PolyLetter

The Newsletter for PolyMorphic Systems Owners and Users

JAN / FEB 8601

Editorial

Well PolyMorphic Systems has a new address, see their ad this issue. It seems that the future of PolyMorphic and of PL are in question. Now don't do anything rash yet like sucicide. I hope that PolyMorphic will be around for some time, however one can only guess. As far as PolyLetter goes, this subject needs some discussion. As I said in the last issue I will continue to edit and publish PL as long as the subscriber count remains to where it is economically feasiable. At the present time and for some time I have been going in the red every issue.

There are several ways to get around this problem. I for one want PL to remain in print or I would not have gone on this long. I hope the rest of you want PL to stay in print. The obvious is raise the tariff. I don't want to do this. The second way would be to publish PL four times a year instead of the six. Now I know what you are thinking: thats about what he is doing now! Yes I have been late and asked several subscribers what they thought of me turning over the letter to someone else. The reply was that it is better late than never. I also think that if PL was given up that it would surely expire in a very short time. Who else would spend as much time as it takes to do an issue and spend an additional fifty dollars an issue to boot?

I'm not asking for anyone to take on PL. What I am saying is to be patient, use your Poly, help little ladys across the street, eat your beets, brush twice daily, see Halleys comet and renew your subscriptions. You need to at least do the last two, because both are a once in a lifetime wonder. Besides I hate beets.

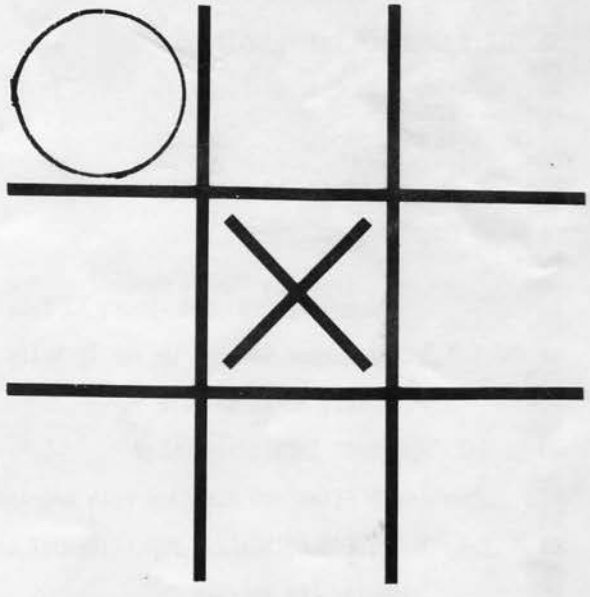
The glitch was not guessed so I gave myself a free disk of the month. The glitch was from editor. The glitch will continue next issue. It should have a decent picture by then.

For Sale

(1) 8813 and (1) 8813 MS system. The MS system can run CPM-80 and has a DC Hayes micro-modem 100 in it. Both systems complete with Exec 96, Wordmaster II, Spell 3.0, Mailist and documentation. The 8813 has been used in an Architecural office for the last four years. The MS system also has specifications and office management system software. This software availableat an additional cost. Both systems are in excellent condition. First $2000.00 gets them both plus all the spares, documentation and disks. Contact Bill Davis evenings at (503) 232-6208.

Poly 8813 w/64K keyboard, monitor, 10MB Priam HD, 8 inch floppy drive. $1500.00. Contact Charles Trayser at (415) 651-5931.

HD 18 system complete with controller, chassis, power supply cables etc. 1295.00. MS 88 system including two drives, controller, p/s, Exec 96, roms, chassis 495.00. Contact PolyMorphic Systems at their new address: 7334 H Hollister Ave. Santa Barbara, Ca. 93117. Phone (805) 685-6238.



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Using Mailist - Part 4

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****

What about mistakes? or Changing an entry?
Understanding how MAILIST.BS works is part of the problem.
For the minute, here is a simple minded way of fixing errors,
and updating both lists (if you have two) and keeping them the same.

1) Use OLDFILE to find the entry that needs correcting.
2) Correct the entry on one of the lists.
3) MAKE NOTE OF THE "ENTRY NUMBER".
4) Quit OLDFILE

If the fixup does not effect the "Key Field"
Use the BASIC program COPYLINE (listed below)

If the fixup does effect the "Key Field"
Use Oldfile to find the Entry
Correct the keyfield and QUIT Oldfile.
Use the BASIC program COPYLINE (listed below)

```
**************************************************
REM                   COPYLINE.BS
REM*******************;**************************
REM
REM      L$   Data record in first file.
REM           You must know the length of each record.
REM           If you do not know the length, make the
REM           Length=550              DIM L$(1:550)
REM      L1$  Data record in second file
REM      Y$   1 character used for Yes No
REM      N    Record Number
REM
**************************************************
10 DIM L$(1:175),L1$(1:175),Y$(1:1)
REM
REM        Change the Names of theses files
REM
REM            "<?<First File Name"
REM
20 FILE:6,OPEN,"<ML<NAME",INPUT
REM
REM            "<?<Second File Name"
REM
30 FILE:7,OPEN,"<ML<ZIP",INOUT
REM
REM            In Case Of Typos
REM
40 ON ERROR GOTO 50
REM
REM             Clear The Screen
REM
50 PRINT CHR$(12),
REM
REM              Type The "Entry Number"
REM              or Type "0" and return to Exec
REM
60 INPUT " Record Number To Look Up (0) To Quit: ",N
REM
REM             This works in Exec 96
REM
70 IF N=0 THEN PRINT CHR$(12)Z=CALL(0
REM
REM    Reads both Files and displays both entries
REM
80 FILE:6,POS,N+1READ:6,L$FILE:7,POS,N+1READ:7,L1$
REM
REM         Display the entries
REM
90 PRINT L$PRINTPRINT L1$PRINT
REM
REM         Verify Copy Procedure
REM
100 INPUT"ok to copy? ",Y$
REM
REM            Copy it!
REM
110 IF Y$="Y"THEN FILE:7,POS,N+1PRINT:7,L$
REM
REM          Start Over
REM
120 GOTO 50
```

A few years ago I wearied of doing the Printer Diablo-1200 and Printer SET routines from the keyboard.

Using 8" DSDD drives, more often than not I ran out of Directory space long before using half of the disk.

I am not a great fan of WordMaster and prefer to format files directly from Exec. I use a large number of different formats and different print wheel sizes.

Due to the above, I use only the FORMAT.IN file (as opposed to having many .IN files).

The first problem I overcame was renaming FORMAT.GO to FOMAT.GO. Why? Because everytime I wanted to delete FORMAT.IN I had to type "DEL FORMAT.IN" instead of "DEL FORMAT" and I am so lazy!

I wanted to type as little as possible. So, I set up a sub-directory called "CMDS.DX" (short for "COMMANDS").

The problem: How do you put the ESCAPE character in a text file?

Solution:a)

```
                    Type "BASIC"
Enter The Following Lines
10 FILE:6,OPEN,"<3<FAKE.TX",OUT
20 PRINT:6,CHR$(27),"       "
30 PRINT:6PRINT:6FILE:6,CLOSE
"RUN"
"BYE"
```

Solution:b)

```
                    Edit a text file
                    Close the file
                    ENABLE the system
                    List The Directory

Disk SAMPLE has 11 files on it.
185 sectors in use, 0 deleted, 2279 sectors free.
 Size Addr   La   Sa Name
    6    4    0    0 ADVERT.TX
   13    A    0    0 NEWDISK.TX
   31   17    0    0 PART2.TX
   22   36    0    0 PART3.TX
   19   4C    0    0 PART1.TX
    6   5F    0    0 READ.me
   28   65    0    0 CPM/EDIT.TX
   16   81    0    0 CP1.TX
   25   91    0    0 POLYLETTER.TX
   10   AA    0    0 REMoval.BS
    5   B4    0    0 ESCAPE.TX

                    Look For Your New file and
                    Check the Addr Column
                    Use SZAP or Szap

  Type ":" and the drive number of the new file
           Example :2

  Type "/" and the sector number of the new file
  ( This is the number in the Addr Column)
           Example /B4

  Press the ESCape Key
```

If the file is more than one sector long hit the RETURN until you see the end of the file.....
(HEX 00's or null characters)

When you have reached the last sector of the file, use the down and right cursors to get past the last

Goto 7

How To Use Setup

There have been several inquiries on the use of the printer setup routine. Many have come from people that have recently purchased new printers. The main complaint has been that they could not successfully connect the new printer and make it work properly. The fact is that they did indeed set the parameters correctly however did not know that when the system is booted the old parameters were loaded and that the new setup routine has to be cold booted in order for it to work as planned, or call the routine Printer (new name) to set the Printer as newly defined.

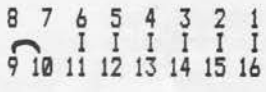
A good starting point when installing a new printer is to view the default printer listing and take note of how it is defined. Now carefully read the documentation for the new printer and compare the data for the two. It should be obvious what needs to be changed. The first thing that comes to mind would be the baud rate. The reason most people are changing printers is to upgrade thier capability. The newer printers have print speeds up to 160 cps plus. The effective transfer rate of serial data from the computer to the printer can be as high as 9600 baud for the Poly. You need to see what speeds the new printer will handle and use the highest speed possible. If you have a decent sized buffer in the printer, then at 9600 baud the adverage file can be printed in one load to the buffer. This gets you back to Exec in just a few seconds!

The second item to check is the hardware handshake. Most printers I have used like the DTR handshake best. Acually most serial printers come from the factory strapped as DTR. The DTR handshake stands for Data Terminal Ready. The printer is the controlling device. When you call to print the printer controlls the DTR line. This line is normally high, meaning it is ready to accept data. As the computer fills the buffer the printer starts to print. However at a 9600 baud rate the printer can't print as fast as the computer can send it data. So when the buffer is full the printer toggles the DTR line low and the computer quits sending data. Now when the the buffer reaches the empty point, about 256 characters, the printer then re-toggles the DTR line high and the computer resumes sending data. This continues until the entire file has been transfered.

There are other handshakes available such as Xon Xoff and Etx Ack. I have found that the Poly likes the DTR best. For a straight "thru" header connection on the serial mini-card you should wire the cable as follows (in most cases).

COMPUTER SIDE	PRINTER SIDE
1	1
2	3
3	2
4&5	8
6	20
7	7
8	4&5
20	6

For the header:



The nice thing about setup is that you can define many different printer parameters and call them by using Printer (name). This is very handy when you want to change from printing text to say labels. Just define the lines per page as 255 and the fanfold labels will print perfectly. This is how I print the PL labels.

Now lets look at the Setup main menu. The first screen gives you the commands available in Setup. The command NEW is for defining a new printer type. View is used to look at an existing printer's setup parameters. Default is used to tell Exec. that on boot it will load THESE parameters. Delete is for deleting a printer name. The prompt in Setup is the # or ## depending on whether you are ENabled or not. The following is how to define a new printer with the name Epson.

```
##NEW EPSON
SIMILAR TO A DIABLO? N (for most serial printers)
Understand Form Feeds?Y
Understand TAB characters?Y
Speed of printer in baud?9600
Blocking type device?N  (unless you want to use ETX-ACK)
ASCII code for PAD character?0
Number of pads after CR?0
"      "  "     "   LF?0
"      "  "     "   Tab?0
"      "  "     "   BS?0
DEFAULT page parameters
lines per page?66
Characters per line?80
Lines for TOP margin?0
Lines for BOTTOM margin?0
Offset for left EDGE?0
Printer defined
```

If this is your default printer parameters then the next line should read DEFAULT EPSON. Then type EXIT or all of this work goes down the bit bucket.

If you have the cable and header wired correctly, the switches or strapping options done correctly on the printer you are ready to cold boot the system and enjoy your new printer.

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HELPFUL HINTS IN LAYMEN'S LANGUAGE

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Recently, I was discussing the capabilities of Poly BASIC with an experienced programmer, who has written some very sophisticated business software for his Poly(s). To my surprise, he wasn't using user-written functions. After a quick demo, however, he found many places where a well written function would save both space and time.

An easy way to understand a function is to think of it as a GOSUB. Indeed, a multi-line function even ends with a RETURN.

We all use the built-in functions regularly: TAN(X),INT(X), SQRT(X), etc. All we do is to substitute for the "X" the number for which we want the tangent (integer, square root) and BASIC returns the answer.

A user-written function works the same way. For example, you want to do a simple arithmetic routine many times. You can write a function to do this.

Let's say you want to add two figures, multiply the sum by a third, and divide the result by a fourth. A function to do this could be

```
5000 DEF FN M(X1,X2,X3,X4)
5010 X=(X1+X2)*X3/X4
5020 RETURN M
5030 FNEND
```

What have we done? On LINE 5000 is the required DEF FN (could be DEFFN) to tell BASIC we're defining a function. Then, we specify the variable name of the function: DEF FN M

Then, in parentheses, we include DUMMY variables, in this case X1, X2, X3, and X4 are used. ANY legal variable can be used, but CAUTION: If you use this same variable anywhere else in the program, it will not affect the function, but the function will change the other variable each time the function is used (this MIGHT come in handy).

Then, in LINE 5010, we have defined the mathematical formula to be executed, using the dummy variables. I used "X=" but you could also use any numeric variable (Note, though, that whatever you use will be set to the result of the formula). In LINE 5020 is specified that the value to be "returned" is M, and LINE 5030 is the mandatory FNEND to tell BASIC that your function definition is ended.

To use this function in a program, you might use:

```
50 M=FNM(1,3,5,9)
```

and the values specified in the parentheses would be substituted for X1, etc. In this case, X1 becomes 1, X2 becomes 3, X3 becomes 5, and X4 becomes 9. It is not necessary to specify the line number of the function since BASIC knows where the definition of FN M is located. You could also use

```
50 PRINT FN M(1,3,5,9)
```

and the calculations would be done, with the result printed.

You can do ANYTHING in a function you can do in a program line. For example, let's assume you have some strings which include filling blanks. You want to strip off the blanks at the end of a large number of strings, with many variable names. Here's a simple way to do it:

```
10 DIM S$(1:100),X$(1:100)REM  even dummy variables must be DIMed
    * * * *
6000 DEF FN S$(X$)
6010 IF RIGHT$(X$,1)<>" "THEN 6040
6020 X$=LEFT$(X$,LEN(X$)-1)GOTO 6010
6040 RETURN S$
6050 FNEND
```

To use this function, merely call the function and substitute whatever variable you wish. In some of my work, I use L$ (last name), F$ (first name), A1$ (1st line of address), A2$ (2d line of address), C$ (city), S$ (state), and Z$ (ZIP code). Assume I've extracted all of these variables from a data file and want to delete all padding blanks. All I have to do is:

```
100 L$=FN S$(L$)F$=FN S$(F$)
110 A1$=FN S$(A1$)A2$=FN S$(A2$)
120 C$=FN S$(C$)S$=FN S$(S$)Z$=FN S$(Z$)
```

and all will be stripped of trailing blanks. You can see the beauty of this system. You do not have to use the "real" variable(s) when you do the "GOSUB" -- just insert your "real" variable in the parentheses in the same order as the "dummy" variables and BASIC will substitute for you.

Incidentally, you could also do

```
340 L$=FN S$("Thompson ")
```

and the function would strip off those excess blanks. You can also use a similar function to ADD blanks to pad strings before writing them to a data file.

I have a library of functions which I use in various programs. In one set of programs (my General Ledger package), I use a MENU program to hold a number of often-used functions, then CHAIN additional modules to provide the program parts to do various things. This cuts down the total space the GL package requires on disk and on load time. It also simplifies programming!

Just to demonstrate a more mundane use of a function, here's one I use in my 1040 Tax Package:

```
11000DEFFNP2$(X)
11020   FOR J=1TOXPRINT:2NEXTRETURNP$
11030                   FNEND
```

What does this do? All it does is skip lines, but how simple it is to use

```
535 P$=FNP2$(6)
```

to skip 6 lines. It's also VERY easy to edit.

There is also a "single-line function" which works the same way, but is written slightly differently. The example in your BASIC manual is

```
20 DEF FNS1(A,B)=A+B
```

No FNEND or RETURN is used on a single-line function.

IN CONCLUSION: Let your imagination be your guide. You can call functions from within functions if you want. You can use ON-GOTO in a function (think of all the variations of the function you could "command" by merely adding a dummy variable in the definition and then inserting the appropriate number).

In my 1040 Tax Program, I would estimate that fully 50% of the program lines involve function calls. I have functions which add lines, print lines, skip lines, make decisions, print captions on lines followed by figures, etc. Where I have printing done, I can also specify the amount of TAB for positioning on the form, etc.

If you haven't tried functions, TRY THEM. Experiment. You'll find your programs run faster and take less space.

Speaking of my 1040 Tax Program, the 1985 1040 Tax Preparation System is ready for shipment. This program package is now in its fouth year, and really, really works. It peels, slices, dices, calculates, and prints your federal income tax Form 1040 and Schedules A, B, C, G, and W. Price is $75 for first-time purchasers ($150.00 for tax professionals). Annual updates are one-half price (return previous year's diskette). Operating manual is included.

non-null character. Enter 1B in the first "00" square.
Press the RETURN a few times and then CTRL/Y

Now if you EDIT the file, you will see the ESCAPE character (a left arrow) in the file.

Solution:c) The easiest!

Edit your file.
Press the ESC key. Press the left arrow.
Press CTRL/F
Press CTRL/E
Press [ESC]
Press CTRL/U (TWICE)
Press LEFT ARRROW once
Press [DEL] key once (remove the extra cursor)
Exit The Editor

ok now that we are past that let's get down to the matter at hand.

My sample:

```
EDIT CMDS<LETTER

Pr D                          I Changed Diablo-1200 to D
Pr SET
66
85
5
5
0
?DEL FORMAT
ZP
ED FORMAT.IN

   Type <ESC> LEFT ARROW
   Type CTRL/F
   Type CTRL/E      (End)
   Type ESCape
   Type CTRL/U      (Undelete)
   Type CTRL/U      (Undelete)
    Delete the extra cursor
Close the file
In Exec type CMDS<10 and enjoy.....        Al
```

Note:
Since many of the characters used are control codes or escape characters, it is tough to print these commands on paper. Anyone wishing disk copies which you can edit and/or use send $5.00 per disk to:

Al Levy, Box 71, Hicksville NY 11802
(516) 293-8368

```
*************************************************
REM
REM      Sample User Defined Definition
REM         to a) clear the screen
REM            b) create a Border
REM            c) display program name or whatever
REM
REM       Submitted to Polyletter 02/01/86
REM             Al Levy
REM             Box 71
REM             Hicksville NY  11802
REM             (516) 293-8368
REM
REM       Clear Screen and draw Stars
REM
10 Z=FNA(X)
REM ***********************************************
REM
REM            Display Banner
REM
REM ***********************************************
20 PLOT 30,42,0PRINT"My Program",POKE0,160
REM ***********************************************
REM
REM          Put Your Program Here
REM
REM ***********************************************
30 PLOT 30,30,0PRINT "ok?"POKE0,160
40 GOTO 40
REM ***********************************************
REM
REM       Define Functions At End Of Program
REM         Then they can always be added
REM           to new programs
REM
REM ***********************************************
4000 DEF FNA(X)
4010 V=47H=0
4020 PRINT CHR$(12),POKE0,160
4030 PLOT H,V,0DRAW 127,V,1V=V-6IF V>40 THEN 4030
4040 RETURN X
4050 FNEND
NEXT A LITTLE TIME ROUTINE----
REM
REM      Sample User Defined Definition
REM         to a) Accept a number of minutes
REM            b) display as Hours and minutes
REM
REM       Submitted to Polyletter 02/01/86
REM             Al Levy
REM             Box 71
REM             Hicksville NY  11802
REM             (516) 293-8368
REM
10 DIM Y$(1:1)Z$=CHR$(12)
20 PRINT Z$,POKE0,160
30 ON ERROR GOTO 40
40 PLOT 0,30,0DRAW 127,30,2PLOT 40,30,0
50 INPUT "Number Of Minutes ",MPOKE 0,160
60 RESETH=FNT(H1)M=FNT(M1)PLOT 40,21,0
80 PRINT H1," HOURS AND ",M1," MINUTES ",POKE0,160
90 PLOT 0,6,0DRAW127,6,2PLOT 40,6,0
100 INPUT1"Go Again? ",Y$POKE0,160
110 IF Y$="Y" OR Y$="y" THEN 20
120 IF Y$="N" OR Y$="n" THEN PRINT Z$,Z=CALL(0)
130 GOTO 90
REM ***********************************************
REM
REM            User Defined Functions
REM
REM ***********************************************
5000 DEF FNT(X)
5010 H1=INT(M/60)M1=MOD(M,60)
5020 RETURN X
5030 FNEND
*************************************************
REM
REM      Sample Routine
REM         to a) Accept a number of minutes
REM            b) display as Hours and minutes
REM
REM       Submitted to Polyletter 02/01/86
REM             Al Levy
REM             Box 71
REM             Hicksville NY  11802
REM             (516) 293-8368
REM
10 DIM Y$(1:1)Z$=CHR$(12)
20 PRINT Z$,POKE0,160
30 ON ERROR GOTO 40
40 PLOT 0,30,0DRAW 127,30,2PLOT 40,30,0
50 INPUT "Number Of Minutes ",MPOKE 0,160
60 RESETH=INT(M/60)M1=MOD(M,60)
70 PLOT 40,24,0
80 PRINT H,"HOURS AND ",M1," MINUTES"POKE 0,160
90 PLOT 0,6,0DRAW127,6,2PLOT 40,6,0
100 INPUT1"Go Again? ",Y$POKE0,160
110 IF Y$="Y" OR Y$="y" THEN 20
120 IF Y$="N" OR Y$="n" THEN PRINT Z$,Z=CALL(0)
130 GOTO 90
```

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PolyLetter

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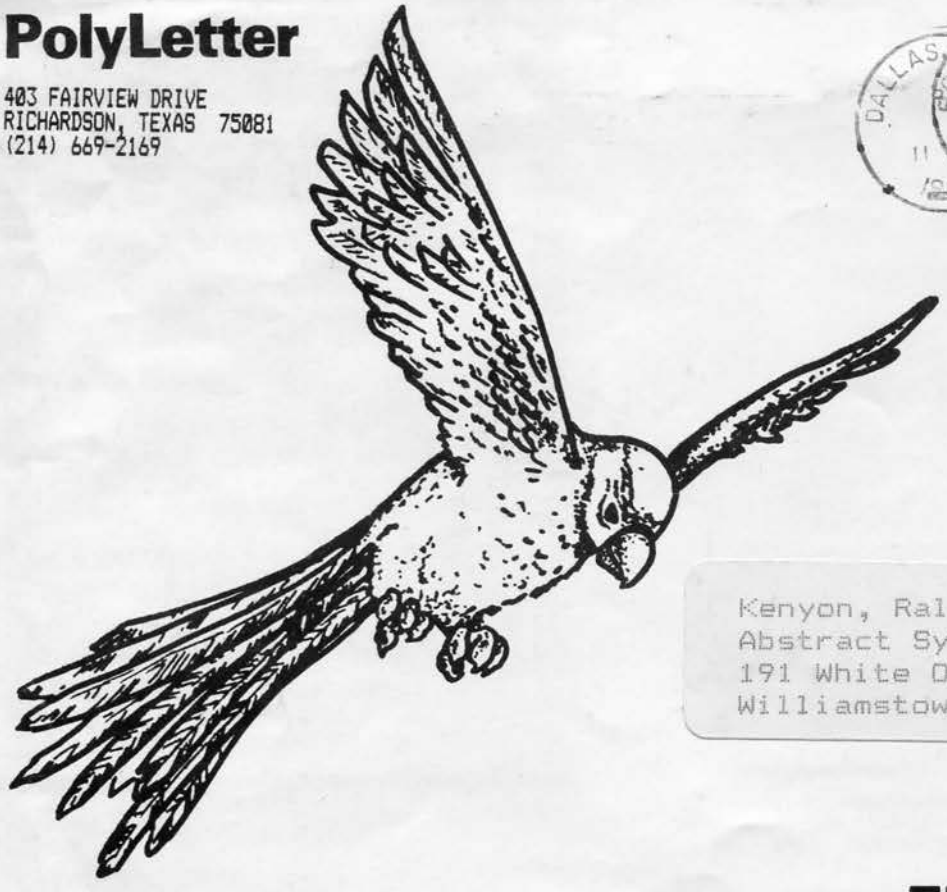

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FIRST CLASS MAIL

PolyLetter

The Newsletter for PolyMorphic Systems Owners and Users

PolyLetter 8602 MAR/APR 1986

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Editorial

This is a surprise; I find that I have volunteered to take over PolyLetter at a time when it is 3 issues behind schedule. I am calling this issue the MAR/APR issue, because I have not decide whether or not I cannot 'catch up' to the schedule. The worst part of this is that the former editer, Charles, tells me that no one has written or called to complain about the tardiness. What kind of people are these subscriber that do not complain when their *favorite* publication does not arrive on schedule?

Well, whatever kind of people you are, I hope to serve you as well as the past editors of PolyLetter have (if not better). I have made suggestions to the different editors about how to organize PolyLetter, but none have taken the bait. As a matter of fact, that is why I am now the editor; I have a chance to do the things I have suggested. I hope to implement a number of departments and features to cover most users needs.

Included among these are Letters (comments and opinion from our readers), help information about various system facets, information about bugs that have been discovered, comments about programming techniques and style, information about what programs are in the public domain, and whatever news seems relavant.

You may have read one of my articles in the past or you may have used one of my programs in the past. I have tried to make the Poly do what I wanted it to do. I have not always been successful. In this day and age, most people have moved on to the IBM-PC (clone). There are still a few hold-outs who are loyal to the Poly. One of the things I have been thinking about is writing a system which runs Poly software on the IBM-PC (clone). A step in this direction has been taken by Micro-Solutions, DeKalb, IL, who is manufacturing a board for the IBM-PC (clone) which is capable of reading hard-sector diskettes. (See Al Levy's article). Another step in this direction which I plan to take advantage of is NEC's new processor the V-20. The V-20 is an 8088 which is also capable of becoming an 8080.

Writing a Poly emulator for the IBM-PC (clone) would be much easier if the system had a V-20 installed. I will keep you posted on that score.

Let me give you a little personal history. I first aquired a Poly in 1979 when I was looking for a word processing system to handle the papers I was writing in general semantics. I couldn't stand the idea of typing a paper over just for minor revisions, so a word processing system seemed a good bet. I had only worked with the Wang 2200 series, which, although it is a dedicated word-processing system, had been being used for management information processing.

My choices were the Apple, the Sol, a North Star Horizion, a Vector Graphics, and an Alpha-Micro (which wasn't really a desk-top). Back then, in 1979, the Poly Editor had it all over everything else at the local computer store. That's what sold me. After learning about its operating system and its front panel mode, it seemed like it was light years ahead of everyone else in the market. It seemed too good to be true. (Too bad Poly lost the market lead.)

Well, about that time, I started taking graduate mathematics courses and working on a M.S. in mathematics. My involvement with the Wang 2200 at work, and the Poly at home soon had me taking courses in Computer Science, and I eventually changed my major to Computer Science. Of course, the Poly figured into every project in the program.

Well, the university computer, a DEC-10, had two editors, both of which were terrible. After using the Poly editor, SOS and TECO were absolutely terrible; I hated using them. O.k., I'll do my homework on the Poly and transfer it to the DEC via a dial-up line. Well, I needed a modem to talk to the University computer, and bought the Hayes Micromodem-100. Unfortunately,

there wasn't any software for it for the Poly. I chose the Hayes Micromodem-100 because it went into the Poly's bus and I could use the printer and the modem at the same time. However, I had to write the software to run the board (my first big assembly language project).

With my newly developed interest in assembly language programming, I developed a desire to see how other people wrote assembly language programs, and bought a disassembler. It was a total disapointment! It had horrible bugs. I sent it back and got my money back; then I wrote my own version, in BASIC, which did what *I* expected a disassembler to do. It produced a source list which could be given to the assembler and which would assemble to the original machine language program without any errors. (Since then I have written a fast machine language version.)

