 2 - 2114 (1024 X 4 Ram) in UC6 and UC7

Qty 2 - SN74LS244 (Driver) in UB6 and UB7

Qty 1 - SN74LS373 (Buffer) in UB8

If both, 40 and 80 versions are desired, pin 1 of UB8 must be switched via another jumper or toggle-switch. In 40 column position this pin is simply pulled up to VCC via a 2 K resistor and in 80 column position it is connected to the artwork of the board.

To complete the hardware modification, all BAx jumpers located in the centre of the board must be moved one position up. The easiest way to accomplish this is to install single-row male header strips (20 pins) and using a shorting plug with every other pin shorted across, move the plug one position up for 80 columns and one down for 40. This jumpering accomplishes the screen-ram addressing scheme which is word oriented rather than byte. I.e. BA0 is not used, BA1 goes to SA2 etc.

Now that the hardware resembles an 8032, some firmware changes are in order to make the operating system aware of this. All changes take place in the E000-E7FF Rom of the system. It must be re-programmed using a 2716 or 2516 E-Prom. Use a friends programmer if you don't have one yourself. Here are the necessary changes:

1 - Screen line wrap table must be changed to reflect 80 columns.

2 - CRTC registers must be set for different line spacing and line length.

3 - PET must come on in lower case characters.

4 - Screen clear function must now clear 2000 locations.

The following minimum changes were done to the authors system and all standard 8032 software runs as normal.

LOCATION FROM TO LOCATION FROM TO

```

-----
E045 C0 80 E047 83 87
E04C 28 50 E05C 9D 20
E05D 00 9E E05E 80 E5
E07F 27 4F E091 28 50
E095 28 50 E1DF 27 4F
E28E 28 50 E32B 28 50
E32F 28 50 E34E 28 50
E3FA 27 4F E407 27 4F
E70C 27 4F E734 27 4F
E67F 8E 20 E680 4B BA
E681 E8 E5
  
```

Create two new routines at the presently unused area after E59E and insert the following code:

Routine one (clear screen)

```

E59E STA 8000.X
ESA1 STA 8100.X
ESA4 STA 8200.X
ESA7 STA 8300.X
ESAA STA 8400.X
ESAD STA 8500.X
ESB0 STA 8600.X
ESB3 STA 8700.X
ESB6 INX
ESB7 BNE E59E
ESB9 RTS
  
```

Routine two (reprogram CRTC and lower case)

```

E5BA LDA (No.sign)$09
E5BC STA $E880
E5BF STA $E881
ESC2 LDA (No.sign)$0E
ESC4 STA $E84C
ESC7 LDX (No.sign)$00
ESC9 STX $E84B
E5CC RTS
  
```

Change the table in addresses E799 thru E7B0 to the following:

(least significant byte of screen wrap-table)

```

50 A0 F0 40 90 E0 30 80 D0 20 70 C0
10 60 B0 00 50 A0 F0 40 90 E0 30 80
  
```

For persons not equipped to implement these changes, a fixed up version may be made available on disk or tape. Since the software is proprietary to Commodore Business Machines Inc., the author prefers to have interested people do the changes themselves.

To have 40 and 80 column capabilities at the flick of a few switches, it is recommended to keep both roms, the old (901499-01) and the fixed up version in the system. To change between them a rom switch board could be installed in the 'E' socket. It may be necessary for a proper graphics character ratio, to adjust the vertical size slightly. This can be done from the underside of the PET without dismantling the entire cabinet. (Use small insulated screwdriver or filter adjustment tool).

Due to the high frequency that is switched in some cases (16 Mhz), it is required to keep the leads to the switches as short as possible. Care must also be taken to install the miniature toggle-switches laying down on the board since the height underneath the keyboard does not allow standing them up. Even sub-miniature P.C. mount are too long.

The thus modified PET in my possession can be altered for any configuration within 10 seconds. Make sure power is turned off when switching systems or funny things happen on the screen and the PET may crash (software-wise, that is).

For real hardware experts, there is a method of implementing all changes with the addition of a single Flip-Flop (SN74LS109) and only one 4 pole double-throw switch which will have the added advantage of two complete screens full in 40 column mode. This additional chip has to be installed in the main 16 Mhz clock line between UE5 and UD3/UD2 to divide all frequencies at the counter output by two. In this case the feedback to the clock-phase shift register A input has to be moved to output Qc of UD3 instead of Qd to retain correct memory timing.

It seems that J.Strasma (see July TORPET) has expressed wishes for a dual function PET of this kind. For software development people it is obviously a must, if only one machine is to be kept in the house.

POWER

Review by Chris Bennett

About a year ago at a TPUG meeting, Brad Templeton showed us a programmers' aid package he was in the process of developing. That program is now available and is called POWER. The manual has been written by Jim Butterfield and the package is being produced by Professional Software.

There are two versions of POWER. One for the 8032 Computer and one for any 40 column with BASIC 4. The 4K chip fits into the \$9000 ROM socket inside the PET and is called by SYS36864 (SYS9'4096). Power is now ready to help you with your BASIC programs. There are 13 commands available and are as follows:

AUTO - Automatic Line Numbering. You specify the starting line number plus the increment.

DEL - Delete line range.

DUM - This dumps all the non-array variables to the screen.

FIX - This resets POWER to its default settings.

MLM - Calls the Monitor directly without canceling a CDM command so you can dump to a printer.

OFF - Disables POWER.

REN - Renumber command. You can specify the increment, the new starting line number, and the range of lines to be renumbered. This means that, if you have a subroutine from 8000 to 8499, the command REN 10,8000,8000-8499 will renumber that routine in steps of 10 while still keeping the same starting line number. This is very useful to keep all subroutines with the same starting line number.

SEL - This command allows setting or disabling user features such as keyword expansion or macro Expansion.

TRC - The TRACE function in POWER is the most powerful I have seen so far. A full trace lists the line being executed. If the first part of a line has been executed, it will not show on the screen. The statement just executed is shown left justified and the variable value calculated will show just below it.

WHY - If a program ends because of an error, this command will list the line that was being executed at the time of the error. The position within the line is printed in reverse.

XEC - This command takes information from a sequential file and executes them as if they had been entered from the keyboard. The main use I can see for this function is to build a library of subroutines on disk and merge them together into one program as needed.

(at sign)..(at sign) - The (at sign) is used as a find command. It can be used to scan through a BASIC program (or a line range within that program) and search for a specific string of characters. There are also pattern matching characters. The period (.) will match any single character or token while the (asterisk) will match any string. This is the most powerful FIND function that I have seen so far and I have found it to be very useful over the past two months.

(square right bracket)..(at sign) - This is the search and replace function (CHANGE in Basic Aid) for POWER. All the pattern matches found above can be used with this command. A nice feature of both the find and change functions is that they do not repeat the line more than once if the string being searched for occurs 2 or more times within the line. This is one of the problems with Command-O and Basic-Aid.

Some of the other functions of POWER include: Repeat on all keys, Complete scrolling both up and down when listing a basic program, a BASIC keyword on each shifted character (when SEL K is set), plus the ability to define long strings of character (up to 80 character) on a single shifted character.

The documentation, written by Jim Butterfield, is very well presented and, as a bonus, gives you the informa-

tion needed to redefine the BASIC keywords to suit your own needs. Since the keyword selection is more restricted on the 8032, I wrote a short program to redefine the BASIC keywords the way I wanted them to appear. This is included on the TPUG September Disk and is named POWER MOD.

In comparing this package with Basic-Aid and Command-O, I think POWER is a better package. For example, the scrolling feature leaves a blank line at the bottom of the screen when you release the cursor down key. Command-O does not, and I ended up entering a command over the top of a basic line quite a few times. Although I don't use the Trace function, I think many people will find the one in POWER to be the best around. Since obtaining POWER in middle October, I find I have used it quite extensively and prefer it to either Basic-aid and Command-O for the type of programming I do. I think that most people out there when they try POWER will agree with me.

A CALL FOR A SMARTER ASSEMBLER

by Henry Troup

Some while ago, Steve Punter, Bill McLean (not the one from BMB), and I came up with an idea about assemblers. I'd like to throw the idea into the open, for anyone interested.

The thought is this: many assembler variables are temporary. Having to keep track of them yourself is a nuisance. It would be really convenient if we had an assembler that would do this for us. Then we could say 'give me a temporary variable', and get a location. When we are through, we'd say 'get rid of this temporary'.

To do this, we need three new pseudo-ops: one to allocate an area for temporary storage (call it a heap), one to get a variable, and one to destroy it. Call these ALLOCATE, CREATE, and UNCREATE.

These could not be tacked onto an existing assembler, but would be intimately connected with the design of the tables in a new assembler. For example, CREATE needs to be able to check the symbol table to see if the name exists, then add the name (with some tag to say that this is a temporary variable). This means that the table must include the tags.

UNCREATE should not allow us to dispose of anything but temporary variables from CREATE. UNCREATE does not need to remove the entry from the symbol table, but it does need to reset the tags so that we can tell that the name is no longer defined. Of course, CREATE and UNCREATE have to be able to assign addresses to the temporary variables, and free the space afterwards. That involves keeping track of the space in use. This can be done with a bit vector of as many bits as there are bytes in the heap. For a large heap, that can be a significant amount of storage.

A possible syntax for these commands would be:

.ALLOCATE first,last

.CREATE name,size

.UNCREATE name

'First' and 'last' would be addresses. 'Name' would be a variable name, and 'size' would be an optional parameter indicating the amount of storage needed.

Disadvantages: If the heap allocation is overly large, space will be wasted. This can be ameliorated by having the assembler output the total unused heap space, along with the symbol table. Then the programmer can correct the heap size in the next assembly.

Some new error messages and options will be needed.

Some issues I will leave to would-be implementers

BUTTERFIELD BOX

by Jim Butterfield

The Lazy Programmer

Laziness may be a fault sometimes, but in programming, laziness can be about the most constructive force you have going for you.

If you ask a beginner to write a program to print the letter X five times, he will likely code `PRINT "X"; PRINT "X";PRINT "X";PRINT "X";PRINT "X"`. This will certainly do the job, of course. But around the time that I'm coding the third `PRINT` statement, I will tend to think: 'There must be a better way'.

It's not great quantum leap to decide that the statement `PRINT "X"` is repeated five times, so we may put it into a loop, and write: `FOR J=1 TO 5:PRINT "X":NEXT J`. Very nice and a step towards sophisticated programming.

Here's my theory: The `FOR/NEXT` program is better, but not because it's shorter (it is, slightly) and not because it's faster (it's not). It's better written because the programmer has made the jump from dealing with the problem to dealing with the nature of the problem.

What does that mean? Well, a couple of examples will illustrate the point. If I had written the above program either way, what would happen if I wanted to change it so that the program printed Y six times? With the first program, we'd have to rewrite almost completely; with the second, a couple of quick changes would do the job. In other words, the first program, written the hard way, does only one thing; but the lazy program is more flexible and solves the general problem.

Let's carry on with our lazy programming activities. If we're asked to print the numbers from 100 to 150, we could code: `PRINT 100:PRINT 101:PRINT 102 ...` and so on. Once again, the lazy instinct says, "There must be a better way"; but this time, the `PRINT` lines are not identical. No problem, we just code `FOR J=100 to 150:PRINT J:NEXT J`. Our laziness has led us to a new technique. When we get tired of typing in similar lines, we may be able to use a variable to insert the changeable part. It's not just less work, the program result is really better.

Continuing along the scale of escalating laziness, our next job is to print a series of names Bob, Carol, Ted and so on. As we grind out `PRINT "BOB";PRINT "CAROL";PRINT "TED" ..` and so on, the old instincts come into play again. A programmer might get writer's cramp putting in all those names; there's gotta be an easier way. This time we can't compute values like John, Mary and so forth since they don't arrive in any special pattern, but we can put them in Data statements and Read them as we need them. So we code `DATA BOB,CAROL,TED ... MIKE`, followed by `FOR J=1 TO 20:READ NS:PRINT NS:NEXT J`. Once again, laziness wins the day! The program will adapt much more easily to a change in the size of the bowling club, or to Carol dropping out and being replaced by Phoebe.

Of course, if we wanted to use the names twice within our program, it would be anti-lazy to have to type them into the data statements twice, and if we wanted to enter the bowling scores, we'd have to look for a lazier method. After all, we wouldn't think of writing an `INPUT` statement for each player - that would be work. So we graduate to arrays. Each name is first copied from a data statement into an array where we can use it over and over. We code `DIM N$(20), S(20)` to make room for twenty names and twenty scores, and then use the previous data statement with `FOR J=1 TO 20:READ N$(J):NEXT J`. Now we can prompt each name and set each bowling score with `FOR J=1 TO 20:PRINT N$(J);:INPUT S(J):NEXT J`. Following this, our program can work out the average and print each player's result. It's a lot easier than doing things the hard way. It's also better.

If you write a few lines of code that do something handy - calculate the interest on an amount, say - you could repeat the coding later when you needed to do it again. But we lazy people put the things into a subroutine and save ourselves the work.

What happened to the good old work ethic? Well, if you want to program the hard way, slugging through each thing to be done one at a time, be my guest. If your programs fit into the machine at all, they will run faster. But they won't be better. It's laziness that causes us to search out the system behind what we're doing, and thus build sounder programs that are easier to change.

For my part I program the lazy way.

Jim Butterfield, Toronto

THE BASIC BOX

by Chris Bennett

The **BASIC BOX** has been set up to answer the many questions that have come up about certain features of Commodore BASIC. In this column we will answer questions that have been sent in to the TORPET.

PROMINICO SORT ROM

SORT ROM is a product of Prominico Ltd, 1921 Burrard Street, Vancouver, B.C. V6J 3H3 (604/738-7811). It is a 2K 2716 EPROM which fits into one of the empty sockets inside the Pet and sells for \$97.50 in Canadian funds. Versions are available to run in any 40 column Pet with either BASIC 2.0 or 4.0 or in the 8032. You must state which socket you want to use. Since an EPROM is being used, it can be reprogrammed for about 1/3 the original cost to be compatible with any new BASIC releases.

This ROM contains an excellent SORT utility plus several other useful utilities. A description of the various features follows:

`SYS.SORT(x),a$,b,c%`

A maximum of 13 array names may be included in each SORT command. Single dimensioned STRING, REAL or INTEGER arrays may be freely mixed together. The optional key (x) can select which array is to be used as the key for sorting. In the above example, x can be 1, 2 or 3.

One advantage of this utility is that REAL arrays can be sorted. Another is that no matter which array is selected, the corresponding elements in the other arrays are moved around to match the sort key. The third advantage this utility provides is the ability to select, by a variable (x), which array is to be the sort key. With this type of versatility and speed, the SORT ROM is well worth its price. However, there are other features included. An example of each follows.

`SYS.READ#1,(END 200,STOP 300),a$,b$,c$`

This replaces the BASIC INPUT# command and incorporates the following improvements:

1. Maximum string length is 254 bytes.
3. I/O error trap.
2. End of file trap.
4. Accepts NULL strings.
5. Commas, Colons, Leading spaces and Quotes are accepted as valid data.
6. Input terminates with either a carriage return or the 254th character.

This is similar to the block GET that has been written up in the TRANSACTOR and also distributed in our library. However, this version goes a step further and allows more than one string variable to be input with one command and also allows End-of-File and Error trapping. In the above example, if you attempt to read past end-of-file, statement 200 is executed. If an I/O error occurs during a read, statement 300 will be executed. This eliminates testing the variables ST and DSS.

The next two commands go together. The formats are:

`SYS.INPUT#1,(END 200,STOP 300),a,b%,c$`

`SYS.PRINT#1,(STOP 300),a, b%,c$`

These two statements are used to read and write to disk with no restrictions on the format of the data. This means that Carriage Returns, Double Quotes and Commas can be written and read as data. This is accomplished by writing the data out in INTERNAL format. This means that Integer values (b%) are stored as two characters, Real values (a) are stored as five characters and String values (c\$) are stored as a length character followed by the string data. None of these data values are separated by carriage returns or anything else. If, for example, 20 Integers are written to disk, exactly 40 characters (20 times 2) are output.

This can result in a great savings in time and storage. In a test I did with 500 Integer values ranging from 1 to 500, I saved 47% in space and 25% in read write time. This would have been even greater if there had been a large number of 4 or 5 digit numbers included. This will prove very useful in Relative Record files where a fixed length record is assigned based on the maximum size of each field. For example, a dollar value would normally need 11 characters to hold the maximum amount. Using the above commands, it would only need 5 characters. This could reduce the record size by up to 1/2 and allow a larger number of records to be used in the same space.

The last feature is a very fast substring search command which finds the position of one string within another. The format of the command is:

`SYS.POS,p,l$,s$,s`

The last feature is a very fast substring search command which finds the position of one string within another. The format of the command is:

`SYS.POS,p,l$,s$,s`

P will contain the position of the last match or zero if there was none. L\$ is the large string and s\$ is the small string. S is an optional start position for the search.

The documentation for the SORT ROM consists of 25 pages of information with an explanation of each command plus some good examples and background information. This is an excellent package and well worth the money for the features it provides.

Chris Bennett

If you have a problem send your question to:

THE BASIC BOX
c/o Toronto Pet Users Group
381 Lawrence Avenue West
Toronto, Ont. M5M 1B9

are: do temporary variables appear in the symbol table listing? Are their addresses given in the listing? Is it proper to end a source program without UNCREATING all temporary storage? What about the case of NAME2 = NAME1? Do we disallow this, or does it cause NAME2 to become a temporary variable? Or will it 'fix' part of the heap. Do we allow multiple heaps? What about other assignments to the heap?

This temporary variable facility would be a good extension to a macro assembler. It would also be a lot of work. If anyone is interested, I'd be glad to discuss it with them.

MICROMON

The following documentation is for MICROMON, a machine language utility available free to TPUG members through the disk library. The documentation is part of a large body of documentation that the TORPET has available for publishing. The editor would like some feedback as to whether the members feel that this kind of documentation is valuable and whether or not the TORPET is the proper place for its dissemination.

Micromon Instructions SIMPLE ASSEMBLER

```
.A 2000 A9 12 LDA #$12
.A 2002 9D 00 80 STA $8000,X
.A 2005 DEX:GARBAGE
```

In the above example the user started assembly at 2000 HEX. The first instruction was load a register with immediate 12 HEX. In the second line the user did not need to type the A and address. The simple assembler retyped the last entered line and prompts with the next address. To exit the assembler type a return after the address prompt. Syntax is the same as the Disassembler output. A ':' can be used to terminate a line.

BREAK SET

```
.B 1000 00FF
```

The example sets a break at 1000 HEX on the FF HEX occurrence of the instruction at 1000. Break set is used with the QUICK TRACE command. A BREAK SET with count blank stops at the first occurrence of the break address.

COMPARE MEMORY

```
.C 1000 2000 C000
```

Compares memory from HEX 1000 to HEX 2000 to memory beginning at HEX C000. Compare will print the locations of the unequal bytes.

DISASSEMBLER

```
.D 2000
```

```
.. 2000 A9 12 LDA #$12
.. 2002 9D 00 80 STA $8000,X
.. 2005 AA TAX
```

Disassembles to the end of memory starting at 1000 HEX. The three bytes following the address may be modified. Use the CRSR KEYS to move to and modify the bytes. Hit return and the bytes in memory will be changed. Extramon will then disassemble that line again.

```
.D 2000 3000
```

Disassembles from 2000 to 3000.

Disassembly can be done under the control of the cursor. to disassemble one at a time, say from \$1000

```
.D 1000
```

If the cursor is on the last line, one instruction can be disassembled for each pressing of the cursor down key. If it is held down, the key will repeat and continuous disassembly will occur. Disassembly can even be in reverse!. If the screen is full of a disassembly listing, place the cursor at the top line of the screen and press the cursor up key.

FILL MEMORY

```
.F 1000 1100 FF
```

Fills the memory from 1000 HEX to 1100 HEX with the byte FF HEX.

GO RUN

```
.G
```

Go to the address in the PC Register display and begin run code. All the registers will be replaced with the displayed values.

```
.G 1000
```

Go to address 1000 HEX and begin running code.

HUNT MEMORY

```
.H C000 D000 'READ
```

Hunt thru memory from C000 HEX to D000 HEX for the ASCII string read and print the address where it is found. Maximum of 32 characters may be used.

```
.H C000 D000 20 D2 FF
```

Hunt memory from C000 HEX to D000 HEX for the sequence of bytes 20 D2 FF and print the address. A maximum of 32 bytes may be used. Hunt can be stopped with the stop key.

LOAD FROM TAPE

```
.L
```

Load any program from CASSETTE #1.

```
.L "RAM TEST"
```

Load from CASSETTE #1 the program named RAM TEST.

```
.L "0:RAM TEST",08
```

Load from disk drive #0 the program named RAM TEST.

Beware load with a file name breaks the IRQ saved by the MONITOR. Do not use GO COMMAND after LOAD OR SAVE. Exit to BASIC and re-enter MONITOR.

MEMORY DISPLAY

```
.M F000
```

```
.. F000 54 4F 4F 20 4D 41 4E 59 TOO MANY
.. F008 20 46 49 4C 45 D3 46 49 FILESFI
```

Display memory from F000 HEX to F008 HEX and ASCII. The bytes following the address may be modified by editing and then typing a RETURN.

NEW LOCATER

.N 7000 77FF 6000 0400 9000

.N 77CD 77FF 6000 0400 9000 W

The first line fixes all three byte instructions in the range 7000 HEX to 77FF HEX by adding 6000 HEX offset to the bytes following the instruction. New loader will not adjust any instruction outside of the 0400 HEX to 9000 HEX range. The second line Word values in the same range as the first line. New loader stops and disassembles on any bad op code.

QUICK TRACE

.Q

.Q 1000

The first example begins trace at the address in the PC of the register display. The second begins at 1000 HEX. Each instruction is executed as in the WALK command but no disassembly is shown. The Break Address is checked for the break on Nth occurrence. The execution may be stopped by pressing the STOP and '=' keys at the same time.

REGISTER DISPLAY

.R

PC IRQ SR AC XR YR SP
; 0000 E62E 01 02 03 04 05

Displays the register values saved when EXT-RAMON was entered. The values may be changed with the edit followed by a RETURN.

SAVE TO TAPE

.S "1:PROGRAM NAME",08,0800,0C80

Save to disk drive #1 memory from 0800 HEX up to but not including 0C80 HEX and name it PROGRAM NAME.