About this time, I connected up with Chuck Sutherland, who was just starting PolyLetter. He advertised my disassembler; that's how I got into the business of writing and selling software for the Poly. Many of the programs I have were written just because I wanted the Poly to do something for which there was not yet any software. In some cases, I just made something someone else had much better. (As a matter of fact, the DisAssembler has been the single most popular program I have ever written.)

In any event, writing and selling software for the Poly became a part-time side-line business for me. I met many interesting people through my Poly contacts. One fellow is analyzing and displaying the minute by minute play of the stock market. Another manages all facets of a printing business. Yet another did only the pay-roll for a radiology business. However, it comes down to the editor as the one thing most people like best. I still think the Poly editor is better than any other I have seen, and I plan to adapt it to the IBM-PC.

But, I ramble on, and on, and on . . . Let me continue this saga with the next issue. In the mean time, send me your stories on how you got involved with the Poly, and what you do with it.

Ed.

Letters

Dear PolyLetter,

****
The Importance of CP/M on a PolyMorphic
****

Let's look at the facts and take a hard look at the future. First, I am building and selling PC/XT/AT clones. I write most of my commercial software on the XT since this is what my customers demand.

References to Exec are Exec 96 using Rom version 81 or ASROM. If you are still using Execs prior to 93 you are using antiquated equipment. Although the earlier Execs where ahead of their time they suffer by today's standards.

I have in house, an Apple IIe, a CP/M 3.3 system (BASIS), a CP/M 2.2 system (Compupro), a PC/XT clone (MSdos), a PC/AT clone (MSdos), and I have used and tested a MegaData (Unix) system. I am also writing software and helping to maintain a Dec PDP mainframe (75 users not counting the Data Processing Maintainence People). The PDP is using the Unix operating system.

The pros and cons:

My favorite machine is still the Poly. "First the good news." The Poly operating system is unique. Although it is a single user system, it has many of the best features of Unix and it is the friendliest machine in town. Writing a serious program on the Apple or on a CP/M or DOS machine takes ten times the effort as writing it on the Poly.

You are used to Exec and working from the operating system. Commands such as copy, image etc. are a snap, no? On the Apple you must load and run a copy program, do all your copying and then run some other program. All Apple disks are not compatible. All PC-DOS disks are not compatible. All CP/M disks are not compatible. The standard for CP/M is eight inch single sided. Most of today's CP/M machines use 5.25 inch diskettes. Using CP/M, you would need a collection of Public Domain software to do half the things built into Exec. MS-DOS is CP/M with adenoids. There have been 4 major releases in the past five years (at $100 a pop) and the latest release 3.2 has bugs crawling throughout. I just received a "patch" to fix some of the bugs.

Now the bad news:
The advantage of PC-DOS or MS-DOS (IBM disk operating system) "YOU CAN BUY THE SOFTWARE YOU NEED!" There are telephone books crammed with offerings. By the time a list is released, it is obsolete because the titles have doubled!

Due to the universality of DOS and the IBM architecture parts are cheap. I can put together a PC/XT clone with a twenty or thirty meg hard disk for about a thousand dollars. Compare this to the price of a Poly hard disk sub-system. I could buy seven clones for the price of a new Poly-8813.

It is a bewildering situation. I use the Poly for all of my personal and business affairs (I own seven PolyMorphic systems and constantly have two working). I use the CP/M machine and the Apple for my club work (LICA). Our monthly publication, a forty page newsletter, is written on the Poly. I of course am the standing joke of this 1500 member group. When any member visits my office and I give them a ten minute demo of the Poly, the attitude changes. I hear remarks such as "wow, I never realized...."

People from Intel were at my office and their minds were boggled by the Poly's software. (Exec, BASIC, Edit, Assembler)

What to do? You may not realize the power in your machine. Do we need you? You bet we do. Without other users to communicate ideas etc the emotional feel goes. There is hardware support from at least three sources. There will be software support (a) Public Domain from

Ralph, myself, and any other person who feels they can contribute. (b) Commercial software provided you can afford it and the programmer is willing to accept the task. I must say I have turned down a few offers on the Poly not because I wasn't willing but I had higher priced jobs available and couldn't find the time.

My reccomendations are a) grab a hold of an MS system (eight inch DSDD) and find heaven. You can pick up drives at prices from $5.00 to $100.00 depending on your resources. Try to get a hold of a MS controller board.

Just to startle you, I am enclosing a printout of my Directory in Drive 4.

If the price gets too steep, talk to Ralph about his 96 TPI drives which work off of the Single Density controller boards. [1600 sectors per drive. Ed.]

There is a great possibility that we will be running the Poly software on PC-clones. Details will be published as the works progresses in future issues of PolyLetter. The aim of the project will be to a) read Poly disks on the IBM clone. b) Run Poly disks on the IBM clone. c) transfer files from-to Exec/Dos by putting disks into the machine on which you are working.

To read Dos Disks, NorthStar CP/M disks, Kaypro disks etc on the Poly you must have Poly CP/M. [Note, Poly's CP/M can only read and write the NorthStar single density disk format, but most CP/M software will run once it is copied over into NorthStar or Poly disk format. Ed.] Please read my article on the MatchPoint hardware/software combo. This is significant. If you cannot run CP/M on the Poly or if you don't know if you can run CP/M on your Poly contact Ralph or my office. This will be a starting point. I intend to run off a mimeograph check list with costs involved which I will send to you for a STAMPED SELF ADDRESSED ENVELOPE.

I also think its about time you got off your "duff" and sent meaningful questions to our new editor. If we don't know what you need to know how the heck can we write meaningful articles? Get with it guys and gals. Despite Santa Barbara, we can do miracles.

Al Levy

[Al can be reached by writing P.O. Box 71, Hicksville, NY, 11802, or by calling (516) 293 8368. Ed.]

NEWS

1. MATCH-POINT, a hardware product to allow the PClone to read and write files under Apple's Apple Dos or ProDos cannot read PolyMorphic or NorthStar single density formats. Ron Proesell [phone: (815) 756-3411] says the project to modify the board to allow reading and writing our format is now a 'back burner' project. [See the letter from Al Levy, and his article on the subject. If you are interested in moving your data to a PClone, call and urge him to work on it. Ed.]

2. Hardware Service for the Poly is currently available from Jeff Osborne, 1215 Henning Ave., Evansville, IN 47714, Phone: (812) 479 5480

3. PolyMorphic Systems is still in business and providing hardware service. (Factory upgrade to CP/M for $100 plus parts.) 7334-H Hollister Avenue, Santa Barbara, CA 93117, Phone: 805 685 6238

4. 9th Boston Micro Show & Sale, Sunday December 14, 1986, Sheraton Hotel Conference Center, Boxborough, Mass. Call 800 631-0062

5. Long Island Micro Show, Sale & Computer Fleamarket. Saturday, November 23, 1986, Colonie Hill Convention Center, Hauppauge, New York. Call 800 631-0062

Is There Any Hope For Poly Users?

By Al Levy

There is a glimmer of light but it is quite dim.

PLUS:

I have been in touch with a company in Dekalb IL. The company is Micro-Solutions and they sell software and hardware for CP/M and MS-DOS machines.

MINUS:

I build IBM (T) compatible machines. A clone with 640k plus a twenty meg hard disk and two DS/DD drives costs about $1400.00. Mr. PolyMorphic is asking $1200 for a hard disk setup. Is it worth it?

It is my opinion that S-100 is dead! The cost of parts and the difficulty in finding parts that are more than three years old make maintaining a Poly very cost inefficient.

PLUS:

On the other hand, Poly's Exec, Editor, Assembler and BASIC make the machine a better piece of equipment than almost anything around. Poly's lack of software, and the need to custom write applications almost makes it ridiculous.

Since I have written all of my own Applications on the Poly it works fine for me. I do my own work on the Poly and all of my consulting work on the clone.

PLUS:

CP/M is anything but friendly. MS-DOS is acceptable. Exec is easier than both of the above.

PLUS:

I have copies of most of the major "WORD-PROCESSORS". Poly's Editor beats the hell out of all of them, windows shmindows!

Note: I do not consider anything but the latest ROMs (81) or anything less than Exec96, BASIC C04, etc an up to date Poly. All of my comments are based on the fact that you have the above. If you have anything less, you are using about 50% of the Poly's potential.

PLUS:

Despite my remarks about CP/M, it might pay to have it installed on your machine.

Using a combination of programs and cables I have been able to glean the best from each of the worlds mentioned above and use what I need, when I need it without too much hassle.

When I wanted Public Domain Software, I had friends create a NorthStar SS/SD diskette FORMATTED (INITed) using CP/M. Poly's CP/M allows you to read the disk and transfer the files to a Poly CP/M disk. The PolyMorphic program "PCOPY" allows one to transfer from CP/M to Exec or the other way around.

One of the CP/M tricks is to "UNLOAD" a file. This creates an ASCII Hexfile from a machine language file. The file can be transferred by cable or modem and then "LOADed" on the receiving end. The result is a perfectly running machine language program. I have a CompuPro CP/M machine. I can always unload a CP/M file on the CompuPro and send the HEX file to the Poly via a null modem. I am using an assortment of file transfer programs under Exec (not FTP) and usually work at 1200 baud. I then use PCOPY (Poly CP/M) to transfer the file from one Poly disk to another and end up Loading the file on the newest disk.

The plus side of MS-DOS and even CP/M. There are thousands of Public Domain software packages available. There are still more commercial packages available. The latest DOS modem program called PROCOMM is free! The author asks for $25.00 as a donation. It is one hell of a program and worth many times the asking price of $25.00

How does this help us? Well, I recently installed a card from Micro-Solutions in the XT. This is called a MATCHPOINT card. In addition I purchased UNIFORM-PC and UNIDOS-PC from Micro-Solutions. I have also installed a NEC V20-8 in the clone.

UNIFORM-PC allows me to read and write about 160 different disk formats. This includes most of the popular brands such as Osborne, Kaypro, Heath, TRS, Apple DOS, ProDos, Apple CP/M and many more. [Apple formats require the MATCH-POINT card. Ed.]

UNIDOS-PC allows me to run any of the CP/M programs on the MS-DOS clone. UNIDOS only works with a NEC V20. [Programs which require specific hardware, such as PCOPY.COM, will not run. Ed.]

HERE IT COMES

With the MatchPoint card I can read, write, and run programs from a NorthStar TEN HARD SECTORED diskette. [Not yet. See the news item. Ed.] I have sent the techs at MicroSolutions all of the documentation they need about the Poly. According to the head man, he may have to add one more chip to the MatchPoint card and we will be able to read and write PolyMorphic diskettes on an IBM (T). This may be limited to Poly CP/M! If so, we can use PCOPY to transfer from Exec to CP/M. Insert the disk into the regular IBM (T) drive and read, write or run it!

At worst, you can move your data and text files to the new machine easily. At best, we get Exec up and running on the MS-DOS machine. If you have never used hard disks or mass storage units the following may be a little tough to follow. To make it easier here's some data.

Poly SS/SD has 350 useable sectors (90k). Poly DS/DD has 1400 usable sectors or 360k. A Poly 8 inch DS/DD has 4928 sectors or 1232k a little over one meg. This means that I have the equivalent of 28 SS/SD diskettes on line, with two Poly 8" DS/DD drives. (In addition, I still have the three small drives.)

To help you feel the impact, I'm asking Ralph to print my current directory with this article. [Al's directory listing took up 263 lines accounting for 214 files taking up 4444 sectors in 9 sub-directories. It's just too big to devote that much space to in PolyLetter. But, if you want to see a copy of it write him or me and we'll be glad to send it to you. Ed.]

Now imagine multiplying the two eight inch DS/DD directory by twenty. Forgetting the speed of a hard drive, figure out what you can have on-line!

Since all of the room is available, it is common to "partition" a hard disk. At one point I partitioned Poly's twenty meg to some sixteen different drives! Directory space becomes precious, therefore Sub-directories become a neccesity. Exec 96 contains all of the software you need to set up large storage devices such as a hard disk!

Partitioning a hard disk under DOS is not as easy. It is normally done by the dealer who sets up the machine. It is not impossible for the layman. It just takes a little learning and some hand holding the first time out. Many hard disks are partioned using half for MS-DOS and the other half for UNIX or CP/M. Why not half for Exec? I know there are people who will tell me why it can't be done. (Columbus fell off the end of the world!) Maybe they are right but I feel it is worth a shot. How about some feedback from you? I prefer notes, postcards and letters but phone calls are ok (no collect). If you need info on upgrading your machine, please write. My address: Al Levy, Box 71, Hicksville NY 11802, Phone (516) 293-8368

P.S. I now have the entire CP/M and SIG/M catalogs on Poly disks in all formats. (Poly Exec not CP/M.) SS/SD take three or four diskettes therefore the "high" price. 5" SS/SD $ 7.50, 5" DS/DD $ 5.00, 8" SS/SD $ 6.00, 8" DS/DD $ 6.00

[One definition of 'obsolete' is "no longer in use or practice; discarded". As applied to equipment, obsolete means that there is more modern equipment which will do the same job better. Now, it is clear that the Poly may be antiquated, but it is far from obsolete. No other equipment and software can do the same job as well. If your requirements remain the same, then the same equipment which originally met those requirements will continue to meet them. However, the availibity and cost of repair parts and service is a point well taken. In addition, the investment in software cannot be replaced by "off the shelf

commercial software". It is true that few people would choose the Poly as their first choice today, but for those of us who already own one have an investment in hardware, software, and experience. Changing horses in midstream shouldn't be done while the horse can still get us across.

If your requirements change, then it becomes appropriate to make a cost-benifit analysis comparing some new system with upgrading your Poly. How much cost must we place on learning a new system and developing or buying new software? This becomes a highly subjective matter which each of us may have to answer in turn. For my money, I chose to upgrade my system by increasing my disk size with 96 tpi drives. I am very loyal to the Poly operating system and I also have a large investment in enhancing and developing software for it. Long Live the Poly! Ed.]

ADS

1. Eight inch MAXELL 32 hard sectored diskettes for your MS. $15.00 per box or $ 115.00 per ten boxes. Contact Al Levy at (516) 293-8368.

2. Hardware, Supplies, & Software: Five inch MAXELL 10 hard sectored disketts. $13.00 per box; 5" disk drives (Shugart SA-400) $50.00 (includes shipping) (We have 5 of these drives which all test out with no errors on the confidence package); Two drive external box and power supply $75; Abstract Systems Exec $35; Abstract Systems Proms $35; Abstract Systems Spelling Checker $35; PolyGlot Library Volumes, $10 each. Contact Abstract Systems, 191 White Oaks Road, Williamstown, MA 01267, (413) 458-8421. (Send for a complete software catalog.)

3. New 88-MS (8" DSDD) rack-mount (no wood cover) with controller $995; 2 used 8813's SSSD with 2 drives, 64K, monitor and Keyboard-III $495 each; New 20 Meg Hard Disk $1295. From PolyMorphic Systems at 7334-H Hollister Avenue, Santa Barbara, CA 93117, Phone: 805 685 6238

REVIEWS

I have no particular software packages or articles to review here, so I will use this slot to review the public domain software area.

Public domain software is software which someone has written and 'given' away the rights of exclusive controll of it. Usually stuff which has been published anywhere without any copywrite notice is public domain -- free for the taking. In PolyLand, this includes stuff which some wrote while they had a Poly and sold if the buyer places the software in the public domain. If you have written any programs which you are willing to give away, I suggest you "place them in the public domain". I have collected and put together several disks [See "In the Public Domain"] of such software. The past PolyLetter disks of the month are such examples. As editor of PolyLetter, these disks will be available for the price of $10 each (including shipping). This small fee is to help pay for the maintenance of the library. The larger this library gets, the better the survivability of the Poly is, so get out your old programs and send them in. To encourage building the library, Anyone sending in a disk of new programs will be entitled to recieve a free disk of public domain software in exchange.

HELP!

In this section I share with you the help system files I have built up over the last few years. (The entire system is included with Abstract Systems Exec.) Covered in this issue are "HELP", "HELP SYS", "HELP ?", "HELP #", and "HELP PROGRAMS". Which ones shall I do in the next issue?

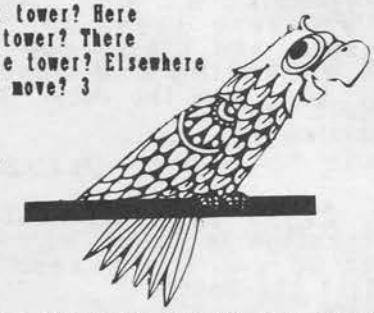
```
$HELP
        HELP file for Exec/(A:S) system command "HELP".
Help is available for the following system commands:
  # ; Auth boot CONTINUE COPY DELETE DNAME DIRECTORY DISABLE
  DISPLAY DLIST DONT DUMP EDIT ENABLE flip fold FULL GET HELP
  IMAGE INIT LIST PAGE PRINT PACK Printer REENTER RENAME RESET
  Restart SAVE SetSys Sniff SQUEAL START TYPE UNDELETE UnSys
  WRITE ZAP
Additional help is available for the following:
 ? BASIC CMDF CTRL-U files format GAMES INITIAL MACROS NEW
 PROGRAMS SYS
Syntax: "HELP [name]" (RETURN).   Example: "HELP LIST"
"HELP NEW" gives a summary of the new system enhancements.
"HELP [name]" displays the help file information for 'name'.
"HELP" displays this message again.      [minimum size "H"]

$HELP SYS
                        HELP SYS
Commands:
"; " (semicolon followed by space) : just print line
"LIST N" : lists contents of disk on drive N, defaults to 1
"PRINT file-name" : Prints file on printer
"PAGE" : pages printer
"TYPE file-name" : Types file named on CRT
"EDIT input-file-name output-file-name" : invokes editor
  (omitting output file name deletes old input file)
"PACK" : packs disk (closes up deleted files)
"DELETE file-name(,file-name)" : deletes file(s) named
"UNDELETE N" : undeletes all deleted files on drive N
 (NOTE: UNDELETE only works if the disk has not been packed!)
"COPY file-name new-file-name" : makes a copy of file using
  new-file-name
"RENAME old-file-name new-file-name" : renames file
file-name : evokes a file (RUN a basic program, etc)

              File specification
 <drive-no<path<file-name.extension

Examples : <1<Help.TX   <2<BS<Year.BS   <1<BS<ML<MENU.BS
 On the system resident drive the drive number may be omitted.
Examples :  Help.TX     <2<BS<Year.BS   BS<ML<MENU.BS

Extensions
        TX : text file
        BS : BASIC program
        DT : data file
        GO : machine program
        OV : System Overlay
        SY : System library file
        ZO : Two user.
```

```
       RL : Relocatable object code file
 all others are user defined.
       AD : Ada program Source
       AS : Assembly Source
       DC : Document file
       L1 : Ada L1 object file
       MU : MUsic source

$HELP ?
       HELP file for system function "?"

The "?" may be used in place of the disk drive in many
system commands. The function is to cause the system to
search all drives for the file.          (see #)

"T (?(file" searches for file on each drive starting with
the system resident drive. When the file is found, # is set
to the drive on which the file was found.

"EDIT (?(old (#(new" creates an output file named 'new' on
the same drive that the input file 'old' was found.

$HELP #
       HELP file for system command "#"

The "#" command sets the Wild Card Path.

Syntax: "# (d(path)" (RETURN)

"#" cancels the previous wild card path.
"# (d)" sets the wild card path to 'd'.
"# (d(path)" sets the wild card path to 'd(path'.

Use:    "LIST #" is equivilent to "LIST d(path".
        "TYPE (#(file" is equivilent to "TYPE d(path(file".

Example: "# 2(LETTERS"

$HELP PROGRAMS
       HELP file for programs.

Help is available for the following programs:

  ARISE  Clock  Cursor  DIRCOPY  dlist  Emedit  FETCH  New
  prism  PUNCH  RDB  Reset  slist

 Syntax: "HELP PROGRAM(name)" (RETURN).
Example: "HELP PROGRAM(ARISE"

"HELP PROGRAM(name)" displays the help file for 'name'.
"HELP PROGRAMS" displays this message again.
```

BASIC

One of the features which is available in Poly BASIC is recursive functions. Unfortunately, the implementation is not a "pure" one, in that the variables can get clobbered by sucessives calls to the same function. One way around that, is to define an array for the parameters of the function. The function must keep track of the level at which it is called and operate on the parameters passed at that level. In the following program, the parameters passed to the function FN M are copied into the appropriate level in the array by statement 50. Of course there is a limit to the depth of calls using this technique (set to 64 in line 20 here). To see that the technique works, look at the log of program execution following the program listing.

```
10 PRINT "Towers of Hanoi"
20 DIM T$(3:10),S(64),M(64),D(64) \L=0
22 INPUT "What is the name of the first tower? ",T$(1)
23 INPUT "What is the name of the last tower? ",T$(3)
24 INPUT "What is the name of the middle tower? ",T$(2)
40 DEF FN M(S,M,D,N)
50 L=L+1 \S(L)=S \M(L)=M \D(L)=D
60 IF N=1 THEN GOSUB 117 \GOTO 100
70 Z=FN M(S(L),D(L),M(L),N-1)
80 GOSUB 117
90 Z=FN M(M(L),S(L),D(L),N-1)
100 L=L-1 \RETURN 0
117 PRINT "Move from ",T$(S(L)),"  to ",T$(D(L)),"." \RETURN
130 FN END
140 INPUT "How many rings do you want to move? ",K
150 Z=FN M(1,2,3,K)

>RUN
Towers of Hanoi
What is the name of the first tower? Here
What is the name of the last tower? There
What is the name of the middle tower? Elsewhere
How many rings do you want to move? 3
Move from Here to There.
Move from Here to Elsewhere.
Move from There to Elsewhere.
Move from Here to There.
Move from Elsewhere to Here.
Move from Elsewhere to There.
Move from Here to There.
```



The object of the Towers of Hanoi game is to move a pile of rings or other objects from one peg or pile to another using a third as a place to put things so that NEVER is a larger piece placed on a smaller one.

BugNotes

Abstract Systems BugNote 001.1 **November 3, 1982**

BASIC C03, 04/14/81

1. INPUT and READ from a file skips over 00H bytes.
   Example:
   A$="1"+CHR$(0)+"3" REM LEN(A$)=3
   FILE:4,POS,1 \PRINT:4,A$ writes hex 30 00 33
   FILE:4,POS,1 \INPUT:4,A$ returns hex 30 33 (LEN(A$)=2)
   FILE:4,POS,1 \READ:4,A$ returns hex 30 33 (LEN(A$)=2)

Note: One expects trailing 00 bytes to be skipped.

November 8, 1982

According to Len Araki at PolyMorphic Systems, the file input routine in basic skips all 00H bytes returned from the file.

Notes on a fix:
a. Amend the file input routine to return 00H bytes with NZ flag set when there are actual 00H bytes in the file.
b. Amend the string input routines to input as many characters (including 00H bytes) as are needed to fill up the string.
c. Add a routine to backtrack over trailing nulls.

2. Writing to a fixed length file with blank (hex 20) records in the INOUT mode continues to write past the end of the file without reporting an error. It is possible to write past the end of the file and on top of data past the end of the file. (I lost several programs in one incident)

November 8, 1982

According to Len Araki at PolyMorphic Systems, use of FILE:X,POS,N prior to writing will prevent this type of problem, because the actual end of file check in done in the POS routine.

```
Do NOT use => FOR I=1 TO 1000 \PRINT:5,A$ \NEXT
DO use     => FOR I=1 TO 1000 \FILE:4,POS,I \PRINT:5,A$ \NEXT
```

GAMES

For you Adventure fans, here is a map of the maze of twisty little passages, all different. If you find yourself in the maze, this map will get you out. It took me many reincarnations to get this map. I went into the maze with both arms full of treasures, and dropped one in each spot until I found out which passage went where. If you don't have Adventure, it is available as one of the past PolyLetter Disks of the Month. (All of which are now available for $6 each)

		Direction and Destination									
Code	LOCATION	N	NE	E	SE	S	SW	W	NW	U	D
1	Maze twisty little	3	8	11	6	2	9	4	7	5	OUT
2	Maze twisting little	4	5	10	9	3	6	1	8	7	11
3	Maze little twisty	6	10	9	7	4	1	8	2	11	5
4	Maze little twisting	5	9	2	11	7	3	6	10	8	1
5	Twisty little maze	1	4	6	2	8	11	7	3	10	9
6	Twisting little maze	2	1	5	3	11	10	7	9	4	7
7	Twisty maze little	10	3	1	3	5	8	2	11	9	6
8	Twisting maze little	11	6	7	3	10	5	9	4	1	2
9	Little maze twisty	8	11	4	10	6	7	5	1	2	3
10	Little maze twisting	9	7	8	5	VM	2	11	6	3	4
11	Little twisty maze	7	2	3	1	9	5	10	5	6	8
VM	Vending machine	10									

To VM from Entrance: N, NE, S
From VM to Exit: N, NE, E, D

Public Domain

The first 6 volumes of the PolyGlot Public Domain Library are listed here. These disks are available for $6 each.

```
Disk PGL-V-01 has 27 files on it, 33 free entries.
347 sectors in use, 0 sectors deleted, 3 sectors free.
 Size Name.
   50 STARTREK.BS          These are original games
   17 GALAXY.BS            which run on BASIC A01.
   15 GALAXY-INST.BS       The system disk is Exec/4D.
    2 USER'S-INST.TX
   21 SURVIVOR.BS
   15 CAI.BS
   28 STARWARS.BS
   22 BACKGAMMON.BS
   16 HANGMAN.BS
   28 DOCTOR-ELIZA.BS
   23 LUNAR-LANDER.BS

Disk PGL-V-02 has 27 files on it, 34 free entries.
251 sectors in use, 0 sectors deleted, 99 sectors free.
 Size Name.
   16 DOCUMENT.TX          This is Poly's original
   49 INVENTORY.BS         inventory system, which
   13 STATUS.BS            is no longer supported
    4 CREATE.BS            by them. It comes on
   11 STOCK.BS             Exec/4D with BASIC A01.
    1 Htx.tx
    9 INVENTORY1.DT
    9 INVENTORY2.DT
    2 DISCLAIMER.TX

Disk PGL-V-03 has 30 files on it, 31 free entries.
349 sectors in use, 0 sectors deleted, 1 sectors free.
 Size Name.
   19 DECISION.BS
   18 VENTURE.BS           These programs are
    4 DEPRECIATION.BS      From various sources.
   31 ANNUITY.BS           Some are by Poly, and
    5 SAVINGS.BS           Some are by others. All
   26 INVEST.BS            Are associated with
   22 LOANS.BS             financial matters of one
    6 INT78CRT.BS          sort or another.
    7 STOCK.BS             The system is Exec/83,
    7 PUTS&CALLS.BS        with BASIC C02.
   16 MLS.BS

Disk PGL-V-04 has 34 files on it, 26 free entries.
350 sectors in use, 0 sectors deleted, 0 sectors free.
 Size Name.
   25 PERFIN.BS            Exec/83 & BASIC C02.
    8 CHECKBOOK-REC.BS     These programs are
    3 INTEREST-RULE-78.BS  From various sources.
    3 FV-INVESTMENT.BS     Some are by Poly, and
    5 T-BILL.BS            Some are by others. Some
    6 IRR.BS               are finantial in subject,
   10 FMRR.BS              and some are utilities.
   15 FS-RA.BS
   38 APARTMENT.BS
   21 FUTIL.BS             File utility program.
    7 CALENDAR.BS
   11 FileSort.BS          Placed in Public Domain by
    3 FileSort76.BS        Abstract Systems.
    5 Calendar.BS
    2 DIR-CREATE.BS

Disk PGL-V-05 has 29 files on it, 33 free entries.
350 sectors in use, 0 sectors deleted, 0 sectors free.
 Size Name.
    7 M-L-R.BS             Exec/83 & BASIC C02.
    9 CPM.BS               These programs are
   11 PERT.BS              From various sources.
   57 STATPACK.BS          Some are by Poly, and
   18 REGRESSION.BS        some are by others. All
   23 L-REGRES(DEMO).BS    are of mathematical
   30 Plotter.BS           subject areas.
    2 C(n:m).BS
    3 N!.BS
    2 TIMER.BS

Disk PGL-V-06 has 34 files on it, 28 free entries.
350 sectors in use, 0 sectors deleted, 0 sectors free.
 Size Name.
   52 INVENTORY.BS         Exec/83 & BASIC C02
   14 INVENTORY1.DT        Another INVENTORY system.
   40 DisAsmb31.BS         Placed in Public Domain by
    1 DM31H.BS             Abstract Systems.
   16 8080-INST.TX
   10 DisAsmb.DC
    8 Szap.GO              Utilities from Poly
    5 SCOPY.GO
    2 SPACE.GO
    2 CLEAN.GO
    5 COMPARE.GO
    4 DUMP.GO
    1 DUMP.DC
    1 Unsys.GO
    1 scr.GO               demo
```

SURVEY

Please complete this census form and mail it to Ralph Kenyon, PolyLetter, 191 White Oaks Road, Williamstown, MA, 01267. The first 3 entries received will receive a free disk with the PolyGlot Library Volume of your choice.