Beware SAVE with a file name breaks the IRQ saved by the MONITOR. Do not use GO COMMAND after LOAD OR SAVE. Exit to BASIC and re-enter MONITOR.

TRANSFER MEMORY

.T 1000 1100 5000

Transfer memory in the range 1000 HEX to 1100 HEX and start storing it at address 5000 HEX.

WALK CODE

.W

Single step starting at address in register PC.

.W 1000

Single step starting at address 1000 HEX. Walk will cause a single step to execute and will disassemble the next instruction. Control speed with choice of key:

(left wedge) FOR SINGLE STEP;
RVS FOR SLOW STEP;
SPACE FOR FAST STEPPING.

EXIT TO BASIC

.X

Return to BASIC READY mode. The stack value saved when entered will be restored. Care should be taken that this value is the same as when the MONITOR was entered. A CLR in BASIC will fix any stack problems.

MICROMON INSTRUCTIONS:

A SIMPLE ASSEMBLE
B BREAK SET
C COMPARE MEMORY
D DISASSEMBLER
F FILL MEMORY
G GO RUN
H HUNT MEMORY
L LOAD FROM TAPE
M MEMORY DISPLAY
N NEW LOCATER
Q QUICK TRACE
R REGISTER DISPLAY
S SAVE TO TAPE
T TRANSFER MEMORY
W WALK CODE
X EXIT TO BASIC

Micromon also repeats all keys. The repeat key function will be disabled on any load or save.

The repeat key will re-enabled after any MICROMON command.

MICROMON is executed by the following: SYS 4096
Note: MICROMON resides in \$1000 to \$1D43

MAE ASSEMBLER LEARNING AID

This rather long documentation on use of the MAE assembler may not appeal to extremely wide interest in the Toronto community at this time but it is the TORPET editors hope that indication that this type of support would be forthcoming will encourage the M.L. group and may even create the nucleus of a MAE users group here in Toronto.

If this does find interested readers please give the editor some feedback so he will know to continue the support.

MACRO ASSM/TED LEARNING AID (Examples)

This document contains examples which illustrate the many powerful operations that can be performed using the PET Macro MAE.

You should make reference to the accompanying manual for more details. In fact, we recommend that you read the manual first and become familiar with its contents. Then, read this learning aid carefully for a detailed understanding. When using this aid, make frequent references to the manual for further understanding. Learning is an iterative process. You may find yourself advancing rapidly thru this material and later having to fall back and reread previously covered material. This may be because you forgot something or we did not cover the subject properly.

In some of the examples that follow, we recommend that you actually type in the commands and try them. You will find that learning from actually 'doing' reduces the mental overhead caused by dealing with abstract concepts.

So, lets begin
(but first note that any ')' prompts are actually square brackets on the PET.)

Text Editor Examples (Try These!)

#1 Cold start the MAE so all parameters are properly initialized:

```
.G 5000
```

NOTE: Always cold start the MAE as the first entry after you load the MAE program and when you think things are all messed up.

#2 Cause an error to occur so we can see what an error message is like: You type garbage such as XX and return

```
)XX
```

```
!ED AT LINE xxxxx
```

And this error message will appear

#3 Change the text file memory allocation to \$0800 - \$1FFC, the label file to \$4000 - \$46FC, and relocatable buffer to \$4700.

```
)SET $800 $1FFC $4000 $46FC $4700
```

NOTE: The actual value you choose will vary depending on amount of memory you have available. Do not issue this command if you do not have memory in the indicated areas.

#4 Go to monitor and then reenter the MAE at warm start:

```
)BREAK
```

The monitor greeting message appears (Registers displayed or whatever)

```
.G 5003
```

NOTE: The warm start entry leaves the text file, label file, and associated parameters intact. This is the non-destructive entry.

#5 Enter a short subroutine in the text file using the auto line numbering feature. Type this in as shown as later examples refer to it.

```
)AUTO 10
)1000;THIS PROGRAM ADDS 06 TO THE ACCU-
MULATOR
1010;
1020 .BA $800 ;ASSEMBLE MACHINE CODE (OR
OBJECT) AT HEX 800
1030 .OS ;INDICATE TO STORE IN MEMORY
1040;
1050 ADD CLC ;SUBROUTINE ADD
1060 ADC #06
1070ENDADD RTS
1080//
Use // to exit auto numbering
```

```
)AUTO 0
```

Use to disable auto numbering

#6 Now print out the program:

```
)PRINT
```

Program appears properly tabulated

#7 Now print out the program but unformatted (i.e. without tabulating):

```
)FORMAT CLEAR
)PRINT
```

Program appears but untabulated

#8 Now lets go back to automatic tabulating:

```
)FORMAT SET
```

#9 Lets output just the last line:

```
)PR /
```

#10 Renumber the text file by 10:

```
)NU 0 10
```

#11 Renumber the text file with line number 100 as the first number with increment of 10:

```
)NU 0 90
```

```
)NU 90 10
```

Note: The first)NU rennumbers by 90 with the first line number equals 90. The second)NU will add 10 to line 90 giving 100 as the first line number.

#12 Put the contents of the text file to disk. First insert disk, initialize, then type:

```
)PUT "dn:program name"
```

#13 Assemble with no listing:

```
)ASSEMBLE
```

```
//0000,0804,0804
```

This message appears when done. First number is number of errors. Second number is the byte following last object code byte. Third number is relative to .MC specification. If no .MC then it will be same as previous digits.

#14 Assemble with listing:

```
)ASSEMBLE LIST
```

Listing appears

#15 Output the label file (or Symbol Table).

```
)LABELS
```

#16 Run the program entered in example #5

```
)RUN ADD
```

Note: There will be no indication that the program did anything since no outputting was performed.

or give start address in hex

```
)RUN $800
```

or give start address in decimal

```
)RUN 2048
```

#17 Now lets cause an error to occur and see what happens: Change the . in line 120 to ' using)EDIT form 2

```
)EDIT 120
0120 .BA $800
Line appears
```

Cursor up to the period in line 120, change to an asterisk (*), and then press return.

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#18 Now lets assemble with the error and see what happens:

)ASSEMBLE

!02 AT LINE 0120

Illegal mnemonic error message (A list of error messages is contained in the manual.)

#19 Note that the assembly stopped at line 0120. Sometimes we would like for the assembly to continue on errors so all mistakes in the file will be identified. We can instruct the assembler to continue with errors using the .CE pseudo op. (Note: The assembler can not handle some types of errors and will stop, but for most it will continue if you specify a .CE.). Insert the .CE pseudo op at line 10:

)10 .CE

#20 Now assemble again!

)ASSEMBLE

Note that the assembler continues assembling with errors.

#21 Now lets find and output all occurrences of the phrase THIS PROGRAM.

)FIND /THIS PROGRAM/

The line with the phrase will be output followed with the # of occurrences.

#22 Find and output all occurrences of the letter A:

)FIND *A*

The terminator is *. The line with the phrase will be output followed with the # of occurrences.

#23 Find all occurrences of the letter A but just show count:

)FIND /A/#

#24 Replace the phrase THIS PROGRAM with THIS STUPID PROGRAM using edit form 1.

)EDIT /THIS PROGRAM/THIS STUPID PROGRAM/

)EDIT /search string/replacement string/

Note, after replacement the edited line will be output.

#25 Replace all occurrences of the character A with X between lines 100 and 150:

)EDIT /A/X/ 100 150

Note, lines will be output with the replaced string.

#26 Now lets change the text file back but show no output:

)EDIT /X/A/# 100 150

#27 The phrase ADD appears in several places in the text file. Set up to search for ADD and conditionally replace with SUBTRACT:

)EDIT /ADD/SUBTRACT/ *

1000 ;THIS PROGRAM ADDS 06 TO THE ACCUMULATOR

* Experiment with the following one letter commands:

A - Go ahead and alter string
S - Skip over this line
D - Delete this line
2 - Enter edit form 2
X - Exit this command operation
M - Move to next field

#28 Now lets clear the text file:

)CLEAR

#29 Lets reload the text file with that saved on disk in example #5 via the following procedure:

)GET "dn:program name"

xxxx yyyy-zzzz prg.name

Status message output during loading

xxxx - Length of file
yyyy-zzzz - Range where loaded in memory
prg name - File loaded

#30 Copy lines 100 thru 120 to after line 900

)COPY 900 100 120

#31 Delete lines 140 thru 150

)DELETE 140 150

#32 Move lines 100 thru 120 to after line 160

)MOVE 160 100 120

Now that we have tried the basics, lets cover some more sophisticated operations.

Note: The following are not try by example:

a) Search for all occurrences of phrases LOOP01, LOOg01, LOOK01, or any phrase with LOO followed with some character we don't care about, then 01:

)FIND /LOOP%01/

% is the don't care character

b) Search for all occurrences of period, some pair of #'s, the %. Here we have a delima - % is our don't care character. But wait, it can be changed as follows:

)FIND /.XX%/ %X

Here we change the don't care from % to X

c) Search for all slashes (/) in text file:

)FIND A/A

Note that A is the string terminator

d) If you want to append say F12 to the contents of the text buffer, do the following:

)GET "dn:program name" APPEND

e) If you use MAE for generating text, lette etc., then you should set up as follows:

\$100 REWARD

To ANYONE

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)FORMAT CLEAR

To prevent tabulating on fields

)MANUSCRIPT SET

To suppress output of line #'s

Assembler Examples

#1 Begin assembly at \$1000 and store object code.
.BA \$1000
.OS

#2 Begin assembly at \$1000 but store object code at
\$4000.

.BA \$1000
.MC \$4000
.OS

#3 Define a ROM routine.
ROM1 .DE \$FFD2

#4 Assign an internal work location in zero page.
WORK .DI \$0

#5 Allocate 6 bytes of storage.
TABLE .DS 6

#6 Define label EOI as mask with bit 6 set and show
use in AND statement.
EOI .DE %01000000
AND #EOI

#7 Load the low address part of the label VALUES in
register X and high part in register Y.
LDX #L,VALUES
LDY #H,VALUES

#8 Give example of .BY pseudo op.
.BY 'ALARM CONDITION ON MOTOR 1' \$0D \$0A

#9 Store the address of the internal label TABLE and
the external label OUT1.

.SI TABLE
.SE OUT1

#10 Define the contents of the text file as Macro
Global so its macro definitions can be used by sub-
sequent files in the assembly.

.MG

NOTE: This locks the macro definitions in the text
buffer. If you get a !OF error on subsequent loads, you
should know that you have overflowed the text buffer.
The solution is to allocate more memory (via)SET
command) and then reassemble.

#11 Show example of a very long label
MEMORY.TEST.FOR.6502
JMP MEMORY.TEST.FOR.6502

NOTE: Long labels (greater than that specified via
)FO command) are allowed if defined on a line with no
mnemonics.

#12 Define the 6502 reset vector so the relocating
loader will not alter the address during loading.
RESET .DE \$FFFC ;6502 RESET VECTOR

LDA RESET

-- OR --

LDA \$FFFC

The following examples can be entered and actually
tried, but you will need to enter the following source
sequence to be used with each example:

```

0010 .BA $800 ;ASSEMBLE OBJECT CODE AT
$0800
0020 .OS ;INDICATE TO ASSM TO STORE OBJECT
CODE
0030LOC .DS 1 ;RESERVE ONE BYTE OF
STORAGE FOR LOC
0040;
0050WRT. .DE $FFD2 ;WRITE ASCII TO SCREEN
ROUTINE
0060TBYT .DE $E775 ;WRITE BYTE AS 2 HEX
DIGITS
0070RDT. .DE $FFCF ;INPUT ASCII FROM KEY-
BOARD ROUTINE

```

insert code from example here

```

9000;
9010 RTS ;RTS WILL CAUSE A RETURN TO
ASSM/TED
9020;
9030 .EN ;INDICATE END OF ASSEMBLY

```

After you have entered the source for the example you are trying, type)ASSEMBLE to assemble the program. If you get no errors, then valid object code is stored starting at \$0800. If you get errors, correct them and then assemble again. Repeat this procedure until you have an error-free assembly.

When you get an error-free assembly, type)RUN TEST to execute the program example. Note that TEST is the label where we want the program to begin execution.

When you complete an example, use the)DELETE 80 8000 command to delete the lines associated with the example. This will leave the required setup intact for the next example.

If an example uses the BRK instruction, then you should use your monitor to examine the registers and/or memory to verify the operation. Then type G to your monitor to reenter ASSM/TED.

#13 Load R(A) with hex F3, R(X) with decimal 96, and R(Y) with binary 110110:

```

0080TEST LDA #$F3 ;$ MEANS HEX
0090 LDX #96 ;NO SPECIAL SYMBOL = DECIMAL
0100 LDY #%110110 ; % = BINARY
0110 BRK ;ENTER MONITOR TO EXAMINE REG-
ISTERS

```

#14 Load R(A) with hex 69 and output to screen:

```

0080TEST LDA #$69 ;LOAD R(A) WITH 69
0090 JSR TBYT ;WRITE TO SCREEN

```

#15 Decimal mode arithmetic - Store 25 at location LOC and then add 06 to LOC:

```

0080TEST SED ;SET DECIMAL MODE ARITH-
METIC
0090 LDA #$25 ;STORE 25 AT LOC
0100 STA LOC ; *
0110 CLC ;CLEAR CARRY BEFORE ADDING
0120 ADC #06 ;ADD 06 TO R(A)
0130 STA LOC ;AND PUT IN LOC
0140 BRK ;BRK TO EXAMINE LOCATION LOC
0150; OBSERVE THAT R(A) AND LOC CONTAIN 31

```

#16 Subtract 14 from LOC:

```

0080TEST SED ;SET DECIMAL MODE ARITH-
METIC
0090 SEC ;SET CARRY BEFORE SUBTRACTING
0100 LDA LOC
0110 SUB #$14
0120 STA LOC ;RESULT IN R(A) AND LOC
0130 BRK
0140; OBSERVE THAT R(A) AND LOC CONTAIN 17

```

#17 Hex mode arithmetic - Store hex 26 at location LOC and then add hex 06 to LOC:

```

0080TEST CLD ;CLEAR DECIMAL MODE - ENTER
HEX
0090 LDA #$26
0100 STA LOC
0110 CLC
0120 ADC #06
0130 STA LOC ;RESULT IN R(A) AND LOC
0140 BRK

```

#18 Subtract hex 14 from LOC:

```

0080TEST SED
0090 SEC
0100 LDA LOC
0110 SUB #$14
0120 STA LOC
0130 BRK

```

#19 Store \$47 in location LOC and then increment:

```

0080TEST LDA #$47
0090 STA LOC ;LOC = 47
0100 INC LOC ;NOW LOC = 48
0110 BRK ;INC INSTR. ALWAYS HEX MODE

```

#20 Store \$47 in location LOC and then decrement:

```

0080TEST LDA #$47
0090 STA LOC ;LOC = 47
0100 DEC LOC ;NOW LOC = 46
0110 BRK ;DEC INSTR. ALWAYS HEX MODE

```

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MEMOREX

#21 Load R(A) with ascii X and then output to screen:

```
0080TEST LDA #'X
0090 JSR WRT.
```

#22 Load R(X) with 8 and output the character A eight times:

```
0080TEST LDX #8 ;8 TIMES
0090LOOP LDA #'A ;CHARACTER TO OUPUT IS A
0100 JSR WRT. ;WRITE TO SCREEN
0110 DEX ;DECREMENT R(X)
0120 BNE LOOP ;LOOP 8 TIMES (UNTIL R(X) = 0)
```

#23 Define two locations TEMP1 and TEMi 2, pre-load with 4F and 03, then add in hex mode and display on screen:

```
0080TEMP1 .BY $4F
0090TEMP2 .BY $03
0100;
0110TEST CLD
0120 CLC
0130 LDA TEMP1
0140 ADC TEMP2
0150 JSR TBYT ;52 SHOULC BE DISPLAYED
```

#24 Store the message THIS IS YOUR LIFE! and then output to screen:

```
0080MESSAGE .BY 'THIS IS YOUR LIFE!' 0
0090;
0100TEST LDY #00 ;INDEX TO START OF MESSAGE
0110LOOP LDA MESSAGE,Y ;GET CHARACTER
0120 BEQ DONE ;IF 00 BYTE THEN DONE
0130 STY LOC ;SAVE R(Y)
0140 JSR WRT. ;WRITE TO SCREEN
0150 LDY LOC ;RESTORE R(Y)
0160 INY ;INCREMENT FOR NEXT CHAR.
0170 BNE LOOP ;LOOP FOR NEXT CHAR.
0180DONE
```

#25 Set up two messages and let user select message via keyboard input:

```
0080MESSAGES
0090A .BY 'THE WORLD IS ROUND!' $0D $0A $00
0100B .BY 'THE WORLD IS FLAT!' $0D $0A $00
0110INTRO .BY 'INPUT EITHER A OR B?' $0D $0A $00
0120;
0130SAVEX .DS 1 ;SAVE AREA FOR R(X)
0140;
0150TEST LDX #INTRO-MESSAGES ;FORM INDEX FOR MESSAGE START
0160 JSR MESS.OUT ;PRINT MESSAGE
0170 JSR RDT. ;GET KEYBOARD INPUT
0180 AND %01111111 ;MASK OUT BIT 7
0190 CMP #'A ;WAS THE INPUT A?
0200 BEQ DO-A ;BRANCH IF IT WAS A
0210 CMP #'B ;WAS THE INPUT B?
0220 BEQ DO-B ;BRANCH IF IT WAS B
0230 BNE TEST ;BRANCH IF NEITHER A OR B
0240;
0250DO-A LDX #A-MESSAGES ;SET INDEX FOR "...ROUND!"
0260 JSR MESS.OUT ;PRINT MESSAGE
0270 RTS
0280;
0290DO-B LDX #B-MESSAGES ;SET INDEX FOR "...FLAT!"
0300 JSR MESS.OUT ;PRINT MESSAGE
0310 RTS
0320;
0330;SUBOUTINE WHICH OUTPUTS A MESSAGE STRING TO CRT
```

```
0340;R(X) POINTS TO START OF TEXT
0350MESS.OUT LDA MESSAGES,X ;GET CHARACTER
0360 BEQ DONE ;IF 00 THEN END OF MESSAGE
0370 STX SAVEX ;PRESERVE R(X)
0380 JSR WRT. ;PUT TO SCREEN
0390 LDX SAVEX ;RESTORE R(X)
0400 INX ;INCREMENT FOR NEXT CHAR.
0410 BNE MESS.OUT ;LOOP UNTIL DONE
0420DONE RTS ;EXIT WHEN DONE
```

MAE SCROLL ENHANCEMENT

DESCRIPTION:

SCROLL is a program enhancement which provides for forward and reverse scrolling thru MAE source files using the cursor up (CU) and cursor down (CD) keys.

LOAD AND INITIALIZE:

1. Go to Basic level.
2. Type: /SCROL3.0.EXE
AC or AW
)RUN \$700

OPERATION:

If cursor is in columns 0 or 1: CU at top of screen results in scroll reverse thru file until text file start, CD at bottom of screen results in scroll forward until text file end.

SCROLL notes

1. The .EXE file occupies memory in range \$0700-\$AFF.
2. Scrolling is temporarily disabled on all exits from MAE, but reenabled on warm start (AW).
3. Scrolling permanently disabled on cold-start (AC) but may be reenabled via)RUN \$700.
4. SCROLL program may be relocated using the MAE Relocating Loader and the .REL file. Enter 0 for Z-page and ABS-page offset. The initialize address will change if relocated.
5. Scrolling will not function unless the cursor is in the two left-most columns (columns 0 and 1).

MAE Cassette I/O to ASSM/TED

DESCRIPTION

This program provides MAE the capability to read and write ASSM/TED cassette source files.

LOADING:

1. Go to Basic level
2. Type: /TAPE3.0.exe
AC or AW

READ FROM TAPE:

Type)RUN \$7900, insert cassette, and press PLAY.
WRITE TO TAPE:
Type)RUN \$7903, insert cassette, and press RECORD and PLAY.

MAE Tape Interface Notes

1. The .EXE file occupies memory in range \$7900 thru \$7AFF.
2. The MAE tape interface program may be relocated using the MAE Relocating Loader and the .REL file. Enter 0 for Z-page and ABS-page offset. The read/write addresses will change if relocated.

MAE NOTES

NOTE: If you want your MAE software kept up to date with the latest offerings and enhancements, you must complete the license agreement that was sent with your order.

We will provide upgrade service for minimal cost. Currently MAE can be upgraded to 2001-32K with 4.0 ROMS or to the CBM 8032.

If the label specified in the .IN pseudo op has not been defined when the .IN is encountered, MAE will not accept input. For example

```
.IN VALUE
```

VALUE

Will not result in MAE accepting input. To correct this, simply move the label to or in front of the .IN pseudo op.

IEEE.LIB is a program that has been provided to aid in the development of programs which interact with the IEEE bus including the 2040 Disk Drive.

To aid in understanding IEEE.LIB, the program SECTOR has been provided which illustrates usage of these IEEE routines. SECTOR is not an elegant program but it does attempt to display the contents of sector 18,1 on the CRT. To get a listing, type JAS "SECTOR.CTL" LIST.

NOTE

SECTOR.CTL uses a macro contined in the file MLMACROS.MLIB. You may find several machine language macros in this file of interest to you.

```
.LINK Dn "filename"
```

A new STP text macro has been added which can "link" text modules together as a single printable document. An example is:

```
.LINK "SECTION14"
```

Simply enter the .link macro at the bottom of the file immediately before the one you want loaded and formatted. Thus the first file will have a .LINK to the second, the second to third, etc. There is no limit to the number of files linked.

Two additional program goodies not mentioned in the manual are on this disk. They are:

```
SCROLL3.0.xxx
```

```
TAPE3.0.xxx
```

SCROLL3.0 provides for scrolling forward and backward thru the MAE source file.

TAPE3.0 provides the ability to read/write source to cassette in the PET ASSM/TED format. Thus ASS TED and MAE owners can now exchange source modules on tape.

The instructions for these additional programs are contained in the Basic programs with extension .INS BAS.

BUG NOTE FROM ATUG:

When you edit formatted lines, the formatting spaces will not be compressed out. This is a horrible waste of space. Therefore, always either clear the formatting before you edit (fo cl), or delete all but one space between fields before hitting return. Existing files may be purged of extra spaces with:

```
ed / / /
```

Caution: this deletes extra spaces even from remark lines.

Several ATUG files have this bug. A quick way to spot it is to clear the formatting (fo cl), and then list (pr). Any line that is still formatted has waste spaces.

ALTERATIONS FOR STARWRITER, FROM ATUG

Carl Moser has supplied some fixes to make MAE act like Wordpro3 in talking to the Starwriter, thus saving some switch-switching between the two. Some of these fixes may be useful to other MAE owners, so here they are:

1) The printer device number is set in \$725a. Default is \$04.

2) If you have W-I-D-E paper, fill the 6 bytes beginning at \$6027 with \$ea to allow 80 column printouts.

3) To avoid losing an occasional character with any printer, enter these 2 fixes:

```
$7256 85 2b 78
```

```
$726d a5 2b 58
```

4) To send pure ASCII to the printer, enter this change:

```
$7210 20 53 72
```

5) To kill the line-feed after a carriage return:

```
$6467 $60
```

```
$68f5 $0d
```

(This also prevents a cursor-down from being sent at the start of each line.)

Also, change \$0a's to \$0d or \$20 wherever found, between \$5553 and \$55a3. Otherwise, the line count gets off during message printing.

6) To restore the character set in use before MAE:

```
$73a1 20 51 e0
```

7) To make the prompt a non-printing character on the Starwriter:

```
$55bb ff
```

8) To wait at each page, for a key to be hit, before printing the page number, add the following code to the end of the patch area:

```
$75bd pha
```

```
txa
```

```
pha
```

```
$75c0 jsr $ffe4
```

```
beq $75c0
```

```
pla
```

```
tax
```

```
pla
```

```
ldy #$3d
```

```
jsr $553d
```

```
rts
```

Then call this code by changing the jsr at \$6930 to:

```
$6930 jsr $75bd
```

(This last fix may run afoul of future patches by Carl Moser to MAE.)

REVIEWS BY MEMBERS

There is a great variety of hardware and software out there being used by our members. If you use some equipment or software that has not been reviewed in the TORPET, we would like to hear about it. Just send us an article (typed if possible) to the editor of TORPET. Some of the things we would like to know include:

- What is it? (Utility, Reset Switch etc.)
- Who produces/distributes it?
- Canadian cost
- Comments on how it works
- Would you recommend it for other people to buy?

Some of you out there have also developed your own special hardware or software. Let us know about it. Maybe someone else is also interested and you could help each other out. So why not send us a letter and let us know what you are working on.

MIDNIGHT SOFTWARE GAZETTE

GREETINGS!

Well, we made it! This is Issue No.4, the official end to the first year of the quarterly 'Midnite Software Gazette', published by the Central Illinois PET(tm) Users' Group. Our deepest thanks to all of you who have contributed reviews and gifts to make it possible. And what do we have to report to you after a year? Read on for the re-emergence of PETdom's first great author, a report on PET MECCA, some reviews of the latest PET products, and a new address for the 'Midnite'.

That's right, we're moving -- still in Central Illinois, but no longer in Decatur. This will complicate matters for you a bit, but not much. From now on, please send your mail to the three addresses below, depending on what you need:

1) Send self-addressed stamped envelopes and guest reviews for the 'Midnite' to JIM OLDFIELD at:

CIPUG
635 Maple
Mt. Zion, IL. 62549
217/864-5320

2) Send exchange programs and requests for Asm/Ted Users' Group disks to BRENT ANDERSON at:

ATUG
c/o 200 S. Century St.
Rantoul, IL. 61866
217/893-4577

3) Send correspondence for JIM and ELLEN STRASMA to:

Jim and Ellen Strasma
Box 647 (400 6th St.)
Pawnee, IL. 62558
217/625-7494

We apologize for leaving our address out of the last issue entirely. Some of you were very creative in finding us! Part of the reason for the multiple addresses is to divide the load of caring for your needs more evenly. It was getting a bit heavy for the Strasmas. Also, they are doing a new project this summer: editing the third edition of the Osborne/McGraw-Hill 'PET Users Guide'. Readers with suggestions are urged to send them to the Strasmas. They hope the manual will be even more helpful to you than 'Midnite'.

GUEST COLUMNS

To further spread the load of producing the 'Midnite', we plan to include some guest columns, to cover Commodore rumors, hints, and such that JS has done in the past. This issue we have a great treat for you: Len Lindsay's report on the NCC (National Computer Convention) in May. Welcome back to the PET world, Len!

Len Lindsay

RE trademarks: PET, CBM, and VIC are from Commodore; Apple is from Apple; Atari is from Atari; and TRS-80 is from Radio Shack.

My period of recuperation is over, and I am back and ready to go. Some of my past readers thought I had died, while others thought I had switched camps (meaning given up on PET and switched to BRAND A). You will be happy to know that PET/CBM still remains my favorite computer. For the last 3 years I have always recommended it to others who asked me which computer to get. Many did not buy a CBM. One bought a TRS-80, and now is planning on selling it in favor of CBM. Others bought an APPLE due to its professional image in the ads. They then found out that it was not all the ads led them to believe. As for ATARI, I think it

is a well designed system, but the quality of the components appears poor, and the so called repair centers do not know how to repair them. But now I am back and have agreed to write 'I' page for Jim in his 'Midnite Gazette'.

I am very pleased that Jim's magazine doubles in size each issue, and is sent to twice as many people (the costs are 4 times as much). Which leads me to a somewhat related point...when you write to someone asking for advice or information, always include at least a SELF ADDRESSED STAMPED ENVELOPE (SASE). Answering just 10 letters a day for 1 year would cost \$650. A pre-addressed envelope makes it easy for the person to quickly answer your question (often on the back of your letter) or enclose the information you request.

Commodore is really thinking BIG now. (They have more things up their sleeves than I have sleeves!) I was one of the lucky few to attend their private press conference during the NCC in Chicago. I was very impressed! The conference first let the press in on one of Commodore's big secrets: Commodore is selling computers! What they meant by this was that until recently, Commodore made computers, but did not advertise or support them well (at least in the USA). Now Commodore has finally decided that good marketing and advertising should accompany a good product line. And boy, what a product line! My personal opinion is that Apple is in real trouble. If you thought Apple was comparable to the CBM, but just a bit higher priced, think again. Now, for just \$200 more than the recent list price of the CBM 8032 computer, you will get a 'SUPERPET' (9000 series) computer. Now that sounds like a lot, but it really is. Here is what Commodore will sell for only \$1995:

CBM 8032 with 96K RAM memory, dual processors (both 6502 and 6809), standard Commodore BASIC 4.0, microBASIC (also known as structured BASIC or WATERLOO BASIC), microPASCAL (an interpreted PASCAL), microFORTRAN (interpreted), microAPL (only 2 features left out of a complete APL language and character set), 6809 Assembler WITH linker, microEDITOR, interactive debugging (including SINGLE STEP and more), 6809 machine language monitor, and built-in option of using the machine as an intelligent terminal (even with a set-up menu for you to tell it how to act in terminal mode), plus an RS232C Interface (up to 9600 Baud). That was a mouthful! And the price is under \$2000. Now I hear you saying, how can that be? The 8032 all by itself recently cost \$1800. AHA! That's why its price was just cut \$300 to \$1495. Superpet, along with most of the other new products, will probably not roll off the assembly lines till late SEPTEMBER 1981 (if all goes well).

Prices are not the only thing that were dropped. All PET/CBM's now have the big 12 inch screens, but only display 40 columns. This will standardize the 'box' used for Commodore computers. The bigger screen doesn't cost them any more than the smaller one. Now if Commodore were really smart, they would have the screen software selectable between 40 or 80 column display (idea from JS), which would allow compatibility along with real flexibility.

More news from that private press conference included 'MINNIE WINNIE' (miniature Winchester hard disk drive) storing 6 MEG, compatible with the 8050 and 8250 floppies at an undisclosed price (but watch for a real bargain here). It will come in 3 flavors (as Commodore put it): the single Minnie Winnie, a dual drive Minnie Winnie in 1 box (very similar to the 8050 box), and the Minnie Winnie with one of the drives from the '8250 DISK'.

Yes, I know that you don't know what the 8250 Disk is: ANOTHER new product. It is a dual Mini-Floppy Drive unit that looks just like the 8050, but stores 2 MEG on its disks. So you can back up your Minnie Winnie with only 6 diskettes. Look for it to list somewhere around \$2095.

Yes, the long awaited (coming in a few months?..) single floppy MAY finally arrive as the 2031 (unless they change its name to 4031 to go along with the number changes of the printers and floppies not in the

8000 series). It is supposed to appear for only \$695, and still retain all its smarts (this is one product I have to see to believe). This drive is supposedly configured to run on the IEEE-488 like the others, or in serial to run with the VIC-20.

Which brings up the 'VIC'...also referred to as the VOLKSCOMPUTER in Commodore literature. It is in production now, and costs only \$299. Just plug in your Commodore PET cassette unit, hook into your TV antennae screws, and you are off, with full color and sound--all in standard PET BASIC.

If I haven't taken your breath away yet with new products, let me conclude with the Commodore 'COLOR COMPUTER'. It is a CBM 8032 with 96K, dual processors (both 6502 and 6809), BASIC 4.0 and a beautiful, superb quality high resolution RGB color monitor. Yes, it has color graphics extensions to 4.0. The text can be printed in 8 different colors, with any of 8 different background colors, and you can mix them as you like, since the color is part of the video screen attributes. They are as easy to read as the 'green screens' (not fuzzy and hard on the eyes like the APPLE). Commodore did not fall into the Color Computer trap by saying "just hook into your TV." Using the TV is just fine for a low end computer using only 22 characters per line like the VIC, but not for a screen to be used for word processing and the like (but a steep \$3495 price tag). Now it is anti-climatic to mention the fact that both of the new machines have 96K AND use the 6809 microprocessor.

No, Commodore is not abandoning the 6502. In fact, watch for a souped-up version to be coming out soon, running at more than double the clock cycle speed, and maybe even 16 bits? No, the 6502 will still be used. It is just that Commodore is now also making the 6809 microprocessor.

Do I even need to mention the fact that Commodore stole the show at NCC? But with all the above announcements, there still was more they DIDN'T mention. No one seemed to know anything about COMAL, a new Language interpreter, developed in Denmark for Commodore England. Seeing an announcement for COMAL is what brought me back out of hibernation. COMAL looks like the language I've been waiting for. It's powerful and structured like PASCAL, yet it's easy to learn and use, like BASIC. I finally had to call Commodore England to learn more about the new Commodore COMAL interpreter. I believe in COMAL so strongly that I've started a COMAL USERS GROUP for it, to spread information about COMAL to anyone who is interested. The interpreter won't cost you several hundred dollars either, like the Commodore England PASCAL compiler listed at 120 English Pounds (is that about \$300?). The COMAL interpreter for the CBM is in the public domain, ie. uncopyrighted. The COMAL USERS GROUP will provide a copy of the interpreter with any Users Group Disk. (Both Commodore England and Commodore USA have granted us permission to distribute the Commodore COMAL interpreter.) Commodore England specifically states in their newsletter to NOT apply directly to them for a copy. They are letting the user groups in Europe distribute it for them. And don't contact Commodore USA about COMAL either. They told me that for the time being, they will NOT be supporting it. To get more info, send a large SASE (35 cents) to the COMAL USERS GROUP, 5501 Groveland Ter, Madison, WI 53716. To use it, you need a 32K (minimum) PET/CBM (8032 or 4032 so far) with a floppy disk.

Now, I don't want you to go away thinking that I have been hired by Commodore, with all the glowing comments above. Anyone who knows me also knows that I wouldn't fit in with their organization. I like to say what I believe, which is not always favorable. For instance, anyone foolish enough to subscribe to the Commodore (USA) PET/CBM NEWSLETTER (called INTERFACE) should request their money back immediately. Why send \$15 (\$25 foreign) for a subscription, when it is virtually worthless? For only \$11 you can subscribe to the Commodore (CANADA) TRANSACTOR. The TRANSACTOR is very informative and worth the sub-

scription price. Let me explain what appeared in the last 2 issues of INTERFACE (confusing name since there already is a magazine called INTERFACE AGE).

INTERFACE is labelled bimonthly. (The last 2 issues were FEB 1981 and MAY 1981. Sounds quarterly to me). Each is mainly advertising of Commodore products. 1 page of new products would suffice, along with a separate catalog listing all products. You shouldn't have to buy catalogs.

One 'article' was ADDING SOUND TO YOUR PET. Now, this is ridiculous... In July 1978, I published a full page article in the PET GAZETTE, explaining the same thing. I even went on to suggest two STANDARDS for PET sound, and included a 2-page article explaining how to get specific notes using the SOUND CONVENTION. Commodore wouldn't help standardize user port sound. Now, after everyone uses this method, Commodore bravely tells you how to do it.

The other real 'article' in the FEB 1981 issue was called BASIC, MACHINE CODE and ASSEMBLY LANGUAGE--AN INTRODUCTION. That struck me as funny--an introduction to a high level language, low level language and pure machine code, all on 2 pages.

The May issue was pure Commodore promotion: dealer list, a list of the 5 people responsible for the issue (is responsible the right word?), product announcements (1 page on SUPERPET and almost the same for a Thermostat!!!), an explanation of OZZ (data base manager), explanation of Legal Time Accounting software package, mention of their new PET/CBM SOFTWARE ENCYCLOPEDIA, VIC computer update, and an ad for the MOS Hardware and Programming Manuals. VERY little newsletter! After cancelling your subscription to INTERFACE, send \$11 to The TRANSACTOR, Commodore Business Machines, 3370 Pharmacy Ave, Agincourt, Ontario M1W 2K4, CANADA.

That's it for now. I can be contacted at 5501 Groveland Ter, Madison, WI 53716. (remember a SASE if you wish a reply).-Len Lindsay

TRIP TO PET MECCA

"Never trust a computer you can't carry."

-- James Finke, Commodore's president, in Dallas - May, '81

In Mid-May, the Strasmas toured PET Heaven, the area around Toronto, Ontario, Canada. Here are some of Jim's impressions:

The Toronto Pet User Group is well on its way to 500 members, growing by several dozen members every-time I get a report! Well over a hundred were present in May for the West side branch meeting held at Sheridan College, home of over 50 PETs. I'm told Commodore has 96 percent of the education market in Ontario, and I believe it. The ECOO (Educational Computing Organization of Ontario) conference in mid-May was mostly PET. The Commodore booth had all the attention, showing both VIC and SUPERPET. Waterloo University, designers of Superpet, explained it in some detail. The Basic and APL in Superpet will be syntax-identical with the same languages on the IBM Series 370. Much is made of CP/M's 4 year software library, but IBM's is obviously FAR larger. SUPERPET can chat with an IBM at up to 200,000 baud on a special shielded line, or at 9600 baud in ordinary RS232, from ANY of its several languages. The SUPERPET languages are interpreted now, as you would expect in an educational machine, but compilers should follow, since Waterloo U. wrote the IBM compilers. COBAL won't be out before year end. The guy who will write it has 2 other prior jobs to finish first.

Commodore Canada really has its act together! The plant is modern and efficient, the staff seems happy, loyal and highly-skilled. Dealer and user relations are excellent. I'm sure this is one reason PET dominates the area. And talk about roasting Commodore...I've never seen so many BBQs! The same plant that makes 4040 and 8050 disk housings also makes most of Canada's outdoor barbecues.

It was great to meet people I've heard so much about. Karl Hildon, editor of the 'Transactor', Jim Butterfield, guru of the PET movement, Steve Punter, author of Wordpro... not to mention so many others.

Steve has a new PET Bulletin Board System modem answering program available for about \$175, as good as anything I've seen for Apple. The software to call it is FREE. You can even download it from the PBBS yourself if you already have an earlier version and know a not-very-secret code. Yep, reliable uploading and downloading is one of its features. Versions are available for the CBM modem and for the NEECO Intelcom user port modem interface. Steve's PBBS answers at decent evening hours at 416/624-5431. (But don't call during sleeping hours.) ATUG will soon have the terminal programs on its 'UE' disk. Punter's PBBS uses a CBM modem to answer calls, assisted by a hardware circuit handed out at the May TPUG meeting.

TPUG is accumulating a HUGE library, all well-organized. USER groups and associate members may request disks for \$10 each, US or Canadian. (Don't send disks, just money.) They have a neat Disk-of-the-Month, which is the only thing copied at their meetings, and also available on cassette. Their librarian is David Hook, of 58 Steel St., Barrie, Ontario, Canada L4M 2E9.

While in Canada, we saw several new products of all types. Among these was a pre-release version of BMB's highly touted \$225 DATA MANAGER, since verified as received by a US customer. Once the Canadian mail strike lifts, I hope to test and report on the final version. I promised not to report on the preliminary, but I will say this one has REAL potential. To give only the most obvious reason, it does much of what competing databases do, but is totally user-modifiable, even though it's also totally protected. The trick is BMB's special dongle (key). It's like the one on CBM's WORDCRAFT, but far smaller and easier to take along.

Also seen, and admired by us was the pre-release version of RTC's mail list and word processor from Peter Smith. It should be dynamite in applications needing hundreds of standard paragraphs to be combined in various ways and sent as letters to hundreds of people at once. Again, we'll say more when we see a final version.

REVIEW: THE CARVERY smorgasbord restaurant. \$14/person. For all PET-owning tourists in Toronto. Beautiful decor and excellent food in the heart of the city. Partner, Jim Butterfield, has rigged it with a computerized bar, (untested by reviewer). Specializes in meats, such as Roast Duck. Highly recommended! -JS

HOTLINE

LATE-NEWS FROM THE COMMODORE HOTLINE

The IEEE interface version of the 2031 single-disk drive, which I first saw at NCC, is now in final testing. It is half a 4040, with all the same smarts. Should be at your dealer's by the end of September, along with the first edition of the series 9000 SUPERPET. This first SUPERPET will be as it was shown at NCC in May, with 2 add-on boards instead of the single one predicted earlier. Eventually, a single add-on board version is still expected.

You may already have read in other publications, about SEARS's search for a computer line to carry (and about 5 special stores soon to open). They are supposedly negotiating with Atari (to be dropped?), Apple, and Commodore. According to a non-Commodore source who ought to know, SEARS is big on CP/M, and Commodore would very much like SEARS to carry the PET/CBM line. Apple pulled a fast one with a card allowing the Apple to speak CP/M (tm Digital Research). Don't think that Commodore is going to be left in the dust, however! CP/M is coming for PET, by year end, according to Hotline! To run CP/M on the PET, a Z-80 chip and add-on memory are required. There are 2 contenders. One is from 'Lifeboat Associates'; the other is from 'Madison Computing'. The Lifeboat one is

currently favored, primarily because of Lifeboat's software, but both may make it to market. 100 copies of another 64k add-on RAM board, which was to have been the 8096, have already been made. Many of these are in the hands of major PET software developers. Memory-gobbling versions of WORDPRO, WORDCRAFT, VISICALC, USCD PASCAL, and various other programs are being developed, for use with the CP/M boards.

Users must choose between the SUPERPET and CP/M, since the 2 tie up the same space on an 8032's motherboard. It won't be an easy decision, as both products should be wonderful.

Don't hold your breath waiting for the serial version of the 2031 disk. Commodore may decide to go with just a VIC-to-IEEE interface instead. (That makes more sense to me--who needs more incompatible Commodore equipment?) The FCC-approved version of the VIC was scheduled to go into production on July 1st. It is shielded, and the main board thoroughly redesigned as a result, but is said not to include any new features, such as add-on RAM sockets. (Based on the interference one early one caused on my TV, wait for the FCC version. You'll probably have to anyway; they're selling faster than they can be made.)

All disk units now use Tandon Magnetic brand drives, said to be better than the Shugart and Micropolis drives previously used. When the 8250, the double-sided 8050 disk appears, it will have DOS 2.7 in it. This new DOS is said to be fully compatible with the current DOS in tests thus far. It's intended to be more fully documented, in terms of memory maps and such, than earlier disk operating systems. According to other sources, it may also include a copy protection feature. The Hotline folks aren't aware of any plans to make DOS 2.7 available to owners of 8050's and 4040's.

Due to the huge 2 Meg capacity of the 8250 drive, the 8061 and 8062 8" disks probably won't appear in the U.S. They may be used in Europe, however. Their main virtue is that they are IBM compatible. In addition, they may include some fancy built-in functions on disk, such as 'string-search' or 'sort'.

The new 12" screen versions of the 4016 and 4032 computers will not run WORDPRO 3 as is. One poke is said to be needed to fix the program. Some other fancy programs may also fail with the new edition. Apparently, the 2K ROM at \$E000 has been revised, as in the 8032. Alas, the 9" PET is no more.

According to outside sources, the CBM COLOR COMPUTER at NCC may have been a promotional gimmick, rather than a serious product announcement. I hope it wasn't a fake, because it was a dynamite product. Apple, Atari and TRS-80 Color sets aren't even in the same league! Another reason I hope it wasn't a fake is that the World is just beginning to trust Commodore product announcements again, and doesn't need any more cancelled or delayed products.

The INTEGER COMPILER should be hitting the streets as you read this. It had been held up, waiting for a manual till recently. The 8032 version of Pascal probably won't appear after all. A full USCD version from 'Softtech', for the CP/M boards is coming instead. The other new package due out is MAS, a medical accounting package, from 'Cimmarron', the same folks who brought you LTA (Legal time accounting).-JS

Besides the wonders seen at NCC, two other major events have happened to bolster my faith in Commodore's future:

- 1) they actually replied to our request for information at NCC, with a letter telling us about TWO toll-free numbers to call for further information, and the addresses of the 7 U.S. regional offices. The toll-free numbers are: 800/523-5622 for technical info, and 800/523-5614 for everything else.

- 2) Main Street Computers in Decatur, which was 'Apple all the way' a year ago, is now a proud new Commodore dealer, and intends to support it thoroughly, with the same effort that has made them the leading independent Centronics service center in the country. Welcome aboard, guys, and obviously, they know quality when they see it. They feel the Commodore will make a dynamite word-processor that

even beginners can use. Well, I've been saying Word Pro is the best word processor available on any micro for over a year now, so I think Main Street is onto a winner. Their philosophy is to sell the whole package: 8032, disk, Wordcraft 80, letter-quality printer and SERVICE at one price. Now THAT's the way to compete effectively with mail order prices.