PolyMorphic Systems Census information

Hardware (How many of each?)

8813 _____ SS-SD DS-SD SS-DD DS-DD
8810 _____ SS-SD DS-SD SS-DD DS-DD
MS _____ SS-DD DS-DD

:SS - Single Sided
:SD - Single Density
:DS - Double Sided
:DD - Double Density
MS - Mass Storage (8" Drives)

Keyboard _____ I _____ II _____ III
Without Arrow Keys With arrow Keys With Numeric Pad

CP/M _____

Memory: Top of RAM is _____ (FFFF=56K DFFF=48K)

 # 5" Drives _____ **# 8" Drives** _____ **HD** _____

Addional devices:
Extra printer card installed (Device 0 mini card)? _____
Printer(s) _____
Modem(s) _____

Versions:
PROMS: _____ **Exec(s)** _____

User's Name _____
Address _____
_____
_____
Phone # _____

Please describe briefly how you use your Poly's.
Business (type) _____
_____
Personal (how) _____
_____
Other (Specify) _____
_____

Please describe briefly the software you use.
_____
_____
Programs written by others.
_____
_____
Favorite system _____

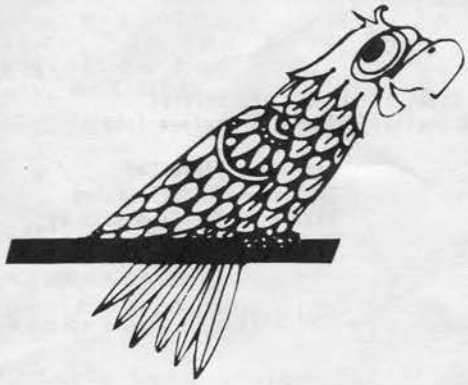
Do you write programs?

__ Assembly __ BASIC __ FORTRAN
__ Forth __ Pascal __ Ada
__ Other language _____

To find the PROM version Open the disk doors and press the load button; When "(Error 0306)" appears, press the "CTRL" key and then the "Z" key. Then type L0439 and RETURN. The horizontal arrow will point at a number 75, 76, 81 or some other number. That is the PROM version number.
To find the Exec version, type RESET at the "$" prompt.
To find Top of RAM, type DISPLAY at the "$" prompt.

PolyLetter
191 White Oaks Road
Williamstown, MA 01267
(413) 458-8421

Address Correction Requested



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FIRST CLASS

PolyLetter

The Newsletter for PolyMorphic Systems Owners and Users

Editorial

I'm not sure what an editorial is; I always thought it was just a place for the editor to say what he or she couldn't say somewhere else. So, here're some thoughts.

PolyMorphic Systems was one of the first manufacturers of desk-top computers. Before the 8813 line, Poly entered the market in the hey-day of the build-your-own craze. Poly's original entry was the Poly-88, now affectionately known as the "Orange Toaster". It sold in kit form, as well as fully assembled (mostly to OEM's), had an industrial base as process controllers. Being small in size, and rugged in construction it was most suitable for use in undustrial environments. The S-100 bus was new then, and Poly's was compact and rugged. When Poly moved into the Desk-Top market, they devised an exceptional operating system, a superb Editor, and some neat software. As I look back thru my folder of promotional literature from Poly, it gives me a choked up feeling and brings a tear to my eye. What went wrong? Well, we can't live in the past, as attractive as it sometimes seems.

The original Poly Users were a combination of the hardware hackers who built from kits, and the early professional pioneers who dared to be first. Some of them are still using their Polys today! However, pioneers usually want to move on when the landscape gets crowded. Many have gone on to newer computers. I love my Poly for many reasons. Most of the software I use I wrote myself, and know exactly what its limits are, and how it works. I have become familiar enough with the hardware to trouble shoot many kinds of problems. I re-wrote and optimized the single density proms, and adapted them for 96 tpi drives (1600 sectors). I also made corrections and improvements to the operating system. I even designed a minor change to the Printer Mini-card. I know how the Poly does what it does and have a great feeling of comfort about it. I have found it to be extremely reliable. I almost never keep backups. (Although I wouldn't recommend that to others, or for Double Density systems.) I am very spoiled by my relationship with my Poly.

Sound like a dream? Well, the reality is that as long as my Poly does what I need it to do, I'll keep her. And, since I can write programs to make her do much of what I want to, I 'll help her out.

Even though I love my Poly, I am a realist. (See Bob Bybee's article.) A business stays in business in a volatile market by developing new products and by phasing out 'mature' products. Poly is not developing a new system, so has no future markets. We all hope they hang in there to provide service and parts as long as we have our Polys. If they move into the service market, and do service work on other systems, they'll have a viable future. I'd like to see Poly design and produce a transition product which allows a PC-clone to read (and write?) Poly's disk format. Poly could also assemble and market a clone. The established base of Poly Users could transition with Poly's help, and have Poly as their suplier of parts and service in the Poly + Clone market. In addition Poly would be moving into a new market area which would improve their future outlook.

If Poly is going to make some such kind of transition, it had better be soon, while there are still enough active users. Unfortunately, the value of a Poly is steadily dropping. In the market place, price is determined by demand. The demand for Polys is lower than the cost to produce them. (See Russ Nobbs article).

I'm not going to close my eyes to reality. I'll print the negative stuff right along with the good stuff.

As part of the good stuff, the Poly is still capable of doing a lot of good work. Let's help each other by sharing our experience and software. So, I ask you all to write in with your questions, problems, fixes, and if you are looking for some software which can be run or adapted for the Poly, write in and I'll publish your request.

No More GOTO's

Since this is the second issue I have published, you may have noticed that there are no more GOTO's at the bottom of each column. One of the features of most magazines that I always hated is "continued on page --". Unless I get a lot of flak from the readers, I'm not going to do that in PolyLetter.

Ed.

Letters

Dear PolyLetter,

It occurred to me that Charles [Our previous Editor] didn't know that he could use the backslash character to print a backslash character. (Huh?) When I want to print a BASIC program using the FORMAT command from Exec I create a FORMAT.IN file that includes the page size, line spacing, etc., and most important is the command {nfil}.

I Edit the BASIC program to a file with .TX as an extension. Then, I use <Escape> <Control G> to change all of the

backslashes to two backslashes. (\ becomes \\)

When using Poly's FORMAT.GO a backslash is a command to print the next character literaly. Therefore to print a backslash you must have two backslashes in'est-ce pas? If you want to create a cents sign, type a "c" a backslash, a BACKSPACE and a vertical bar.

Unfortunately the programs Charles printed do not read right. All of the backslashes are missing and commands are run together.

Al Levy

[FORMAT.GO does not 'know' about the backspace character. It counts it as a printable character, so doing as Al suggests leaves two extra spaces on the right end of the line. This is fine if you don't need right justified margins.

{A;S} format has a {bs} command which counts the spaces right. Using Poly's FORMAT program, one must reset the line width by adding 2 for each backspace character so imbedded. For example, if your width is 60 and you want to print one of these cent signs you would need to include the following commands. "{wid62} c\¦". Also, the next line needs to be preceded with {wid60}. {A;S} format would only require "c{bs};" as the {bs} command automatically allows for the extra printable characters.

Ed.]

Dear PolyLetter,

Did you know that if you use <CTRL F> to find, then close the file and edit a new file; <CTRL C> often works to find the same thing?

Using the CP/M PCOPY you can create a file in Exec with NO EXTENSION!

```
PCOPY PIP.COM
     From Poly or CP/M?   [C]
     Poly Filename?       <2>WHATEVER
```

The result is an Exec file called "WHATEVER" with no extension.

I call FORMAT.GO FOMAT.GO. This is because I hated having to type DEL FORMAT and get the error message "I can't do that to a System File". I use FORMAT.IN and when I delete it, no more hassle.

Al Levy

Dear PolyLetter, November 3, 1986

To say that I am dependent on POLY is the understatement of the year. Since 1977 I have been conducting this Investment Advisory service based on several Basic program styles which were patiently given to me by Vince Heuring, the computer vendor, who is no longer in business. I have written all the numerous evaluation, reporting, and technical analysis programs that I use.

I bought Pcalc which I use only for client billing, and resort to Edit mode (much faster) for input of new data instead of the Pcalc input system. Recently I added a Modem but thus far cannot find usful data bases or program info that justifies the expense.

Mr. Parsei at POLY has been most cooperative to the extent of his ability. Also one of the (part time) technicians there has given me useful insight on several problems. I have learned how to diagnose and remedy hardware problems through my inventory of backup boards, parts and a nearby URI store.

Unfortunately I am not qualified to understand much of PolyLetter's technical content. However, I am interested in knowing how CP/M would be of use to me? Also, I realize that the ability to convert POLY programs to an IBM PC or clone would represent a quantum leap forward. However, the ability to avoid down time without calling in a service man would be a critical consideration.

I would be glad to join a network of POLY users if the technical level would not be too frustrating, and if an interchange of info and ideas would result.

Enclosed is my subscription renewal and the census data you have requested. Best wishes for success.

Sincerely, --- Jim Salinger, Cincinnati OH

PolyLetter, November 3, 1986

This reader had not questioned lapse since last issue since PolyLetter has been consistently inconsistent. Am delighted to receive this copy and would welcome regular resumption of service.

Earl Gilbreath, Savannah GA

News

1. Bob Bybee and Poly Peripherals have moved to 5011 Brougham Court, Stone Mountain, GA 30087, (404) 498-3556. A matrimonial merger was included in the deal. Congratulations, Bob.

Glitch of the Issue

My apologies for spelling and typograpical errors in the last issue. In my haste to get it out I didn't run everything through the spelling checker. Also, my proof-reader didn't get around to looking over the proofs until after publication. (Let's see now, proof reading comes before publication..., ya, dat sounds right.) We'll try to get the order straight from now on. My deepest apologies to MARK Sutherland for getting his name wrong. I must have been talking to too many Chucks lately.

Conversation with PolyMorphic Systems

By Bob Bybee (MAY-86)

I had an interesting conversation recently with Sirous Parsaei, the current head of PolyMorphic Systems. He was quite candid with me on several issues. By now it's certainly no secret that Poly's operation is trimmed to the bone. Poly's only sales seem to be from hard disks and from support of old customers - repairs and occasional upgrades. There is no new system for sale, and no new software development is being done for the old system. Other rumored projects, such as PolyNet and Pascal, are never going to be.

Buying the Source

One of my reasons for calling Sirous was to find out if it would be possible to buy the source code for the Poly operating system and utilities. I'm interested in this for two reasons. First, we all know

that someday Poly won't be around to support the software. Even now it seems that software improvements aren't going to come from PolyMorphic anymore. Shouldn't this software be available to the user community, just in case someone discovers a bug that needs fixing? Or in case someone decides that a number of enhancements should be made?

Second, there's always the possibility of running the Poly software on some new hardware someday. I know I've played this tune before, but I recently found out about a new development that could make it much easier. There's a processor chip that plugs into an IBM-PC or XT which can execute not only the 8088 instruction set (the one IBM uses), but also the 8080 instructions (our Poly's) as well. People are already running CP/M-80 programs on PCs with this chip. If we had the source code to the Poly assembler, editor, BASIC, Exec, and a few other important pieces of the system, it might be possible to run our Poly software on a suitably equipped PC. A few minor changes might still be needed, but it would certainly be simpler than the massive rewrites we'd need to do if we wanted to move to IBM BASIC.

The chip I'm talking about is called the V20, made by NEC. It's available from many mail-order houses for about $30. You just pull out your PC's 8088, and plug in the V20 instead. As a side benefit, the chip also runs IBM programs faster than the 8088 did, up to 50% faster in some cases. I bought a V20 for my PC, and have the processor manual, but haven't studied the project enough to know if it's feasible to "port" the Poly OS to the V20.

At any rate, I discussed this whole project with Sirous. He was concerned that if I (or someone) did convert the Poly software to the PC, it would encourage more people to drop their Polys right away. This would reduce the income he's getting from servicing those Polys. This is a legitimate concern, of course. We all want PolyMorphic to stay in business as long as we can. I did suggest that if I developed this software, Poly could sell it and earn royalties that way. But Sirous wasn't interested.

How much?

When I asked what kind of money he would consider to part with the Poly code, Sirous couldn't say... my question had caught him by surprise. He did say that given the possible loss of service revenue, it would have to be "worth his while" before he would consider it. I got the feeling that several thousand dollars would be a good offer. Sirous suggested that several Poly users might pool their money and make an offer to buy the code. He also said that if several users did purchase the code, they could have it with no restrictions - they could rewrite it, distribute it, resell it, or whatever.

Personally, I'd be willing to sink a couple of hundred dollars into the project, just to keep the Poly source code in my archives for emergencies, or posterity, or sentimental reasons. Anyone else willing to go along? We'll need a dozen or more people to make a group purchase possible.

Bad Feelings

I hadn't spoken to Poly in quite a while. In fact, when I began selling hard disks through Poly Peripherals, I decided that it would be better to let PolyLetter talk to PolyMorphic, and stay out of that relationship.

I knew that selling HDs wouldn't make Poly fond of me. But until my conversation with Sirous, I had no idea how upset they really were. Now that hard disks are the only piece of new hardware that Poly sells, they are very sensitive about my role in the HD business.

When I discovered this, I made Sirous aware that I had only sold a total of three HD units, and wasn't even actively advertising them for sale anymore. (The truth is, there wasn't much profit in them for me anyway. And with Poly's HD now at $1295, there's no way I can compete.) I wrote Sirous a letter the next day, explaining that for the good of all concerned, I would promise not to sell HDs (or any competing product) anymore.

Sirious said he is assembling a mailing list of 500 to 1000 Poly owners, and preparing to send out a mailing about HDs, used equipment, and services. He was concerned that if PL obtained a list of PolyMorphic's customers, I would try to sell HDs to those people, possibly taking sales away from PolyMorphic Systems. I assured him that I had no plans to do so, and I hope that my letter changes his mind about my intent.

I feel that all of us would benefit if everyone had access to the widest possible base of users, and I encouraged Sirous to share his mailing list with PL. If the PL subscriber list could be increased by 500 or 1000 names, we wouldn't have any trouble keeping our newsletter going for years to come.

Bob Bybee

Bob can be reached at: Poly Peripherals, 5011 Brougham Court, Stone Mountain, GA 30087, (404) 498-3556.

Bit Bucket

On November 4, 1986, Al Levy reported that one of his clients has a broken ESC key on his KEYBOARD III. He tested the keyboard with a basic program, "10 PRINT INP(1) \GOTO 10", and nothing happened when the ESC key was pressed. What a bummer! The ESC key is used in the editor for all kinds of things, including geting out of it.

Dear Al, -- The ESC key produces the same ASCII value as CTRL-[. Tell your client to use CTRL-[in place of ESC until a replacement key can be found.

Ed.

Speaking of the ESC key, in PL-8201 Al described a method of getting a literal ESC character into you text file using Szap.GO. There's a much easier way.

How to put an ESC (1BH) Character Into a Text File.

First, type ESC left-arrow and a little left arrow will appear ←. Second, delete the left-arrow and it will disappear. Third, use CTRL-U and undelete one character; the little arrow will reappear.

To insert other control characters,

simply type CTRL-F. When the second cursor appears, type the CTRL character of your choice (except CTRL-Y, CTRL-Z, CTRL-@, ESC, or DELETE [CTRL-Z works when not in ENABLEd mode]). Next, type ESC and the double cursor and the CTRL character will disappear. Next, type 2 CTRL-U's and a second brick and the CTRL character will reappear. One left-arrow to jump over the newly recovered CTRL character and one DELETE removes the extra cursor BRICK.

By the way, the BRICK is the DELETE character, so if you ever want to insert a DELETE character in a file the sequence CTRL-F, ESC, CTRL-U does it. To get a CTRL-Z (→) character use ESC right-arrow, DELETE, CTRL-U. CTRL-@ (∝) cannot be gotten this way because it's ASCII value is 00 and the keyboard input routine skips over any 00 inputs.

Never-the-less, a CTRL-@ can be gotten in three ways. The hard way is to go to the end of the file and use CTRL-U until some greek alpha's (∝) appear (that's one). Delete everything CTRL-U came up with except the alpha, mark the alpha ←∝, and copy it or move it to where you want it.

The second way is to simply insert a left or right block marker. When Edit (4.X) writes out the file it changes these to 00 bytes first, but writes them out anyway. However, don't expect the 00 bytes to be in the file when you read it it. Edit's load routine strips all null bytes out!

The third way (and the easiest) also works for CTRL-Y, CTRL-Z, and any other CTRL character except ESC and DEL. Simply use the escape definition sequence. I'll use Y for this example. Type ESC, =, Y, ^, Y, ESC and then when you type ESC Y the square root sign √ (CTRL-Y) will appear. To make the insertion of an ESC easy, why not define the operation using the escape library. Since you cannot define the escape key, I'll use the @ key (we'll probably never want to use CTRL-@ anyway). Just define the @ key by the sequence ESC, =, @, ^, [, left-arrow, CTRL-D, CTRL-U. Then when you type ESC @ the escape character ← will appear but it will not be a block marker.

Ralph Kenyon

Poly Resale Value

By Russ Nobbs (JAN-84)

I was approached in 1984 by a person who had bought a Poly system in 1982 to lease to a small business. The system was an 8813 with dual 5 1/4" SSSD drives, Qume Sprint 5 printer, various accessories, Poly's operating system, WordMaster, PLAN and a GL/AR package adapted by the now bankrupt Spokane dealer, PCI. The system with software cost around $11,000.

The business wanted to drop the equipment. The lessor wanted to know how much the system could be sold for. The lessor was greatly disappointed at my estimate of $1000 for the printer and $1000 for the Poly and all the software. (The lessor was hoping for $5500 to $6000!) I sent them copies of some recent ads from PolyLetter for examples of PolyPrices and the following comparison of another used system on the market in Spokane.

Another Spokane business was closing and offered for $1950 a Quasar S-100 system, 64K, 6mhz, dual 8" DSDD drives, (1.2 M ea), Televideo 950 terminal, cache memory, CP/M 2.2, Wordstar 3.0 w/ MailMerge & SpellStar, Dbase II 1.4 with Zip, 2 accounting packages, 4 spreadsheet packages. Also for sale was a Qume Sprint 45 printer for an aditional $950. $2900 for a system that was faster, newer, had greater on-line storage, with better supported (and in some cases, more powerful) software than the Poly.

Following are excerpts from the letter to the lessor.

Along with the ads selling used Polys I am enclosing a sheet describing some other used equipment for sale in Spokane. I thought it might be helpful to do a comparison of the Poly versus another piece of used equipment with bundled software.

	PolyMorphic	Quasar
Designed	1976-77	1980-81
CPU chip	8088	Z80B
	(a faster enhanced version of 8080)	
Clock rate	1.8 mhz	6.0 mhz
	(over 3 times as fast as a Poly)	
Main memory	48 to 56 K	64 K
Operating system		
	Poly's proprietary	CP/M (industry standard)
	(Only Poly software will run on Poly. 1000's of programs are available for CP/M systems.)	
Disk drives	2-5 1/4 " SSSD @ 90K ea	2-8" DSDD @ 1.2 Meg ea
Total capacity	180K bytes	2,400K bytes
	(over 25 times greater on-line storage)	
	(Quasar allows much larger text files, data files and easier back-up of data.)	
Disk format	hard sector	soft sector (industry standard)
Cache Memory	(not on 5" Poly system) included (comes with Poly 8" system)	

Software:

Much as I like the Poly operating system and Poly's WordMaster text editor/formater, advanced "what you see is what you get" editors such as WordStar have become industry standards. New word processors call themselves WordStar work-alikes because the commands are similar. WordStar lists for $395, MailMerge for $195, and SpellStar for $195. Dbase II lists for $700. These and the other programs included are in use by thousands of users. Even for older versions, there are upgrades available for a fee.

Poly's PLAN, for example, was an innovative spreadsheet program when it was written in 1977 and 78. The author, Don Williams, went on to write a version for the Apple that sold a lot of copies. PLAN is written in BASIC, is very slow, and does not show recalculations on the screen. It is an early, primitive, ancestor to VisiCalc, SuperCalc, PerfectCalc, MultiPlan and the other current machine language spreadsheets. Once I had SuperCalc on my Osborne 1, I never used PLAN on the Poly, even though I had a number of well developed spread sheets on the Poly. It was faster and easier to rewrite them for SuperCalc than to continue to use them under PLAN.

Because there are 100's of thousands of CP/M machines in use, with more than one hundred thousand users for each of the more popular programs like WordStar, SuperCalc and Dbase II, the programs are upgraded from time to time, often for a fraction of

the original cost. (I recently paid $50 to the publisher for an upgrade for the $295 SuperCalc® spreadsheet for my Osborne. The last software upgrade I bought from Poly cost $150. The difference is the much smaller base of users. $50 times (say) 20,000 SuperCalc users made SuperCalc some money. $150 times (probably) 30 Poly users who upgraded didn't do much for Poly.)

The best guess is that Poly has sold around 3000 total 8810 and 8813 computers. PCI's accounting software was installed in only a few locations. I don't believe it is fully debugged. The versions that were supplied to me did not work. Other users who tried to work longer with PCI continued to tell me of problems in the software even after "most of the bugs" were fixed. There is no support today because PCI has gone out of business.

Because the Poly programs will only run on the Poly with their non-standard operating system and non-standard disk format and can not be moved to a more modern computer when the user upgrades the computer, there is unfortunatly little value except to a current Poly user. And then, only if it fits their current application.

The PolyMorphic was an excellent design. If their operating system had become the industry standard instead of Digital Research's CP/M, the Poly would be a much better value today. PolyLetter has had several articles by users who speak of their "beloved" Polys and their "friendly" operating system and editor.

This letter was written on the Poly using Poly's WordMaster. I find it much "friendlier" than WordStar on my Osborne. However, for some purposes, I am forced to use WordStar because it has more features than Poly's editor. I edit the local CP/M user group newsletter. Many articles are submitted to me on disk formats that the Osborne can read. None in a format the Poly can read.

The industry has passed Poly by. If they had delivered the 16 bit machine they announced last year [1983], they might have had a viable market share. The new Poly would have had many times the power and speed of the present Poly computer. It would have used a fraction of the number of individual chips. What takes up several boards in the current Poly would have been on a single board in the new system. And it would have been less expensive. Now, the IBM PC, the rush of PC look-alikes (most of which are not selling well) and the new Apple Macintosh may have sealed Poly's fate. Poly's market share may be limited to selling upgrades to current owners and some specialized markets serviced by dealers who like (and push) PolyMorphic computers. Frank Stearns, is from Cheney, and bought his first Poly from PCI. He recently bought a second working system "for spares" for around $700.

Keyboards and WordMaster II

Mark De Piolenc of San Diego asks: "How do users of KEYBOARD-II use WordMaster? What corresponds to the function keys?

Keyboard III has the separate numeric pad with additional keys labeled I, II, III, IV, and CLEAR. WordMaster was designed with Keyboard III in mind, but it does work on keyboard II. Each function key generates a single control character, but the WordMaster II software also recognizes a multiple key stroke escape sequence. Preface C to the WordMaster II manual explains that Keyboard II can be used by substituting the ESCAPE sequence listed in the table below for the appropriate function key. In addition, I have listed other ways to accomplish the same result.

KEYBOARD III equivalents for KEYBOARD II

FUNCTION	ASCII	HEX	CONTROL	ESC SEQUENCE
I	FS	1C	<,,;	ESC H
II	GS	1D	=,],}	ESC S
III	US	1E	>,^,	ESC A
IV	RS	1F	?,DEL,_	ESC CTRL-E
CLEAR	CAN	18	X,x,8	----

"<", "=", ">", "?", "¦", "}", " ", and "_" are all on SHIFTed keys; it requires an extra finger to hold down both the SHIFT and CTRL keys (unless you're pretty dexterous) while pressing another character key. Personally, I find the two key escape sequence easy to remember because of their mnemonic value. ESC (H)elp, ESC (S)elect, and ESC (A)dd are easy to remember, while ESC CTRL E is the same as the exit sequence for Edit. But, for those purists who desire the minimum keystrokes, CTRL DELETE would be preferred to ESC CTRL-E. I nearly never actually use WordMaster II in its menu version. I use Edit and FORMAT instead. It would be interesting to see how many of our users do or do not use WordMaster II, and why. Please write in and tell us whether you do or do not use WordMaster II, and what you like or dislike about it. Also, if you have any desires concerning how it could be improved, let us hear about them. Maybe they will fall on the sympathetic ear of a programmer.

Ed.

Help Your Fellow Users

November 3, 1986

Travis Miller is looking for an inventory system for use in his jewelery business. He has an 8813 and a MS and uses it for most of his business needs, but doesn't yet have an inventory system. He says that adapting the MailList program won't work because it doesn't have enough fields. If anyone out there is using an inventory system, please send PolyLetter some information about it. Did you write it, and are you willing to share? Did you buy it, from whom, and are they still in business? A brief description of the capacity of the system would be helpful.