One final bit of praise for Commodore from an independent source. Datapro Research Corporation of Delran, NJ, reports, in 1980 Commodore and Apple tied among the top 10 brands of personal computers in user satisfaction. Of popular brands, only Ohio Scientific's CHALLENGER got a slightly higher mark. Not bad, considering the heat CBM took from Apple-happy users and dealers in '80.-JS

BUGS

If you have diskettes containing DOS 1 random access files, you can't move them from DOS 1 to DOS 2 with the COPY or BACKUP commands. You must write a program to read and rewrite the files, no easy task.-D Doug Dachenbach

Our local dealer has had an amazing failure rate on 8050 disk drives; nearly all the drives received in the past few months were dead or ill on arrival. Other dealers tell us the 8050 is very reliable for them. So what's the story? Well, 3 of the units had problems anyone good with an erector set could fix--LED in backwards, connector unconnected, and small part clear out of place. The rest were a mystery till we contacted Bill Seiler. It turns out the 8050 drives are intended to float freely within their mounting case. However, in shipping, the outer case flexes against the too-tight front cutouts, thus bending the drives. This in turn misaligns the heads, which are very critical on this octal-density drive. Moral of story: dealers, learn how to realign Micropolis drives. Now that Tandon Magnetic drives are being used, the problem may go away.-JS

'Practical Computing', in its March '81 issue said that owners of Basic 3.0 TOOLKIT ROMs can 'poke14,0' just before a FIND or DUMP command, to make paper printouts format correctly. (How about a review of this mag, gang?)

CONTEST

ANNOUNCING A ROM-NAMING CONTEST

Since 2 years have passed without the various Commodore departments agreeing on the name for the 1st ROM set used on the 40 column large-keyboard PETs, we hereby invite our readers to make the decision. 'The Commodore User Club Newsletter', in announcing the availability of 'upgrade' ROMs for older PETs to give them the same BASIC as the large keyboard models, called the upgrade BASIC 2.0. For the next year, this was accepted as the title within Commodore, although there had been another upgrade a year before, called the '019' ROM. During this time, a BASIC 3.0 was developed within CBM. It changed only the method of garbage collection in string-handling, and was never released. Then came BASIC 4.0, whose name everyone accepts because they must. It, thanks be to the genius who thought of this idea, gives its name in the sign-on message when PET is switched on. Thus, according to the CBM engineering department (confirmed by logic), there was first BASIC 1.0, then BASIC 2.0 and now BASIC 4.0. However, someone wondered what happened to BASIC 3.0, so the CBM software department filled the gap (and perhaps countered the Apple III as well) by calling the BASICs, 2.0, 3.0 and 4.0 respectively. Personally, I am not impressed by revisionism, and I worry just as much about missing BASIC 1 as I ever would have about missing BASIC 3.

To show this is not a trivial problem, there is a BASIC 5.0 already completed, but unreleased, in favor of a coming BASIC 6. I am sure a large number of Commodore computers have gone unsold, due to the confusion over all these mutually-incompatible ROMs.

The best solution would be for Commodore to enforce uniform naming on its various departments. May that happen soon! Meanwhile, we use 1.0 to refer to PETs with the first release of BASIC, both 011 and 019 ROMs. We use 4.0 for the BASIC in the 8032, which is nearly the same as the variants for 40 column PETs. The in-between BASIC may be called 2.0, as it was in the beginning, or 3.0, to clearly differentiate it from both 1.0 and 4.0.

The prize for the best name? Ah yes, it's one of the ROMs that did NOT win a free VIC at the Commodore booth at NCC in Chicago!

Here's a list of 'recalled' ROMs we've heard about:

1) 011 ROM in Basic 1.0, replaced with the -019, to make PET quit going out to lunch unexpectedly after editing screen row 25.

2) 3.0 Basic ROMs for those with Basic 1.0 who buy a CBM disk drive, since the disk won't work with Basic 1.

3) -04 ROM for CBM 2022 or 2023 printers. This one allows easier printing of lower-case text than the earlier -03 ROM. However, it has its own bugs, so may not be available any more. An -07 ROM has been rumored, but not seen. The 2022 and 2023 have been discontinued.

4) DOS 1.2 for the 2040 disk, replaced with DOS 2.1 - DOS 2.7 is being developed, possibly for the 2040.

5) -23 ROM to replace the -19 ROM in Basic 4. Keeps a check for disk status from taking PET out to lunch.

6) -07 and -06 ROMs to replace -03 and -04 ROMs in the 8050 disk. Improves reliability, according to source Mike Kouric.

The upgrades are recommended, if your PET accommodates them, and most are free.

XRAYS

"Comment about the note concerning xrays and diskettes in M No.3. (My scientific background is in this field.) The problem is in the pulse nature of the Flash X-ray devices used for baggage inspection. These devices typically discharge a very high voltage capacitor onto a vacuum load in a very short time period. This is a messy operation which results in a high frequency (rf) discharge. This magnetic field is what does in the disks just like a super demagnetizer. The aluminum wrap builds a 'screen house' which can partially protect the disks. My advice is that you never let magnetic media go through this sort of inspection since it means the disks get close to the rf field. Furthermore, you should make a point of keeping your disks (and tapes) as far from such devices as possible. The public is protected fairly well from X-radiation by the built-in shielding, but it appears no one gave much attention to the rf problem associated with these units." -Quintin Johnson

A Canadian PET user commented during our recent trip, that British X-ray scanning for letter bombs is so powerful, especially in the southern part of England, that it's a wonder any disks or tapes survive the check at all. -ES

Several people have warned us about leaving magnetic media next to telephones. Even if 6' away is 'safe', who wants to take the chance of erasure when your computer buddy gives you a ring? -ES

DEALERS

AB COMPUTERS. "As a dealer who is providing complete service and customer support, I don't appre-

ciate mail order firms who undercut retail prices (which already have such low margins for the dealer.) Case in point: I spent 30 hours off and on with a potential customer in our town, demonstrating machines and software, and giving him the benefit of much time and money spent in researching resources. He made his list from this and got prices from AB COMPUTERS which were very close to the wholesale prices I pay as a dealer. He gave me the opportunity to match them, which I refused to do. There are a lot of expenses that have to be paid for out of the meager mark-up, including demonstration and consultation time, plus all labor required under warranty. Result--he bought his boxes from AB Computers, and guess who he came to for help after they arrived? That's right, his local dealer! I don't know of any dealer who is willing, more importantly--'who can afford' to give free local support to cut-rate mail order houses." -Bob West

EDITOR'S NOTE: Which is more important to you, buyers: fast local service (especially later on) or low initial cost? All Commodore dealers are required to service their products. For users with limited patience and imperfect understanding of computer problems, local dealers are worth their weight in gold. Mail-order houses serve a purpose, too, by providing discount prices to experienced users who don't mind the time, postage and phone costs of support by mail. -ES

COMPUTER MAIL ORDER. "They were very friendly and a pleasure to deal with. Just order by phone and have a money order ready when the goods are delivered. My 4022 arrived within 5 days. It suffered slight shipping damage (a bent paper advance knob). I was informed in a quick call to CMO (via their toll free number) that I could send it back, take it to a local Commodore service rep, or attempt to repair it myself. I opted for a 4th alternative. I ignored the problem." -Greg Johnson.

EASTERN HOUSE SOFTWARE. (Tongue-in-cheek dept.) "I must say I am very disappointed with Carl Moser and EHS! It took him almost 4 business days from the time I called him to send a version of MAE for BASIC 4.0. But seriously, he even sent it without waiting for payment. I feel \$20 for an upgrade on a \$170 package is very modest. This has to be one of the best companies around!" -Ralph Bressler

FANTASY GAMES SOFTWARE. "I purchased ESCAPE FROM THE DEATH PLANET from Fantasy Games Software and after having difficulty in getting it to load from my non-CBM cassette I wrote for help. They were very prompt in replying and referred me to their 'troubleshooter' Jerry Pietenpol, in Raleigh, NC, and from him I received a 2 page typewritten (sing spaced) response along with a new cassette in exchange for the one I was having trouble with and some 'Q-tips' and instructions for cleaning my tape recorder. In short, I was amazed at the effort this company was taking to support a customer." -Clark L. Stewart.

HUMAN ENGINEERED SOFTWARE. "Received HESLISTER without changes to recognize Basic 4's commands. A brief letter resulted in a new copy that works very well on all BASICs, a letter of apology and some very nice additional routines for the inconvenience! HUMAN ENGINEERED SOFTWARE is not a name but a fact in their business!" -Jerry Key

VIRGINIA MICRO SYSTEMS. "I would like to praise the men... Stu Mitchell, Roy Busdiecker and Phil Poole. They have been very sensitive to my needs and respond, as did you all, to my requests for help." -B. Earle Mountcastle.

A word to the wise, dealers...when 'Midnite' writes you to suggest you have an unrelated, representative customer send us a review of one of your products, it is very bad form to reply with an envelope containing nothing but an ad. If we hadn't already seen an ad, we wouldn't write! Getting nothing but what we don't need tells us a lot about the support users can expect from your company. -JO

USER GROUPS

'Midnite No.5' (targeted for Fall '81) will list as many user groups as we can. We hope there is interest in having groups offer specialized software exchanges. Each of the hundreds of existing groups could handle a category or 2 for its region and maintain those programs better than most groups now maintain their huge general libraries. Here are a few groups that already specialize:

COMAL USERS' GROUP. For Basic 4.0, 32k and CBM disk. Interpreted structured language. 2 reviews of promotional material arrived, both complaining that this 'free' language costs at least \$13. Normally, I would not review this material myself, since I helped the group get COMAL. However, I will comment, and invite user reviews: COMAL combines the best of both Basic and Pascal. Almost any command or statement that either accepts is usable in COMAL, except 'goto line No.', a 'no-no' in Pascal and COMAL. Version 00.12 comes in 2 formats, 28k all-in-1 and 2 part 16k format (half for editing and half for running). Organizer Len Lindsay treats this as a first-class project, comparable to CBM PASCAL. Recommended \$40 package includes well-done COMAL 3-ring binder, vinyl pages protecting a list of keywords and user group diskettes (with many good demo programs), CBM COMAL manual and COMAL group quick-reference manual. A ROM version of COMAL is rumored. As a language, I find it fantastic! Very much like WATERLOO BASIC on the forthcoming SUPERPET. A natural for school use. Highly readable programs. Includes many extended editing helps. Despite complaints, the prices are reasonable. It's hard to organize, duplicate, and mail a diskette full of programs for less than \$13 if you value your time. -JS

PERPETUAL PET PROGRAM PYRAMID.

Mentioned in M3, it was actually started by Gary Stone, but never reached 'critical mass'. He's still looking for a "decentralized, distributed network approach" for "PET program and idea exchange." Write him at P.O.Box 153, Annapolis Junction MD 20701.

PET BENELUX EXCHANGE is not at the address in M No.2. Reach them c/o Johan Smilde, COPYTRONICS, Burgemeester van Suchtelenstraat 46, Dventer, Holland, 7413 XP

SEMPUG (Southeast Michigan Pet User Group). Started in May, emphasis on machine language applications and education. Meets 2nd Tues (even mos.), 2nd Thu (odd mos), at O.E.Dunckel Middle School, 32800 W. 12 Mile Rd., Farmington Hills MI 48018. For more info, contact Norm Eisenberg at the school. This group now has all 7/Commodore Education Advisory Board (CEAB) public domain program diskettes in its exchange.

SPCA (Sun Coast PET Computer Association), 6219 Thirteenth Av. South, Gulfport, FL 33707. Specializing in business and utility programs. Has Bennet's Mail List disk with instructions. Copying fee of \$8.

COMMODORE CANADA has released 7 diskettes of public domain programs via the COMMODORE EDUCATION ADVISORY BOARD (CEAB). These diskettes are sent FREE to all Commodore Canada dealers AND TO ALL REGIONAL U.S. COMMODORE REGIONAL OFFICES, who may then distribute them for a reasonable copying fee. None of our U.S. contacts have been able to get these diskettes from the U.S. regional offices. Therefore, contact BILL SHEA (of SEMPUG) at 3910 Orchard Hill Drive, Bloomfield Hills MI 48013 (313/642-8627) for info on how to get the CEAB diskettes. He is also trying to establish protocols on distribution of other U.S. educational programs (i.e. are they exchangeable?, how much to charge for copying?).

SOFTWARE NEEDS

We often receive requests for new program applications and have to let them sit until someone else writes in with a similar request. By then we can't remember the name of the first person who wrote! We will eventually put all this in a data base or refer people to area specialty user groups when they get going. Meanwhile, we'll try this method to speed up the process. If we have no immediate connection (program or user group) to suggest, we'll print your name, address and need here for others to contact you. If something comes out of it, send us a review of your programs and/or name of person or group to contact for the specialty. Here are the first requests:

'Douglas Dachenbach', 159 N. High St., Gahanna, Ohio 43230, 614/471-7177, needs 2 programs:

COMPETITIVE SCORING program for an Ice Skating match.

OPTOMETRIST'S PATIENT RECORDS and **MONTHLY BILLING** program which can recall by letter at specific intervals 5000-20,000 patient records, with Jinsam's speed, Dr. Daley's capacity and flexibility, and Chuck Stuart's (CMS) accuracy! Has ANYONE met that criteria yet for an understandable data base (at a reasonable price)? He doesn't say whether 256 bytes in one patient's record is large enough either. Write him if you can TRULY meet his criteria. (How about contacting CIMARRON about their forthcoming Medical Accounting System? Also contact BMB Compuscience. They've got at least 1 happy physician customer.)-JS

'Sam Cook' of Cook Compusystems, 309 Lincolnshire, Irving TX 75061, 214/253-6979, would like **OIL and GAS OPERATOR** programs. He uses an 8032.

'Joe Spatafora', of 6219 Thirteenth Av. South, Gulfport, FL 33707 has a long list:

- 1) A way to save **arrays** on disk in binary.
- 2) **Appointment scheduler** for 8 or more individuals, that interfaces with a client billing program. (Will Cimmaron's LTA and MAS do this?)-JS
- 3) A way to dump **VISICALC** formulas to printer. (Should just take a sequential file reader, with a bit of formatting.)-JS
- 4) Disk-based routine to do fixes needed on **Apple programs loaded to PET**.
- 5) **10,000plus word vocabulary** spelling checker for **WORDPRO**.

Another user wants a **dot matrix correspondence printer that works well, ie. can handle stuff like underlining, from WORDPRO and VISICALC**.

JS is looking for the **ultimate church package**. And on that subject, here are 3 definitions from a free computer dealers' magazine that may help you define your needs:

- 'Vertical Market' Church application
- 'Horizontal Market' Funeral Home application
- 'Copyright' mark appearing even on paper towels in security-conscious computer companies; legally equivalent to a paper towel.

And don't forget the world still needs an 80 column conversion for all the 40 column PETs. At least 2 groups, in Madison, WI, and CA, are close to a solution. Tell us when the Millenium arrives, folks!

BOOK REVIEWS

COMMODORE SOFTWARE ENCYCLOPEDIA, \$5 from CBM. A listing of commercial programs available from various sources to run on CBM and PET computers. The list is FAR from complete, and I presume Commodore won't guarantee some of the more outlandish claims in the descriptions of outside programs. One wonders how so many major software houses got omitted. The only 'rating' used is the

corporate symbol beside CBM's own stuff, and 'Commodore Approved' beside 2 other programs. Interesting that 'Wordpro 4 plus' and 'Visicalc' failed to gain approval. The book includes twenty pages of game listings, most of which are not worth cataloging. Sixty pages of education programs are, in vendor, not age level or subject order. Without some kind of rating, or at the very least, testing of vendors' claims, I certainly can't recommend using the book to select software for purchase. However, the most serious fault of the book is its labeling of CBM basics as '2.0, 3.0 and 4.0'. A second edition is said to be coming, and software houses omitted in the first edition can get in by sending a copy of their programs to CBM's software department in PA. Most users will do well to wait for the second edition. -JS

The following book reviews are by F. Arthur Cochrane (thanks!):

BEYOND GAMES! SYSTEMS SOFTWARE FOR YOUR 6502 PERSONAL COMPUTER, by Fern Skier. Byte/McGraw-Hill. 433p. Book covers memory monitor for Apple, Atari, and PET. Source listing in back for monitor and BASIC programs for each machine to POKE code. With Supermon, Extramon and Micromon, why do you need another monitor?

PET and THE IEEE BUS, by Eugene Fisher and C.W. Jensen. McGraw-Hill. Great for person wishing to know how PET communicates with IEEE bus. Has IEEE to RS-232 interface circuit and programming examples. All bus transactions explained in detail.

PET/CBM PERSONAL COMPUTER GUIDE, by Adam Osborne and Carroll Donahue. McGraw-Hill. Best book for PET. 2nd edition covers 8032, BASIC 4.0, disk drive and printers. Memory map in back very useful for ML programmers; formats for variables also helpful. Page 383 contains error about PRINT No. carriage output. I don't go through the day without looking up something.

(The Strasmas are editing a forthcoming third edition, and would appreciate all such corrections.) -JS

PET INTERFACING, by James M. Downey and Steven M. Rodgers. Blackburg Series. Just received. Not only explains 3 (IEEE, user and memory expansion) ports of PET, but has accompanying experiments. Looks very good for person wishing to hook the PET to the outside world.

PET REVEALED, by Nick Hampshire. Good hardware description of PET, all in one book. All I/O chips covered in much detail.

(Even includes PET schematics!)-JS)

PET SUBROUTINES, by Nick Hampshire. BASIC and machine language programs for inputting, sorting, plotting, tracing, repeat keys. Each program is listed from PET printer, has thorough description and list of variables used. Program disk available for \$10 more.

PRACTICAL MICROCOMPUTER PROGRAMMING: THE 6502, by W.J. Weller. Northern Technology Books. \$32.45. Hardbound, very thick, expensive. For APPLE user. Assembler source listing in back. Editor Assembler available on APPLE II cassette or disk. Most of book covers various parts of assembler. Useless for PET user, except to see source code and how an assembler works.

PROGRAMMING A MICRO COMPUTER: 6502, by Caxton C. Foste. Addison-Wesley Pub. Co. Very little use to me because it's for KIM-1. Contains mostly hardware experiments.

PROGRAMMING and INTERFACING THE 6502, by Marvin L. DeJong. Blackburg Series. 416p. Good book covering 6502 hardware and software; 1st half covers programming well, and 2nd half nicely explains interfacing to 6502.

PROGRAMMING THE 6502, by Rodney Zaks. Sybex. 304p. I have the error-filled 1st edition, which should be corrected in later editions. This is 1st book I read on 6502, which thoroughly confused me on addressing modes.

6502 APPLICATIONS BOOK, by Rodney Zaks. Sybex. 284p. Great for hardware nut to see how some experiments can be connected to 6500 series chips. Limited use for PET users.

6502 ASSEMBLY LANGUAGE PROGRAMMING, by Lance Leventhal. McGraw-Hill. 606p. The best book for Machine Language programmers to use in learning 6502 assembly language. Each instruction covered in detail, with many, many examples. Also covers 6500 series I/O chips. The first book that explained addressing modes in language I could understand.

6502 SOFTWARE DESIGN, by Robert Findly. Blackburg Series. 204p. Although mainly for the AIM 65, it has many useful routines quickly adaptable for PET. Good explanation of 6502 instructions and addressing modes.

6502 SOFTWARE GOURMET GUIDE and COOKBOOK, by Robert Findley. Scelbi Publs. Not as well written as other book on 6502. I prefer '6502 Assembly Language Programming' and '6502 Software Design'. Book does have many routines and if I didn't have the other two, I would use it more.

MAGAZINES

(The following guest review is more favorable than Len Lindsay's column.)

INTERFACE, \$15 for 6 'bimonthly' issues, from CBM 681 Moore Rd. King of Prussia, PA 19406. Lon awaited. Has many items of general interest to the novice. Very nice section on the VIC. Pretty good layout. Good supplement to anyone who owns or uses PET. -Mark Niggemann

THE PAPER, \$20 from Long Island PET Society. Quarterly. This is the only U.S. PET journal still in continuous publication since 1978. It has had its ups and downs. When it was a 'for profit' magazine published in Auburn, PA. I considered it strictly for idiots -- amateur oriented, with little of substance except what came in over the transom from readers. But in the past year it has become something else; an excellent magazine for teachers and other less-than-full-time PET freaks. It has good articles and lengthy reviews. During the course of volume 3, the printing improved markedly, (just as ours did at 'Midnite'). Still not for the same audience as MICRO, but the world is large enough for both. After a reader survey, publisher, Ralph Bresler has decided to go ahead with volume 4. If you like the idea of an independent U.S. PET magazine, you probably should subscribe. If you also are less than expert with PET, you certainly should IS

BUSINESS REVIEWS

BENNETT'S MAILING LIST, by Chris Bennett. Available to TPUG associate members from Toronto PUG for \$1.00 copying fee. Excellent, easy to use program for amateur PET user. Requires 32K, DOS 1 or DOS 2.1 and CBM or ASCII printer, plus 2 diskettes: 1st holds program and 2nd holds data for 600 records max. No manual, but usable anyway. Handles U.S. and Canadian postal codes, but not ZIP plus 4 as sent. Wish it came with a 'remark' field in addition to its very useful 'Code' field (up to 20 sort fields in a single field). Great for the home user (Christmas card and moving list) or for small business. Large, complicated mailing lists should try Dr. Daley's program above, or Peter Smith's soon-to-be announced Mail List.-ES

DR. DALEY'S MAIL LIST (Improved), \$160 from Dr. Daley Software. Needs BASIC 3/DOS 1 or BASIC 4/DOS 2. Output to screen, printer, and user-defined sequential files for use in WORDPRO. 1 system master

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required per file, but 1 master controls up to 89 data disks, with up to 1340 records per 4040 disk. This allows 1 file to have several thousand records. Fast access only by record number, but searches up to 3 fields at once, including wildcard, at about 3 records/sec. All fields user defined (15 max.), with fixed record length of 117 characters. Input features include: auto repeat, defined duplicate, field from previous record duplicate, etc. Records placed in proper order and on correct disk, regardless of input order.

Good documentation, but not current with program. I have received about 5 updates thus far with another coming to correct printing and disk maintenance bugs. Program needs house cleaning to eliminate screen errors and is ultra sensitive to disk errors. Hardware maintenance is essential: disk heads MUST be cleaned regularly, and on 4040 disk, COLLECT must be run at intervals to keep directory free of pointer errors.

This is the only program I've seen that controls several thousand records in a single file and is so user defined in its format. A good buy at the price and will probably get better as Daley continues to update it.

Doug Dachembach

(REPLY:)

Dr. Daley, from a phone conversation, feels some of Doug's problems may be due to changes Doug has made in the program. However, Doug is, from what I've heard, by far not the only user to have trouble with the program. Daley and user Chuck Spriggs have commented that this is not a program you can expect to use without serious preparation, or without a manual. Prepare to spend a full day with the manual, and beware of surprising side effects if you change ANYTHING. Dr. Daley has an excellent reputation as a PET programmer, spanning 3 years. -JS

(OPINION No.2:)

Menu-driven program with overlays totalling approximately 60K of BASIC and machine code. Fields within each record are user defined and print routine

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RTC ROM4 - RTC ROM8
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C

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(one)

PRINTER EXPANDER
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and Centronics 737, 739
using all word processing versions
using the pitch command

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PET TUTO LESSONS 1-20

(with manual) \$40

PET TUTO LESSONS 21-40 \$40

PET TUTO LESSONS 41-60 \$40

ALL THREE (with manual) \$99.95

allows formatting of fields in any sequence and can print labels up to 8 across. Directory allows up to 80 disks each with 1380 names to be maintained in zip code order (an advantage in bulk rate mailings which must be pre-sorted). Other features: re-sort, disk compress, wild card search, record update, and a useful routine to scratch dups or near dups. Input is error-proof and can be used by anyone. Several recovery programs included if errors occur (I've had none since changing to DOS 2.0). Well-written program; usable in business environment (ours has 5000 names). Can supply labels required by a mailing house and can be kept current easily. Several readings of 100 page manual and careful thought on initial setup important (i.e., will zip codes have 5 or 9 digits?). Updates available as Commodore products change by returning disk plus \$15. Program and support have been well worth the cost. Good program, but takes time to learn to use it. -Chuck Spriggs

FLEX FILE, \$60 from A.B. Computers. Needs CBM Disk with DOS 2. Versions for BASIC 3 and 4. Versatile Database manager with 18 overlay programs. Uses relative records. Fast access. Able to convert relative files to sequential ones and visa versa. This aids in changing file structure at any time. Defines 4 keys for sorting. Max. record size is 250 characters, field sizes not fixed. Includes tips for changing programs and using mixed BASIC/DOS versions. 12 commands for adding your own routines. Excellent report writer with summing and totals. -Doug Dachenbach

(REVIEW No.2:)

In BASIC and machine language. CBM or ASCII printer. Up to 42 fields. Finds records from partial name plus backward or forward browsing. Unique key field data not needed. 1000 records of 127 characters per 4040 disk, 2800 on 8050. Saves label format. Includes report headers, column titles, arithmetic on data, and logical search for report data. Easy-to-follow 28 page manual. Worth its weight in gold. -Dr. George Piasecki

GENERAL LEDGER, \$300 from C.M.S. Software. Version 2.5 operates on either BASIC 2.0 or 4.0. Requires 32k. dual disk and printer. Random access files give 1/2 sec. access by account number. Setting up account file is not hard, but requires planning. Once established, results are very professional hardcopy. Documentation a little light, but program is so turn-key, it doesn't need much. Osborn manual provided with program to aid in setup. Excellent audit trails and reports; match accountant files very closely. Only 1 disk need be copied to get full backup. In 1-1/2 yrs. of use, I've never broken out of the program nor lost a file due to a bad write. I highly recommend this program for any business. -Doug Dachenbach

EDUCATION REVIEWS

THE ATOM, \$8 from Micro Ed. Requires 16kplus and 40 column screen. Fails to set graphics mode for business keyboard. Teaches basic concepts of subatomic particles. Has interesting graphics, and uses them in testing. Stop key not disabled, and test results not stored for teacher review. Variety of activities within program. Recommended for Jr. Hi. science use. -JS

GREAT TIMES HR, \$8 from Micro Ed. Similar to GUZINTA HOTEL reviewed in M No.3. Crashes on Basic 4.0, due to protection routine being overwritten by DOS variables on loading. Easily unprotected, but that isn't a teacher's task. Otherwise a very nice program, with good graphics and a puzzle that is fun to figure out even for adults. Teaches multiplication of 2 numbers together. For late elementary. -JS

MATRIC, \$125 from Cognitive Products. For Matrix

USER RESPONSE

Now it's your turn. Help Midnite save PETdom with this response sheet. Anything you want in Issue 5 must reach us by September 1.

[Try for Issue 6 -TORPET ed]

FIRST SOME PERSONAL DATA [ABBREVIATE WHEN POSSIBLE.]

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Telephones

NEXT, IF YOU'D LIKE TO REVIEW SOFTWARE, YOUR AREA OF SPECIALTY

GUEST REVIEWS ARE VERY WELCOME, ESPECIALLY IF THEY COME ON A WORD PRO DISK FILE. BE SURE TO INCLUDE THE PRICE and WHERE TO ORDER THE PRODUCT.

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algebra and array processing. Machine language. Uses 5K in high memory. Adds 14plus matrix commands to Basic 3, tape or disk, (tested on DOS 1.0). 8-12plus times faster than Basic. I'm very impressed. Routines all work, are fast, easy to use, and greatly shorten Basic programs. Well-written manual, good examples and demo programs. Non-standard notation but not confusing. Output to screen or printer. No algebraic sign for determinant value, only absolute value, (only such I could find). Floating Toolkit ROM disables MATRIC routines. Price seems steep, but if you handle numeric arrays, or use matrix methods, and can afford it, this package is for you. -William L. Hinrichs.

NUMBOWL, \$8 from Micro Ed. Crashes on Basic 4.0, just like GREAT TIMES above. Otherwise, teaches various ways to combine numeric factors to approach a desired arithmetic result. Gives total score, but no indication of whether score is optimum for the random numbers given, or even in general. Best used in group setting, with several students figuring out highest scoring solution before answer is entered. Late elementary. -JS

General comments on Educational software from **Teaching Tools: Microcomputer Service** -- \$20 for 2 copies of each program on cassette. Less than 8k, compacted, somewhat protected BASIC programs. Should work with all ROM sets. Short manuals help teacher/parent assist students. Most screen displays needed instruction. Input routines ignore undesirable use of keys. Cute figures, words, or flashing for feedback. My usually reliable tape deck had much trouble loading 2 of the programs. Also, (foolish in educational setting), the record-lock tabs were still on the cassettes. -BA

ADDITION. Makes screen timed, electronic math sheet. Student chooses from 24 difficulty levels, 1 to 99 problems. Adult may preset this plus maximum time to do all problems, number of tries before correct answer given, time before 'Answer Please' displayed, and whether cute feedback pictures are used. Each problem is screened nicely. Screen input and pointers guide

on/of for picture elements. Tests for screen edge. Supports user port and CB2 sound. Two timers, 26 registers (no named variables). Only tests are branch-if-true and branch-if-false. Big number display, 255 max. Easy disk and cassette save and load. Basic works except during a run. Sometimes 'flaky', but this can be avoided. 9 demo games. Faster than Basic, but slower than machine language.-JP

David Conley, of 10571 Kerrigan Ct. Santee, CA 92071 is selling disk **data files** for several commercial game programs only sold on cassette, along with listings of changes needed in calling programs. Prices range from \$4 for Automated Simulation's **DATESTONES OF RYN** to \$12 for their **STARFLEET ORION**. I haven't seen these, but quite apart from likely copyright problems, They're only for beginners. Tape-to-disk copy utilities are widely available through user groups, and the file command changes needed in Automated Simulations programs are trivial -- 1 statement in **DUNJONQUEST**. -JS

HARDWARE REVIEWS

ANACOM 150 PRINTER, \$1150 from Orange Micro. 9x9 dot matrix, logic-seeking, bidirectional, 132 columns, 200 characters/sec., 6 and 8 lines/inch. Front feed with adjustable tractors and quiet. I interfaced it with a standard Centronics cable from Virginia Micro (super guy at V.M.) -Douglas Dachenbach

CBM 4022 80 COLUMN PRINTER, \$795 from Commodore. Replaces previous Commodore 2022 tractor printer. It features adjustable tractor only paper feed, intelligent IEEE 488 interface, and is packaged similar to the new Epson MX-70/80 printers. Uses 8-wire impact print head; bottom wire is used for descenders on appropriate letters, making very readable text font. Prints all normal PET graphics characters. Vertical spacing is adjustable via software to print continuous graphics. Supports 11 secondary addresses, used as follows: 0-normal printing, 1-print per previously defined format, 2-store formatting string, 3-set line per page, 4-enable printer diagnostics, 5-define programmable character, 6-set spacing between lines, 7-select upper or lower case, 8-select ASCII/graphics, 9-suppress diagnostic messages, 10-reset printer. Reverse field printing and enhanced (expanded width) characters also available. -Greg Johnson

(REVIEW No.2):

The main points that upset me were: only prints unidirectionally(!) even though manual says it is bidirectional. Also, manual was next to impossible to decipher. It looked as if someone in Engineering sat down and deleted all references to Epson, then deleted a few random paragraphs and pages, and rebound it. I hope they are planning to rewrite it (and the 8010 modem manual), as I was just getting used to Commodore's documentaton. I consider this (and the modem manual) to be a step down. -Mike Kourie

(REVIEW No.3):

Closest thing to a 'scam' that I've been involved with in this industry ... I'd call it a camouflaged MX-70. Unidirectional, 5X7 dot matrix, and only 1 linefeed option (all or none). You get automatic paging whether asked for or not. No question -- the MX-80 is the best value to come along in printers. -John Malone

(REVIEW No.4):

I've heard a bidirectional mod for the 4022 is coming, but I'd still say most users should get Epsom's MX-80, or their new models announced at NCC, instead of the 4022. -JS

SOFTROM, \$130 from BMB Compuscience. For all 1979 and later PETs. Like the 'AdoptaROM' in M No.3. Stands vertically in a ROM socket and plugs into memory expansion connector. Unlike its competitors, it can also have a ROM on board, selected with a switch

added by the user. (No instructions, and you have to cross the wires to get this feature to work.) BMB sold dozens of these to eager buyers at the TPUG meetings in May. Recommended. -JS

(I also saw the competing **INSTANT ROM** while in Toronto. It is said to be like Soft-ROM except: 1) it's far smaller. 2) it has CMOS RAM plus a battery backup good for three months after PET is turned off. 3) It can't be paired with a real ROM. It costs about \$162. I've since been told the unit uses 2 Hitachi chips that are pin-compatible with the 2716 ROM, so if you don't need the battery backup, you may just want to try using the bare chip.)-JS

TALLY 8024 PRINTER, \$1800 from CBM. A nice, FAST dot-matrix printer. We have the 7x9 version, and have been very pleased with it. I consider it a must for business applications with a lot of in-house paper demands. -Mike Kouri

The programmable character may not work on the 8024, and I don't think it has PET graphics. -JS

VIC PERSONAL COMPUTER, \$299 from Commodore. 5k memory (expandable to 32k), 22 column screen, 16 screen colors, 4 programmable function keys, 4 sound generators (3 music, 1 noise), full PET graphics, PET BASIC, accepts plug in Rom cartridges. This machine is Commodore's attempt to recapture the home computer market. With all of the features above for only \$299, it has a good chance to do it. I saw some software (mostly games) at the NCC that Commodore plans to release, including **VIC INVADERS**, and it all looked good. Other companies are also considering or marketing VIC software; Creative Software already has a package out, and **CURSOR** is considering some form of VIC software. Limitations: 22 column screen, only 5k memory on board, and it runs very hot. Also, Commodore doesn't tell how to define a character set, but it CAN be done. -JOH

SWARM 100, \$150 from Batteries Included. "It seems to operate OK. It just plugs into the ROM slots with no cables or wires. Room for BASIC 2.0 and BASIC 4.0 and 5 utility ROMs. 2 ROMs at \$9000 and 2 at \$A000 and 1 in the \$B000 slot. A simple POKE chooses which utility ROMs are enabled. To switch BASIC 4.0 to BASIC 2.0, you can hang up the system with a POKE and then reset or use a simple ML program. With the program swap there is no loss of your BASIC program. I have not been able to go back to BASIC 4.0 without losing my program and am inquiring about this. I also took your suggestion about ZIF sockets for DOS swapping and this works fine." -Ralph Bressler

2040 ERROR LIGHT, \$30 from BMB. I bought this little board that changes the red LED in the middle of a 2040 or 4040 front panel to a green/red one, with a built-in buzzer. Normally, this one is on and green, to show the disk has power. On error, it turns red, and the buzzer goes until you reset the disk off or read the error channel. Since the noise might get to you after a while, BMB partially muffled it on my copy. You can hear it, but not as loudly as on the ones I heard up there. Also, my drive is an old one, so I had some trouble fitting the little board in position and had to jury-rig a ground for it. But I sure like it all the same. Cost is \$30, US or Canadian. Recommended. -JS

EXPANDAPET/EXPANDAMEM, \$525 from Computhink. Add-on RAM for ancient PETs. Usually works perfectly, has 4 expansion slots with pinouts almost identical to Apple so Apple cards can plug right in -- but not the DC Hayes moden card (DC Hayes requires -12v, not available on Expandapet, but not impossible to add, copying the plus 12v circuit with reversed polarities). But due to a design error in the refresh circuitry (confirmed by the manufacturer), the memory loses data when continually addressed, as in a software wait loop. Basic programs are no problem, because the board refreshes itself adequately during the keyboard scan interrupts; but critical timing with interrupts inhibited causes trouble, so that Chamberlin

student to answer or show carry from right column to left. (May delete left to right.) Final report: average time for problems correct on first try. Excellent except screen, like manual, should say "Press equal sign when ALL DONE with your answer."

SUBTRACTION. Same techniques as ADDITION above. Also excellent.

LETTERS and NUMBERS. Practice matching letters or numbers or complete ordered sequences of them. Screen displays large characters including upper/lower case. Choose: case of letters displayed, no. of characters per problem, 1 to 999 problem sets, and fixed or random location of a sequence's blank. Well-done and good options in many ways. But probably too complicated for the young or learning-disabled students who would use it.

MATCH GAME. Many variations on 'Concentration' memory game (Turn over face-down 'boxes,' 2 at a time; try to make the most matches.) Students choose (or adult presets): large or small board (12 or 20 boxes); type of items to match (shapes, animal names, french english words, math problems, or set your own); difficulty level (1-20); and 1-4 players (1 may play against PET). Students must be able to follow screen directions to proceed thru game. Excellent, enjoyable way to teach many facts. -BA

'FIRMWARE' REVIEWS

CALC, \$100 from Matrix Software. For users of MAE or CBM assemblers. A much-enhanced equivalent of Sweet-16 on the Apple II. Allows PET users to pretend 6502 is a 16 bit chip while writing code. Unlike Sweet 16, you don't have to have CALC in ROM to run a CALC program. Capable of attaching its own run-time portion to programs, so any PET with same BASIC ROMs can use them. Consists of 4K ROM chip available at various addresses in memory, plus file of macros to assemble. Also includes debug feature that steps through finished programs to track errors. I've included a guest review by the editor of THE PAPER, which follows. Ralph's comments are similar to my own first impressions, and those of another prominent reviewer who also has it. Learning CALC is much like learning a new processor's op codes. The lengthy, and otherwise helpful, manual neglects to illustrate correct syntax for several commands with practical examples. I have so far failed even to get it to emulate a simple question and input statement. The debug mode hasn't been able to lead me to my error yet. If I knew for sure that a rumored full Microsoft compiler for PET Basic 4.0 will soon be available, I wouldn't give CALC another thought. However, I have yet to see the rumored British compiler for BASIC 3.0, and the 4.0 version was incomplete the last I heard. Those who need something higher level than an assembler, and faster running than BASIC, and need it right now may still need CALC. -JS

(REVIEW No.2:)

"I have had some time to play with CALC. It really is a new language. The initial reaction of a novice programmer is that it is easier and CHEAPER to program in machine language or assembly without CALC. I am sure that this opinion is partly due to my own ignorance." -Ralph Bressler

PICCHIP, \$75 from Skyles Electric Works. Graphics extension to BASIC. 4k ROM. Specify BASIC version. (Review copy in RAM for BASIC 2.0 obtained from Europe.) VERY capable graphics package. Provides fantastic animation of PET graphics characters with very high resolution, but only in 1 dimension at a time. BASIC continues to work normally. Recommended for those who often need fast graphics. -JS

GAME REVIEWS

ATLANTIC PATROL, \$7 from Programma. 8k. Very good sea battle simulation. Uses some graphics, but they just sit there. You control the British Fleet, trying to wipe out the German Fleet. You can choose 1 of 3 types of ships to command. If you're sunk 5 times, that's it. -JOH

CHECKER KING, \$20 from Personal Software. 8k. Machine language. I've never been beaten by a computer checkers game ... until now. It took three defeats at level 4 (of the 8 levels you can play) before I beat the computer at levels 5 thru 7. Tries to set up multiple jumps on you. Many options plus 3 built-in checkers problems to solve. This program is to checkers what Microchess (from Personal Soft.) is to chess for the PET. A good investment, but heavily protected. -JO

COMPUTER ACQUIRE, \$15 from Avalon Hill. 16k. Machine language. The computer version of the Bookshelf game of the same name. Never played the board game before so can't make a comparison. 1-5 levels of play with 1-6 players, or you can play the computer or watch it play itself (handy for learning to play well). You place hotels randomly on a numbered board, try to build chains, buy stock in them, and try to have the controlling interest. You can beat level 1, but past 3 it's tough. Try out the program at your computer store if you can. I prefer graphics and sounds games compared to numbered board games. -JO

CONFLICT 2500, \$15 from Avalon Hill. 16k. Space war game in which you try to stop the Planet Pulverizers from destroying the universe. Average game. Found 1 bug. Uses graphics, but they are slow, simple and confusing. Hard to play at first, but fun once you get the idea. -JOH

HELLFIRE WARRIOR, \$25 from Automated Simulations. 32K. Best in the DUNJONQUEST series. Four new levels: 1) Lower Reaches of Apschai, 2) Labyrinth, 3) Vault of the Dead, 4) Plains of Hell. Many new treasures (some magical) are present, but they are guarded by many new monsters! -JOH

INVASION ORION, \$25 from Automated Simulations. 16k. Another space war game. Many options and variable scenarios. Uses phasers, torpedoes, tractor beams, etc. Very good game, even with its simple graphics. Play time: 15 minutes to 3 hours. Good manual. -JOH

LORDS OF KARMA, \$20 from Avalon Hill. 32k. Machine language. Adventure game with over 150 locations, an assortment of weapons, and a hoard of monsters. The object is to do good deeds, such as saving the princess, giving to a beggar, and slaying evil monsters. One of the best adventures I have seen for a PET. -JOH

PENTAGON, \$15 from Harry Briley. 8K. One of several CLUE type games. Good example of what a good programmer can do. GOOD. -Eugene Smith

PYRAMID ADVENTURE, \$14.95 from Aardwark Technical Services. 8K. Adventure type game. Fair to good. Challenging. -Eugene Smith

SPACE SHUTTLE, \$10 from Programma. 8k. The object is to take supplies up to a space station. Uses good graphics, but is very hard to win. -JOH

TIME TREK, \$15 from Personal Software. 8k. BASIC and machine language. Heavily protected. By far the best 8k star trek game for PET. 9 difficulty levels with stationary klingons or with moving klingons. All motion, information, action, stays on-screen at all times. Good use of PET graphics for objects (ships, stars, bases) and shooting phasers and torpedoes. Uses all standard commands. Great game; I always like shooting the unknown '?'! -JO

VIGIL, \$35 from ABACUS Software. Game language interpreter (4k), for 1/4 dot graphics on all 40 col. PETs, (specify). Not structured. Programs very hard to read, because VIGIL redefines Basic's keywords. Easy

music, software modem programs and such must not be placed in this memory. (In Nov '80, manufacturer promised to let me know if a fix were possible; haven't heard from him since.). -Charles A. McCarthy

UTILITIES REVIEWS

MONITORS. One more time on the difference between supermonitors: 1) SUPERMON, by Jim Butterfield, has the fewest commands, but is easiest for beginners, because it is self-relocating to high memory, and is supposedly able to list last 5 entered instructions when asked. 2) MICROMON is the newest version of EXTRAMON. It adds scrolling during assembly and hex dumps, and works on both BASIC 3 and 4. A new version 'c', by F. Arthur Cochrane, available from ATUG, adds a 'K' (kill) command, binary display, plus a user-vector for later added commands. JS's new favorite.