Games

This is a game called REVERSE. It is written to run on BASIC version C04, so there are a few statements which may need to be changed to adapt it for older versions of BASIC. PAGE is the same as PRINT CHR$(12). POKE 0,127 is the same as POKE PEEK(3087)*256+PEEK(3086),127. RANDOMIZE is the same as Z = RND (TIME(0) / 65536).

```
10 DIMO \DIM A(30),A$(1:16) \RANDOMIZE \G=0 \ON ESCAPE GOTO 610
20 A$="                " \REM 16 SPACES
30 PRINT CHR$(12),TAB(25),"REVERSE"
```

```
40 PRINT "Would you like instructions? (Y or N)", \POKE 0,127
50 Z=INP(1) AND 95 \PRINT \IF CHR$(Z)="N" THEN 210 ELSE PAGE
60 PRINT "This is the game of REVERSE. To win, all you"
70 PRINT "have to do is arrange an unsorted, sequential"
80 PRINT "list of integers. The final arrangement must"
90 PRINT "have 0 on the left and 'count up' to the highest"
100 PRINT "integer (on the right). You can only reverse"
110 PRINT "the order of a block of integers. This block"
120 PRINT "can be any length but must begin with the left-"
130 PRINT "most integer. For example, if the current list is:"
140 PRINT "1 2 3 4 5 0 6 7 8 9"
150 PRINT "and you reverse 5, you will then have:"
160 PRINT "5 4 3 2 1 0 6 7 8 9"
170 PRINT "Note the positions of the first and last 5 digits."
180 PRINT "Now, if you reverse 6, you will win:"
190 PRINT "0 1 2 3 4 5 6 7 8 9"
200 PRINT "If you want to change the array size, reverse 0!"
210 INPUT1 "How many digits do you want to arrange?",M
220 PRINT A$ \M=INT(M) \IF M<1 THEN 610
230 IF M<18 THEN 260
240 PRINT "I'm sorry, but I can't go beyond 17 array elements."
250 GOTO 210
260 G=G+1 \X=0 \PRINT CHR$(12),"Game #",G
270 PRINT "Thinking....", \FOR L1=0 TO M-1
280 A(L1)=RND(M)-1 \IF L1=0 THEN 310 ELSE L2=0
290 IF A(L1)=A(L2) THEN 280 ELSE L2=L2+1
300 IF L2<L1 THEN 290
310 NEXT \R=M \PRINT CHR$(12)," POSITIONS:", \FOR L1=1 TO M
320 PRINT %3I,L1, \NEXT \PRINT CHR$(11) \PRINT " THE LIST: ",
330 PLOT 22,43,0 \FOR L1=0 TO R-1 \PRINT %3I,A(L1), \NEXT
340 IF W=1 THEN 550 ELSE X=X+1
350 POKE 0,127\PLOT 0,40,0\PRINT" This is your try #",X,"  "
360 INPUT " How many integers do you want to reverse? ",R$
370 PLOT 90,37,0 \FOR I=1 TO 10 \PRINT A$, \NEXT
380 POKE 0,127 \PLOT 0,34,0 \IF LEN(R$)<3 THEN 410
390 PRINT " I can't use a number with more than 2 digits,"
400 PRINT " even if it's correct!", \GOTO 350
410 IF LEN(R$)=0 THEN PRINT "Input error - retype!" \GOTO 350
420 FOR I=1 TO LEN(R$) \R1=ASC(R$,I)
430 IF (R1<48) OR (R1>57) THEN EXIT 450
440 NEXT \R=VAL(R$) \GOTO 460
450 PRINT " That's a strange choice--try again!" \GOTO 350
460 IF R=0 THEN 210 ELSE IF R<=M THEN 500
470 PRINT " Please remember, you can't reverse more than",M
480 GOTO 350
490 REM REVERSE R NUMBERS IN LIST A
500 FOR L1=0 TO INT(R/2)-1 \T=A(L1) \A(L1)=A(R-L1-1)
510 A(R-L1-1)= T \NEXT
520 REM CHECK FOR A WIN
530 FOR L1=0 TO M-1 \IF A(L1)<>L1 THEN EXIT 330
540 NEXT \W=1 \GOSUB 330
550 PRINT \PRINT \PRINT \PRINT " And you WON in",X," move",
560 IF X=1 THEN PRINT "!" ELSE PRINT "s!" \PRINT \W=0
570 PRINT "Type return key when you are ready to continue",
580 POKE 0,127 \Z=INP(1) \PRINT \IF G<10 THEN 260
590 PRINT "You've played many games, are you getting bored?"
600 Z=INP(1) AND 95 \IF CHR$(Z)<>"Y" THEN G=5 \GOTO 260
610 PRINT CHR$(12),"BYE!",CHR$(13),"Back to ",CALL(0)
```

ADS

DISKS -- DRIVES -- MODEM -- PROMS -- SOFTWARE -- SPELL

1. Maxell disketts -- $13 per box of 10.
2. 5" disk drives (Shugart SA-400) $50.00 (includes shipping)
3. Two drive external box and power supply $75.
4. Hayes Micromodem 100 for only $40.
   (300 baud in bus direct connect modem. limited quantity)
5. HayesSys modem software $35.
6. (A:S) Spell, a spelling checker for $35.
7. Abstract Systems Exec $35.
8. Abstract Systems Proms $35;
9. PolyGlot Library Volumes, $6 each.

Available from: Ralph E. Kenyon, Jr., Abstract Systems, etc.
191 White Oaks Road, Williamstown, MA 01267, (413) 458-8421
(Send $1.00 for a complete catalog--[free with any order].)

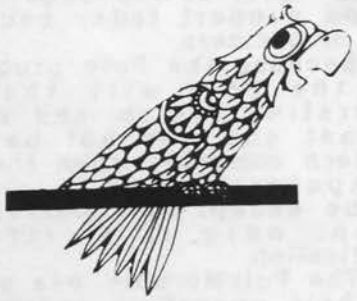
10. Eight inch MAXELL 32 hard sectored diskettes for your MS. $15.00 per box or $ 115.00 per ten boxes. Contact Al Levy at (516) 293-8368.

BugNotes

Abstract Systems BugNote 002.0 November 3, 1982

Exec/95, Dfn1 has a bug in the RENAME function. The use of the wild card results in deleted files being undeleted and renamed. Example:

```
$$L 3
Disk AsmbWork has 20 files on it.
288 sectors in use, 91 deleted, 62 sectors free.
 Size Name
    3 Exec.OV
   12 Load.AS
   11 Dis.AS
    2 LAB.GO
   21 Blsa.AS
    3 TES.AS
    1 MUL.TX
   10 Label.AS
    8 LABEL.AS
    2 LABEL.GO
    2 Encrypt.AS
    3 Prog.AS
    1 Prog.GO
   12 ASROM.GO
    4 r100.GO
    4 r400.GO
    4 r800.GO
   90 ASROM.AS
```



```
$$DL 3
Disk AsmbWork has 2 deleted files on it.
 Size Name
    1 nrCS.TX
   90 ASROM.AS

$$REN <3<ASROM.* <3<asrom.*
<3<ASROM.GO renamed to <3<asrom.GO
<3<ASROM.AS renamed to <3<asrom.AS
<3<ASROM.AS renamed to <3<asrom.AS

$$DL 3
Disk AsmbWork has 1 deleted files on it.
 Size Name
    1 nrCS.TX

$$DE <3<asrom.AS
<3<asrom.AS deleted.
$$REN <3<asrom.* <3<ASROM.*
<3<asrom.GO renamed to <3<ASROM.GO
<3<asrom.AS renamed to <3<ASROM.AS
<3<asrom.AS renamed to <3<ASROM.AS
```

HELP!

(Which ones shall I do in the next issue?)

```
$HELP NEW
        New features added to Exec/95-96 (A:S)

  1. UnSys (clear system bit) (enabled mode)
  2. Restart (resume an aborted command file) (enabled mode)
  3. Sniff d s (Sniff drive d starting with sector s)
  4. WRITE "text" prints "text" on printer (without paging)
  5. .DX files are listed when the file-name is keyed in
  6. .DC files are typed when the file-name is keyed in
  7. AS files are "I don't know what to do with that file"
  8. LIST & TYPE accounts for protected portions of screen
  9. LIST adds number of free entries & flags (enabled mode)
 10. Setup shows default printer & selects device 0
 11. REN corrects *, and uses input file extension as default
 12. SQUEAL reports Dio errors, DONT cancels SQUEAL
```

Public Domain

The first Disks-of-the-Month from PolyLetter are listed here. These disks

are available for $6 each.

Disk of the month APR-80 has 5 files on it.

Size	Name.
2	COUNT.GO
1	CONTROL-U.GO
7	CALENDAR.BS
4	READ-THIS.TX

Disk of the month AUG-80 has 33 files on it.

Size	Name.
2	POP.GO
8	SZAP.GO
1	Cursor.GO
8	COPYALL.BS
4	MOVE.BS
2	ROOM.GO
3	POKE.BS
7	READ-THIS.TX
5	COPY-SUB-DIR.BS
2	Cursor.DT
1	BIG-LINE.BS
2	MIRROR.GO
3	DUP.GO

Disk of the month JAN-81 has 25 files on it.

Size	Name.
37	SORT-DEMO.BS
44	DEMO-STRINGS.DT
6	MAZE.GO
17	READABILITY.BS
38	GENE.BS
44	HOME-INVENTORY.BS
2	READ-THIS.TX

Disk of the month MAR-81 has 33 files on it.

Size	Name.
5	TABBER.BS
7	FNTIMER.BS
7	PEEK-DUMP.BS
3	Tran.OV
7	TRAN-DOC.TX
2	TRAN-TEST.BS
6	READ-THIS-FIRST.TX

Disk of the month MAY-81 has 32 files on it.

Size	Name.
13	BIORHYTHM.BS
35	BATTLESHIP.BS
15	HANGMAN.BS
2	SPIRAL.BS
1	ART.BS
22	BACKGAMMON.BS
19	HANGMAN-II.BS
31	ROULLETTE.BS
4	READ-THIS-FIRST.TX
10	FROGS.BS

Disk of the month JUL-81 has 27 files on it.

Size	Name.
3	READ.GO
5	COUNT.GO
5	FLIES.BS
12	INPUT.BS
10	READ-THIS.TX

Disk of the month DEC-81 has 31 files on it.

Size	Name.
17	SLOT.BS
22	BACKGAMMON.BS
6	ARTIL.BS
9	MOON-LANDER.BS
22	Sex-Appeal.BS
4	READ-THIS.TX

Disk of the month MAR-82 has 15 files on it.

Size	Name.
6	Letter.TX
12	Leaflet.TX
132	VM.VM
33	INITIAL.GO
2	FETCH.GO
1	PUNCH.GO
7	Bchr.OV
7	BCHR-DEMO.TX
1	bchr-demo.GO
2	BCHR-TEST.BS
8	READ-THIS.TX

Disk of the month JUL-82 has 31 files on it.

Size	Name.
6	SDIR.GO
3	FIND.GO
16	FIND-&-SDIR-INFO.TX
5	DX.GO
1	FPL.GO
44	BOWLING.BS
3	COMMENTS-BOWLING.TX
47	TEXT-TRAN.BS
18	TEXT-TRAN-INFO.TX
3	TEST.TX
2	TEST2.TX
1	CHANGE.GO
23	MASTERMIND.BS
11	READ-THIS.TX
2	July.XD
4	MasterMind-Instructions.DT

Disk of the month MAR-83 has 12 files on it.

Size	Name.
38	DATA-SORT.BS
36	ADD-A-BASE.BS
82	DATABASE.TX
1	CREATE-IT.TX
1	DIRECTORY.TP
1	DIRECTORY.DR
94	DATA-ENTRY.BS
5	BASES.GO
6	SCAN.GO
2	SNIFFALL.GO
10	READ-THIS.TX
4	ADDRESS.DX

Disk of the month JUL-83 has 12 files on it.

Size	Name.
73	DIS80-SRC.TX
19	DIS80.GO
20	DIS80-INFO.TX
8	SYSTEM.SY
1	ERROR.GO
1	BERR.GO
6	MKDIR.GO
12	MKDIR-SRC.TX
10	ERROR-SRC.TX
10	BERR-SRC.TX
22	READ-THIS.TX

Disk of the month NOV-84 has 14 files on it.

Size	Name.
9	CNT.GO
5	MERGE.BS
8	GEMSET-SRC.TX
2	GEMSET.GO
1	STRIP.CM
10	DDBLIST-INFO.TX
15	DDBLIST-SRC.TX
3	DDBLIST.GO
14	SETPR-SRC.TX
23	SETPR-INFO.TX
18	FUTIL2.BS
5	SCOPY.GO
1	LABE.TX
17	READ-THIS.TX

Hidden Messages

When I get an old disk from someone, one of the first things I do to it, is look at the unused portion of the disk with Szap. One never knows what goodies may be left

after files have been deleted and the disk packed. I have recovered several programs in this manner, and many interesting parts of programs. It's a little like picking over the local dump. Most of what's there is garbage, but one occasionally finds something valuable. I once got a driver for some noise generator. Another time I got a copy of Don Moe's Form.OV overlay. Well, the other day I got a disk from Al Levy with stuff for the last issue of PolyLetter. I was so busy I didn't look at the disk. Since then, I have taken a look, and I thought I'd share with everyone what I found there. Here's what I saw when I brought up Szap.

```
20 20 20 20 20 20 2A 2A 2A 20 20 20 20 20 20 20      xxx
57 68 61 74 20 64 69 64 20 79 6F 75 20 20 20 20 What did you
65 78 70 65 63 74 3F 20 20 20 20 20 20 20 20 20 expect?
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
41 20 62 6F 6E 75 73 20 70 72 6F 67 72 61 6D 3F A bonus program?
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
48 6F 70 65 20 79 6F 75 20 77 69 6C 6C 20 20 20 Hope you will
63 6F 6D 6D 65 6E 74 20 73 6F 6D 65 20 64 61 79 comment some day
6F 6E 20 6D 79 20 68 69 64 64 65 6E 20 20 20 20 on my hidden
6D 65 73 73 61 67 65 73 20 21 21 21 21 21 21 21 messages !!!!!!!
2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A 2A xxxxxxxxxxxxxxxx
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
53 74 69 6C 6C 20 77 72 69 74 69 6E 67 20 61 6E Still writing an
20 61 72 74 69 63 6C 65 20 6F 6E 20 53 7A 61 70  article on Szap
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20
52 65 67 61 72 64 73 20 2D 20 28 41 6C 29 20 20 Regards - (Al)
```

Survey Winners

The first three survey forms returned were from Kenneth Lowe of West Valley City, Utah; James Salinger of Cincinnati, Ohio; and J. Earl Gilbreath of Savannah, Georgia. Congratulations; you beat everyone else and are entitled to a free PolyGlot Library Volume of your choice.

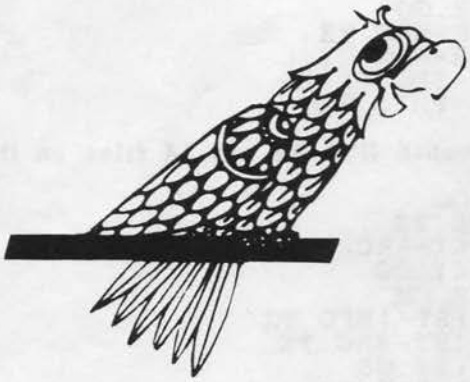
In This Issue

Coming Soon

Odds & Ends from Atlanta by Bob Bybee, An Assembly Language Memory Test Program, Hardware Problems by Bob Bybee. Finding a Bad Memory Chip, Letters from Russ Nobbs, & John McNally, More Help and BugNotes. Towers of Hanoi in Graphics, etc.

PolyLetter
191 White Oaks Road
Williamstown, MA 01267
(413) 458-8421

Address Correction Requested



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PolyLetter

The Newsletter for PolyMorphic Systems Owners and Users

Editorial

When I took over PolyLetter, I received a mailing list with about 350 names on it. A large proportion of those names had 0000 in the renewal field, which meant that the dreaded "RETURN TO SENDER - ADDRESS UNKNOWN" had been received at PolyLetter. In some cases, I have been able to get a new address by simply calling directory assistance. This is fine when the move was local, but it doesn't work when a PolyUser has made a long distance move. I merged PolyLetter's mailing list with Abstract Systems, and came up with a final list of 400 names. I sent my first issue of PolyLetter to the entire list. So far I have received over 75 back as address unknown.

Whenever this happens, I wonder what happened to the Poly. I have a book of users which has one page for each user. The book has been divided into three sections. The last section has the names of past Poly users who have gotten rid of their Poly. In some cases, I have a record of where the Poly went. The second section has the names of People whose location has been lost. And the first section contains the active subscribers plus those from whom no response has been received.

We presently have about 75 active subscribers whose interests are quite varied. 15 census/survey responses have been returned to date. The respondents use their Polys in business for accounting, (general ledger, accounts receivable, accounts payable and payroll), administration (Mailist, Plan and Word processing), loan services and investment advising (amortization, escrow and interest calculations), inventory control, product management (manufacturers representative), and for tax services. The reported personal uses of the Poly include address lists, amortization, education, games, geneology, mathematical modeling, numerical analysis, publishing, telecommunication, and word processing. (If your application isn't mentioned here, please send it in for PL to include in the list.)

Hardware at PolyLetter

I thought I'd take a little space to tell you about my system. The hardware at PolyLetter consists of one 8813 with 3 double sided 96 tpi drives being operated in a single density format. This yields 1600 sectors (400K) per drive, or 1.2 megs on line. I also have an 8810 with two 1/2 height 96 tpi drives. I have an IDS prism 132 color printer and a Dataproducts (formerly IDS) 8050 color printer. I also have a Hayes Micromodem 100 300 baud modem. Software allows my 96 tpi drives to read and write standard PolyMorphic single density 5" diskettes.

PolyLetter is printed with the Dataproducts 8050 printer. The software used in preparing it are the Editor, Abstract Systems format program, Abstract Systems Print to a File program, and Abstract Systems write program. I also use the Dio35 program to read SSSD disks submitted with articles and letters.

I have set up my odd and even page headers to include margin setting commands for the printer so that the left column is printed as an odd page and the right column is printed as an even page. The even page footer prints the page number right justified. Each header includes a command to start printing at absolute line 4.

First, I format the document with my print to a file utility to capture the output. Second, I edit that file and change all page numbers to the proper sequence. I also delete the form feed character at the head of each even page. (The absolute line command will cause the printer to go back to the head of the same page for printing the right column.) Finally, I use the write program to print out a copy of the document. It is printed in one pass, leaving a space for the header on page 1, and leaving the bottom of page 8 open for postal use.

Ed.

Letters

Ralph - November 3, 1986

Glad you took PL over. Will try to send you some copy - altho I had to drop CP/M user group newsletter due to lack of time.

Thanks!, Russ Nobbs.

Dear Ralph: November 3, 1986

Glad to see that PolyLetter is still alive - I had about given it up for dead. About the only thing interesting is I have moved (via Modem) some of the Poly programs I have written and adapted them to the two IBM-PC's that I have but still use the Poly all the time. Of the three machines I have, two are up and running with little or no troubles. I agree, in many ways Poly is great - too bad PolyMorphic missed the boat back a ways.

Regards, Jim Trahan.

Dear Ralph, November 5, 1986

Ah, the persistence and endurance of die-hard Poly fanatics, like you and Al Levy, never ceases to amaze me.

Nor, in spite of having owned an early 8813 since about 1978, have I ever come to

attribute any special wonders to Exec or Edit or have the Poly be especially 'friendly' in any way.

I do have a sentimental attachment to mine - as one of the earliest completely integrated diskette based micros with remarkably sophisticated software for its day.

The poly may be great for the 'hacker' but it's hell to get any useful work out of it without struggling to program it every step of the way - and every minor change meant another debugging debacle. I have CPM and MSDOS machines now that may not be quite as easy to use as TV - but they work for me instead of me working for them as I did for the Poly.

Even now I'd use the Poly if I could make it do two very simple jobs without taking the rest of my life to relearn its system and cope with the aberrations of its wondrous Exec. On the one hand I have sizable mutual fund and stock data bases on a PC clone, and in the closet I have a small but smart Radio Shack four color plotter. I'd love to use the Poly to drive the plotter to produce comparative performance plots of the individual mutual funds in a family. I can 'print' the plot data as a series of ASCII characters out the serial port of the PC if I could get the Poly to receive it and store it to disk. A group of such strings would constitute an array for processing, and then the Poly could 'print' the plot instructions out the serial port to the plotter. At one time I did have an assembler routine that would accumulate characters from the serial port into memory (from the earliest version of the system programmer's manual) so I could probably get the data into the Poly and 'save' it on disk. Manipulation of the array wouldn't be too bad, either. But then I have to struggle to circumvent the Poly printer driver which insists on modifying the return, backspace, and similar characters before sending them. Guess what characters are used to control special functions in the Radio Shack plotter! Back when I was still using the Poly part time I started to disassemble the Printer Drive to try to control the plotter - and pulled out what little hair I had left. ANYWAY, the point of this diatribe is that, while the Poly was wonderful when there wasn't anything else, you sure earn everything you get out of it. I have communications utilities for both CPM and MSDOS that will both send and receive ASCII files without modifying them, and with little effort on my part. The Poly's will die because, like Model T Fords, only the highly skilled and exceedingly determined can use them.

So how come I have a sentimental attachment? Because when designed it was such a wondrous machine. At that time I worked for IBM servicing both hardware and software for medium size business systems - principally the IBM System 3 in the middle 70's. When the first table tops came out I borrowed a tape cassette based IBM demo machine for a couple of weeks to see if it was practical for home use for securities investment analysis. At that time no major manufacturer had a complete diskette system on the market, and the Apple was a cigar box for playing video games and making music. The Poly was amazing - completely integrated software, with advanced performance features, like disk overlays that were wery similar to those of the IBM System 3. When the desk sized IBM System 32 was announced it still didn't have a type-ahead buffer, and automatic first job execution didn't come in the business systems until the IBM System 34. The Poly was way ahead of its time - and the tragedy was the error of trying to keep it proprietary. They withered away because of the self-imposed isolation, while Apple and CPM and later the IBM PC exploded in popularity because of their openness and accessibility to other hardware and software vendors.

The Poly also earned its keep as a home terminal while my youngest son earned his Computer Science degree. His experiences were like those you describe in the current PolyLetter. The ability to work on his programming problems at any hour of the day or night was a big asset that we think helped him a lot. We can attribute some of his success to the Poly - so it has earned a place in his affections as well.

My renewal is enclosed. Hope springs eternal. Maybe you will make it a bit easier to use a Poly for constuctive work. Perhaps, if a future PolyLetter article should address my plotter received and send problems above, I can put the Poly back in service. I'd love to show my clients a bona fide antique still working hard to maximize the return they get from their investments.

Please hang in there. I have a sentimental affection for die-hards too.

Sincerely - John H Mc Nally

Dear Editor, November 15, 1986

I enjoyed the last PolyLetter. I must say, I thought Poly was a dead issue though. I had lost track of the time between issues, and really didn't expect to receive another. In the eyes of everyone else, I'm sure Poly is a dinosaur. But as you have well expressed, it's a really impressive small system. I'd be among the first to say that the people at Poly did their homework well when they introduced the Exec operating system and Poly BASIC. I've not seen another to compare to the ease with which it operates or to the easy reading of those Poly manuals. I've been employed by IBM for 26 years now, and have seen lots of operating systems come and go, but none have compared to Poly's.

My Poly is a "Homebrew". It all started with a Video I/O and a Poly CPU card, then came an 18 slot Godbout motherboard, three used RAM cards and a new cassette recorder. Boy this was living! Now the old girl is a full blown 8813 with a single card CMOS RAM, a SIO4 I/O card, an internal Hayes modem, eprom burner, and an Intex Talker box to boot. Also added a Microline 82a printer later on. I'm sure my PROMS are way down level, (75). Exec is at level 80, and BASIC is at C00. But I sure enjoy what I have. I have written assembly and BASIC programs for use around the home. Primarily it's a game machine now as most functions have been moved to our PCjr. The software just wasn't there when I needed it.

I would be interested in sharing any projects to upgrade the Old Girl to a more up-to-date system, either hardware or software. A Peter Norton I'm not but when

it comes to the hardware, I think I can be of help.

Sincerely, Doug Henry, Naperville, IL

The Other Guys

I have been playing with an XT-clone, and have written .BAT files to simulate some Poly commands. I HATE having to type extensions, or to type the command names fully out. I have created a T.BAT file which works mostly like the Poly TYPE command. Here it is:

```
ECHO OFF
IF EXIST %1 GOTO TYPE
IF EXIST %1.TXT GOTO TXT
IF EXIST %1.DOC GOTO DOC
IF EXIST %1.BAT GOTO BAT
ECHO I can't find file %1.
GOTO END
:TYPE
ECHO type %1
TYPE %1 | MORE
GOTO END
:BAT
ECHO type %1.BAT
TYPE %1.BAT | MORE
GOTO END
:DOC
ECHO type %1.DOC
TYPE %1.DOC | MORE
GOTO END
:TXT
ECHO type %1.TXT
TYPE %1.TXT | MORE
:END
```

Odds and Ends from Atlanta

By Bob Bybee

It's been a while since I've written anything for PL, so this article is going to be a collection of subjects that I've been thinking about over the past few months. Have patience with my ramblings!

Projects

I discussed with Sirous Parsaei (PolyMorphic Systems) my current projects on the Poly, including PCALC, my spreadsheet program, and several upcoming ideas. He was very enthusiastic about these subjects, and encouraged me (and other software developers) to continue to write for the Poly.

PCALC has turned into my hottest product yet for the Poly. So much so, that I'm keeping the price at $150 indefinitely. PCALC/2.0 will be released shortly, so call me for a brochure or more information. By the way, PCALC is written in BASIC and assembly language, as a lot of my projects are. But this time the two languages are linked together in a new, novel way that you programmers may find interesting. I'm planning to write an article about that subject in the near future.

Networking

Many Poly users have more than one system. But in those situations, there's always the problem of getting files from one system to another. When do you do it without interrupting the operators? How do you make sure that all systems have up-to-date data? What if only one system has an HD? What about sharing a printer between the two?

Computer networking is an exciting solution to these problems. PolyNet was talked about for a long time, but was never completed by PolyMorphic Systems.

I'm currently working on a network system for the Poly. It will use off-the-shelf hardware and custom software, and allow any number of Polys to communicate over coaxial cable. The systems can be separated by at least several hundred feet. The cost per system is expected to be extremely low, probably around $750. This project is still in the design phase, so if you're interested, now is the time to get your ideas in to me!

Cheap Printers

Have you noticed the prices on printers lately? There are a lot of dot-matrix and near-letter-quality printers for $150 to $200, mail-order of course. I can't vouch for their quality, but sheesh! Some of these printers are supposed to run at 120 characters per second, about the speed of the TI-810 in my office. That one cost almost $2000 a few years ago. At $150, the day of the disposable printer may have arrived.

Board Bank

It's called the S-100 Board Bank, and it sells a lot of used goodies for old computer systems, S-100 based and others. Their address is Box 344, Olympia WA 98507. For a lifetime subscription to their catalog, The Statement, send a check for $4.37 or more.

As you might guess from the price, the owner of this place has a sense of humor. The jokes in his catalog are well worth the price of admission. He defines a "lifetime subscription" as (1) the lifetime of your $4.37, or (2) his lifetime, or (3) your lifetime, or (4) the Board Bank's lifetime as arbitrarily determined by his attorney, Austin Tacius Pomposo. Your lifetime subscription can be cancelled, but only at great cost. (Your life.)

Anyway, there were a few boards that could be useful in a Poly. No true-blue Poly boards, but you never know what might show up. I like to keep my eye on any possible sources of PolyParts.

Setnew

For those of you who use BACKUP on your files: You've noticed that BACKUP only copies files which have the "new" bit set. That happens when a file is created, or when you use the SetNew program to do it yourself. It does not happen when a BASIC data file gets modified by simply changing one record of the file. [PolyLetter cannot confirm this assertion. We tested a program which only read one record of a data file in BASIC C04 and the new bit was properly set. Bob, give us more detail about your experience. - Ed.]

I recently wrote an overlay which can be called from a BASIC program, and which can set the "new" bit on any file. Your application program could call this overlay to set the "new" bit after modifying a record in your database. If you'd like a copy of this overlay, send me a diskette (5" SSSD). For a listing, just send an envelope.

On A Personal Note

Thanks to all of you who congratulated

me on my recent marriage. Hawaii was a great place to honeymoon, but now it's back to the land of reality, jobs, the o' Poly, and life in general. (And Charles thought my days of programming at home were over!)

Bob Bybee

[Bob can be reached at: Poly Peripherals, 5011 Brougham Court, Stone Mountain, GA 30087, (404) 498-3556.]

The Anatomy of a Bad Memory Chip.

By Ralph Kenyon

I run a 16K memory card which has been converted to 64K. While editing my thesis one day, Edit reported back with SYSTEM FAILURE, CHECKSUM CHANGED after deleting the old input file.

Now, I've disassembled Edit and know that that error is only reported if the in memory copy of Edit has been changed. To insure matched versions of Edit and Efun, Efun computes a checksum for Edit and compares it to its known value. I immediately got out my Compare program and compared Edit on the disk with the error with Edit on a master disk. No difference. What gives? How is this possible? So I tried again and Edit worked fine. So I chalk it up to a fluke, or as Jack would say, a Gremlin, and go on with my work. A couple of days later the same thing happens. Another DEAD error! Well, this time I use ARISE to get back the old file, and try again. This time it works. I begin to suspect that I have one of those terrible intermittent errors, the kind that only show up when the repairman isn't around.