CBM ASSEMBLER, release 2. \$90, for Basic 3 or 4 with CBM Disk. All machine language and fast. Excellent assembler with terrible documentation. Includes an editor, assembler, and 3 loaders (for different areas of memory). Editor has auto number, break to monitor, change string, find, delete, format as assembler, kill, cold, resequence lines, get and put files, and cput (save file without spaces. Cold and cput are not mentioned in the manual). 2 pass assembler allows 6 character labels, and all standard directives and commands. Allows conditional assembly (also not mentioned). Disk includes SUPERMON, BASIC AID, and should have source files for the editor and the loaders. Make certain that these source files are included; they are not in some of the earlier disks. Source files use conditional assembly, and by reading them with the editor, you will see how that works. The source files have excellent documentation, and are much better than the manual for demonstrating the assembler directives. -Ron Blattel

FILEMASTER, \$35 from Len Sasso. For 8032 and 4040 or 8050, specify. Protected. A VERY flexible and powerful disk utility, along the lines of the old DUM program, but light years beyond in power and speed. Sets up jobs in any of several ways, then proceeds to do them. Can easily and quickly copy any portion of a diskette to a new drive, and then immediately delete the original disk's copies. Directory includes scratched files. Able to restore a diskette with twenty or more scratched files in under 5 minutes, without any user intervention beyond hitting a few keys at the start. May even be used as a disk catalog. Usable even without instructions. Highly recommended. -JS

MACHINE LANGUAGE UTILITY -PAC 1.2R, \$82 from PS or Competitive Software. Separate versions for BASIC 3 or BASIC 4. 4k ROM at \$9000 or \$A000. Includes an enhancement of Bill Seiler's EXTRAMON, called ULTRAMON. It adds a printer mode, hex/dec ASCII conversions, logical operations, and a memory test. This part of the program is not as good as MICROMON, in my opinion. In addition to ULTRAMON, the ROM also includes the 'Wedge', a screen print, 'Un-new' and 'Disk Append' from 'Compute!' magazine, plus my own 'Lower-case Lister' from 'Micro', under other names. I hope we authors are getting a royalty, but I have my doubts, as none of us are even mentioned in the 12 pages of instructions. Overall, typical of what is available for just a copying fee from user groups. I'm astounded that 'Compute' reviewed it favorably at this price! Not recommended. -JS

ULTRAMON 1.4 is most of the same stuff, as UTILITY PAC above, in RAM, with less 'borrowed' material, and selling for less. Still not recommended. -JS

RESOURCES

AARDVARK TECHNICAL SERVICES 2352 S. Commerce, Walled Lake MI 48088

A.B. COMPUTERS 252 Bethlehem Pike, Colmar PA 18915

ABACUS SOFTWARE P.O. Box 7211, Grand Rapids MI 49510

ADDISON-WESLEY PUB. CO. Reading MA
AUTOMATED SIMULATIONS 1988 Leghorn, Mountain View CA 94022

AVALON HILL 4517 Harford Rd., Baltimore MD 21214

BATTERIES INCLUDED Toronto, ONT CAN
BLACKBURG SERIES P.O. Box 87, Check VA 24072
BMB COMPUSCIENCE CANADA LTD. 363 Main St., Milton ONT CAN L9T 1P7

BYTE/MCGRAW-HILL 70 Main St., Petersborough NH 03458

CALIFORNIA SOFTWARE ASSOCIATES ...is no more. See SOFTWARE FROM SASSO instead

COGNITIVE PRODUCTS P.O. Box 2592, Chapel Hill NC 27514

C.M.S. SOFTWARE 5115 Menefee Drive, Dallas TX 75277

COMMODORE CANADA 3370 Pharmacy Av., Agincourt ONT CAN M1W 2K4

COMMODORE USA 950 Rittenhouse Rd., Norristown PA 19401

COMPETITIVE SOFTWARE 21650 Maple Glen Dr., Edwardsburg MI 49112

COMPUTER MAIL ORDER 501 E. Third St., Williamsport PA 17701

DR. DALEY SOFTWARE 425 Grove Av., Berrien Springs MI 49103

EASTERN HOUSE SOFTWARE 3239 Linda Dr., Winston-Salem NC 27106

FANTASY GAMES SOFTWARE P.O. Box 1683, Madison WI 53701

HARRY H. BRILEY P.O. Box 2913, Livermore CA 94550

LONG ISLAND PET SOCIETY c/o Ralph Bressler, 98 Emily Dr., Centereach NY 11720

MCGRAW-HILL 630 Bancroft Way, Berkeley CA 94710

MATRIX SOFTWARE 315 Marion Av., Big Rapids MI 49307

MICRO-ED, INC. P.O. Box 24156, Minneapolis MN 55424

NORTHERN TECHNOLOGY BOOKS P.O. Box 62, Evanston IL 60204

ORANGE MICRO 3150 E. La Palma, Suite 1, Anaheim CA 92806

PERSONAL SOFTWARE 1330 Bordeaux Dr., Sunnyvale CA 94086

PROGRAMMA INTERNATIONAL 6908 N. Naomi St., Burbank CA 91504

PS SOFTWARE P.O. Box 966, Mishawaka IN 46544
SCELBI COMPUTER CONSULTING, INC. 20 Hurlbut St., Elmwood CT 06110

SKYLES ELECTRIC WORKS 231 E S. Whisman Rd., Mountain View CA 94041

SOFTWARE FROM SASSO P.O. Box 969, Laguna Beach CA 92652

SYBEX 2020 Milvia St., Berkeley CA 94704

TEACHING TOOLS:MICROCOMP. SERV., P.O.Box 12679, Research Triangle Park NC 27709

This 'Midnite' is already a month late, 8 pages too long, and doesn't include all that we have on hand already. ARGH! CIPUG members assisting this time were: Brent Anderson (BA), John O'hare (JOH), Jim Oldfield (JO), Jeff Porter (JP), Ellen Strasma (ED), and Jim Strasma (JS)

(If you think you have troubles then look at this TORPET issue -TORPET ed)

BENNETT'S MAIL LIST

by MIDNIGHT

Bennett's Mail List is a very capable mailing list program, for up to 600 records as supplied. This version requires a 40 column CBM/PET with CBM disk and DOS 2.1. It is also available from Bennet in a version for CBM DOS 1. I have only tested it with Basic 4.0, but 3.0 should also work. It uses random access files that do not appear in the directory, which means only the backup command can copy records. Otherwise, it is very convenient, surprisingly powerful in use, and easy to modify.

I have modified Bennett's original, to improve the speed of Basic portions of the program, and to tailor the program for use in our church. However, except for the need to change the headings over the code field, and the default field contents, it is also better for other uses, and recommended for all users.

The program comes from Bennett without instructions of any kind. It can be run even without directions by most persons familiar with data entry on computers. However, I wasted a lot of time typing in lengthy replies that could be avoided. Therefore, here is a stab at a set of directions for version 'c'.

BEFORE FIRST USE: Backup the program diskette. File the master safely away, and place the clone in drive 0. Then place an erasable data disk in drive 1. Also set aside 2 backup data disks. (Not strictly required, but if I hadn't, I'd have lost all my data once.) load the program 'update'. Using the Toolkit ROM's 'find' command or by manually listing, find the 2 places where 'Pawnee, IL.' appears in the program. Change this line to whatever town you want as a default. Similarly, change nearby lines that set '62558' as the default postal code, '625-' as the correct preface for 4 digit phone numbers, and add 'R.R. numbers' to any single digit answer in field 3. Remember that these defaults appear twice in this module. Change them in both places.

Next, think about what 2 line 20 character header you want to appear over the code field in the video display. At present, the display is:

```
maceefmmnppsstuuuv  
vbhdvieioapcsrcrmwyo  
with the last 2 positions blank. This is to be read  
vertically, and stands for:  
member or visitor  
administrative board  
choir  
education work area  
evangelism '  
finance committee  
memorial '  
missions work area  
nominations committee  
parsonage '  
pastor/parish relations '  
social concerns work area  
sunday school  
trustee  
United Methodist Men  
United Methodist Women  
United Methodist Youth Fellowship  
Worship work area  
(last 2 open for expansion)
```

Each position within the line can contain most any character, and printouts can be limited to records containing a particular character in a particular position within this field. I recommend not being too picky however. Most of the above positions in our use are either blank or contain m for member. Otherwise, we would need several printouts to print all records with something other than a blank in a given position. (I

anticipate adding an option to include all non-blanks in printouts for a position, but haven't done so yet.)

If you want a field header other than mine, find the present header as above, and substitute your choice. Now you are ready to rename the original copy of update to update.orig, and save your own version as update.

If you changed the header info, you will now need to load print, and make the same changes there. Search for both upper and lower case versions of the header, as both are used, depending on whether you have a CBM or ASCII printer. When done, rename the original and save your new version.

FIRST USE: Hit shift and run together to begin the starter program. It will load the machine language portion into high memory, (on top of anything else you tried to put there). Then it will load the menu for you. The 'c' version does not show the option you want next on the menu. It is called 'format', and to get to it, you choose 3. It was left off the menu intentionally, as it will wipe all existing data when run, and that isn't something you want to do often.

If you get to **FORMAT** by accident. hit '0' to return to the main menu. Otherwise, just follow instructions and supply a title for the data disk. Don't supply a disk ID, that will be ml, and other modules look for it to be 'ml' on loading. Formatting will take quite a while, so go get a snack or something while you wait. When finished, the menu will be reloaded.

REGULAR USE: Hit 'shift' and 'run' together to load the machine-language program and then the menu. To add, view, or change data, choose '1' **UPDATE**. To print mail labels or whole records, choose '2', **PRINT**. I will describe **UPDATE** first.

UPDATE offers 6 choices, plus '0' to return to menu. '1' adds records to the file. Naturally, you should have some entered before you try to view or change them. When **ADDING**, you have 10 fields to fill. The names and default contents if you just hit return are:

- Last Name - back to **UPDATE** menu
- Initials - blank
- Then asks if "Any corrections needed Y/N" - no
- Name - none
- Adr1 - blank
- Adr2 - none (a single blank is acceptable though)
(if a single digit is put here, 'R.R. number' is pre-
faced to it)
- Adr3 - Pawnee, IL. (or your substitute)
- Pcod - 62558 ('')
(Code must be valid in U.S. or Canada to be
accepted.)
- Home - blank
(If 4 digits are entered, "625-", or your sub, is pre-
faced to it.)
- Buss - blank
(as in Home)
- Code - blank
- Then asks if changes are needed - no

When you finish one **ADD**, another will be begun. To quit adding, hit return when the first field is requested.

I recommend saving **ADD** data regularly. During the adds, the records are updated on the disk immediately. However, the key file is only updated when you return to the main menu. If anything happens meanwhile, you could loose all knowledge of where the adds are. After every **ADD** session, return to main **MENU** and then back to **UPDATE** again; it takes about a minute, but is well worth it.

Choice '2' on the **UPDATE** menu is **CHANGE**. When it is selected, you are asked for the last name and initials **KEY** of the record desired. return here sends you back to the **UPDATE** menu. Anything else gets you the nearest match in existing records, (called 'wild card' searching). If the wrong record appears, you have 3 choices: If you hit 'return', **PET** will ask again for the name wanted. If you hit the **UP-ARROW**, the following record in alphabetical order by name will be

shown. If you hit the SIDE-ARROW, the preceding record will appear instead. When the correct record appears, you may select a field number to change, hit 'return' to choose another record, or hit 'escape' to immediately print the record on an ASCII printer. (Yeah, CBM printer owners can change this feature too, as can graphic keyboard owners. Just search through UPDATE for chr\$(27), and substitute your choice of character codes. The sys call there should be omitted for PET printers, it flips the case of each field's data before sending it to an ASCII printer.)

If you change a record, the change is not stored til you hit return when asked to choose another field to update. To avoid saving the change, hit UP-ARROW or SIDE-ARROW instead.

Choice '3' deletes a record. 'return' here gets you back to the UPDATE menu, and an unmatched KEY last name and initials gets a protest. Other than that, it's almost too easy to delete a record. (The record is still there, but removed from the key file, and marked to be written over by the next ADD. I imagine you could get it back with a lot of work, but I haven't tried.)

Choice '4' changes a KEY. Like DELETE, it has to find a match first. Beyond that, there is no limit to the new KEY given any record. It need not match the regular name field within the record. However, it MUST be unique. So you may have to have Smith, J1 and 'Smith, J2', instead of 'Smith Jo(hn)' and 'Smith, Jo(e)'. Hitting 'return' for the old KEY returns you to the UPDATE menu.

Choice '5' makes a sequential backup of the entire existing data file. This can be VERY useful. First, it gives added safety to your data. Second, it can be read by Word Pro. Third, it can be tinkered with by other programs you may write. Fourth, it may be re-entered into the same or even into a different data set, using option '6'. The sequential file goes on drive zero. I keep mine on my program disk, but you can substitute another diskette when asked, if you like.

Now for your PRINT options. You can print out data in 3 orders. Alphabetic by KEY, numeric by POSTAL CODE, or by the CODE field. I haven't figured out a need for a CODE printout yet, since both of the other options allow you to limit data to that containing a particular CODE. There is no subsorting. A zip code order printout will be in record number order within zip codes. If this bothers you, use the sequential file options in UPDATE to make a new alpha-ordered master data disk.

By far the fastest option is 1, in alpha order by KEY. ZIP and CODE order take a long time to load the key file, as it is being sorted on the way in, and not with a machine-code sort either! Once the sorted key is loaded, you choose ASCII or PET printer, (default is ASCII), upper-case only printout, or both cases, (default is both).

There are 3 possible printouts: mail labels of the first five fields, summary reports of all 8 fields (this is a summary?), and a phone list of fields 1, 2, 6 and 7 - useful for telephone campaigns.) Note that I use field 2 for overflow names as well as overflow addresses, whichever is most urgently needed in a given record.

You may choose 1 to 3 labels across when doing LABELS or a SUMMARY. The PHONE list goes on one line per record. Acceptable labels need to be 1 inch by 3-1/2 inches in PICA format. I don't know what you would need for elite. To do more than 2 across, you need a 15 printer width. I got 3-up labels for my letter quality printer at the local computer store on special order. Most stores probably carry only 1-up labels in stock. If your printer is friction-feed, like mine, you'll want at least 2-up, to minimize paper wandering. Also, I've buried a gotcha in the program when a 1-up SUMMARY is requested. PET will assume you want it put on tractor-fed 3 by 5 cardstock, and advance 6 extra lines after each record to bring the next card into posi-

tion. Normally, it would only advance 1 line, to make 5 records fit on an 11" page vertically, and follow each set of 5 with 6 blank lines to skip to the top of the next page.

Next comes a cute question, "Start printing from the beginning?" If you don't, you'll have to give a starting record number. Back in UPDATE, the record number appears to the right of the KEY in video display. It doesn't appear on printouts, because church folks don't want to be numbers, and because a restructure would change all the numbers.

Finally, you are asked if you want to select only records that match a CODE subfield. If so, specify which position within the field to begin the match with, how many characters to match, and what must be matched. Then hit return again, and printing will begin. (if matches exist). When setting up a code to match, UP-ARROW backs you up somehow. (I haven't used that feature.)

During printing, you have a few more options: First, if you are printing labels, you are offered rows of dummy labels until you answer n when offered another. Next, if you hit SIDE-ARROW, printing will halt after the current record, waiting for you to hit another key. Most any key will then get you one more record at a time. This is very useful when printing on special cards that don't form-feed. To cancel this mode, and return to quick printing, hit UP-ARROW. To quit altogether, and return to the PRINT menu, hit HOME.

This concludes your instructions on use. The only other thing you need to know is that the input is idi proof; the stop key is disabled during all modules. Also, the input routine is intelligent enough to limit entries to allowable characters or allowable lengths. Do try to keep things short. It is possible for all fields together to be overlong, which you'll be told about if it happens. Records should be under 127 bytes long, including carriage returns for each of the 8 data fields.

If you discover the need to change a program during a run, finish what you're doing, reset the PET, and load the offending program directly, rather than via the MENU. If you have questions about the program, Bennet's address is on the START display. Don't forget this is a free program. If you want anything from him, don't make him spend his own money to help you.

MORE FROM BENNETT

MAIL LIST DOCUMENTATION Continued

In the June TPUG meeting (West End), I gave out the new relative record versions of my MAIL LIST. They only will run on computers and disks that support Relative Record files. (BASIC 4.0 in the computer; DOS 2.0 in a 2040 disk; a 4040 disk or an 8050 disk). The 4040 version will hold 1000 name and addresses while the 8050 version will hold 2400. I have added a few new features. One of these is the ability to go into CHANGE mode in the UPDATE and scan through the names and make changes using the arrow-up and arrow-left keys. In the previous version, these two keys were used to scan forwards or backwards through the names. If you made a change to a name, you had to hit the return key to save the value and then type in the key of the next name to be changed. In the new versions, you just make the changes to the name/address and then press either the arrow-up or arrow-left. This causes the record to be saved on disk and the next record in sequence to be read in (either forwards or backwards) without having to re-type the key.

CODE FIELD

Many people have asked how the code field can be used.

It is usually used in two ways:

You can SELECT records to be printed by a match on up to 10 different code values. For example, if you use

column 1 of the code field to represent a location with the letters A to Z, you can select from 1 to 10 of these to be printed at any one time. Thus you could print all the name and addresses in locations B, F, Y and Z.

You can SORT the records to be printed by values in the code field. In the example above, if you sorted on column 1 of the code field, the name and addresses would print in alphabetic sequence of location. This means that all locations 'A' would print followed by 'B' and so on up to 'Z'.

Finally, you can do both of the above. SORT the records in a certain sequence and then SELECT the ones you want to print. In this case, if you selected codes B, F, Y and Z and sorted on the same code field, then all name and addresses in location 'A' would print first, followed by 'F', 'Y' and then 'Z'. However, you are not restricted to the same field for the SORT and SELECT. They can be two completely different fields.

In the next issue of the TORPET, I hope to describe the use of the ALTERNATE KEY which is a new feature of the Relative Record Mail List.

Chris Bennett

BASIC AID

Basic Aid Instructions

Aid

Function - print line and the position in line where the program stopped, or found an error.

Syntax: Aid

Aid prints: 1000 FOR I=0 TO 100: PUNT I:NEXT

Auto

Function - Generates line numbers when writing new programs.

Syntax: Auto #

Enables auto numbering, where # is the increment between line numbers. If # is omitted, numbering is disabled.

Break

Function - Jumps to the ROM monitor with a BRK instruction.

Syntax: Break

Change

Function - replace string with another,

Syntax: Change /old/new/,#-#

/ = String delimiter. Any character not in strings.
old = String to replace.
new = Substitute string.

as list.
.# = Range of lines. Default is all lines. Same syntax

Changed lines are printed.

Delete

Function - Remove a range of lines.

Syntax: Delete #-#

= range of lines. Same syntax as list.

Dlist

Function - List program on disk to screen.

Syntax: Dlist "filename"

Dump

Function - Lists variables in use, and values. Does not list arrays.

Syntax: Dump

Find

Function - Locate string and print lines containing it.

Syntax: Find /x/,#-#

Where /, x, and # are the same as for Change.

'=' Key pauses printout.

.' Key resumes printing.

Hex

Function - Gives hex of 'num'. Gives dec of '\$0000'

Syntax: Hex 'number'

Keyprint

Function - Prints screen to printer device #4, 'escape' on business keyboard version, or '(back slash)' on graphics one does the same.

Syntax: Keyprint

Kill

Function - Remove aid's link to BASIC

Syntax: Kill

Lower

Function - Drops into lower case mode

Syntax: Lower

Merge

Function - Merges program off disk with program in memory

Merge "filename"

Number

Function - Renumber basic program.

Syntax: Number #1,#2

#1 = New 1st. line number.

#2 = Step of next number.

Number will print all line numbers referenced by GOTOs, GOSUBs, THENs, and RUNs. This will act as a cross reference for program changes. All lines are renumbered. Missing numbers are called 65535, assuring an error when the program is run.

Off

Function - Cancels Repeat (restores normal irq)

Syntax: Off

Pack

Function - Removes waste spaces etc. in program.
Note: don't branch to deleted REMs!

Syntax: Pack

Read

Function - Reads and displays a sequential file from disk to the screen

Syntax: Read "filename"

Repeat

Function - Enables repeat key. Set automatically when Basic-Aid is first called. Automatically cancelled each time a program is loaded.

Syntax: Repeat

Start

Function - Gives start of a program on disk in decimal

Syntax: Start "filename"

Trace

Function - Slow-step thru program, showing line numbers and tokens.

Syntax: Trace #

= Delay time per line, 0-128, least to most.

Uses a 6 line window in reverse field at the top left of the screen.

'=' key pauses trace

',' key resumes trace

Upper

Function - Goes into upper case mode

Syntax: Upper

Wedge Commands

Function - The wedge commands are also supported. however, they are bugged. Use carefully! to give a disk command, put a 2nd. prompt before the command, and start the prompt in the first screen column. to load a program, add a character to the end of its name. Load and run fails to run on loading.

Syntax: (right wedge), (at sign), (slash), (up arrow)

SUPERMON INSTRUCTIONS

SUPERMON 1/2/4

SIMPLE ASSEMBLER

.A 2000 LDA #\$12
.A 2002 STA \$8000,X
.A 2005 (RETURN)

In the above example the user started assembly at 2000 HEX. The first instruction was load a register with immediate 12 HEX. In the second line the user did not need to type the address. The simple assembler prompts with the next address. To exit the assembler type a return after the address prompt. Syntax is the same as the disassembler output.

DISASSEMBLER

```
.D 2000
(SCREEN CLEARS)
.. 2000 A9 12 LDA #$12
.. 2002 9D 00 80 STA $8000,X
.. 2005 AA TAX
.. 2006 AA TAX
(FULL PAGE OF INSTRUCTIONS)
```

Disassembles 22 instructions starting at 1000 HEX. The three bytes following the address may be modified. Use the CRSR keys to move to and modify the bytes. Hit RETURN and the bytes in memory will be changed. SUPERMON will then disassemble that page again.

PRINTING DISASSEMBLER

```
.P 2000,2040
2000 A9 12 LDA #$12
2002 9D 00 80 STA $8000,X
2005 AA TAX
....
203F A2 00 LSX #$00
```

To engage printer, set up beforehand: OP ¼*¼:CMD4. On 4.0, access the monitor via a call SYS 54386 ('not' a break) command

SINGLE STEP

.I

Allows a machine language program to be run step by step. Call register display with .R and set the PC address to the desired first instruction for single stepping. The .I will cause a single step to execute and will disassemble the next.

Control speed with choice of key:

(left wedge) FOR SINGLE STEP;
RVS FOR SLOW STEP;
SPACE FOR FAST STEPPING.
STOPR TO RETURN TO MONITOR.
(On Business Keyboards)
(Use 8,(Left Arrow),6 and Stop.)

FILL MEMORY

.F 1000 1100 FF

Fills the memory from 1000 HEX to 1100 HEX with the byte FF HEX.

GO RUN

.G

Go to the address in the PC register display and begin run code. All the registers will be replaced with the displayed values.

.G 1000

Go to address 1000 HEX and begin running code.

HUNT MEMORY

.H C000 D000 READ

Hunt thru memory from C000 HEX to D000 HEX for the ASCII string READ and print the address where it is found. A maximum of 32 characters may be used.

.H C000 D000 20 D2 FF

Hunt memory from C000 HEX to D000 HEX for the sequence of bytes 20 D2 FF and print the address. A maximum of 32 bytes may be used.

LOAD FROM TAPE

.L

Load any program from cassette #1.

.L "RAM TEST"

Load from cassette #1 the program named RAM TEST.

.L "RAM TEST",08

Load from disk (device 8) the program named RAM TEST. This command leaves basic pointers unchanged.

MEMORY DISPLAY

.M 0000 0080

supermon2

:: 0000 00 01 02 03 04 05 06 07
:: 0008 08 09 0A 0B 0C 0D 0E 0F

Display memory from 0000 HEX to 0080 HEX. The bytes following the address may be modified by editing and then typing a RETURN.

REGISTER DISPLAY

.R

PC SR AC XR YR SP
.: 0000 01 02 03 04 05

Displays the register values saved when SUPERMON was entered. The values may be changed with the edit followed by a RETURN. Use this instruction to set up the PC value before single stepping with .I.

7ln2
SAVE TO TAPE

.S "PROGRAM NAME",01,0800,0C80

Save to cassette #1 memory from 0800 HEX up to but not including 0C80 HEX and name it PROGRAM NAME.

.S ":program name",08,1200,1F50

Save to disk drive #0 memory from 1200 hex up to but not including 1F50 HEX and name it PROGRAM NAME.

TRANSFER MEMORY

.T 1000 1100 5000

Transfer memory in the range 1000 HEX to 1100 HEX and start storing it at address 5000 HEX.

EXIT TO BASIC

.X

Return to BASIC ready mode. The stack value saved when entered will be restored. Care should be taken that this value is the same as when the MONITOR was entered. A CLR in BASIC will fix any stack problems.

7ln3
SUMMARY

COMMODORE MONITOR INSTRUCTIONS:

G GO RUN
L LOAD FROM TAPE
M MEMORY DISPLAY
R REGISTER DISPLAY
S SAVE TO TAPE
X EXIT TO BASIC

SUPERMON ADDITIONAL INSTRUCTIONS:

A SIMPLE ASSEMBLER
D DISASSEMBLER
F FILL MEMORY
H HUNT MEMORY
I SINGLE STEP
P PRINTING DISASSEMBLER
T TRANSFER MEMORY

SUPERMON will load itself into the top of memory wherever that happens to be on your machine.

You may then save the machine code or faster loading in the future. Be sure to note the SYS command which links SUPERMON to the COMMODORE MONITOR.

EXTRAMON INSTRUCTIONS

EXTRAMON 9.3

SIMPLE ASSEMBLER

.A 2000 A9 12 LDA #\$12
.A 2002 9D 00 80 STA \$8000,X
.A 2005 DEX:GARBAGE

In the above example the user started assembly at 2000 HEX. The first instruction was load a register with immediate 12 HEX. In the second line the user did not need to type the A and address. The simple assembler retyped the last entered line and prompts with the next address. To exit the assembler type a return after the address prompt. Syntax is the same as the Disassembler output. A ':' can be used to terminate a line.

BREAK SET

.B 1000 00FF

The example sets a break at 1000 HEX on the FF HEX occurrence of the instruction at 1000. Break set is used with the QUICK TRACE command. A BREAK SET with count blank stops at the first occurrence of the break address.

COMPARE MEMORY

.C 1000 2000 C000

Compares memory from HEX 1000 to HEX 2000 to memory beginning at HEX C000. Compare will print the locations of the unequal bytes.

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DISASSEMBLER

.D 2000

.. 2000 A9 12 LDA #512
.. 2002 9D 00 80 STA \$8000,X
.. 2005 AA TAX

Disassembles to the end of memory starting at 1000 HEX. The three bytes following the address may be modified. Use the CRSR KEYS to move to and modify the bytes. Hit return and the bytes in memory will be changed. Extramon will then disassemble that line again.

.D 2000 3000

Disassembles from 2000 to 3000.

FILL MEMORY

.F 1000 1100 FF

Fills the memory from 1000 HEX to 1100 HEX with the byte FF HEX.

7ln2
GO RUN

.G

Go to the address in the PC Register display and begin run code. All the registers will be replaced with the displayed values.

.G 1000

Go to address 1000 HEX and begin running code.

HUNT MEMORY

.H C000 D000 'READ

Hunt thru memory from C000 HEX to D000 HEX for the ASCII string read and print the address where it is found. Maximum of 32 characters may be used.

.H C000 D000 20 D2 FF

Hunt memory from C000 HEX to D000 HEX for the sequence of bytes 20 D2 FF and print the address. A maximum of 32 bytes may be used. Hunt can be stopped with the stop key.

INTEGRATE MEMORY

.I F000

. F000 54 4F 4F 20 4D 41 4E 59 TOO MANY
. F008 20 46 49 4C 45 D3 46 49 FILESFI7ln2
Displays HEX and ASCII until the end of memory.

.I F000 F080

Displays HEX and ASCII from F000 HEX to F080 HEX.

LOAD FROM TAPE

.L

Load any program from CASSETTE #1.

.L "RAM TEST"

Load from CASSETTE #1 the program named RAM TEST.

```
.L "0:RAM TEST".08
```

Load from disk drive #0 the program named RAM TEST.

Beware load with a file name breaks the IRQ saved by the MONITOR. Do not use GO COMMAND after LOAD OR SAVE. Exit to BASIC and re-enter MONITOR.

MEMORY DISPLAY

```
.M 0000 0080
.: 0000 00 01 02 03 04 05 06 07
.: 0008 08 09 0A 0B 0C 0D 0E 0F
```

Display memory from 0000 HEX to 0008 HEX. The bytes following the address may be modified by editing and then typing a RETURN.

NEW LOCATER

```
.N 7000 77FF 6000 0400 9000
.N 77CD 77FF 6000 0400 9000 W
```

The first line fixes all three byte instructions in the range 7000 HEX to 77FF HEX by adding 6000 HEX offset to the bytes following the instruction. New loader will not adjust any instruction outside of the 0400 HEX to 9000 HEX range. The second line Word values in the same range as the first line. New loader stops and disassembles on any bad op code.

QUICK TRACE

```
.Q
.Q 1000
```

The first example begins trace at the address in the PC of the register display. The second begins at 1000 HEX. Each instruction is executed as in the WALK command but no disassembly is shown. The Break Address is checked for the break on Nth occurrence. The execution may be stopped by pressing the STOP and '=' keys at the same time.

REGISTER DISPLAY

```
.R
PC IRQ SR AC XR YR SP
.: 0000 E62E 01 02 03 04 05
```

Displays the register values saved when EXT-RAMON was entered. The values may be changed with the edit followed by a RETURN.

SAVE TO TAPE

```
.S "1:PROGRAM NAME".08,0800,0C80
```

Save to disk drive #1 memory from 0800 HEX up to but not including 0C80 HEX and name it PROGRAM NAME.

Beware SAVE with a file name breaks the IRQ saved by the MONITOR. Do not use GO COMMAND after LOAD OR SAVE. Exit to BASIC and re-enter MONITOR.

TRANSFER MEMORY

```
.T 1000 1100 5000
```

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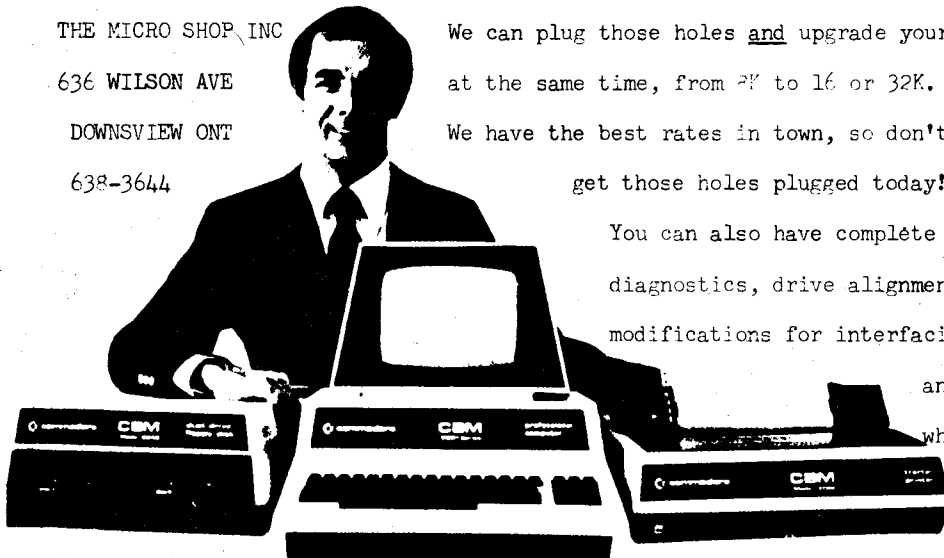


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Transfer memory in the range 1000 HEX to 1100 HEX and start storing it at address 5000 HEX.

WALK CODE

.W

Single step starting at address in register PC.

.W 1000

Single step starting at address 1000 HEX. Walk will cause a single step to execute and will disassemble the next instruction. Control speed with choice of key:

(left wedge) FOR SINGLE STEP;
RVS FOR SLOW STEP;
SPACE FOR FAST STEPPING.

EXIT TO BASIC

.X

Return to BASIC READY mode. The stack value saved when entered will be restored. Care should be taken that this value is the same as when the MONITOR was entered. A CLR in BASIC will fix any stack problems.

COMMODORE MONITOR INSTRUCTIONS:

G GO RUN
L LOAD FROM TAPE
M MEMORY DISPLAY
R REGISTER DISPLAY
S SAVE TO TAPE
X EXIT TO BASIC

EXTRAMON ADDITIONAL INSTRUCTIONS:

A SIMPLE ASSEMBLE
B BREAK SET
C COMPARE MEMORY
D DISASSEMBLER
F FILL MEMORY
H HUNT MEMORY
I INTEGRATE MEMORY
N NEW LOCATER
Q QUICK TRACE
T TRANSFER MEMORY
W WALK CODE

EXTRAMON can be relocated.

TYPE:

.T 1000 17FF 7000
.N 7000 77FF 6000 0400 9000
.N 77CD 77FF 6000 0400 9000 W

The first line moves EXTRAMON at \$1000 to \$17FF a new location at \$7000 to \$77FF. The second line adjusts the machine code. The last line adjusts the .WORD TABLES.

The second line stops at a bad op code which is part of the MONITOR tables.

EXTRAMON also has repeat keys on the cursor left right, cursor up/down, insert/delete, and the space keys.

The repeat key function will be disabled on any LOAD or SAVE.

The repeat key will re-enable after any EXTRAMON command.

JEM INSTRUCTIONS

Jeff's Expanded Monitor

JEM's command table

A - alpha-numeric switch
 B - binary display of memory
 C - relative branch calculation
 D - disassemble memory
 E - reassemble code at new location
 F - find a string of code in memory
 G - goto a routine
 H - give the hex value of a bit pattern
 L - load from tape
 M - hex dump of memory with checksum
 P - place a value in a range of memory
 Q - ram test
 R - display the registers
 S - save to tape
 T - blanket transfer of memory
 U - check eprom for all f's
 V - verify a tape
 X - exit to BASIC
 (shift)D - disassemble a range of memory
 # - checksum of memory
 \$ - screen-printer switch
 (Up arrow) - display one more line with d or m
 = - compare memory
 + - add two sixteen bit numbers
 - - subtract two sixteen bit numbers

(right wedge)A

Successive inputs followed by a carriage return will change the mode from graphic to lower case and back again.

Example: move your cursor halfway down the screen

(right wedge)T 8000,c000,c1ff

Displays the first 2 pages of the BASIC interpreter - can you read it? if not

(right wedge)A (cr)

(right wedge)B xxxx yy

This command displays the binary bit pattern of memory bytes. xxxx = starting address of bytes to display. yy = HEX no. of bytes to display. You can display up to \$17 bytes at a time on the screen

example:

(right wedge)B 0000 04

0000 0100 1100 4C

0001 0011 0000 30

0002 1101 0001 C1

0003 0000 0000 00

add. bit pat. hex value

(right wedge)C xxxx yyyy

C is the command to calculate relative branches. xxxx = your present hex line (memory location of relative branch opcode). yyyy = hex line to branch to (address of next op code to execute).

(right wedge)D xxxx(optional)

D is the command for the disassembler. xxxx = hex address to start disassembly the address is optional. just pressing D followed by cr will start disassembly at the last address disassembled i.e.the bottom address on page one will be the top address on page two.

(right wedge)E xxxx,yyyy,zzzz

This command reassembles code to run at a new location. xxxx=new location of code. yyyy=starting address of code to be transferred. zzzz =ending address.

Example: E 1F00,033A,03F2

this set of instructions will take a program located in the second cassette buffer, move it and rewrite it to run in high ram, correcting addresses as it goes.

Caution you must check your program for such things as load imm when the imm is a vector address for irq etc.. after using e, use t to move data fields and lookup tables. then use m to modify your vectors and data fields.

(right wedge)F xxxx,yyyy aa bb cc dd .. .

Use F to search memory for machine code xxxx=hex address to start search. yyyy=hex address to end search. aa bb cc . = specific sequence of code to search for.

Example: F C000,DFFF A9 00

This will search thru the BASIC interpreter for the code sequence - load acc imm with 00. you can search for a sequence up to 22 bytes long because PET will read a second line of code

Caution - always use the space bar to go to the second line. do not - use the cursor control.

JEM will print out the starting address of each occurrence of the sequence.

(right wedge)G xxxx

This will jump you to a routine beginning at hex \xxxx

(right wedge)H xxxx xxxx

H will display the hex value of a given binary bit pattern. xxxx xxxx= the bit pattern you wish to convert to hex

(right wedge)L 0x,yyyy

L is the load from tape command. 0x is the device number and yyyy is the name of the program you wish to find. you must use at least one letter

(right wedge)M xxxx,yyyy

This will give you a hex dump of memory from xxxx to yyyy. the first two bytes displayed is the address of the first byte in that line. the last two bytes are the checksum for that line.

(right wedge)P xxxx,yyyy,zz

P will place a specified character (zz) in a range of memory, starting at xxxx and continuing thru yyyy.

(right wedge)Q xxxx,yyyy

Q tests ram from xxxx thru yyyy. It prints the address of each bad bit.

(right wedge)R

R displays the registers

(right wedge)S 0x,abc...p,yyyy,zzzz

S is the save memory command. 0x is the device number, abc...p is the name (up to 16 alpha-numeric characters), yyyy is the start of memory to be saved and zzzz is the ending address to be saved.

(right wedge)T xxxx,yyyy,zzzz

T is a blanket (no modification) transfer of memory to xxxx from yyyy thru zzzz.

(right wedge)U xxxx,yyyy

Checks eproms for all f's, from xxxx thru yyyy.

(right wedge)V 0x,abc..p

This will verify a previously saved program on a tape. 0x is the device no. and abc..p is the name of the program

(right wedge)X

Will exit from the monitor and return you to the BASIC command mode

(right wedge)(shift)D xxxx,yyyy
Shift D will disassemble a range of memory, not just one page rloading the rest of the instructions

(right wedge)# xxxx,yyyy
Will give you a checksum of memory from xxxx thru yyyy

(right wedge)\$
\$ will switch PETs output between the screen and a printer (through the ieeec-488 port). Each successive use will change the output device

(right wedge)(up arrow)
Using the up arrow following the use of the D or M commands will display one more line. Any other key will return the prompt

(right wedge)= xxxx,yyyy,zzzz
This command will compare code starting at xxxx with code starting at yyyy and ending at zzzz. it will print the address of any mismatch.

(right wedge) xxxx,yyyy
This will give the hex sum of xxxx and yyyy.

(right wedge)- xxxx,yyyy
This will give the difference.

How to use jem to reassemble itself,
starting at \$9000
(right wedge)E 9000,1000,1AB0 Reassemble itself
(right wedge)T 911A,111A,112C Break header
(right wedge)T 9176,1176,1185 M header
(right wedge)T 9392,1392,13FF Command lookup
yable
(right wedge)T 94FF,14FF,15DB Disassembler
lookup
(right wedge)T 973E,173E,17B7 Reassembler lookup
(right wedge)M 9015,9015 (change 10 to 90) IRQ vec.
(right wedge)M 93B6,93D0 (change the 1x's to9x's)
How to add commands to JEM the command lookup
table and branch address tables are located at \$1392-\$1
3FF. The first group is the command lookup table. Add
the hex value of the symbol you want recognized as a
command to this list. The high byte branch address
table starts at \$13b6. add the high address byte of your
new routine to this list the low byte branch address
table is at \$13DA. Add the low address byte -1 of your
routine to this list remember -1 for the low byte.
JEM - Subroutines

10A3 Done? See if data in \$11,\$12 is less then or
equal to \$13,\$14, if not it returns with carry clear

10B2 Moves data in \$11,\$12 to \$19,\$1A

10F2 Prints one carriage return

10F7 Increments data in \$11,\$12 by 1

115F Same as below except proceeded by a space

1162 Read 2 two byte addresses seperated by a
comma. first address is at \$11(lo byte),\$12(hi byte).
Second address is at \$13(lo byte) \$14(hi byte).

1204 Prints data in \$11,\$12 as 4 ASCII characters

1208 Prints data in \$19,\$1A as 4 ASCII characters

1213 Prints data in ACC as 2 ASCII chr.

1237 Prints 2 spaces

123a Prints 1 space

123F Swaps data between \$11,\$12 and \$13,\$14

124f First half of \$1162 i.e. reads 1 two byte address

125e Read 2 ascii characters from screen convert to
hex and return with data in accumulator

1290 Skip one character on the screen

14e8 Print a multiple quantity of the same character
quantity i x reg. character in accumulator

1600 Read 3 two byte addresses first address in
\$19,\$1A second in \$11,\$12 third in \$13,\$14

These programs were written by:

Jeffrey Dukes
15346 SE 307
Kent WA 98031
206-613-1973

if you add something to JEM, please send a copy to
me
Thanks, Jeff

OLIVETTI TYPEWRITER

by Chris Bennett

In late march of this year, I took
delivery of an Olivetti Electronic Typew-
riter that has been interfaced to the Pet by
Communications Specialists of Toronto. It
sells for about \$2700.

The Olivetti 121 Typewriter on its own
has quite a few good features such as
Automatic Centering, Vertical Lines on
tabs, Memory Error Correction and Multi-
lingual Capability. All these features can
be used if you need the machine just as an
ordinary typewriter. However you can also
connect it up to a word processor such as
WORDPRO. The advantage of this machine
is that I don't have to do anything
special in WORDPRO to get it to work. For
example, underlining using cntl-[and
cntl-] work on the Olivetti as described in
the WORDPRO manual. Many of the
Olivetti features such as TAB SET,
DECIMAL TAB, CENTER and
PARAGRAPH INDENT have been imp-
lemented by assigning them to ASCII
codes less than 32 decimal. However for
general use most of these will never be
accessed.

Some of the features of the typewriter
include 10, 12 and 15 pitch; special
daisywheel typestyles such as OCR-A,
OCR-B, ITALIC, ORATOR, GOTHIC plus
many more; and several different types of
ribbon cartridges.

The machine will type out text at about 18 characters per second (6 when underlining) and must be considered a slow speed word processing printer. However if you have WORDPRO 4 PLUS, you can print one letter while editing the next so

the speed is not as much of a problem. Also if you are like me and need a stand alone typewriter as well as a word processing printer this machine is quite attractive for the price.

HOMEMADE CHARACTER GENERATOR ROMS

BY Dieter Demmer

Recently I purchased an Epson MX-80 Printer which has several advantages over the CBM 4022 Printer. The only problem - it has no PET graphics and thus produces listings that are hard to read.

To get around this problem, I thought of changing the character generator rom in the printer to include those graphic characters. Easy job at first glance; but after a cursory glance at the rom in question (a standard 2332 type), several bugs developed:

From my previous knowledge of character generators the standard method of addressing is to present the ASCII code to the more significant address bits and then scanning through the least significant bits (3 or 4 depending on the matrix) thus producing the individual columns. So after inspecting address 65, I expected to see an 'A' somewhere in the vicinity. But joggling addresses up and down around this area, no character of any readability, not to speak of an actual 'A' was to be found. I then proceeded to dump the entire rom to the printer representing zeroes as spaces and ones as an 'X'. This produced an apparent mess but after close inspection there was indeed a complete character set starting at address 2048 and up. To make a long story short, the first 2 K block was the actual micro-code for the computer inside the printer and the characters followed in the second 2 K block. An added attraction was a skip every 256 words (most likely introduced by EPSON to make the job more difficult). The characters were rotated and inverted as well to make them almost illegible.

To make the following job a little easier, I produced a program that examined the rom and printed out a 9 word block in a rotated and inverted manner to actually show what character was in a specific area. I then started to learn Japanese, because that was all I found

beyond address 127. Since the necessity of Japanese characters was not primary on my mind, I thought this might be a nice area to store the PET graphics. If one has never tried to design characters, even though they are painted on the keyboard, I can highly recommend it. It is pure unadulterated fun, specially when it comes to PI's or card suits.

To sum up my creation, all (well, almost) PET characters were reproduced in corresponding addresses 160 (rev.space) to 223 (half triangle). I got carried away a little bit and added some of my own like left arrow, right arrow, Db and Hz since there was lots of room in the Rom. The only characters that could not be produced were the cursor control characters since they were below the acceptable range of the printer 'intelligence'. I.e. the printer uses them for it's own purpose like expansion and compression of text, line spacing etc.

The final product was quite satisfying until I talked to Chris Bennett about the Rom and he suggested to carry this madness a little bit further and produce special software to intercept these cursor control characters and modify their ASCII code to numbers beyond 223. I hope something will come of it since I hate to see 3 weeks of my time completely wasted on one single Rom. Anybody in proud possession of an EPSON MX-70 or MX-80 printer should get in touch with Chris or myself and be the beneficiary of this work. By the way, the Rom plugs in instead of the original and 2532 types are adequate (450 nSec type).

One additional limitation is the connection of the graphic characters in the horizontal axis. By programming the printer to feed 8 dots per line the vertical problem goes away but there is no fix for a clean connection in the other axis.

Classified 5 cents
per word

CLASSIFIED

with \$1
minimum.

Regretfully selling 8032 with CN2 cassette and numerous books - \$2000. Call Gerhard 282-8237.

8024 printer for sale. 160 cps Commodore version. 7 dot matrix version with stand - \$1800. call Chris 782-9252.

Olivetti 121 Electronic typewriter with PET IEEE interface. Includes 3 print wheels and 2 boxes of ribbons- \$1800. call Chris 782-9252.