After a couple of times of this happening I put my thinker into high gear. Let's see, the error couldn't be in reading the disk, or there would be a checksum error. (It could be with Poly proms, but I am running on ASROM proms, which corrects the multi-sector read bug in Poly's proms.) I begin to suspect that memory is at fault, that is, that the checksum is changed after Edit is read into memory. So, I run the confidence disk. It says there's no errors in memory.

Now this is getting really spooky. Edit's checksum isn't changed, but it is changed. I have horrible thoughts about the effect of flakey memory during packing a disk, with bytes being changed helter skelter between the reads and writes ... What a nightmare. After a couple of more failures, I decided to make a SAVE copy of Edit from memory after a failure and compare that to the master copy. Sure enough, there was one byte different. I got a F6 instead of an FE at location 4114. I saved a copy of the difference in a file so I could look at it any time, EMF (for Edit Memory Failure).

The next trick was to load in Edit and look at that byte with the front panel. Lo, it was FE. So I went back to Exec and TYPEd EMF. Ok, it was supposed to be FE. So, I went back into the front panel, and ... Hey! now it's F6! What gives? between the time Edit was loaded and looked at the first time and the second time, I only went to Exec and TYPED a file.

Let's try again, I reload Edit and look at byte 4114. It's FE like it's supposed to be. This time I press the arrow key and the byte changes in front of my eyes to a F6. Hey! It's not supposed to do that! Now, location C00 does do it because that is changed by interrupt routines, but location 4114 has nothing to do with such routines.

Well, now I suspect I've got a bad bit in 16K RAM chip. I reset the bit to FF with the front panel and press the arrow key. Sure enough, it changes to F7 in front of my very eyes. Ok' is it the memory chip, or the support logic on the board? So I pull out the memory card (after turing off the machine) and swap bit 3 chip with the bit 4 chip on bank 1. After I put it back in, I bring up the front panel and poke a FF into 4114 and press the arrow key. Sure enough, it changes to an EF in front of my very eyes. I've located a bad memory location.

Now, the next question, are there other bad locations too? I don't know, so I write a quick little program to write FF into every byte from MEMTOP down to 3300H, and then to loop checking for changes. If it finds a change it prints out the location and the incorrect value. I assemble this program and run it. Lo!, it doesn't find anything wrong! So, I say, What gives? and interrupt it with a CTRL-Z to get to the front panel. The byte at 4114 is FF like it should be. I press the arrow key and it changes to an EF in front of my eyes again. Ok, I figure there must be some kind of interaction with the HALT condition. When I press G from the front panel, now I start getting 411F EF repeated at regular intervals. It found the bad bit after I halted the program and restarted it (during which the CPU was halted). Ok, I replace the suspect memory chip and everything now works fine.

Ok, here's a memory failure which did not show up on the main confidence test routine. Now, I did not run the extended memory test, so I don't know if that would have found it. Unfortunately when I put the bad memory chip back in to try it out, it had been zapped but good, and failed the simple test done by Exec, so I couldn't try the extended memory test.

Well, I thought I'd share my experience with you in case you started getting a similar problem. I had a problem like this once with memory location 6A94 on another board which only showed up when the 8" MS disk was used. I got rid of the MS and never had another problem with that memory card. In that case, I would IMAG a disk and then use COMP-DISK to compare the original and the copy. About 3 to 5 bytes per disk were changed, all dropping the 20H bit. That's the problem I traced to memory location 6A94.

It seems to involve the CPU going into the halt state and the converted 64K dynamic ram cards. Any hardware hackers out there got any ideas?

The New System!

By Ralph Kenyon

The new system has been a closely guarded secret at Poly, but some of its parameters have finally leaked out. It is really something else. The biggest surprise is its completely integrated software package. (Considering Poly's integrated software in 1976, I guess it's really not such a surprise.) The front end is a natural language processor (NLP) with

a dynamic translator (DT) which converts any spoken language into its highly flexible internal representation, a new language design called mentalese. Noam Chomski predicted it's existence, but it was Fodor who proved its ability to translate between any two languages.

The NLP uses a combination of structured semantics transformation (SST) and Graded Unprocessed Extra Segmented Syntax While Organizing Real Knowledge (GUESSWORK) to correct for mis-pronunciation, incorrect words, and lack of meaning to correctly determine the desired command structure to execute. Why, one barely has to think about what one wants done and the new system has the task half done. (The SST is fast.)

The brain of the system is the newly designed Binary Random Access Inferencing Nucleus. As is well known, binary random accessing allows the system to remember anything in two stages - find it and then report it. And, of course, it was proven earlier this century, that if anything could be remembered, then everything could. The big advantage of this design is that, since everything can be remembered, it need not be entered into the system. The biggest bottle-neck, data-input, is completely eliminated.

It is also because of this theorem that the new system can have an unlimited virtual memory. The one drawback of unlimited random access to virtual extended memory is that the system may not get around to accessing the particular memory that is needed right away, creating the "tip-of-the-tongue" error. However, when this happens the system doesn't crash. The job is resubmitted to the queue. The big advantage of unlimited random access to virtual memory, not having to input data far outweighs any minor inconvenience from random rescheduling due to tip-of-the-tongue errors.

By far the most ingenious portion of the operating system is the pre-detection error reprogramming look ahead processor. This device forcasts errors anticipated by the code and data and rewrites the code to prevent the error from occurring before the code gets accessed. The system was tested with the "Drain the Swamp" program. -- It correctly replied "Not until you get rid of the alligators." [See the Bit Bucket - Ed.]

The hardware is even more marvelous. The entire system is designed with the massively parallel architecture connecting many minuscule processors via serial links to each other. Each processor is called a Hybrid Operating Master User Node Combining Uniform Logical Understanding States (HOMUNCULUS for short). What's really fantastic about this hardware is that each HOMUNCULUS divides up its task and farms out the parts to the others, so that it has no real work to do itself. Since it has no work to do itself, it gets the job done in no time at all - a real breakthrough in computing speed. Of course, there is a certain amount of overhead in the communication, but because of the parallel architecture and by increasing the number of homunculi in the circuit the jobs get broken up into smaller pieces, and it takes less time to farm them out and get the results back -- a classic case of the well known PC-syndrome "just get more hardware." -- I suppose even Poly had to compromise somewhere.

ADS

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19	User's Manual	40.00
20	System Programmer's Guide	50.00

Theory of operation manuals for the following boards: (including schematics)

1	5" DSDD Controller	$20.00
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Add $5.00 for shipping and handling.

CP/M hardware conversion $100 plus parts. (CP/M license, manuals, and software - $200)

16K to 64K memory card conversion $125.00 plus parts. (The 16K board has to be a Poly board and in good working condition.)

System Programmers Guide
(What shall I cover next time?)

*** System Service Vectors * Wormholes ***

Symbol name: WH0

Single value: 0C20
Twin value: 3E0C

Entry: WH0 takes no inputs

Exit:
- **A:** Character from keyboard or command file
- **INT:** not modified/enabled

See Also: KBEX, Flip, Fold, KBUF, KBIP, KBIG, CBUF, CMDF, CMDD, CMDN, CMDP, CMDA, Killi, Flush, DBARF

Description:

WH0 is called to return a character from the user. The character is returned either from the keyboard ring buffer (see KBUF, KBIP, KBIG) or from the command file buffer (see CBUF, CMDF). A request to read a character past the end of a currently active command file causes the system to switch automatically back to the keyboard for input. The character returned in A is not echoed to the screen; this must be done by the program. WH0 is initialized by the boot process to point to Cin (label not defined in the single user system).

If command files are not active, and a character is not present in the keyboard buffer, the system waits until a character is available. In the single user system, the processor enables interrupts, halts to wait for an interrupt, and then checks again for a character. In the TwinSystem, Giveup is called to give up the processor (see description of KBIP for this code).

If the character returned is from the keyboard buffer, or a disk read was required to bring in command file data, the interrupts are returned enabled. If the character is returned from the command file buffer (CBUF) and a read is not required, the interrupt system is unaltered. Any errors in attempting to read from the command file cause control to be transferred to Err, essentially aborting the program; restart may be difficult.

The character removed from either the command file buffer or the keyboard buffer is passed through the routine connected to KBEX; this is commonly a null routine, but may also be either Flip or Fold, or a user specified routine.

As the result of invoking Killi or Flush, the contents of the keyboard typeahead buffer may be flushed. Killi also aborts command files if in progress.

Symbol name: WH1

Single value: 0C24
Twin value: 3E10

Symbol name: Vti
Twin value: E057

Entry:
- **A:** character to be displayed on screen

Exit: All registers and interrupts unchanged.

See Also: SCRHM, SCEND, POS, Vti, Lock, Unlock

Description:

WH1 is called to display a character on the video screen. It is initialized by the system boot process to point to the video display driver (Vti in the TwinSystem, no separate label for the single user system). Certain character values have special effects when displayed. They are:

Code	Name - Action
09H	HT - Tab cursor
0BH	VT - Move cursor to top of screen
0CH	FF - Clear screen and move cursor to top
0DH	CR - Move cursor to start of next line
18H	CAN - Erase remainder of line
7FH	DEL - Move cursor left one position

Values less than 20H not appearing in the above list are ignored. Note that displaying a character may cause the screen to scroll up a line, destroying the information in the top line of the screen.

The display driver finds the starting and ending page address of the screen by examining SCRHM and SCEND. On exit from the display driver, POS contains the address of the cursor within the video display.

In the TwinSystem, and in ROMs version 81 and later, the screen driver does not alter the state of the interrupt system. Earlier versions of the ROMs always enabled interrupts.

In the TwinSystem, erasing lines, clearing the screen, or scrolling the screen is done with the task protected against slicing by first calling the Lock service. This prevents the screen from being left partially updated. The Unlock service is called as part of exiting the screen driver (Vti) and WH1, even if Lock was not called; this means that a program wishing to remain locked against slicing may not use any service that may call WH1.

Assembly Language Programming

Here is that memory test program I wrote about in the Anatomy of a Bad Chip article. BLK, BYTE, and CROUT are labels I have added to my system file. In this program, I define and use one macro, WAIT. The B register is used to contain the pattern which is put into memory and then tested for. The C register is used as a scratch count. HL is used as a memory pointer. In DISP the top of the stack is used as a temporary storage area. To see that the program is working, the keyboard routine is left in place. If you touch any key while the program is running, it will report the memory location changed. The location is determined by the test byte stored in KBIP and KBIG. The first pass it will be at location FFFF. The second pass it will be at location FEFE, etc.

```
;*************************************************************
;*                                                           *
;*      MEMTEST.AS                                           *
;*                                                           *
;* This program is designed to do a memory test in           *
;* conjunction with the CPU going into a halt state.         *
;*************************************************************

        REFS SYSTEM.SY
        REF BLK         ;0397H  Clear screen
        REF CROUT       ;038DH  Output a carriage return
        REF DEOUT       ;03D1H  Output DE as 4 digit HEX
        REF BYTE        ;03D6H  Output A as 2 digit HEX
```

```
        REF Dhalt       ;0409H  Stop SD drives
        REF MEMTOP      ;2D86H  Storage for TOP of RAM

        ORG 0CC0H       ;Free space in onboard RAM
        IDNT $,$        ;Load and start addresses

;We'll use this block of code many times. It puts the cpu into
;the halt state and waits for an interrupt to restart it. We
;are guaranteed a real time clock interrupt every 1/60 second.
;(The 8080 CPU in the halt state restarts after an interrupt.)

WAIT    MACRO
$L      MVI A,#1
        HLT
        DCR A
        JNZ $-2
        ENDM

;Note: We write non zero patterns on DONT, so they cannot
;CTRL-Y out of the program. Too bad, but dey gotta push the
;load button to get outta dis one.

;Since we write all over system memory, Stop the drives!

        CALL Dhalt
        WAIT 30         ;Wait awhile anyway.
        LHLD MEMTOP     ;We write on this too,
        SHLD memtop     ;so save our own copy.
        MVI B,0         ;First pattern is FF
LOOP    DCR B           ;Drop down to next pattern to test
        JZ $            ;If we're all done, we loop forever
        CALL PUT        ;Put the pattern into memory
        CALL DISP       ;Show the pattern we're testing
        WAIT 10         ;Wait 1/6 second
        CALL CHK        ;check it's still ok.
        WAIT 20         ;Another 1/3 second
        CALL CHK        ;Check again
        WAIT 30         ;More 1/2
        CALL CHK        ;again
        WAIT 60         ;Last 1 second wait...
        CALL CHK        ;It's had two seconds to glitch.
        JMP LOOP        ;Go do the next pattern.

PUT     LHLD memtop     ;We start with memtop
        MVI A,1FH       ;and insert our pattern
        MOV M,B         ;(in B) until we get
        DCX H           ;down to and including 2000H.
        CMP H           ;Did HL become 1FFF? If not then
        JNZ $-3         ;go back to the MOV M,B inst.
        RET

DISP    LXI H,1BCBH     ;Display location on bottom of screen
        MVI C,8         ;8 bits to our pattern
        MOV A,B         ;Get pattern into A
DISP1   RAL             ;Shift high bit into carry
        PUSH PSW        ;Save for later
        MVI A,'0'       ;Put ASCII 0 into accumulator
        ACI 80H         ;Add bit shifted to CARRY + 80
        MOV M,A         ;Stuff into screen memory
        POP PSW         ;Get it back
        INX H           ;Move up to next display location
        DCR C           ;Count down our number of bits
        JNZ DISP1       ;Go back to do more
        RET             ;All done.

CHK     LHLD memtop     ;Start with TOP of RAM
CK      MOV A,M         ;Get byte from memory
        CMP B           ;Is it what we put there?
        CNZ SHOW        ;If not show the user
        DCX H           ;Drop back to the next byte
        MVI A,1FH       ;See if we already did 2000H
        CMP H
        JNZ CK          ;Nope, so go do more
        RET

SHOW    XCHG            ;Ok, it's bad. Get the address to DE.
        CALL DEOUT      ;Show the user what the address is.
        XCHG            ;Put it back to HL.
        CALL BLK        ;Output a space.
        MOV A,B         ;Get what it should be.
        CALL BYTE       ;Show 'em.
        CALL BLK        ;Another space.
        MOV A,M         ;Get what it was from memory.
        CALL BYTE       ;Now show 'em the bad one.
        JMP CROUT       ;And go to the next line.

memtop  DS 2            ;Our own local storage.

        END             ;That's all folks!
```

HELP

Directory HF.DX has the complete Abstract Systems Help files on it. (Most are included with Exec/(A:S)). I am constantly adding files to the system. The following are available as of this writing. Which ones shall I do in the next issue?

HELP %
?, BASIC, CMDF, COMMANDS, CTRL-U, files, format, FORMAT, GAMES, HELP, INITIAL, KEYBOARD, MACROS, NEW, PROGRAMS, Restore, SERVICE, SYS.

HELP COMMAND %
#, ;, Auth, boot, CONTINUE, COPY, DELETE, DIRECTORY, DISABLE, DISPLAY, DLIST, DNAME, DONT, DUMP, EDIT, ENABLE, flip, fold, FULL, GET, HELP, IMAGE, INIT, LIST, PACK, PAGE, PRINT, Printer, REENTER, RENAME, RESET, Restart, Auth, SAVE, SetSys, Sniff, SQUEAL, START, TYPE, UNDELETE, UnSys, WRITE, ZAP.

HELP format %
bs, chr, cmt, cnt, cor, date, graph, input, ital, ltr, nital, pap, pep, pop, prism, quo, sdate, slsp, tab, tiger, unq, wait, wide.

HELP PROGRAM %
ARISE, Clock, Cursor, DIRCOPY, dlist, Emedit, FETCH, New, prism, PUNCH, RDB, Reset, slist.

HELP BASIC %
DIM, EXEC, EXPRESSION, FORMAT, FUNCTIONS, H, LET, ABS, BYE, CLEAR, CON, CTRL-Y, DEL, DIGITS, LIST, LOOPS, PROGRAM, REM, REN, RUN, SCR, STOP, VARIABLE, WALK, XREF.

HELP BASIC FUNCTION %
ABS, ASC, ASIN, ATAN, CHR$, COS, COSH, EXP, FREE, INP, INT, LEN, LOG, LOGT, MEM, RND, SGN, SIN, SINH, SQRT, STR$, TAN, TANH, TIME, VAL.

HELP MACRO %
aids, ALIGN, ck, cmp, dat, db, DDtab, dequ, dw, EQ, Flip, GE, gfid, giveup, gover, hex, If, ioret, ix, JEQ, JGE, JLT, JNE, LT, m, MAGIC, move, NE, neg, overlay, overto, ralign, rar, rddef, rds, REQ, RGE, RLT, RNE, ROMoff, ROMon, rorg, set, user, vcb, vect, VMGR, WHtab.

```
$HELP COMMAND INIT
        HELP file for system command "INIT"

The "INIT" command allows one to initialize a disk.

Syntax: "INIT" (RETURN)          (see ENABLE)

"INIT" prompts for the drive number, and, after writing zeros
on the entire disk, then asks for the new disk name. Disk
names are limited to 8 characters.

Minimum size: "IN"      (The system must be in ENABLE mode !
```

```
$HELP COMMAND LIST
      HELP file for system command "LIST"

The "LIST" command displays the directory on the screen.
"LIST" waits after each page with ":". At the ":" ESC exits.

Syntax: "LIST [<n<file.DX]" or "list [<n<file.DX]" (RETURN).

"LIST"  lists the system resident directory.
"LIST [n]" lists drive 'n'.
"LIST [file]" lists the directory whose name is 'file'
"LIST [<n<file]" lists directory 'file' on drive 'n'.

The minimum size needed for the system to recognize this
command is L or l.      Examples: "L 2", "l 2<n"

$HELP files
      HELP file for system file specifications

A File specification consists of a drive number, one or more
sub directory names, the file name, and it's extension.

<d<dir<name.EX.         Examples:       <1<BASIC.GO
                                        <1<n<Reset.GO
                                        <2<BS<ML<MENU.BS

The drive number may be omitted on the system resident drive.

                        Example:        BASIC.GO
                                        n<Reset.GO

The extension specifies the type of file
TX : text               BS : BASIC program
DT : data file          GO : machine program
OV : System Overlay     ST : System library file
PS : Device driver      RL : Relocatable
IN : Environment        ED : Editor ESC library
      (all others are user defined)
AS : Assembly source    HF : Help file
DC : Document file      AD : Ada source program
LI : Ada object file    SD : Star Database Data file
```

BugNotes

Abstract Systems BugNote 003.0 **November 3, 1982**

Exec/95, Dfn3.OV has a bug in the TYPE/PRINT routine such that if a Dio error is obtained while reading the file, two errors will be reported. The "Hard Error! Preamble bad" message is followed by the "I can't find that file" message.

The cause of this seems to be the code sequence:

```
XRA A
STA OVRLY
```

Emsg is called using Ovrto in the Error Exit routine. Since OVRLY has been set to 0 by the (left-over?) code sequence, Rtn can't find the overlay it thinks was in memory (<0>fn3 vice <D>fn3).

Abstract Systems BugNote 004.1 **November 3, 1982**

Dio

Exec/95, EDIT 3.3 (06/10/81) has a bug when reading files into memory. I have occasionally lost one or more whole sectors when reading the input file. No error was reported. The sector was not read into memory. Sniffing the disk showed checksum error on the sectors not read in. On one incident I lost 2 sectors. On another incident I lost 1 sector. Both happened on drive 2. (I occasionally get soft errors on drive 2.)

In this example, I edited the file, but made no changes to it.

Example:

```
$$Sniff 2
0102/0076    0102/006C       $$
$$l 2
Disk GSpaper3 has 2 files on it.
288 sectors in use, 0 deleted, 62 sectors free.
 Size Addr   La   Sa Name
  143    4    0    0 MS.TX
  141    4    0    0 ms.TX

$$Pr MOLOG
```

November 8, 1982
According to Len Araki at PolyMorphic Systems, this bug is in the ROMs, in the SSSD Dio code, and only appears during multi-sector reads. A fix will be incorporated in the next revision to the SSSD ROMs.

April 5, 1983
The correction to this bug has been incorporated into the ASROM proms.

Public Domain

We've got some real goodies in this issue for the public domain.

We've got FORTRAN!

I spoke to Bill Holmes, the proprieter of Micro Applications Corp, who had marketed a FORTRAN compiler for the Poly. He reports that both the company that had written the system and the one who had distributed it have gone out of business. He has graciously consented to put the compiler in the public domain. Therefore, MAC FORT//80 is now available as a PolyGlot Library Volume (PGL-V-07). Bill sent PolyLetter a copy of the documentation which goes with the system. There is an implementation manual (32 pages) and a language manual (92 pages). Because of the cost to reproduce and mail the manuals, PolyLetter must charge $4 for the implementation manual and $10 for the language manual. ($20 for the entire package.)

I have learned something about the system. It is designed to operate on drive 1, but can be patched with a machine language patch to operate on another drive. If you order the system and want to run it on some drive other than 1, let me know which drive you will be using so I can patch your copy for that drive.

I have copied some basic documentation from the inplementation manual into some .DC files on the disk. MAC FORT//80 is supplied on an Exec/83 system disk. Its contents include:

```
Disk PGL-V-07 has 35 files on it, 25 free entries.
349 sectors in use, 0 sectors deleted, 1 sectors free.
 Size Name.
```

```
 76 FORT.GO      .    FORTRAN compiler.
 13 FLOAD.GO     .    Loader.
 16 FORTLIB.TX   .    Library routines.
  2 SAMPLE-1.FN  .    Sample
  8 SAMPLE-2.FN  .    FORTRAN
  9 SAMPLE-3.FN  .    PROGRAMS.
 31 FORT-2^N.GO  .    Compiled demo.
  9 PLOT.FN      .    A plotting program.
  1 FORT-DRIVE.DC .   Drive Changing Documentation
  1 WARM.FN      .    Warm starts Exec.
 10 SORT-EMPLOYEE.FN . Program from manual.
  2 EMPLOYEE.BS  .    Program to create files.
  2 INPUT-OUTPUT.DC . Some documentation
  2 ALLOCATION.DC .   copied from
  4 DIRECTIVES.DC .   the manuals
  5 EXECUTION.DC  .   repeated here.
  2 TEST.FN      .    A FORTRAN test program.
  1 g.TX         .    Command file to compile TEST.
 21 TEST.HX      .    The test program hex file.
 26 TEST.GO      .    The test program GO file.
```

I don't know where the disk copy I have came from and don't know whether it is complete or not. If anyone already has a copy of the compiler, please send PolyLetter a DIRECTORY listing of the disk; I would eventually like to make the PolyGlot Library distribution disk as complete as possible.

If anyone is using this compiler, PolyLetter would appreciate you comments on it. Let's find out what we've got here.

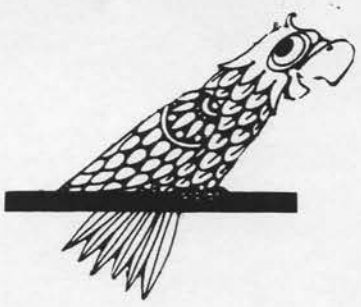
Assembly Source Programs

For those of you who want to learn assembly language, programming there's nothing quite like example programs. Here's a disk full!.

PolyLetter makes no claims about the correctness of these programs. Some will work, and some may need modification. PL believes their best use is in learning Assembly language programming by looking at the style of programs written by others.

These assembly source files were submitted by Al Levy. Al aquired the programs when he bought the computer and the programs in a package deal. The computer used to belong to Don Moe, of the now defunct Logic Inc. The contents of PolyGlot Library Volume 8 (PGL-V-08) include:

```
Disk PGL-V-08 has 13 files on it, 48 free entries.
350 sectors in use, 0 sectors deleted, 0 sectors free.
 Size Name.
   70 MAILER.AS
   14 RDE.AS
   92 TERMINAL-FC.AS
   20 HAYES.AS
   23 PROGRAM-LOAD.AS
   17 TAPE-LOAD.AS
   52 MM100.AS
   16 Space.AS
   22 SPACE.TX
    5 Wait.AS
    3 CMDF.AS
    4 Tweak.AS
    8 READ.ME
```



MAILER is a program that writes form letters or prints labels. It uses a letter or label that the user creates, a form that describes the fields in the letter or label, and a data file that contains the information that is inserted in the form letter.

RDE is the Remote Data Entry system to allow user programing from a terminal and modem over the telephone line, using the MICROMODEM 100 modem. In order to use it, it must be named INITIAL.GO on the disk that is to be used.

TERMINAL-FC is a terminal mode operation program that allows the 8813 to operate as terminal for another computer with text flow from keyboard, and/or from output text disk-file out, and in to screen, and/or in to input text disk-file. HAYES is a D.C. Hayes modem control program for the 80-103A modem board.

PROGRAM-LOAD is a program to read source programs being transmitted from another computer into the printer interface.

TAPE-LOAD is a program to read assembler source programs written using poly assembler version G02.

MM100 is a driver program for the D.C.Hayes MICROMODEM 100 for the polymorphic systems system 88 Space and SPACE are two versions of the program which reads a directory and reports how much space is left in the directory. Space was written by Larry Deran, and SPACE by Don Moe. Wait, also written by Larry Deran, is a program to hold the computer in Command File mode while waiting for the operator to take some action.

Tweak resets the system bit.

CMDF executes internal commands in the command file buffer.

Help Your Fellow Users

November 11, 1986

James Salinger writes "My greatest need is for a program for compound interest calculations. Others needed are time value of money, interest conversion, and cash flow."

The PolyGlot library volumes 3 and 4 contain programs which do some of these functions. Also, PolyLetter has a paper copy of PolyMorphic Systems CASHFLOW and CHECKBOOK programs. CASHFLOW was written in 1977 for BASIC version A00, and CHECKBOOK was written in 1978 for BASIC version B08. Does anyone out there have a copy of either on disk?

If anyone out there has other financial programs, please send PolyLetter some information about them. Did you write them, and are you willing to share? Did you buy them, from whom, and are they still in business? A brief description of the capacity of the system would be helpful.

PolyLost

The following people or organizations who were once on PolyLetter's mailing list have turned up missing (the dreaded RETURN TO SENDER). If anyone knows a current address for these people, or where their Poly went, Please advise PolyLetter. -- Alpha Engineering of Dallas, TX; Beaird-Poulan Chain Saw Distributors of Marshall, TX; Channel Is. Financial Association of Oxnard, CA; Larry Chinnery of Rockville, MD; James Coleman of San Diego, CA; Don Cook of Grand Prairie, TX;

Candace Cross of Birmingham, AL; Chuck Heindel of Brandon, FL; Rolf Levenbach of Plainfield, NJ; Mike Linthicum of Goleta, CA; Coley Andrews of Florence, SC; Philip Cuba of Atlanta, GA; Scott Daley of Santa Barbara, CA; Paul Dishman of Dallas, TX; Dan Ellis of Ventura, CA; Mike Falk of Atlanta, GA; Elizabeth Flynt of Pearl Harbor, HI; Roger Ford of Atlanta, GA; Mark Forte of Richmond, VA; David Freeman of Mesa, AZ; Mike Giheland of Shreveport, LA; Genine Gooden of Dallas, TX; Vince Heuring of Cincinnati, OH.

Bit Bucket

The objective of all dedicated employees should be to thoroughly analyze all situations, anticipate all problems prior to their occurrence, have answers for these problems, and move swiftly to solve these problems when called upon . . . However. . .
When you are up to your ass in alligators, it is difficult to remind yourself that your initial objective was to drain the swamp!

Anonymous.

There is a common misconception among Poly users. The MS (Mass Storage) unit comes in two varieties. They are Single Sided and Double Sided. Both Single Sided and Double Sided units use Double Density format. There is no such thing as a single density MS.

If 2 bits are a quarter and eight bits are a byte, what're four bits?

In This Issue

Coming Soon

Hardware Problems by Bob Bybee & PL, Letters from Jim Purvis & Percy Roy, Confessions from Frank Stearns, Assembly language housekeeping, Towers of Hanoi in Graphics, More Help and BugNotes, etc.

Questions

Can you find and answer the questions asked in this issue? Send your answers and requests in.