LIBRARY DISK LISTINGS

ASSEMBLER

A1- TPUG-ASSM 1

3D.PLOT.ASM
CBM.TO.MAE
DOS.ASM
EPROM.PRGM.ASM
EPROM.PRGM.EXE
EPROM.PRGM.INS
EXMON.CT
EXMON.M01
EXMON.M02
EXMON.M03
EXMON.M04
EXMON.M05
EXMON.M06
EXMON.M07
EXMON.M08
EXMON.M09
EXMON.M0A
EXTRAMON.EXE9.0B
EXTRAMON.EXE9.0G
FREQ.CTR.ASM
IEEE.LIB
KEYSORT.ASM
L.C.LISTER.ASM
LEARNING.AID1
LEARNING.AID2
LEARNING.AID3
LEARNING.AID4
LEARNING.AID5
LEARNING.AID6
LEARNING.AID7
MAE.PAT.ASM
MAE.TO.CBM
MAE/DOS
MAE/DOS.ASM
MLMACROS.MLIB
PET.LIB
PET16.ASM
PET16.MAC
SECTOR.CTL
SECTOR.EXE
SECTOR.PGM
UART.CT
UART.M01
UART.M02
UART.M03
UNASSEMBLER/CBM
UNASSEMBLER/MAE

A2- TPUG-ASSM 2

AID.CT
AID.M01
AID.M02
AID.M03
APPEND.ASM
APPLE.LOADER.ASM
BASIC.AID.EXE
BASIC.AID.INS
3MBSTRINGTHING
EXTRAMON9.3B
EXTRAMON9.3G
MAE/DOS
MINI-COMPILER
PGMR.UNIV.ASM

PGMR4.0.EXE
SCI.S - OLD
SCI.S I/O FIX
SCREENPRINT.ASM
SCREENPRINT.EXE
TINY.PILOT.ASM
TINY.PILOT.EXE
TINY.PILOT.INS
UN-NEW.ASM
UNASS.EXE60C
UNASS.INS.WP
USERS.LETTER
V40.2.O
V40.2.S
V40.4.O
V40.4.S
V80.4.O
V80.4.S

A3- ASSEMBLER 3

AID INSTRUCTIONS
B1.S
B2.S
B3.S
B4.S
BAID.LIB
BAID.O
BAID4.CT
BAID4.DOS
BAID4.M1
BAID4.M2
BAID4.M3
BAID4.M3
BAID4.M4
BASIC AID 4
COPY ALL
ERIC ASSM
INSTRUCTIONS
LITTLEMON .CT
LITTLEMON.ASM
LITTLEMON.M01
MUSIC.ASM
UNASSEMBLER
UNASSEMBLER.CBM
UNASSEMBLER.MAE
UNASSEMBLER/C
UNIVERSAL WEDGE

AID4.ASM
APP LOAD SOURCE
ASM CONV MOS
COM
COPY ALL
FORMS.CT
FORMS.M1
FORMS.M2
JUMP2
JUMPTABLE
KEY.PRINT3/4.ASM
L.C.LISTER.ASM
LITTLEMON.ASM
MEAN 14/PET.ASM
MICROMON.CTB
MICROMON.M01
MICROMON.M02B
MICROMON.M03
MICROMON.M04
MICROMON.M05
MICROMON.M06
MICROMON.M07A

MICROMON.M08A
MICROMON.M09
MICROMON.M10
MICROMON.M10.5B
MICROMON.M11B
MXCL.SRCE
NECCL.SRCE
PGMR.UNIV.ASM
PRINT TIME.ASM
REAL.CT
REAL1
REAL2
SET.KEY.ASM
SRC.EX HELLO.ASM
TIM.CTL
TIM.M01
TIM.M02
UNIVERSAL WEDGE
USEIZE.ASM
WEDGE/BASIC4.ASM

A5- ASSEMBLER 5

BAID.MOVE
BAID4.CT
BAID4.DOS
BAID4.M1A
BAID4.M1B
BAID4.M2
BAID4.M3A
BAID4.M3B
BAID4.M3C
BAID4.M4
BAID4.ROLL
BAID4.TRS

BUSINESS

B1- TPUG-BUSNSS 1

APARTMENT.INCOME
APR 80
BUS.PR/CASH/ROI
CAR.COST/MILE
CURRENCY.CONV
DATES-BTTRFLD
DAY OF THE WEEK
DECISION.MAKER
DEMO 8032
DYNATEXT
DYNATEXT.INS
E.G SET-UP 80COL
FEB 80
FINANCIAL CALCS
GROWTH RATE
GROWTH.CALC
HOME.ACCOUNTS.IN
HOME.ACCOUNTS.SU
INVESTMENT.ALT
IRREG.CASH.FLOW
JAN 80
LOAN.ALT
MAR 80
MARKS-BTTRFLD
MAY 80
MILEAGE-BTTRFLD
MORTGAGE-BTTRFLD
PORTFOLIO-BTRFLD
RICE.LIST

RECIPE.SIZER
SALES.ANAL-OP
STOCK.LIST
STOCK.OPTION.VAL
TAX 79 ONT V0.2
TAX 80 ONT V1.0
TAX ONT 1978 V3
TEXT
TEXT EDITOR
TYPER.ALT2
TYPEWRITER.ALT-O
TYPING TEST
UNIVERSAL WEDGE
V40.2.B
V40.4.B
V80.4.B
WP3/4 INST1
WP3/4 INST2

B2- TPUG-BUSNSS 2

4040 FORMAT
4040 MENU
4040 PRINT
4040 UPDATE
8050 FORMAT
8050 MENU
8050 PRINT
8050 UPDATE
FORMAT
INTEREST
JOURNAL
MAIL BACKUP
MAIL LIST 2.0
MAIL LIST 4.1
MAIL LIST 4040
MAIL LIST 8050
MENU
PRINT
TAX 80 ONT V3.0
UNIVERSAL WEDGE
UPDATE

COMMUNI- CATIONS

C1- TPUG-COMMUN 1

8010 MODEM DRIVR
BBS PROGRAM
CBM 8010
COMMUNICATE TEST
ED-TERM
INTELCOM1
INTELCOM2
INTELCOM3
INTELCOM4
MODEM LOG
MORSE TUTOR
MORSE-BTTRFLD
PC.NET.MODEM
RS232-1200/4096
RS232-300/4096
TELE DIALER
TERM.IEEE
TERM.RS232
TERMINAL
TERMINAL.IEEE
TERMINAL.RS232
TNW488/103A
UNIVERSAL WEDGE

EDUCATION

TPUG-EDUC 1 E1

20 QUESTIONS
ADDITION GAME
AFRICA - ASIA
ANIMAL
ANIMAL.DATA
ASK
BIG MATH 1.1
CASH REGISTER
CRYPTOGRAM
DISPLAY
DONUTS
EASY ADD - SUBTR
EDU-TILITIES
ELIZA
EUROPE
EUROPEAN CAPITOL
FISHERY
FLASH CARDS
FRACTIONS
FRENCH
FRENCH VERBS
GLOBAL
GRAMMAR
HAIKU 5
HANGMAN
HANGMAN 2
HANGMAN(HJS)
HIDDEN WORDS
HISTOGRAM
ICE CREAM PAR
MATH DICE
MATH IQ
MATH TUTOR
MATH QUIZ
MISSING NUMBER
NO
NOT.SO.EASY
PETS
Q'S - Z'S
READER
SPEED.READING
SPELLING BEE FIL
SPELLING.TEST
STATES - CAPITALS
STORY.PROBLEMS
TACHISTOSCOPE
TYPING DRILL
UNIVERSAL WEDGE
US PRESIDENT QUI
VOCAB 1
WORLD CAPITAL QU

TPUG-CEAB 1 E2

A V OR MINERAL
AMORT'N TABLES
CAPITALS
DART
DISK DATA
DUM 3.2
GEIGER COUNTER
GRAPH SNAPSHOT
GRAPH SUBROUTINE
GRAVITY TIMER
HANGMAN
HEAT SOLVER 16K
HEAT SOLVER 8K
HYPO SIMULATOR
JOHN GRAPH
MATRIX SOLUTION
METRIC

MICROMATH DEMO
MM1.1 SHERIDAN
MM16.1
POLLUTION
PRIME NUMBER 16K
REFLEX TIMER
SMALL MATH
SOLVE BY GRAPH
SPEAK AND SPELL
TIC-TAC-PET
TITRATION
TRACE.REL
TRIANGLE SOLVING
UNIVERSAL WEDGE

TPUG-CEAB 2/3 E3

BEADS
CALENDAR
CLOSED-3
CURVE-FIT
CURVE-FIT 2
DRUNKARD
EXPECTANCY
GEOGRAPHY
HAMMURABI
HANGMAN
HICALC
HIST
HURKLE!
LISSAJOUS
METCONV
MULTILOT
NUMINT
POINTS
POLAR
POLICY
POLUT
POP
PROBABILITY MACH
PROJ-PLOT
QUEUE
RESULTANT
S-HYPHEN
S-PUNC
S-SPELL
SMOG SIMULATION
T-HYPHEN
T-PUNC
T-SPELL
TICTACARITHI
TICTACPET!
TRACE.REL
UNIVERSAL WEDGE
USPOP
WATER
WORLD 2
YELLOW LIGHT
Z-SCORE

TPUG-CEAB 4 E4

80 COLUMN DEMO
A STORY
BAIRSTOW NTH EQS
BASIC STATISTICS
BEST FIT(LEAST)
COMBINATION WARS
COPY DISK FILES
DRIVING TEST
ELEMENT DRILL
FFT
FLIGHT SIMULATOR
FOREST FIRE
FRACTION GAME2.0
GRADES
GRAPH PLOTTER

HANG MATH
HANGMAN 3.0
HARMONIC DISPLAY
HELLO
JOTTO
JULIAN CALENDER
LIFE EXPECTANCY
LIFESTYLE
LIN-PRO
LISTENER
LONG DIVISION
MARBLESTAT
MARKS(GRADING AI
METRIC CONVER'N
MORSE CODE
MORSE DECODER
MORTGAGE PRINTER
OPTICAL ILLUSION
POLIFY
PRIMES
PROGRAMMER RPN
QUADRATIC
READABILTY
REG'D PWR SUP DE
ROOT FINDER
SCROLL
SIM INVENTORY
SIMEQ SOLVER
SIMPLE PENDULUM
SPEED READ
UNIVERSAL WEDGE
WEIGH
WEIGHT WATCH 4.0

E5- TPUG-CEAB 5

AMORTIZATION HEL
AUTO FILE WRITER
BALANCING EQU
BIG BINARY
BONDS
DDR
DEPRECIATE
DIET
EARTHQUAKE
EASY EDIT
ENZYMIC
FIFO
GENERAL ANOVA
HEX DEMO
INTRO. JACQUES
INTRO. SYLLABLES
INTRO. TO PERCEN
JACQUES A
JACQUES B
LETTER SEQUENCES
LOCKEY
MICROSCOPY
PERCENT
PHOSYN
SYLLABLES
UNIVERSAL WEDGE

E6- TPUG-CAEB 6

8010 MODEM DRIVR
ADD SUB
AID2
AID4
ALPHA-LIST
CBM 8010
CHEM NOMINCLATUR
COMPOSE
DATES
DYNALOGIC
FACTOR RACE
FACTORS

FRENCH VERBS FWC
FUNCTION GRAPH
FWCI INTEGER TTT
LIFE TABLES
PALKO'S AUDIT
RELATION GRAPH
RELATION SKETCH
STOCK TICKER
STRUCTURE-BASIC
SUPERMON 2.REL
SUPERMON 4.REL
SUPERMON2/4 INS
TAX 80 ONT V2.0
UNIVERSAL WEDGE

E7- TPUG-CEAB 7

'PERCENT' DRILL
AFRICAN CAPITALS
ASIAN CAPITALS
C-C'S AUST / AME
C-C'S CAN / EUR
CAPITAL CITIES
CENTRAL CONICS
DECIMALS
DIVISION
FACTORING DRILL
FACTORING WHOLES
FLASHER
FRACTIONS DRILL
INSTRUCTIONS
INTEGERS
LINEAR SYSTEMS
MAT 250 MLA
MECHANICS
MLA--ARITHMETIC
NICE TRIG RATIOS
PLANES
POWERS / ROOTS
SKELETON DRILL
SPELLING DRILL
STRAIGHT LINE
U.S. CAPITALS
UNIVERSAL WEDGE
VECTORS
WHOLE NUMBERS
WHOLES

E8- TPUG-EDUC 2

ANTONYMS!
BALANCING EQU
BASE CONV.ALT
CHEMISTRY CALC
CHICK
CHICK RESULTS
DOC-SCARDIAC 7B
ENGLISH GRAMMAR
HANGMATH/O'H
LIMERICKS
MARTIAN.HUNT
MATH IQ
MELODY CHANGES
MULT DRILL
PI.CALCULATOR
PICTURES
POGO V7
POGO.INS.WP
PUZZLE.BOX
PUZZLE.ENTER
RATIONAL
SCARDIAC 7A.INS
SCARDIAC V7
SOLAR SYSTEM
TRACE.A.WORD
TURTLE
UNIVERSAL WEDGE
WORD LADDER
WORD.SEARCH

GAMES

G1- TPUG-SIMLTN 1

ADV30 GAME
ADV30 INTRO
ADVBOOT
ADVENTURE
ADVENTURE GAME
ADVENTURE-M.B.
ADV F 0
ADV F 1
ADV F 10
ADV F 11
ADV F 12
ADV F 13
ADV F 2
ADV F 20
ADV F 21
ADV F 22
ADV F 23
ADV F 24
ADV F 25
ADV F 26
ADV F 27
ADV F 28
ADV F 29
ADV F 3
ADV F 31
ADV F 4
ADV F 5
ADV F 6
ADV F 7
ADV F 8
ADV F 9
ADVITM
ADVKEYS
ADVMAP
ADVSHOR
DOG.STAR.ADVEN
DUNGEON 1.4
DUNGEON.ALT3
EXPLORE-BTTRFLD
FISHERY
HAMMURABI
HAMURABI
KINGDOM/PICS
LIFE
POLUT
POWER INSTRUCT
POWER SIMULATION
QUEST 3.0
TOMBS A-BNNYCSTL
TOMBS B-BNNYCSTL

G2- TPUG-SPACE1

AFO WITH SOUND
ATARI II
C.C.STARWAR
C.C.STARWAR.INS
DEEPSPACE 1.0
EASY.DUNGEON!
ELIZA
HUNTER.SATELLITE
KLINGON CAPTURE
LUNAR LANDER 1
LUNAR LANDER-BFD
OSC LUNAR
PLANET.PROBE
SPACESHOOTER.ALT
STAR TREK
STAR WAR TRANINE
STAR WARS
STAR WARS!
STARBASE UFO!

STARTREK V18
STARTREK.ALT4
SUPER STAR TREK
SUPERLANDER
UNIVERSAL WEDGE

G3- TPUG-WRD/NUM1

3D TIC-TAC-TOE
ANDROID NIM!
BAGELS-BUTTRFLD
BAGELSX2-BTTRFLD
BINGO
BRAIN STRAIN
CONCENTRATION.7
CRAPS.ODDS
CRYPTO-BTTRFLD
FAMOUS PHRASES
GUESS IT
HANGMAN
HANGMAN-2/PETS
HANGMAN.ALT
HANGMATH
JOTTO-BTTRFLD
KENO
LETTER.15
MAGIC.SQUARE
MASTERMIND
MATH IQ
NIM-BUTTRFLD
PIGS
REVERSE-PUNTER
REVERSE.

S
SIMON!
STARS
TIC-TAC-TOE 2.0
UNIVERSAL WEDGE

G4- TPUG-GAMES1

AIRPLANE
ARROW-BTTRFLD
AWARI
BATTLESHIPS
BL JACK-PUNTER
BLACK BOX!
BLACK JACK 4.1
BLACKJACK!!
BOMBER
BOWLING
BREAKOUT
CHASE/ROBOT
CHECKERS 1
CHECKERS 2
DAMBUSTERS
DEFLECTION
DUCKSHOOT
FLIGHT SIMULATOR
GO-MOKU
HORSE RACE
INSP. CLEW-SO
KENTUCKY DERBY
LABYRINTH
LIFE WAR
MOTORCYCLE
OTHELLO
PETALS ARND ROSE
PINBALL
POKER-PUNTER
PRO FOOTBALL
RACETRACK
ROBOT CHASE!
ROULETTE
SKI

SNAKES!
SOLITAIRE-PUNTER
TARGET-BUTTRFLD
TOKER
UNIVERSAL WEDGE

G5- TUPG-GAMES 2

ANTI-AIR/BUS
ARROW
BATTLESHIP.ALT2
BILLIARDS!
BREAKOUT
CARD SNAP
CARDS UTILITY
CLOUZOT!
CLUE
CONCENTRATION
DEPTH CHARGE
DICE.PIG
DOMINOES
DRAGON.MAZE!
DRAW.POKER
FAWLTY
FIND.COLOR
GRUNGY TOWERS
GUNNER
KILLER BUNNIES
M.B.INSTRUCTIONS
MADMAN.RACE
MILLE BOURNE
MOUSEMAZE
MOVMAZE1
MOVMAZE2
OSERO
OTHELLO
QUANDRY
QUBIC.ALT
SNAKE 2
SNAKE.ALT
SPADE.INSTRUCTS
SPADES
SUBMARINE!
TARGET
UNIVERSAL WEDGE

G6- TPUG-GAMES 3

ARTILLERY TRAP
AWARI
BASKETBALL
BILLIARDS
BLACKBOX
BLACKJACK.ALT
BOGGLE
BOMBER.ALT
BOWLING
BOXING
BREAKOUT 3.1
BRIDGE BID TRAIN
CHECKERS.ALT
DOT RACER
GOLF
HORSERACE
HORSES
HURKLE
IAN'S RACE (N)
KNIGHT.TOUR.SOL
MUGWUMP
PONG
POP SHO.
QUBIC
REFLECTIONS
ROAD RALLY
ROBOT CHASE!
SINNERS
SLOTS/JACKPOT

SNOWFLAKE
SOLITAIRE POKER
SUBMARINE
T.TENNIS
TAG
TANK.BATTLE
TANK.WAR.ALT
TORPEDO.BOMBER
TREES
UNIVERSAL WEDGE
WEIGH
WUMPUS.ALT
YAHTZEE

G7- TPUG-SIMLTN 2

ADV9 0
ADV9 1
ADV9 10
ADV9 11
ADV9 12
ADV9 13
ADV9 2
ADV9 20
ADV9 21
ADV9 22
ADV9 23
ADV9 24
ADV9 25
ADV9 26
ADV9 27
ADV9 28
ADV9 29
ADV9 3
ADV9 31
ADV9 4
ADV9 5
ADV9 6
ADV9 7
ADV9 8
ADV9 9
ADVENTURE80
ADVITM
ADVKEYS
ADVMAP
ADVSH8
ADVSH9
AFRICAN ADV-32K
BABY CARE
HS.OF.7.GABLES
LOST DUTCH GOLD
NEW ROM WARLORDS
NEW WARLORDS INS
NEW WATER
NICHE
OLD ROM WARLORDS
OLD WARLORDS INS
SPELUNKER
SWORDS / SORCERY
UNIVERSAL WEDGE

G8- TPUG-GAMES 4

BREAK80
BREAKOUT
CAR RACE 4.0
CRAZY 8'S
MISSION IMP
MONOPOLY
ROULETTE
STOCK
STOCK 80 COL
UNIVERSAL WEDGE

G9- TPUG-SIMLTN 3

CASTLE ADV-32K
KING.TUT
OHARE'S 1
OHARE'S 2
OHARE'S 3
SORCERERS.CASTLE
TRIP TO ATLANTIS
UNIVERSAL WEDGE
WIZARD'S.CASTLE

MATH/ SCIENCE

N1- TPUG-MTH/SCI1

3D PLOT
BIOPRINTER 6.3
BIORHYTHM 1.5
CHI SQUARE
CRITICAL PATH 2A
CROUT ALGORITHM
CURFIT-BTTRFLD
DEMO SORT
DERIVATIVE
EDU-TILITIES
ELECTRONICS.CALC
FACTORS-BTTRFLD
FUNCTION.MACHINE
GLOBAL
GRAPHICS.DEMOS-G

HEAPSORT DEMO
INTERMOD
LAT/LON.DISTANCE
LEAST SQUARES
LIFE EXPECTANCY
LISTENER
MATH TEST-BTTRFL
METRIC CONVER'N
METRIC TEACHER
METRIC-BTTRFLD
NATAL CHART
NEWTONS ZERO
OHMS LAW
PLANET POSITION3
PLOTING
POLIFY
PRESSURE CURVE
PROGRAMMER RPN
QUADRATIC
QUARTIC
RANK CORRELATE
REDUCTION
REG'D PWR SUP DE
ROOT FINDER
ROULETTE.THEORY
SIMEQ SOLVER
SORT
SORTING DEMO
SQUARE ROOT TEST
TREND-BTTRFLD
TRIANGLE-BTTRFLD
UNIVERSAL WEDGE
WEATHERMAN
WEIGHT WATCH 4.0

N2- TPUG-MTH/SCI 2

AUDIO DESIGNER
BAR GRAPH 2.4
BONE TUMOR DIAGN
COMPLEX NUMBERS

CRYPTARITHMETIC
FILTER
FREQ GENERATOR!
NET1
PHYSIOLOGIC WT
PLEURAL EFFUSION
POWER SUPPLY
UNIVERSAL WEDGE

MUSIC

S1- TPUG-MUSIC 1

1950'S MEDLEY!
76 TROMBONES!
ALLELUJAH!
BAROQUE FANFARE!
BUMBLE BEE!
COPY ALL
DANSE CAPRICE
DUELIN' BANJOS
ELEANOR RIGBY
ELEPHANT
ESPANA
FUGHETTA
GAVOTTE MUSETTE
INVENTION 11!
INVENTION 8!
JINGLE BELLS!
JOPLIN MUSIC
LP:NEW ROM MUSIC
MARCH IN D!
MARCHE MILITAIRE
MINUET IN G
MINUTE WALTZ
MUSIC BOX DANCER
MUSIC/OLD ROM
PALINDROME
PESONG
PESONG 1
PESONG 2
PESONG-BACH
POLONAISE IN BFL
PREL / FUGUE 2!
REEL
SILENCE
SINFONIA!
SONATA L.82
SOUND.DEMO!
SOUND.INFO!
SOUNDS TAPS CB2
SPRING SONG
STAIRWAY
STARSPGL BANNER!
TARANTELA
THE ENTERTAINER!
THE PROMENADE
THREE TUNES
UNIVERSAL WEDGE
WASHINGTON.POST!
WATER MUSIC!
WELL TEMPERED
WHEN I'M 64!
WONDERLAND!

T1- TPUG DISK DEC/80

ABACUS
AID4
CANARY
CARD SNAP
COMPACTOR
COPY ALL
DANSE CAPRICE
DISK APPEND
DOS SUPPORT 4.0
DUCKSHOOT
DUELIN' BANJOS

ELEANOR RIGBY
ELEPHANT
ESPANA
FAWLTY
FORMAT
FUGHETTA
GAVOTTE MUSETTE
HALLOWE'EN
IAN'S RACE (N)
KIM'S CALENDAR
LABYRINTH
MARCHE MILITAIRE
MINUET IN G
MORE BLUES
MORE DISCO
MORSE
PALINDROME
PIGS
POLONAISE IN BFL
PRINT USING
REEL
SILENCE
SINFONIA
SOME BALLADS
SOME BLUES
SOME DISCO
SOME JAZZ
SONATA L.82
SPRING SONG
STAIRWAY
THE PROMENADE
THREE TUNES
TOMBS-GAME
TOMBS-INTRO
WELL TEMPERED

TPUG

T2- TPUG DISK JAN/81

AID EXPLANATION
AID2 C
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