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Williamstown, MA 01267
(413) 458-8421

Address Correction Requested

FIRST CLASS MAIL

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PolyLetter

The Newsletter for PolyMorphic Systems Owners and Users

Editorial

Well, So far I've done quite well with getting PolyLetter back on schedule, if I do say so myself. I cannot say that it has been without some strain. Putting an issue out every two to three weeks has been demanding. With this issue, I have only one more to do to complete the 1986 issues, which will probably be out in the first weeks of January 1987. Thereafter I will be going back to the bimonthly schedule. There will be more time for readers' responses to be received to be in time for the very next issue.

One thing I have been trying to do is to increase the amount and availability of public domain software for the Poly. Last issue I added two new disks to the PolyGlot library, FORTRAN and a disk full of assembly language programs. This issue I am adding a disk full of various BASIC programs. Anyone who has written any programs for any purpose just might find that there are Poly Users in need of, or interested in his or her programs. PolyLetter knows of three users interested in geneology, as well as several adventure affectionados. There were requests for financial programs and inventory programs in recent issues.

Another thing I have been trying to do is to locate 'lost' Poly users. I have several address lists of various ages and have put them all together. In some cases a courteous person has notified me that they no longer use a Poly, or even where their Poly went. If you know of people who had a Poly at one time but no longer have one, that information would be valuable in purging the mailing lists. If you have knowledge of someone who does not have a Poly any more (particularly you users of second hand Polys) please send it in to help up purge our list. Also, if you know of someone using a Poly who does not get PolyLetter, please let us know. They may have programs to add to the public domain library, which would allow everyone to benefit. In fact, anyone who brings in a new subscriber to PolyLetter will be entitled to a free volume from the library.

With this issue I am making it easy for you to give PolyLetter feedback by including a pre-addressed postcard.

Letters

Dear PolyLetter, November 19, 1986

Hurrah! We thought you had died.

Up here in the boondocks you are the only connection we have with what is going on out there. We certainly like your publication and hope that it will continue as long as there are any of us who still use your machines.

We are enclosing the forms and a money-order (in US) for another year's subscription so that we can keep in touch with all the rest of the users and keep getting all the helpful hints and suggestions.

We are interested in getting a Pascal compiler for our Polys so we would appreciate it very much if you could let us know who to contact in this regard.

Keep up the good work; we really look forward to receiving the next issue.

P.S. I just received the latest copy of PolyLetter this morning and it looks like there is no Pascal. Someone wants an inventory program. We have one but have not used it - it requires 48K - I don't know if it is Poly's or somebody else's, but I will look up the documentation and send it to if you want.

Percy Roy, Edmonton, Alberta, Canada.

[Yes, yes, Send the documentation. PL has inventory systems on PGL-V-02, and PGL-V-06, but the documentation is minimal. If your inventory system is one of these, great, we'll have some documentation. If not, perhaps the system will qualify for inclusion in the PolyGlot Library of public domain software. You would be entitled to a disk in exchange for each disk you submit.

Ed.]

Dear PolyLetter, November 19, 1986

Thank you for sending me the MAR/APR 1968 issue of PolyLetter. I am enclosing a check for 1987 dues. I would rather not cut up the 8602 issue so I will respond here to your survey.

. . . survey omitted . . .

I originally bought my Poly in 1977 to use in my dental office. I used it to do billing, keep track of accounts receivable, recall, practice activity analysis, payroll, and letter generation. Now, having sold the practice and finished graduate training I am not sure about my Poly. I would like to use it in the new practice but to what extent that will be I'm not sure. When I originally purchased the Poly there was nothing in the same price range which could perform as well for the cost. I wrote my own software in BASIC. Now there are systems priced within reason and SOFTWARE is available. For me the worrisome problem of reliability (what do I do when it goes down and statements are due to be printed, accounts can not be updated) has me leaning toward the purchase of an new system (AT?).

I have purchased some software from Bob Bybee, although this was sometimes a problem since I have only the MS (which Bob does not have). I bought his spreadsheet program and we tried to transfer his files

over the telephone. It took more than one attempt to accomplish a good transfer (from Georgia to Iowa).

I would be interested in articles on assembly programming pertinent to calling system routines such as Ckdr, WH0, WH1, Msg, etc. I have a (second hand) copy of SPG and have read it several times. I have also read several texts on 8080 programming. However, my difficulty lies in making the transition from pure 8080 code to Poly application.

I would also consider:
1. Purchasing some of your PolyGlot Public Domain Library if you could provide disks for my drives;
2. A second 8813 (a back-up system would make me more comfortable about using my Poly in the Office);
3. Taking a look at your complete software catalog.

I am glad to hear that you have taken over the position as Editor. I have missed my PolyLetter. In my mind, it seems logical to assume that due to the limited number of Poly Users that the job you are taking on will not be overly rewarding either in terms of financial reward nor due to Post Office acclaim. I would certainly contribute if there were something I had that would be of value. However, being NOT a computer programmer, I have had to rely on people such as yourself for knowledge abot my Poly. What I know about this wonderful computer (outdated it may be) is what I have learned from you and those like you who have contributed to PolyLetter. So all I can contribute is a THANK YOU for staying in there writing whatever you will (there is always something of value), and send in another year's subscription to PolyLetter.

Thank you ever so much.

James Purvis, Mill Creek, WA.

[Jim, - PL has access to someone who can copy from 5" to 8" diskettes. For a second system, watch the ads in PolyLetter. Also, the catalog is on the way. - Ed.]

PolyLetter December 3, 1986

I mostly use my PC-AT at work and my wife's PC-XT at home. I would like to have more information on switching programs between the Poly and the PC world. I have had my Poly for 9+ years, and I love it. The lack of application programs has been a drag.

Jack Hills, Los Alamos, NM.

Dear Ralph, December 2, 1986

It seems like a message from another life. Don't know if you remember me about 3 years ago as I was moving to California I exchanged my .BS disassembler for .GO and am still here and loving every minute of it.

First, yes I still have my Poly 8813. Has a home made sheet metal enclosure, mounts vertically (less desk space). It got converted from the Poly linear power supply to a modified IBM PC switcher. I had a friend at Zenith and he fixed me up before I left the Midwest. Cross my fingers the Poly has never broken down once! Oh, by the way, it also runs under POLY CPM.

I guess I feel the same way as the rest of you do about the Poly, maybe more, because I was part owner of a computer store and it was Poly that kept us in the money with a commercial account. Must have sold 30 8813's. As a matter of fact the phone number was 8813! I have met and talked with the man behind the Poly, Brian Wilcox, I think was his name. Poly started out with like $6K and what a shame DRI had to get in with CPM.

I will probably not ever expand the Poly, unless I can find the parts very cheap. (I do go to the computer swap meets and may find something at the right price.) I don't know about prices on the East Coast, but here I can get an AT clone with 640K of memory, serial - parallel port, mono interface, and a 1.2 mByte floppy for $1400. Absolutely 100% msdos compatible. I have gotten very used to using an AT at work and rather than expand the Poly I would put my money into an AT clone.

I had meant to renew the PolyLetter subscription, but it got away from me. Right now I don't know. I have built up a CompuPro system with a 6 mHz Z80, 2 8" 1.2 mByte drivess, 20 mByte hard disk, 512K Ram Disk, 1200 baud modem, running under ZCPR and it is a very fast system. And more than that, I have all the software I need.

I have hung in there with my Poly and PolyLetter in the hopes that there would be some or all the Poly source files published and I don't mean non-commented disassembly. No insult intended. I have complete CPM source uninstalled and I am sure there are many others like me. I have tried to get source on DIO with non-disclosure statements signed; I had some ideas from my own disassembly that could have led to a much better DIO. Maybe this is one of the reasons DRI is still a viable operating system. I have strong vibrations that Poly source does exist outside of Poly and even if it does not exist, who, except us want source to very old 8080 programs. What good is it doing Poly to keep it under wraps? I think that it is too late in the PC revolution to try to port Poly to the PC. Too many people are in love with the Unix style operating system and big blue.

Ther is a RBBS in southern CA. that claims to be a Poly system but I have lost the reference to it as I could never get in; it was always busy.

I don't know if you have every read the book: Fire in the Valley (The Making of the Personal Computer) Freiberger & Swaine - McGraw Hill. It is a very good history of the micro revolution.

I modified Digital Research of Texas CMOS 64K memory board for my Poly to switch out 0 to 1FFFH for Poly use and bank switch for CPM. Works fine, had mention in PolyLetter and never heard one word from anyone! I don't think there is much team spirit left out there.

Enclosed is a check for $15.00. If you have time let me hear from you. I don't think I need any more instructions on how to operate my Poly. I think I have most of the DOS and BASIC versions all the way back to 4D & A01, if anyone should care.

I was browsing DDJ and thought I would send you the enclosed DRI story. Good luck and best regards,

Joseph Toman, Freemont, CA.

Ralph, December 6, 1986

I was just putting away some papers and noticed that my PolyLetter label has an

"8606" so I am guessing I need to renew my subscription.

I enjoy PolyLetter even if most of the articles are "over my head". I guess I would like to see more articles on user programs and lists of programs one can purchase.

Chuck Gross, Fairborn, OH

December 9, 1986

Just keeping PolyLetter going is a super achievement! Hard to improve on that. I seem to remember that someone in an earlier issue said that when his Poly was obsolete he'd turn it into a home control center (or do I remember wrong?) Anyone done that? I don't see any S-100 interface boards advertised any more, so I might have trouble with this project.

Robert Johnson, Roanoake, VA

[*S-100 journal*, published quarterly by Octoplus Corp., 2426 Wade Avenue, Raleigh, NC, 27607, (919)839-0115, has an ad on page 43 of the spring 86 issue for a "Real Time Real World Controller" by MULLEN. - Ed.]

December 8, 1986

Glad to see this news letter will continue. It is much better and more interesting.

Charles & Helen Mach, Irving, TX

Dear Ralph December 9, 1986

I really don't know if this should be congratulations or condolences, but I am glad to see that somebody took the bull by the horns (or by the tail) and took over PolyLetter.

Chris Bagley, Tucson AZ

December 10, 1986

Keep up the good work. Will try to put the finishing touches on "QUICK-LEDGER" simple accounting system for your D/O/M. Also list of spare cards, etc. available.

Jim Ryan, Richardson TX.

ADS

From Abstract Systems, etc.
191 White Oaks Road
Williamstown, MA 01267
(413) 458-8421

DISKS -- DRIVES -- MODEM -- PROMS -- SOFTWARE -- SPELL

1. MAXALL diskettes -- $13 per box of 10.
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6. (A!S) Spell, a good spelling checker for $35.
7. Abstract Systems Exec (Enhancements & bugs corrected) $35.
8. Abstract Systems Proms (Enhancements & bugs corrected) $35;
9. PolyGlot Library Volumes, $6 each.

(Send $1.00 for a complete catalog--(free with any order).)
(Make checks payable to Ralph Kenyon.)

From PolyMorphic Systems
7334-H Hollister Avenue,
Santa Barbara, CA 93117
(805) 685-6238

Manuals

1	Field Service	$35.00
2	Aligning 88 disk drives	15.00
3	Printer Interface	15.00
4	Adding a SSSD or DSDD drive	15.00
5	Keyboard II & III	15.00
6	Testing & Maintaining 88xx	15.00
7	88/MS user's manual	25.00
8	Confidence	25.00
9	Hard Disk	15.00
10	Exec 96 Addendum	15.00
11	Twin System	15.00
12	Twin System Confidence	25.00
13	Twin System Diagnostics	25.00
14	Plan	35.00
15	Mailist	35.00
16	Assembler	25.00
17	Basic	40.00
18	WordMaster II	40.00
19	User's Manual	40.00
20	System Programmer's Guide	50.00

Theory of operation manuals for the following boards (including schematics):

1	5" DSDD Controller	$20.00
2	8" Controller	20.00
3	SSSD Controller	15.00
4	Video Board	20.00
5	CPU Board	20.00
6	4.0 Monitor ROM	20.00
7	48K & 16K RAM	15.00

Add $5.00 for shipping and handling.

CP/M hardware conversion: $100 plus parts. (CP/M license, manuals, and software: $200)

16K to 64K memory card conversion $125.00 plus parts. (The 16K board has to be a Poly board and in good working condition.)

Eight inch MAXALL 32 hard sectored diskettes for your MS. $15.00 per box or $ 115.00 per ten boxes. From: Al Levy, Post Office Box 71, Hicksville, NY 11802, (516) 293-8368

For Sale: 8813 with 1 drive, Hitachi monitor, Keyboard, and Practical Automation Printer. Best offer. From: Barry Adler, Gynecare, 230 Route 59, Monsey, NY 10952, (914) 357-8884

Wanted: Poly Keyboard II or III. Allen Daubendiek, 1821 Jackson St., Beatrice, NE 68310, (402) 223-5863.

Confessions

by Frank Stearns

Dear PolyLetter: November 20, 1986

Thanks for taking on that which at times can be a tedious task. I know from personal experience. Many Poly owners will certainly feel relief that PL still exists.

This is a rather difficult letter to write; I feel as though I am something of a traitor. Here I sit, composing this letter on a DOS 3.X machine, and horror of horrors, I really don't miss my Poly (other than the incredibly reliable hardware). How could I possibly say that? How could I ever do without EDIT? Exec? A BCD BASIC that's worth a damn?

Well, briefly:

* Editors -- I've found a DOS editor and

some ancillary tools that together are actually quite a bit more flexible than the Poly editor.

* Operating system -- While DOS 3.X is crude and downright silly in many respects, it's nothing at all like the utter horror and absurdity of CP/M. DOS 3.X does provide the tools to let you add things that make DOS look like Exec.

* BASIC -- DOS BASIC was a pain beyond belief to master, and it still holds unpleasant surprises. However, it can be compiled (which means it runs bloody fast), and has several built-in functions that are very useful. (Of course, one also has C, Pascal, Fortran, and nearly every other major "real" language on a DOS machine.)

Why did this avowed Poly owner and past editor of PolyLetter finally make the switch? (1) DOS machines exist that are at least as fast and faster than the Poly -- these are the 8 MHz 80286-based "AT" class machines (the 5 MHz 8088/86-based "PC" class machines are and continue to be first-order garbage. Those machines are an embarrassment to the word "computer"). The irony here is the raw hardware power needed to match a clunky 8080 with the right software. (2) I had a real need for a machine that would run my client's software. (3) My clients offered me a Compaq 286 machine for half of list. (4) I have a dear friend at Microsoft whose early exposure to computers was on my Poly while we were in school. Having worked on Poly himself, he understands my demands of a machine, and what I will not tolerate. Working at Microsoft for the past three years, he's been on the cutting edge. His patience was enormous as he helped me overcome my various prejudices long enough to be able to show me some incredible things.

Had any one of these items been missing I never would have made the switch, and as it turns out I would have missed a lot.

Let me offer the following to those thinking about a transition: first, it can be done, and you can gain in the process, though you'll probably want to hang onto your Poly. Let me address the major areas of concern:

THE OPERATING SYSTEM: DOS 3.X has few of the features of Exec. But DOS 3.X does have a comprehensive, parameterized batch (command) file mechanism. One of the first things I did was set up a series of batch files that in name and function emulate Exec commands.

DOS 3.X wildcarding is very good, and saves a lot of hassle and redundant typing during file manipulation. DOS offers search and sort tools, and can combine two files or a whole directory full of files during copying.

DOS error messages are nearly useless, but one gets used to them. Typically, the various applications have somewhat better messages. DOS does supply hooks for a lot more comprehensive message system -- that is, individual error bits are set for numerous error situations -- it's just that the upper level of DOS itself doesn't always use these.

THE EDITOR: I thought I would NEVER find an editor like Poly's Edit, but there is such a creature (actually, it is two items). Most DOS editors and so-called word processing systems are idiotic beyond belief, the prime example being Wordstar, followed closely by Multimate and a bunch of other junk. Microsoft WORD 3.0, however, is in a class by itself. (Note the "3.0" -- earlier versions are rather limited.) I could go on for pages about the features, but here are a few: windows, which ARE indispensable. Back in my two-Poly days, I would actually use both machines to provide a crude "two-window" system. WORD provides as many as eight windows. I've had practical use for as many as six, and typically have two to three on screen. WORD also provides on-screen formatting; typesetting abilities; auto generation of tables of contents and indexes; several flavors of search and replace (yes, including control characters); sorting; the ability to "undo" edits; column selection and movement; arithmetic abilities; outlining; a wonderful spelling checker (and I'm picky as hell -- I wrote the most popular checker for the Poly: SPELL 3.0); drivers for virtually any printer in existence (and ways to build your own with user-definable translation tables); wonderfully simple and direct text selection and cursor control; two-levels of user-programmable tabs; operations customization to fit the eccentricities of the user; environment-level formatting abilities; and on and on and on. And oh yes, for the first time, we have a DOS editor whose updates on a 80x25 character screen are "instantaneous", just like Poly's 64x15 screen (WORD 3.0; not at all true in earlier versions).

As a Poly user of nearly nine years, I walked into WORD in a few short hours. I was dumbfounded that it could be so easy to learn a system that did so much. The WORD computer-aided instruction is impressive, and the online help is actually useful.

But satisfaction was not complete. All that power at times needed a lot of keystrokes. (At least I thought it needed a lot; non-Poly people said I was silly and asking for the moon. But never having used a Poly, they'd never understand.) After listening to me rant about an 8080- based machine called a "Poly", one sales fellow had the good sense to show me Borland's "Superkey," a general- purpose and highly-sophisticated keyboard macro definition program that works all the time -- not just in the editor. Needless to say, I have all the Poly editor keystrokes programmed in a macro library named, appropriately, "POLY.MAC". Control-B and -E still go to the top and end of a file; -i and -o still mean input and output. -w kills the previous word; -x a line, and so on. When I had that, I was in heaven -- EDIT lived again, but within WORD and on a DOS machine. (Superkey can do much more than there is space here to describe. And then there is Borland's "Turbo Lightning", an online dictionary and thesaurus which can be directed to verify spelling and word choice for a word just typed. Even while using Poly, this was something I'd dreamed of for nearly ten years. Now I've got it.)

Lord forgive me, but I could now never go back to Poly's editor -- not with my current editing demands. Sadly, a Poly would not have been able to support production of the 3000 page manual set that

is my current project. I've made editing demands not thought of in my Poly days.

A final thought for WORD: it is by no means the most popular word-processing software (the WORD market share is about 5%). Like Poly in her day, WORD may in fact be a product for the insightful and thoughtful user, not the stumbling herd. The fact that WORD is not so widely used is perhaps a good sign.

LITTLE-KNOWN BONUS FEATURES OF PC-COMPATIBILITY: Besides the obvious items of tons of software and the ability to talk to the rest of the world, there are some other advantages to using DOS. You can start as many versions of DOS 3.X as you have memory to support them. What this means is that you can suspend a process, "shell out" with a new command interpreter, and start something else. When finished, you can come back to the original "image". This is extremely useful. (Imagine control-Ying out of large edit, typing Exec from the prompt; getting a new prompt, using another application such as a basic program, finishing, then typing "exit" and returning to your original session right where you left off!)

DOS 3.X input (keyboard) and output (screen) can be redirected to and from files or the I/O ports. This is how I automated the transfer of 30 Mbytes across the serial port. The DOS machine command I/O was redirected to Poly's serial port. A Poly BASIC program and Poly command files spoke DOS and created DOS subdirectories and opened DOS files. Poly files were read via Poly BASIC and "printed" into the waiting DOS files. (There were some "gotchas" with Poly's printer driver; call me if you have questions.)

I was annoyed that the DOS harddisk can only be broken into four volumes; I wanted eight as in my old 5 meg Poly harddisk. But in DOS I found something almost as good, if not better. DOS 3.X allows "substituting" a disk designator for a path. DOS uses letters for disks; so these can have mnemonic significance to the user. I have the four volumes of the DOS harddisk accessible as eighteen online "disks" defined by letters.

I hope this is not taken as a message to abandon a Poly. I had to do so for client reasons, and found through the good fortune of hardware availability and patient friends that things weren't so bad after all. I had to sell my Polys to gain the office space. That hurt more than anything. But both machines do have a good home now in Canada; I know the machines will be well taken care of. That's something.

The important point here is your Poly spirit -- Poly let you know that bogus hardware (the PC) and silly software (Wordstar and friends) need not set your standards. From a daily operations and practical usage standpoint, Poly taught us more than most computer scientists will ever know (except Ralph, of course). When we couple that knowledge and intolerance for junk with modern hardware and truly useful DOS software, the results are stunning. DOS people ooh and ahh at the things my DOS machine does. That's because my DOS machine's "drill instructor" during the transition period was the bundle of experience from nearly a decade with Poly.

Finally, if you make the transition, you are no longer bound by hardware. I know now that after the initial awful task of shoving 30 MBytes through the serial port, and spending months converting my applications and their 10 years of data that I will never need to do this again. DOS is too big to die now, and all my stuff -- software and data -- is in DOS land. You can't know how good that makes me feel.

And Poly, philosophically I miss you more than I can say. But you will live forever in the ways in which I'll use any computing machine for the rest of my life.

-- Frank Stearns, 11-20-86

The First Bug

At 1525 (for you land-lubbers, that's 3:25 p.m.) on September 9, 1945, the Navy's electromechanical Mark II computer was started on a Multi Adder test. The test failed. At 1545 the cause of the failure was found. A moth had been caught between the contacts of relay #70 in Panel F.

HELP!

In this section I share with you the help system files I have built up over the last few years. (The entire system is included with Abstract Systems Exec.) Covered in this issue are "HELP format", "HELP format bs", "HELP PROGRAM PUNCH", "HELP PROGRAM ARISE", and HELP COMMAND COPY.

```
$HELP format
      HELP file for system program "format".

Help is available for the following (A:S) format commands:

 chr cmt cnt cor date graph input ital ltr nital pap
 pep pop prism quo sdate slsp tab tiger unq wait wide

 Syntax: "HELP format<[name]" (RETURN).
Example: "HELP format<slsp"

"HELP [format<name]" displays the help file for 'name'.
      (See also "HELP FORMAT")

format.GO was written by Ralph Kenyon of Abstract Systems.

$HELP format bs
      HELP file for (A:S) format command "(bs)".

(bs) is a command to allow backspacing the printer for the
purpose of overwriting characters.

Examples:
1. Make a 'cent' sign by overwriting a "c" with a "|".
      c(bs)|
2. Make a 'not equal' sign by overwriting an "=" with a "/".
      =(bs)/
3. Make an English Pound sign by overwriting an "L" with a "-".
      L(bs)-
4. Show literal strikeouts by backspacing over a word and
   adding dashes.  "this are(bs,bs,bs)--- IS incorrect"

$HELP PROGRAM PUNCH
      HELP file for Program "PUNCH".

PUNCH.GO is a utility program to convert machine code in memory
to Intel hexadecimal format (which is readable by ROM burners
and some other devices) and transfer the data to the printer
device driver (and out the RS-232C serial port). PUNCH assumes
the serial port is already set up at the proper baud rate, so
you may have to define a temporary printer type to set the
serial port properly.
```

```
Syntax:     "PUNCH [start-adr] [end-adr]"
Example:    "PUNCH 5000 53FF"

"PUNCH" was written by Bob Bybee.

$HELP PROGRAM ARISE
      HELP file for system program "ARISE"

"ARISE.GO" program undeletes a selected deleted file in a
      directory.

Syntax: "ARISE [<n<path<file.EX] [m]" (RETURN)  (see UNDELETE)

"ARISE [<n<path<name]" undeletes the first deleted file called
      'name' on drive 'n' and in subdirectory path.
"ARISE [<n<path<name] [m]" undeletes the 'm'th deleted file
      called 'name' on drive 'n' and in subdirectory path.

Example "ARISE <2<LETTERS 2" undeletes the second deleted
      file named LETTERS on drive 2.

$HELP COMMAND COPY
      HELP file for system command "COPY"

The "COPY" command copies one existing file to a new file.

Syntax:
"COPY [<n<path1<old-file.TX] [<m<path2<new-file.TX]" (RETURN)

'n' & 'm' are drive numbers, 'path1' and 'path2' are
subdirectory paths, old-file is the file to be copied, and
new-file is the new file name. new-file will be an exact copy
of old-file. COPY may be combined with ZAP yielding ZCOPY.
ZCOPY works faster for copying larger files.

Minimum size: "COP" or "ZC" Example: "COP Dick <2<LETTERS<DICK"
```

Which ones shall I do in the next issue?

Device Driver Direct Access

I have lots of good things to say about Poly's printer driver organization, but I agree with John H. Mc Nally; [PolyLetter 8604] it can be very frustrating when one wants to output special characters.

The driver connects thru three "worm-holes". WH7 is the normal character output address, WH5 is the output address which bypasses the normal control character filtering, and WH6 is the normal character input address (for printers with keyboards). WH5 also returns status reports when the character sent has the 80H bit set (chr+128). Unfortunately, BASIC seems to "takes possession" of WH5 and installs its own routine there. I have not figured out just what is going on, but it seems to be associated with OUT statements. What's even worse is that BASIC does not restore WH5 after use. (See BugNote 24)

In early versions of the operating systems, before Exec/80, the wormhole driver and the device driver were combined into one program which loaded and executed at 2F00H. Since Exec/80 the wormhole driver and the device driver have been separated. The serial device driver is Sio.PS, and the wormhole driver is a 1 sector block of code located at 2600H in the Prnt.OV overlay. When a new printer is connected, Prnt.OV copies the wormhole driver up to location 2F00H, and installs the proper addresses in WH5, WH6, and WH7. Sio.PS is also reloaded at this time.

The wormhole driver keeps track of such things as the character count, the line count, and padding character counts. It also inserts a line-feed character ASCII 10 or HEX 0A after each carriage return. (This is because the Poly does not store line-feeds in files, and does not use them in the screen display routines.) Other things done by the printer driver include "throwing away" characters after a line is full. - It truncates long lines. - Moreover, form-feed characters are inserted at the end of each page.

These features which make the Poly printer driver system so easy and convenient for driving printers can be a bit of a headache when in comes to driving special devices such as the plotter John wrote about.

It is possible to bypass these features. The line truncation can be bypassed by setting the printer characters per line to 255. Bypassing the automatic linefeed is harder. We have to modify Prnt. Some time in the past, a friend of mine got a printer which had an automatic line-feed on it, and we had to bypass the automatic line-feed in the device driver. We used Szap to change 1 byte in the wormhole driver portion of Prnt. The wormhole driver area is the same for all versions Since Printer/36, which came on Exec/83. (If you have an earlier version of Printer to modify call me and I will figure out what must be done.) This bypass can be installed on a system disk, but since it modifies the wormhole driver, of which there is only one, a special disk must be made for this purpose.

To make this change the following steps must be accomplished. 1. Make a copy of the system disk and boot up on the copy. 2. ENABLE the system with the ENABLE command. 3. LIST the drive and look for the file Prnt.OV. Make a note of its address: (The "flags" column won't be present unless you have Exec/{A|S}.)

```
 Size Addr    La    Sa flags Name.
    8   79 2000 2000     S   Efun.OV
**  8   81 2000 2000     S   Prnt.OV **
    8   89 2000 2000     S   Pack.OV
    2   A7 3000 3000     S N Sio.PS
```

In this case the file resides at location 81 (hex). The worm-hole driver is the 7th sector in Prnt. Since the first sector starts at 81, the 7th starts at 87. Remember, this address a HEX number, so if Prnt started at 7A, the 7th sector would be at 7A+6 or 80. If this hexadecimal arithmetic is too hard, then we could start at the first sector of Prnt, and "step through" to the proper sector. To do that, we need to start the program Szap.GO. Key-in "Szap RETURN". Next we use the ":" command to select our disk drive, which will be 1, unless you are working on a MS. Key-in ":1 RETURN". You won't see the ":1" on the screen. The drive will step and Szap will bring up a page of hexadecimal bytes and the drive and sector number on the right. Press ESC to see the ASCII display on the right. Next we move out to the starting sector of Prnt with the "/" command. Keyin "/" followed by the sector address which was in the ENABLEd directory listing. In my case that is 81 so I key-in "/81 RETURN". Again, we won't see the "/81", but the disk will step out to the first sector of Prnt. We can see that we are in the right location because the first 4 characters on the top left of the ASCII display on the right will be "Prnt", which is the name of the Overlay. To get out to the 7th sector we need to hit 6 carriage

returns. (A carriage return steps out one sector, and a LINE FEED steps back one sector.) When we get there we will see the following. I have maked the byte we must change with *'s.

```
C5 D5 E5 CD 52 2F E1 D1 C1 C9 C5 D5 E5 06 02 CD     R/
FE 2F E1 D1 C1 C9 E6 7F F5 C5 D5 E5 21 64 00 E5  /         !d
FE 0B CA 52 2F FE 0C CA 52 2F F5 21 F2 31 3A F7    R/   R/ ! 1:
31 BE 3E 0C DC 52 2F 21 F6 31 3A F2 31 BE D2 47 1 › R/! 1: 1  G
2F CD 50 2F C3 37 2F F1 FE 0D C2 52 2F*CD*52 2F / P/ 7/    R/ R/
3E 0A 4F B7 F2 5E 2F 26 31 C6 72 6F 7E C9 D6 09 › 0  ^/&1 ro
CA 97 2F 3D CA 88 2F 3D CA B2 2F 3D CA B8 2F 3D   /=  /=  /=  /=
C2 CF 2F CD FB 2F AF 32 F3 31 21 CB 2F 77 3A FB   /  / 2 1! /w:
31 B7 C0 3A F8 31 77 C9 CD FB 2F 21 F2 31 34 3A 1  : 1w   /! 14:
F4 31 BE C0 36 00 C9 3E 20 CD 52 2F 3A F3 31 E6  1  6  › R/: 1
07 C2 97 2F C9 CD CF 2F 21 F3 31 7E C6 08 E6 F8    /   /! 1
77 C9 3A F2 31 B7 C8 0C CD 50 2F 3A F2 31 B7 C2 w : 1    P/: 1
B8 2F C9 CD FB 2F AF 32 F2 31 C9 00 00 00 00 21  /   / 2 1     !
CB 2F 7E B7 CA E2 2F 35 C5 0E 20 CD FB 2F C1 C3  /    /5     /
CF 2F 21 F3 31 79 FE 08 C2 EC 2F 35 FE 20 DA F6  /! 1y    /5
2F 3C FA F6 2F 34 3A F5 31 BE D8 79 06 01 0E 00 /< /4: 1  y
```

Using the arrow keys, move down and over to the location of the "CD" which has been marked. We change that to a C3 by pressing C immediately followed by a 3. (The cursor will disappear.) Next, press the space bar, and the byte will appear changed as follows:

```
C5 D5 E5 CD 52 2F E1 D1 C1 C9 C5 D5 E5 06 02 CD     R/
FE 2F E1 D1 C1 C9 E6 7F F5 C5 D5 E5 21 64 00 E5  /         !d
FE 0B CA 52 2F FE 0C CA 52 2F F5 21 F2 31 3A F7    R/   R/ ! 1:
31 BE 3E 0C DC 52 2F 21 F6 31 3A F2 31 BE D2 47 1 › R/! 1: 1  G
2F CD 50 2F C3 37 2F F1 FE 0D C2 52 2F*C3*52 2F / P/ 7/    R/ R/
3E 0A 4F B7 F2 5E 2F 26 31 C6 72 6F 7E C9 D6 09 › 0  ^/&1 ro
CA 97 2F 3D CA 88 2F 3D CA B2 2F 3D CA B8 2F 3D   /=  /=  /=  /=
C2 CF 2F CD FB 2F AF 32 F3 31 21 CB 2F 77 3A FB   /  / 2 1! /w:
31 B7 C0 3A F8 31 77 C9 CD FB 2F 21 F2 31 34 3A 1  : 1w   /! 14:
F4 31 BE C0 36 00 C9 3E 20 CD 52 2F 3A F3 31 E6  1  6  › R/: 1
07 C2 97 2F C9 CD CF 2F 21 F3 31 7E C6 08 E6 F8    /   /! 1
77 C9 3A F2 31 B7 C8 0C CD 50 2F 3A F2 31 B7 C2 w : 1    P/: 1
B8 2F C9 CD FB 2F AF 32 F2 31 C9 00 00 00 00 21  /   / 2 1     !
CB 2F 7E B7 CA E2 2F 35 C5 0E 20 CD FB 2F C1 C3  /    /5     /
CF 2F 21 F3 31 79 FE 08 C2 EC 2F 35 FE 20 DA F6  /! 1y    /5
2F 3C FA F6 2F 34 3A F5 31 BE D8 79 06 01 0E 00 /< /4: 1  y
```

Pressing CTRL-E causes the changed sector to be rewritten to disk befor exiting Szap. Now, Prnt has been modified for the special driver on this disk.

If you do not want to make the change permanent, the solution is much simpler. We ENABLE the system, hit CTRL-Z to bring up the front panel, key-in L2F4D RETURN, key-in C3G and the change will be installed until the next time the Prnt overlay is called by a printer command or a program.

To make this temporary change from a BASIC program is even easier. The program merely must include the command

```
POKE 12109,195
```

There is a way to bypass the worm-hole drivers completely, but it is a bit more involved. What I have done in the past is to write a machine language interface which sends characters directly to the device driver at 3000H, bypassing the worm-hole driver completely. To do this, we must write an interface program and use the DEF keyword to connect the driver to a BASIC device channel.

The BASIC manual is wrong. On page 129 it states that the output character must be in the B register. In fact, the output character must be in the accumulator. Also, input characters must be in the A register (accumulator). It also says that the contents of the other registers must not be changed.

Okay, the device driver resides at 3000H and requires a 1 in the B register for output and a 2 in the B register for input. Let us write assembly language routines to interface to that address. We must save registers on the stack and restore them after the call to 3000H to make sure they are not changed.

```
Assembly language      HEX            Decimal

GetChar PUSH B         C5             197
        PUSH D         D5             213
        PUSH H         E5             229
        MVI B,2        06 02          6 2
        CALL 3000H     CD 00 30       205 0 48
        POP H          E1             225
        POP D          D1             209
        POP B          C1             193
        RET            C9             201

PutChar PUSH PSW       F5             245
        PUSH B         C5             197
        PUSH D         D5             213
        PUSH H         E5             229
        MVI B,1        06 01          6 1
        CALL 3000H     CD 00 30       205 0 48
        JMP loret      C3 64 00       195 100 0
```

We know that the loret code restores all registers, so we can save ourselves one byte:

```
loret:  POP H
        POP D
        POP B
        POP PSW
        EI
        RET
```

The GetChar and PutChar routines each require 12 byte. Since we are going to put these routines into string variables, each needs to be 12 bytes long. We also need a disconnect routine (which won't do anything since we don't want to disconnect the device driver). A return instruction by itself will do.

First we dimension the variables we need.

```
DIM D0$(1:12) \REM D for driver, 0 for out
DIM D1$(1:12) \REM D for driver, 1 for in
DIM D2$(1:1) \REM D for driver, 2 for nothing.
```

Next we build the output driver using the decimal values we computed for the assembly language routine.

```
D0$=""
D0$=D0$+CHR$(245) \REM PUSH PSW
D0$=D0$+CHR$(197) \REM PUSH B
D0$=D0$+CHR$(213) \REM PUSH D
D0$=D0$+CHR$(229) \REM PUSH H
D0$=D0$+CHR$(6)+CHR$(1) \REM MVI B,1
D0$=D0$+CHR$(205)+CHR$(0)+CHR$(48) \REM CALL 3000H
0D0$=D0$+CHR$(195)+CHR$(100)+CHR$(0) \REM JMP loret
```

Next we build the input driver using the decimal values we computed for the assembly language routine.

```
D1$=""
D1$=D1$+CHR$(197) \REM PUSH B
D1$=D1$+CHR$(213) \REM PUSH D
D1$=D1$+CHR$(229) \REM PUSH H
D1$=D1$+CHR$(6)+CHR$(2) \REM MVI B,2
```

```
D1$=D1$+CHR$(205)+CHR$(0)+CHR$(48) \REM CALL 3000H
D1$=D1$+CHR$(225) \REM POP H
D1$=D1$+CHR$(209) \REM POP D
D1$=D1$+CHR$(193) \REM POP B
D1$=D1$+CHR$(201) \REM RET
```

Next we build the disconnect routine.

```
D2$=CHR$(201) \REM RET - We won't disconnect it so just return
```

Finally we connect the routines with the DEF keyword.

```
FILE:3,DEF,MEM(D1$),MEM(D0$),MEM(D2$) REM Connect drivers
```

After this, all references to channel 2 will use these device driver codes. Also, to prevent BASIC from inserting carriage returns a PRINT:3 statement must be terminated with a comma.

BugNotes

Abstract Systems BugNote 005.0 **November 6, 1982**

On Exec/95 with Vmgr removed, Pack only looks at the first letter of the argument. For example, "PACK 12" packs drive 1. This was only discovered as a result of a typing error.

Abstract Systems BugNote 006.0 **November 8, 1982**

Exec/95 Dfn2 has a bug in the LIST function. The use of the Wild card results in an error when it is defined without the drive number. Example:

```
$; Wild card LIST bug demo
$# bugs
$LIST #
Bad disk identifier
$Pr NOLOG
```

Geting around this bug is easy. Always define the wild card using the drive number also.

```
$# 4<bugs
```

Abstract Systems BugNote 007.0 **November 9, 1982**

The MS controller has a design bug in the memory access. Memory on board the ms controller is not disabled during a processor IN or OUT instruction with the address in the 1000H to 17FFH rang. This precludes using address 10h thru 17H for 8080 port addressed peripheral devices, because some contents of the MS on-board RAM is placed on the bus during 8080 IN or OUT instructions.

To avoid this bug, do not address peripheral devices in the 8080 port address space from 10H thru 17H.

BASIC

In this column, I want to discuss questions, features, Zproblems and solutions involving programming in BASIC. Since I just started publishing PolyLetter, I haven't yet had questions posed for this column. Soo..., I'll just have to drift along in my own way until someone sends in a question, problem, or other task to exhibit here. Meanwhile....

In PolyLetter 8602 I described how a recursive function could be implemented in basic with the Towers of Hanoi, a classical recursion problem. Well, I was not satisfied to have the Poly just say what disk is moved from where to where, and tinkered with the program. I added graphics to it. It actually draws a tower of disks on the screen, and then proceeds to move the disks from pile to pile with lightning like jumps. Here is the listing for that program.

```
10 PRINT "Towers of Hanoi"
20 DIM S(21) \REM Source parameter stack
30 DIM M(21) \REM Middle parameter stack
40 DIM D(21) \REM Destination parameter stack
50 DIM T(3,22) \REM Tower slots ! T(Tower,Stack)
60 L=0 \REM Set parameter level to 0
70 Y=20 \REM Location of base line
80 MAT T=0 \ REM initialize tower slots to empty.
90 DEF FN M(S,M,D,N) \REM Source, Middle, Destination, Number
100 L=L+1 \REM Increment parameter level
110 S(L)=S \M(L)=M \D(L)=D \REM Save parameters in stack
120 IF N=1 THEN GOSUB 170 \GOTO 160 \REM if N=1 we do only one
130 Z=FN M(S(L),D(L),M(L),N-1) \REM Move N-1 to the middle
140 GOSUB 170 \REM Move the last one to our destination
150 Z=FN M(M(L),S(L),D(L),N-1) \REM Move N-1 from middle
160 L=L-1 \RETURN 0 \REM Decrement parameter level and exit
170 Z=FN M1(S(L),D(L)) \RETURN \REM Move 1 from source to dest
180 FN END
190 DEF FN M1(S1,D1) \REM Move 1 from Source to Destination
200 T(D1,22)=T(D1,22)+1 \REM Increase destination stack size
210 T(D1,T(D1,22))=T(S1,T(S1,22)) \REM Move size to destination
220 PLOT 42*S1-20-T(S1,T(S1,22)),Y+T(S1,22),0 \REM Erase from
230 DRAW 42*S1-22+T(S1,T(S1,22)),Y+T(S1,22),0 \REM source stack
240 DRAW 21*(S1+D1-1),Y+K+1,1 \REM Show movement
250 DRAW 42*D1-20-T(S1,T(S1,22)),Y+T(D1,22),1
260 PLOT 42*S1-22+T(S1,T(S1,22)),Y+T(S1,22),0
270 DRAW 21*(S1+D1-1),Y+K+1,0
280 DRAW 42*D1-20-T(S1,T(S1,22)),Y+T(D1,22),0
290 PLOT 42*D1-20-T(S1,T(S1,22)),Y+T(D1,22),1 \REM draw on top
300 DRAW 42*D1-22+T(S1,T(S1,22)),Y+T(D1,22),1 \REM of des
310 T(S1,22)=T(S1,22)-1 \REM Decrease source stack size
320 RETURN 0 \FNEND
330 INPUT "How many rings do you want to move? ",K
340 K=INT(K) \IF K>21 THEN PRINT "Too many!" \ GOTO 330
350 PAGE \POKE 0,127 \REM Clear screen and blank cursor
360 PLOT 0,Y-1 \DRAW 127,Y-1 \REM Base line
370 T(1,22)=K \T(2,22)=0 \T(3,22)=0 \REM Height of stack
380 FOR I=1 TO K
390 T(1,I)=K+1-I \REM Put size of chip into tower slot
400 PLOT 22-(K+1-I),Y+I-1 \DRAW 20+(K+1-I),Y+I-1 \REM Draw it
410 NEXT
420 Z=FN M(1,2,3,K) \REM Move K from 1 to 3 using 2 as middle
430 PLOT 0,47,0 \PRINT "Done."
```

Helpful Hints

For any of you who program in BASIC here are some hints that are helpful when it comes to program maintenance. (Which I systematically violate in the above program.) I don't know about you, but I tend to forget where I used a variable or a function, especially after I haven't worked on the program for a while. One can LOAD the program, connect the printer with "FILE:2,LIST", and then "XREF:2" to get a hard copy of the variable cross reference list. But who wants to get out of Edit, invoke BASIC and LOAD the file, and then get out of BASIC and return to Edit. It's a lot easier to use the CTRL-F (find) feature of Edit. But, when you only use single letter variable names, CTRL-F 'finds' a lot of garbage as well. CTRL-F stops at every PRINT statement whenever you are 'finding' any variables named "P", "R", "I", "N", or "T".

To make things easier it is a good idea to not use single letter variable names for numeric variables. There are also some letter number variable names which should not be used as these combinations also occur in formatted print statements. These are Fn (Floating point format as in "PRINT %6F2,") and En (Exponential format as in "PRINT %11E8,")

Now, it would seem that we have no problem with string variable names, which are always followed by a dollar sign, but this is not true. For example, "D$" occurs in "MID$(", "R$" in "STR$(" and "CHR$(", and "T$" in "LEFT$(" and "RIGHT$(".

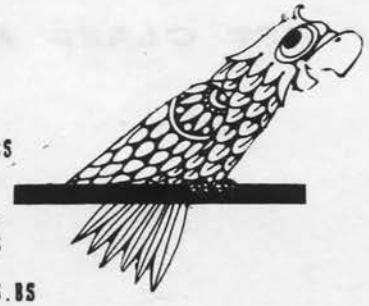
Program maintenance is much easier if one can quickly find occurrences of variables in Edit. To make this easier, it is best to not use single letter numeric variable names, and to not use "F" or "E" with a digit. It is also advisable to avoid string variable names "D$", "R$", and "S$".

To find the occurrences of a function, it is desirable to always use the function name either with or without the space "FN A" or "FNA". If you choose to do it without the space then it is best to avoid using "E" as a function name because CTRL-F will find "FNEND".

Public Domain

PolyGlot Library Volume number 9 has various BASIC programs submitted by various individials at various times.

```
Disk PGL-V-09 has 20 files on it, 30 free entries.
348 sectors in use, 0 sectors deleted, 2 sectors free.
 Size Name.
    1 SCREEN-PROTECTED-DEMO.BS
    1 BASIC-USER-FUNCTION-TABS.BS
    4 MORSE-CODE.BS
    5 TELETYPE-CODE.BS
   34 LEMONADE-STAND.BS
    2 ACCURATE-DIVIDER.BS
   57 STAR-LANES.BS
   14 BIORHYTHM-2.BS
   58 SUN-RISE/SUN-SET.BS
   53 MAJOR-MINOR-FINDER.BS
   17 SUN-RISE/SUN-SET.DC
   21 SEAWAR.BS
    9 NUMBER-CONVERSION.BS
    7 SYSTEM-SORT-PRINT.BS
    3 SORT-BUBBLE.BS
    5 BASIC-USER-FUNCTIONS.BS
    6 SORT-HEAP.BS
   15 BIORHYTHM-1.BS
   14 HORSE-RACE.BS
   18 INDUSTRIAL-SIMULATION.BS
```



SCREEN-PROTECTED-DEMO.BS protects the top and bottom quarters of the screen for demonstration purposes.
BASIC-USER-FUNCTION-TABS.BS saves space in a file by inserting TAB characters in place of spaces.
MORSE-CODE.BS prints the morse code equivalent on the screen as you type.
TELETYPE-CODE.BS prints the teletype punch code as you type.
LEMONADE-STAND.BS is a game simulating a small business.
ACCURATE-DIVIDER.BS attempts to bypass Poly's digits limit.
STAR-LANES.BS is a game of interstellar trading. The object of the game is to amass the greatest amount of money by establishing vast interstellar shipping lanes and purchasing stock in the companies that control those trading routes. Several players are allowed.
BIORHYTHM-2.BS is another program which prints out a hard copy of your biorhythm chart.
SUN-RISE/SUN-SET.BS calculates the time of sunrise and sunset for your latitude, longitude and day of the year.
MAJOR-MINOR-FINDER.BS computes choices of a college major and minor based upon interests.
SEAWAR.BS is another solitaire game.
NUMBER-CONVERSION.BS converts binary, hexadecimal, and decimal numbers from one to another form.
SYSTEM-SORT-PRINT.BS reads SYSTEM.SY, sorts the labels and prints out the sorted list.
SORT-BUBBLE.BS demonstrates the bubble sort method.
BASIC-USER-FUNCTIONS.BS contains basic functions for the following: generate random graphic lines, blank the cursor, check a string for numerical conversion, multiply by dozens, and to check the length of a string.
SORT-HEAP.BS demonstrates the heap sort method.
BIORHYTHM-1.BS is another program which prints out your biorhythm chart to the screen or to the printer.
HORSE-RACE.BS demonstrates Poly graphics in a 4 horse race.
INDUSTRIAL-SIMULATION.BS simulates an Air Force plant that produces a Constant Speed Drive Assy (CSD) for several Air Force aircraft. You are expected to maintain 320 CSD's on hand to absorb fluctuations in demands and production. Your objective is to control the production for 12 months and produce a low average cost per CSD. This is a simulation for management training.

PolyLost

The following people or organizations who were once on PolyLetter's mailing list have turned up missing (the dreaded RETURN TO SENDER). If anyone knows a current address for these people, or where their Poly went, Please advise PolyLetter. -- Brondt's Metal Magic of Spokane, WA; Computer Techniques of Richmond, VA; Jerry Heyman of Germantown, PA; Katy Holkenbrink of Souix Falls, SD; Everett Holland of Frazer, PA; Chuck Heindel of Brandon, FL; Peter Jaackson of Santa Barbara, CA; David Johnson of Prince George, VA; Richard Jones of Fort Worth, TX; Butch Kasey of Greenville, SC; Dave Kominiak of Munster, IN; Dudley Koontz of Cedar Rapids, IA; Morris Lancaster of Laurel, MD; Rolf Levenbach of Plainfield, NJ; Mike Linthicum of Goleta, CA; Rich Little of Chesterfield, MO; Davis McCarn of Arlington, VA; Bill McConnell of Arlington; TX; Robert Measle of Lexington, KY; Jonathan Miller of Tiburon, CA; Bernard Noelting of Evansville, IN; Wayne Norris of Santa Barbara, CA; Steve Perdy of Alanta, GA; Richard Petersen of Sunnyvale, CA; Rod Peterson of Bedford, TX;

Bit Bucket

In the distant past programming languages were named by acronym. FORTRAN is an acronym for FORmula TRANslation. COBOL stands for COmmon Business Oriented Language, or something like that. Then the thing got silly. APL stands for A

Programming Language, and PL-1 stands for Programming Language (number) 1. Programmers claim LISP stands for Lots of Irritating Silly Parenthesis. And ADA is just Another Damn Acronym.

Nicholas Wirth started a new tradition by naming his programming language after a famous mathematician, Blaise PASCAL. DoD named ADA for Lady Lovelace, Daughter of Lord Byron, who worked with Charles Babbage in writing programs for the Analytical Engine, the first (on paper) computer. Ada Agusta is credited with inventing subroutines. Few know that Babbage and his cohort liked to play the horses and wrote their grant proposals to fund the design of a device to help them calculate the odds at the track as well as to fund their passion for the ponies. Now there's motivation we can understand!

I still haven't gotten an anwer to what four bits are.

Bypassing FORMAT.IN

Did you know that FORMAT.IN can be bypassed? Even though it is in the directory? If the first file name on the command line is a .IN file FORMAT.GO will look for it. If it does not exist FORMAT.GO will not report an error. When I do not want to use any .IN file, I put X.IN on the command line as the first file - FORMAT X.IN file-name - and FORMAT.GO just shrugs and continues with the next file.

Pushing a Truck

Al Levy reports that he transfers a file from a PClone to the Poly to use its editor and then transfers it back to the clone. He says it's a lot easier that trying to use any word processor on the clone. Al says: "Working on the clone feels like pushing a truck!"

In This Issue

Coming Soon

Hardware Problems by Bob Bybee & PL, Assembly language housekeeping, BASIC for Beginners, More Help, BugNotes, Public Domain Software, etc.

Questions

Can you find and answer the questions asked in this issue? Send your answers and requests in.

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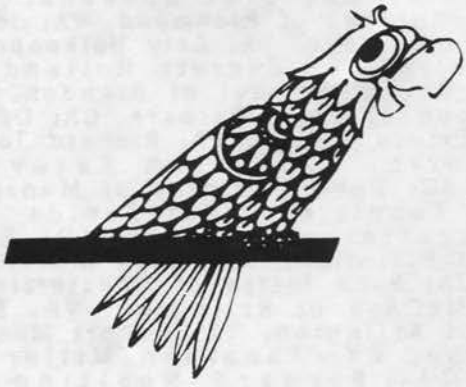
Address Correction Requested

FIRST CLASS MAIL



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PolyLetter

The Newsletter for PolyMorphic Systems Owners and Users

Editorial

With this issue PolyLetter is back on schedule (almost). The next issue is JAN/FEB 1987 and is planned to go to press by February 25. After that, I plan to get each issue out in the last week of the first of the two months. MAR/APR will be due out in the last week of March, MAY/JUN will be due out in the last week of May, and so forth. By setting a schedule everyone should benefit. To get something into the next PolyLetter, you need to get it to me at least one week before the press date. The more typing and research I have to do, the more lead time is better.

I do have a policy of publishing all letters received at PolyLetter with a minimum of editing, so feel free to submit your letters on disk (it saves me typing them in).

I have been quite gratified by the responses I have been getting (of course you have seen them all). I have been sending PolyLetter renewal cards to subscribers whose last entitled issue arrives, and on the bottom of that card is a place for people to say they got rid of their Poly. It was most pleasing when I received one renewal card back with the word ***NEVER!*** scrawled across that area of the card. I am beginning to feel like there is a community of Poly Users out there who are interested in what we have to offer.

Zits!

by Ralph Kenyon

While merrily computing away on my Poly, my screen suddenly began to grow zits! A stray graphics character would appear at odd positions on the screen. It didn't seem to be correlated with anything I did. They became worse as the moments went by. Sooo... I plugged in my trusty confidence disk and pushed the load button. Oops!.. It says I have bad video ram chips.

Now, that doesn't seem likely, since the characters all seem to show up ok in edit. Lets investigate, sez me, and I proceed to unstack the hardware which sits on top of my 8813. A 2-drive box and power supply, a seldom used 30 meg XT clone, my spare 8813 chassis, and finally the cover. Whoo... DUST everywhere. So, I get out my vacuum and start to clean it out.

Oops there's a cob-web and a cob-web-spider between two of the cards! Who says computers don't have bugs anymore. I pull out the video card and find that the S-100 bus plug seems to be corroded. I clean it up, and remembering that the old anti-static 'bug-rug' foam was corrosive, reseat all the video chips. Let's try it now... Nope.. still got errors, but different chips? I remember that I've had problems with the CPU chips too, so I clean them up also and reseat all the I/O chips. Lo! the problem has gone away.

The confidence package races thru the tests and says everything is a-ok. The zits are gone too. So, I guess that there is a moral to this story. One should periodically clean out the inside of the computer. Remove each card, clean the contacts, insure the chips are all seated, vacuum out any dust and cob-webs and remove any bugs.

Letters

Dear Ralph, December 23, 1986

I enjoy *PolyLetter* and think you are doing the best job of all the editors thus far. Keep up the first class job.

I am interested in a checkbook program. You did not mention any price for whatever you have. If it is only on paper, what price goes with it? Any documentation?

Re PolyLost: Paul Dishman of Dallas, TX, is now Paul Dishman, Jr. of Carrollton, TX. ... he did leave the computer business and is teaching management courses at a local college. This is a bit sad. Paul had run the local Poly store, Computer Imagineering, some years back, and many of use got our Polys through him. We held user group meeting in his store. Don't know any more details ... , but I think we have lost him..

The electronic typewriters coming into the market in great numbers should be considered if one wants a computer printer. This letter is being typed on a $200 Panasonic T33 with 8K memory, an elementary word processor, 15 character display, right justify, and other stuff. Very good for the price. It has a plug built in for a computer interface although the interface and cable costs almost as much as the typewriter. Other machines also could be considered for use as letter quality printers for a reasonable price.

Sincerely, Charles Mach, Irving, TX

[Aww shucks (blush)... Thanks for the praise. In regard to the checkbook program. I have a paper copy of CHECKBOOK, a program written in July 1978 by Brian Smith consisting of 8 pages of program; there is no other documentation. The copy and mail cost would be $1.00, but who wants to type all that in? I hope someone comes forward with a disk copy for the PolyGlot Library. The second paper item is CASHFLOW by PolyMorphic Systems which consists of 15 pages of documentation and 14 pages of program listings in a 32 page manual. Looking at the syntax of the listings shows

that the programs were written for A01 BASIC. The copy and mail cost would be $3.50, but, again, who wants to type all that in. Let's hear from our readers and see if anyone has it on disk. I'll check with Poly to insure this is a public domain item.

Also, thanks for confirming that Paul Dishman is no longer a PolyUser. Too bad he deserted the fold. With help like yours maybe we can clean up the mailing list. Ed.]

Dear Ralph, December 17, 1986

Thank you for the latest issue of *PolyLetter*. My 8813 was gathering dust, last year I "inherited" a NEC-8801 with two 8" DSDD drives! I have a problem with my Poly: the keyboard has a horrible key-bounce, that is, several keys repeat very fast, and the delete key works too fast, so that I have problems typing anything. Any suggestions? Also, my 5 1/4 SSSD drive number 2 is occasionally unreliable.

I also have a question: what does the (expletive deleted) front panel represent? Many times I get locked up in it and to get out means reset - restart and loss of the program in progress. I tried to learn assembly language - but still do not understand it, also CP/M. Any help here? Sincerely yours,

Constantin Pavloff, Richland, WA.

[Key Bounce. I have had problems with the very same thing. For Keyboard-II, I gently pry off the key cap and use a small piece of stiff paper to rub between the contacts. Take a business card and cut a trapezoid shape with one end narrow enough to fit inside the key with the cap removed. A second thing I have done is to cover the card with fine emery cloth before cutting it to shape. I have also tried contact cleaner sprayed directly on the paper. I also use an aerosol duster to blow the dust out of the key. Then, I put the key cap back on. That usually takes care of that key for a few months.

Drive problems. Get a long cotton swab and some de-natured alcohol. Swab off the read/write head on the drive. It looks like a glass dome with a cats-eye in it. There is a little felt pad which pushes the diskette against the read/write head. Try not to disturb that. Look to see if it looks thin compared to the other drives. Replacing that pad can sometimes help. The other thing to check is the speed of the drive. You will probably need to remove drive 3 in order to get a good look at drive 2. With a florescent light look at the strobe markings on the drive wheel on the right hand side of the drive while the motor is running. To keep the motor running make a command file called RUN which has the command RUN in it on drive 1. Since all the motors go at the same time, drive 2 will run while this command file keeps calling itself on drive 1. Look at the condition of the drive motor spindle and the drive wheel. I found a good deal of caked dust on mine and held a small screwdriver up against the wheel to scrape off the gunk while it was turning. I also cleaned it with alcohol. The small spindle of the drive motor also got caked with gunk. When these are all cleaned off, then check the speed. If it is still off, it can be adjusted. There is a small circuit board on the end of the drive. It has one varable resistor - a small block with a brass screw sticking out the end. Turning that screw one way or the other will speed up or slow down the drive. While the drive is running, adjust this screw until the strobe lines appear to stop rotating. This will restore the drive to the proper speed. If it still has problems, it may be more than can be done at home. I presently have two spare drives being offered for sale at $50 each.

Front Panel. Have no fear of this strange display. The Front Panel is explained in appendix E of the System 88 Users Manual. The unsolicited front panel is usually caused by too many interrupts happening in a "noisy" (electronic) environment. In most cases you need only type "G" to return to what was going on before. Occasionally the front panel shows up when a bug in a machine language program puts the Poly in "hyper-space". Look at the first line of the display. It begins with "PC" which stands for "Program Counter". Then next 4 characters comprise the machine language address of the program counter. The rest of the line consists of three preceding instructions, the one to be executed next (the one in-line above the arrow), and four following instructions. Here's what mine looks like when I hit CTRL-Z (in enabled mode).

```
PC 05F1 E1 FB 76 E5 3A 88 2D B7
```

If the byte above the arrow is "FF", like so:

```
PC 05F1 E1 FB 76 FF 3A 88 2D B7
```

Then Poly is in Hyper-Space, and typing "G" usually won't work here.

If typing "G" doesn't work, the next thing to do depends upon whether you are in a program such as Edit or BASIC. To get back to a user program which has a re-entry point type "SPJ3203G". Edit will work for this. BASIC puts you in BASIC with the program loaded, but destroys the run-time environment (All variables are cleared). Other programs depend upon the program. To get back to Exec type "SPJ0403G".

Of course, nothing is guaranteed; if the Poly got to the front panel (hyper-space) from a software crash or some kinds of hardware problems, it might just be best to punch the load button and start over.

I have a program called "Inhibit" which stops spurious front panel interrupts. There is also one in the July-82 Disk-of-the-Month. You can do it with the following BASIC program.

```
10 POKE 3100,100 \REM Set the SS interrupt
20 POKE 3101,0 \REM vector to loret.
30 Z=CALL(1027) \REM Return to Exec.
```

CP/M I loathe CP/M as an operating system. Mostly, I have used a few programs in the CP/M public domain, but have not done much of anything. My viewpoint is that CP/M should be used only in private,

and only when it cannot be avoided. However, since you have a NEC-8801, which probably runs under CP/M, you may want to get some use from it. All I can say, is that if there are any public domain (CP/M) programs you want, you can probably get them from Al Levy for a token amount. Programming under CP/M is another story. That requires mastering assembly language.

Assembly Language I am planning to put some assembly language programming articles in. The first one I have in mind is about housekeeping requirements. There have been some programs in previous issues of *PolyLetter*. 8002 - Top of RAM, 8004 - WH0-WH1 Input/Output, 8101 - Today, 8103 - MACROS, 8204 - FPL Inhibit front panel, 8206 - More MACROS, 8506 - Still more MACROS, 8604 - Memory test.

I'd be happy to answer questions if you wish to call me. Feel free to call most any time. There are three teen-age girls here, so the phone is often busy in the evening. For the best time, get up at about 7 on a weekday and call me then; you'll get me at 10 my time and you'll have the night rate. Ed.]

Dear *PolyLetter*, December 10, 1986

I have to commend you for your work with *PolyLetter*. Please keep it going. I have a group of programs that I am thinking about sending to you for the Public Domain. They are CRUDE but may be of some value to someone.

Incidentally, since I converted from 40K to 64K recently, I have a few good boards from the original setup. I would consider modifying them for spares. I have a good 16K board and a good 8K board. Whom do you suggest for this kind of work? I would also like to find a possible source for a backup CPU board.

A question which you may consider for *PolyLetter*. When a BASIC program is stored in SAVEF or SAVEP what happens? Further, if a program has been stored with SAVEP, is there any way that the program can be "restored" with SAVE?

Thank you, James Purvis, Mill Creek, WA.

P.S. I have only a single sided MS.

[Jim, by all means send in the programs. You will be entitled to a disk full in exchange for a disk full (5" disk, that is). A better way to describe a program than "CRUDE" would be "simple and unsophisticated" -- just the kind of thing that beginning programmers need as examples.

While I do not have an MS, I do know people who are willing to transcribe formats for me. Russ Nobbs at Rings & Things in Spokane is one who is close to you. He started with an 8813-0 with a MS, but has since aquired a 5" drive and controller to enable him to swap disks easily with others.

The 16K board can be upgraded to a 64K board. I have done the job myself on some of my boards, but I paid Poly to do the first one (See the Ads). The 8K board cannot (to my knowledge) be upgraded, but a couple of 8K's and a 16K board can get you through a pinch. As for the spare CPU card, perhaps there is a reader out there who can contact us and fill this need. Also, check out the Computer flea markets in you area. I am working on getting a list of parts from a few ex-dealers to include in ads. Your best bet might be to pick up a spare system; you could get the SD controller and 5" drives too. I have leads on Polys for sale, but for which ads have not yet been submitted.

Ah yes, SAVEP stands for SAVE-PROTECT. I think it stands for SAVE-PAIN, since those who used it most often have 'gone away' leaving their customers in the lurch. The programs can be restored, but how it is done is a 'trade secret' by those who know how. There are several methods, from tricks to brute-force. I use the tricks. If you have such programs, I will be glad to un-encrypt them for you.

SAVEF obviously stands for SAVE-FAST, since programs saved in SAVEF (tokenized) format load much faster. The reason is that when BASIC loads a text format program, it looks up each keyword and replaces it with a single token. The SAVE command reverses the process by looking up each token and then converting it into the text characters that make up the keyword. The SAVEF command simply writes out the program in its tokenized format.

Converting a program saved in tokenized format (SAVEF) back to text format is not difficult. Simply LOAD the program and stop it from executing with CTRL-Y. Then use SAVE to get the text copy. Sometimes a program dumps one back into Exec when CTRL-Y is hit. No matter, simply type in REENTER from Exec, and then SAVE it. One note of caution: program modules which CHAIN to one another can sometimes be difficult to deal with. MAILIST is an example. The problem is that program statements from one module may be left in memory when another module is CHAINed to. As a result, what we get with SAVE may have some extra stuff in it.

Ed.]

Ralph, January 2, 1987

I have a request to make about the printing of *PolyLetter*. When I punch 3 holes in the letter to put it in a 3-ring binder, some of the text gets cut out. How about leaving enough space at the left margin so 3 holes can be punched for booking the letters?

Charles Mach, Irving, TX.

[Doug Schrippa also made the same request by telephone. I will see what I can do. I do not have quite as much control over the margins once the proofs go to the printers, but I will shrink the center division and ask the printer to see If he can shift alternate pages away from the one margin. I do not want to reduce the column width; a screen width (64 characters) in condensed mode (17.1 cpi) requires 3.75 inches. This gives 7.5 inches of printing not counting the center margin. I have been supplying the printer with the printing centered on the page. Perhaps I can try to shift it, although it will require more hand editing of the print-file.

Ed.]

Dear Mr. Kenyon December 26, 1986

I was very happy to find the copy of the May/June *PolyLetter* in my MailBox the other morning, together with the subscription form (which I've dutifuly sent in). I've been a loyal *PL* subscriber since #82/1, and

am not about to stop now. (But whatever happened to my "Mr. Squock" - see #84/04?)

As I looked through the current issue, which cannot help but make the 8813 sound obsolete, I asked myself: "Well, what does the Poly do better than anything else right now?" Assuming that many of your subscribers acquired the Diablo #1610 daisy-wheel printer, one answer is still word-processing.

I know that may raise a few eyebrows in these days when there are so many fancy W/P programs around. I have two Mac-Pluses, and am well-versed in things like MacWrite and Microsoft Word. Nevertheless three facts continue to be inescapable:
--- Most "fashionable" computers, being graphics-oriented, are designed to be most compatible with dot-matrix printers. These, while good, still cannot match the daisy-wheel for print quality.
--- There is still no computer on the market (with the exception of the Macintosh) with on-screen text more easy-to-read than the #8813. This is particularly true if you have invested in the integral keyboard/screen "Enclosure" made by PolyMorphic.
--- There is no keyboard in existence today more "finger-friendly" than the Poly's. The keys are cushioned, yet are quite firm enough to satisfy the user.

What this means is that you can work at a Poly for far longer than at other PCs, an further than that you will do so with significantly fewer mistakes and substantially greater eye- and finger-comfort. Having written one doctoral dissertation and scores of books and essays on the Poly, I am in a position to testify to this.

Many Poly-people who are looking for productive things to do with their machines might well consider their versatility as devices to access commercial services such as CompuServe and MCI-Mail ... If communications software and modem-connection hardware exists for the #8813. (I have not asked PolyMorphic about this.) Again, the keyboard/screen friendliness of the Poly make this kind of use a natural for the Poly. If such communications hardware & software exist, perhaps you could alert people to it via *PolyLetter*.

I assume that many of your subscribers are using WordMaster II, Version 1.3. Here are two "environments" which I have found very useful - at least on the Diablo #1610: This first one gives you a nicely-laid out page of text on an 8-1/2x11 sheet of paper:

```
Lines per page: 57
Characters per line: 81
Top margin: 0
Bottom margin: 2
Offset for left edge: 0
Left margin: 0
Right margin: 1
Line spacing: 1
Standard indent: 5
Printer type: diab
Character per inch: 12
First page number: 1
Header for all pages: {cpi 12}{jc}-{pno}-{skp}
```

Using 81 characters per line and then command a right margin of 1 overcomes the Diablos's tendency to avoid boldfacing the last character on the line if you try boldfacing with an 80/0 setting.

Now to a more interesting variation:

How do you get more text on a printed page if you cannot vary your type-size (as with a dot-matrix)? Answer: You print-out on a larger piece of paper, then blow it down on a high-quality photocopy machine. I have done this by picking up a ream or so of 11x14" paper from a printing-supply store. This will feed nicely through the diablo printer. The result can be blown down to a perfect 8-1/2x11 by standard settings on current photocopy machines. The appropriate environment for the Poly is:

```
Lines per page: 76
Characters per line: 106
Top margin: 0
Bottom margin: 3
Offset for left edge: 5
Left margin: 0
Right margin: 7
Line spacing: 1
Standard indent: 5
Printer type: diab
Character per inch: 12
First page number: 1
Header for all pages: {cpi 12}{jc}-{pno}-{skp}
```

This "blow-down" format, if used with a daisy-wheel, will probably get more readable text on a piece of 8-1/2x11 paper than any other system I know, with the (far more expensive) exception of a Macintosh/laser-writer combination. Try it!

I have one last word of praise for the Poly. In these days of endless, anonymous, colorless steel and plastic, the Poly remains incomparably beautiful and unique because of some early designer's decision to emplay those hand-crafted hardwood casings - which have been carried through to other items such as the hard disk #HD-18. I would not be in that much of a hurry to sell of such a work of are as this, any more than I would sell a 1929 Bently just because there are 1987 Chevrolets and Fords that will go faster. Think about it, Poly people. If the day ever comes when your Poly fails and you can't get parts for him/her any more, polish up that elegant cabinet and put him/her on display in your den. When the invariant question is asked, you can answer with pride: "Why, yes, that is the first computer ever made for personal use - long before IBM or Apple ever came along. Those were the days when you wrote your own programs, son - and when the mass-market insult of 'copy-protection' hadn't even been imagined. Yes, we had many a good year together, Poly and I. Isn't he/she beautiful? Too bad they don't make the like this anymore, Isn't it ...?"
Sincerely, Michael Aquino, Washington, DC.

ADS

3. Two drive external box and power supply $75.
4. Hayes Micromodem 100 for only $40.
(300 baud in bus direct connect modem. limited quantity)
5. HayesSys modem software (for the Micromodem 100) $35.
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9. PolyGlot Library Volumes 1 thru 9, $6 each.
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Add $5.00 for shipping and handling.

CP/M hardware conversion: $100 plus parts. (CP/M license, manuals, and software: $200)

16K to 64K memory card conversion $125.00 plus parts. (The 16K board has to be a Poly board and in good working condition.)

Eight inch MAXALL 32 hard sectored diskettes for your MS. $15.00 per box or $ 115.00 per ten boxes. From: Al Levy, Post Office Box 71, Hicksville, NY 11802, (516) 293-8368

For Sale: 8813 with 1 drive, Hitachi monitor, Keyboard, and Practical Automation Printer. Best offer. From: Barry Adler, Gynecare, 230 Route 59, Monsey, NY 10952, (914) 357-8884

Wanted: Poly Keyboard II or III. Allen Daubendiek, 1821 Jackson St., Beatrice, NE 68310, (402) 223-5863.

For Sale: Multiple 8813 systems - each with 3 drives, 64K, Monitor, and Keyboard - Make offer. Robert L. Schwartz, 906 Main Street, Cincinnati, OH, 45202, (513) 241-3447.

BASIC Programming

Many readers have said that much of what has been published in PolyLetter is too technical for them. Well, I would not go that far, but I would admit that it may have been too technical for their present stage of involvement with programming the Poly. Let's discuss some of the issues that are appropriate to the less involved stages.

What's programming for anyway?

The purpose of programming is to solve problems with data processing. Usually we have some vague idea of what we want to see, such as a report of some kind, of an equally vague idea of what we want the computer to do for us, such as to do the payroll, or to do inventory and reorder, etc.

What kinds of things should we be asking the computed to do and what kinds of things should be not ask it to do?

There are several things a computer does well. Tedious computation is the most common. Not forgetting is another. If a datum is to be used in several different applications, a human being can often fail to remember to do all the things with it that must be done. Here is where the computer excells.

If a piece of information is used only once, then it probably has no business being in a computer. Of course it is really rare that a datum is only used once.

Okay, now that we have said a little about what should and what should not be done by a computer, let's see what's involved when it is decided to give a job to the computer. There are four processes involved in using the computer to solve a data management problem. First, the data must be gotten into the computer. Second, data may need to be stored until it is needed. Third, computations involving the data must be performed. And finally, the appropriate data must be gotten out of the computer. So, we have to deal with INPUT, STORAGE, COMPUTATION, and OUTPUT. Okay, we're going to discuss how to do this in the BASIC programming language. BASIC is one of the simplest languages to learn; one doesn't need to know much about the computer hardware to use BASIC.

INPUT. Before we try to get the data into the computer we need to take a look at it. There are two types of data we can deal with in BASIC. There are numbers on the one hand and words on the other hand. Numbers are composed of the digits '0' through '9', the '+' or '-' sign, perhaps a decimal point '.' and maybe, for scientific notation, the letter 'E'. The number 23 can be expressed in the following ways: '23', '+23', '+23.0', (and in scientific notation: '2.3E+1', '0.23E+2', '+2.3E+1', '+.23E+2', '230E-1',), etc. Words are composed of a string of alphabetical characters and/or digits. Since a string of characters could be all digits we or the computer might get confused as to whether it was a word or a number. To prevent this confusion from happening, BASIC has two TYPES of data. These data TYPES are NUMERICAL and STRING types. An item which

is a STRING TYPE is always put in quotation marks. An item which is a NUMERICAL TYPE is never put in quotation marks. 23 is an example of a NUMERICAL TYPE. "23" is an example of a STRING TYPE.

Before we go ahead an try to input data to the computer, we must look at the data and decide which TYPE each datum is. Payroll hours would be of NUMERICAL TYPE, but the names of items in an inventory would be of STRING TYPE.

STORAGE. When BASIC stores a datum it does it by putting it in a location whose contents may be variable. We could get access to the datum by telling the computer where to look, but it's easier if we just have a name for the location and refer to the stored datum by using the name of its location. I'll describe how this works by using an example which may be familiar to some of us.

In one bar of my aquaintance the liquor was arranged on 3 shelves. The top shelf had the highest quality stuff, and the bottom shelf had the cheapest (lowest quality) stuff. One could order "top-shelf" scotch. In this example, we are using the location name to refer to what is stored in that location. In another bar there was only one shelf, but one could still order "top-shelf" scotch. In this case, the name applied to the stuff kept on the left end of the shelf. We don't actually care where the location is, but we do need to have a name for it in order to refer to the stuff stored there. Leaving the bar and heading for the computer, we can bring with us the "top-shelf" idea. Once we store a datum in the computer, we refer to it by the name of its location.

BASIC has several locations for storing variable data; these are, appropriately enough, called VARIABLES. VARIABLES, of course, must come in two TYPES, NUMERICAL and STRING. the names of VARIABLES in BASIC consist of an upper case alphabetic character, 'A' thru 'Z', or an upper case alphabetic character and a single digit, 'A0' thru 'Z9'. In addition a STRING VARIABLE has a dollar sign appended, 'A$' thru 'Z$' and 'A0$' thru 'Z9$'.

So, when we get data into the computer, we need to decide which of these locations to use for which datum. If you've been paying attention, you have already looked at the data and decided which TYPE each datum is, therefore you know which VARIABLE TYPE is needed for which datum. A datum of NUMERICAL TYPE must be put into a VARIABLE of NUMERICAL TYPE and a datum of STRING TYPE must be put into a VARIABLE of STRING TYPE.

Suppose we have decided that we want to enter some very simple inventory data, how many and what we have. Clearly, how many we have is of NUMERICAL TYPE and what we have is of STRING TYPE. Let us decide that we will put the quantity into the VARIABLE Q1, and we will put the name into the VARIABLE N1$. The quantity datum is of NUMERICAL TYPE and VARIABLE Q1 is of NUMERICAL TYPE. The name datum is of STRING TYPE and the VARIABLE N1$ is of STRING TYPE.

Before we start writing the program, we must know a 'housekeeping' requirement that BASIC has. BASIC assumes that a program is a sequence of numbered lines, and it executes these lines in numerical order.

So, to get our quantity and name into our beginning inventory program we must use the INPUT statement. The program would start out as follows.

```
10 INPUT Q1
20 INPUT N1$
```

When we run the program, we are presented with a "?", and after answering that we have 10, we are presented with the "?" again, to which we respond that we have widgets. And, the program stops.

If you didn't know exactly what the program wanted, that cryptic question mark wouldn't be very informative. This is not a user friendly program. Well, we can fix that up by using the PROMPT feature of BASIC INPUT statements. By inserting a literal STRING in the INPUT statement before the VARIABLE name, we can communicate with the user. This is most easily explained by giving an example.

```
10 INPUT "Quantity of item ?",Q1
20 INPUT "Name of item ?",N1$
```

Okay, now that we have inputted the data, we would like to be sure that the computer does indeed have it, so we want it to repeat the data back to us. To do this we would use the PRINT statement and tell it to PRINT the data on the screen for use to see.

```
30 PRINT Q1
40 PRINT N1$
```

Now when the program runs BASIC prints "Quantity of item ?" on the screen before waiting for us to give it how many and likewise for what. It then repeats back what we gave it. But, there's nothing more to the program, and when we turn it off, everything we have inputted is gone! We need some more permanent storage.

The answer to this is to create a data file which contains the information. Before we can put the data into a file, we must decide what the name of the file is and where that file is going to reside. BASIC can keep track of a number of files at the same time, and does so by numbering each file. So, we must also decide what the file number is. It's a fact that we must remember that BASIC FILE numbers start at 4. In this example, let us decide that we will use FILE number 4, that the file will be named "INVENTORY" and that the file will be on disk drive number 2. We must also tell BASIC that we are going to be sending stuff OUT to the file. Now, we can tell BASIC to create our file.

```
50 FILE:4,OPEN,"<2>INVENTORY.DT",OUT
```

Also, we need to put the actual data into the file. We do that with the PRINT statement again.

```
60 PRINT:4,Q1
70 PRINT:4,N1$
```

Another housekeeping task is to tell BASIC that we are finished putting information into the file.

```
80 FILE:4,CLOSE
```

Up to this point I have only dealt with the task of inputting data and storing it.

I have not discussed manipulation of the data or outputting it except rudimentarily.

Are there readers out there who want to hear more in this vein? Is this of interest to would-be programmers who haven't gotten started yet? If there are any of you out there who find this helpful, I will continue with the development of a simple inventory package on a step-by-step beginners level basis. Write in if you want this feature to be continued.

PRINTER INTERFACE TEST with POLY CONFIDENCE TEST

by Russ Nobbs

The PolyMorphic computer comes with one of the most extensive self-test packages of any microcomputer on the market. The self-test software is more common on mini and main frame systems. Like the bigger computers, PolyUsers are encouraged to treat the Poly like a "real computer" and to run the main Confidence test once a week and the extensive memory test once a month.

For some reason, many Polys in the Northwest were delivered without part of the confidence package which is necessary to run the printer interface test. Poly part number 004533, "Test connector, Printer interface" should be plugged into the RS 232c Printer port before running the printer test.

This part can be ordered from Poly or made very simply with a standard connector, a little wire, and some crude soldering. The connector is a male RS 232c 25-pin connector. The panel mount type number DB-25P works best and is available at any Radio Shack store as part number 276-1547. Four pair of pins must be wired together with insulated wire "jumpers". The soldering is not at all critical. Just don't melt the plastic insulator. Connect the following pins as shown in the drawing:

Pin 2 to Pin 3
Pin 4 to Pin 5
Pin 6 to Pin 20
Pin 17 to Pin 24

```
13 12 11 10  9  8  7  6  5  4  3  2  1
 o  o  o  o  o  o  o  o  o--o  o--o  o
  o  o  o  o  o  o  o  o  o  o  o  o
25 24 23 22 21 20 19 18 17 16 15 14
```

If I read the Confidence test manual correctly, the test plug should have come with your machine. No test plug was delivered with my system but I was given one at no charge when I asked the dealer (the now out-of-business PCI) if they had one I could use. If you are in an area with one of the few remaining active Poly dealers, you might ask if they have an extra test plug.

BugNotes

Abstract Systems BugNote 008.0 **November 12, 1982**

BASIC C03, 04/14/81

BASIC's LEN function accepts only a string variable as its input argument. I recently wrote a program to parse a line of input text which tested the length of a part of the input line. BASIC reported a syntax error for the code fragment:

```
IF LEN(MID$(L1$,S1,E1)) > 19 THEN ...
```

In order to get around this, an intermediate variable must be defined. Substituting the following code works.

```
X5$=MID$(L1$,S1,E1)
IF LEN(X5$) > 19 THEN ....
```

Most functions will accept inputs of the correct type, but the LEN function is more specific. It will only accept a string variable. It will not accept a literal string, or a string function.

Correct	LEN (A$)	String variable
Incorrect	LEN (MID$(A$(X,Y))	String function
Incorrect	LEN ("TEST")	Literal String
Incorrect	LEN (FN B$(X))	String function

Abstract Systems BugNote 009.0 **November 30, 1982.**

Exec/95, PACK reported a fatal error on drive 3 while packing but did NOT terminate command file mode! The following log file demonstrates.

```
$cmd
$ZP 3
Error 0106 encountered while reading directories.
No data on the disk has been altered.
$; Command file continued!
$Pr NOLOG
```

The first time it happened to me, PACK had already moved some data, and the next command acted on that disk!

Annual Index — 1986

The Other Guys

by Ralph Kenyon

I forgot to put my name on this column last time and some of you thought it was Bob's. It's really mine, however, I'll be glad to include submissions from others of you concerning how to make 'them' look and work like 'us'.

In *The Stack*, Al Levy just mentioned that CTRL-U works in PC-DOS like CTRL-X does for Poly's System 88.

The Poly's LIST command works by just typing "L", and I HATE having to type out DIR on the clone. Every(Poly)one knows that DIR means LIST to the printer. To avoid this I created the an L.BAT file.

```
DIR %1 %2 %3 | MORE
```

With it I get Poly's single letter, and MORE causes the display to pause on each page. The parameters allow using "L" on a subdirectory, and to include DOS parameters if desired.

In Exec/{A|S}, I can exit from "LIST" by hitting the ESC key (See PL 8604/8 - HELP COMMAND LIST), but MS-DOS only responds to CTRL-C. Moreover, when you hit CTRL-C, MS-DOS blithly asks you if you want to terminate the batch file. (I wouldn't have hit CTRL-C if I didn't, dummy!) Tiring of this rather soon, I modified MORE to exit when I hit the ESC key. Now, when I use L on my clone I can escape all this tom-foolery by hitting ESC. (In Poly's Exec's "X" exits from an incomplete TYPE command; in Exec/{A|S} "ESC" exits from an incomplete TYPE command as well as from an incomplete LIST command.)

Reader's Responses

More articles like Frank Stearns Confessions [8605] & more articles on hardware (boards, etc.)

James Goodman, Memphis, TN

General mix is excellent. I'd like to see more articles on on file interchange with non-Poly machines and programs for

utilities and upgrades.

I will probably make a quantum jump to a new environment eventually. Meanwhile, my low-capacity obsolescent system continues to do most of what I need done. Elementary data base programs and BASIC programs I write take care of most needs.

George Montillon, Cincinnati, OH

User-level terminal adapatation and Poly to Macintosh software.

Michael Aquino, Washington, DC.

Bit Bucket

Fast Loading BASIC Programs

Want to save a few seconds time when loading a BASIC program? There are two ways to speed up the process. The first is to make a SAVEF copy of the program. The SAVEF copy is saved in BASIC tokenized form. BASIC does not have to translate from ASCII to tokens when a tokenized program is loaded. The second way is to bypass Exec's normal lookup process. Normally we type in the name of the file. When Exec finds out that it isn't a command, it calls Gfid to look up the file. If Gfid found the file, Exec looks in its table of extensions and discovers that a file ending in .BS must load BASIC and then transfer control to it. Since we already know that the program is a BASIC program, we can save the time it takes Exec and Gfid to look up the file by simply typing in BASIC and the file-name. Then Exec goes directly for BASIC without looking up the file. For example, instead of typing "MAILIST", type "BASIC MAILIST".

Quote of the Issue

I use my [Poly as a] "General Substitute for Pencil & Paper." - George Montillon.

In This Issue

Coming Soon

Poly Problems by Bob Bybee, Assembly Language Housekeeping, More BASIC for Beginners, RS-232 Cables and Jumper Plugs, Modems and Communications software, How to UNSAVEP protected Programs, More System Programmers Notes, Making your PC work like a Poly, More Help, BugNotes, Public Domain Software, etc.

Questions

Can you find and answer the questions asked in this issue? Send your answers and requests in.

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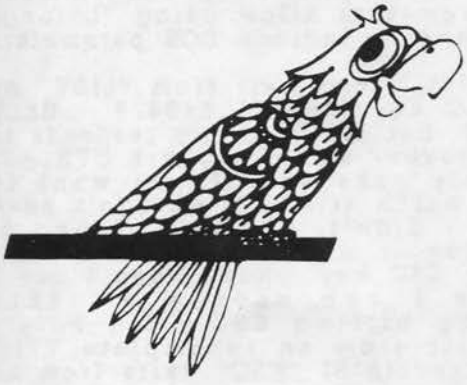

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