

\*\*\*\*\*

GRAPHICS PRIMER for VECTOR GRAPHIC (PART II)

by Burks A. Smith, DATASMITH  
Box 8036, Shawnee Mission, KS 66208

Last month we discussed the mechanics of video graphics using microcomputers. To review, video graphics (or alphabetic characters) are generated by translating numeric codes (ASCII) stored in memory into video signals that are displayed as patterns of dots on the terminal screen. The pattern of dots that will result from a code in memory is determined by codes in another part of memory (usually ROM). This "character set" may include special graphic characters, as with the Vector FLASHWRITER II video board.

While this article is primarily intended for Vector Graphic computers, I should point out that the general principles apply to most computers with graphics capability. Of special note is the Exidy Sorcerer, which keeps its character set in RAM, making it changeable by the user.

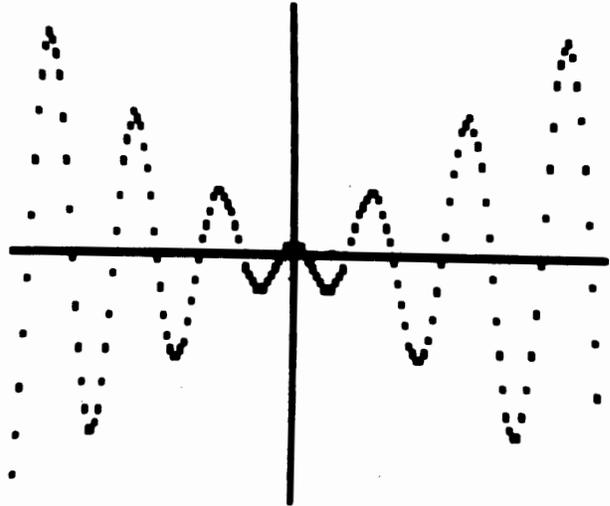
On Vector computers, the graphic characters are limited to various combinations of small squares that are displayed six at a time in the space usually occupied by one letter or number on the screen. This is considered to be "low-density" graphics since there aren't really enough squares possible on the screen to make a good picture, but they are useful for plotting graphs. To do this, the screen is considered to be a grid of 160 squares across and 72 squares down. A point is plotted by causing one of the squares to be generated at coordinate (x,y) on the screen.

The process of causing a single graphic square to be "lit" is complicated by the fact that the graphic "character set" on the Vector FLASHWRITER II video board writes six squares to the screen at once. Therefore, some logic is required to determine which of the 64 graphic characters should be written at any particular point on the screen. As far as the computer is concerned, the screen is still 80 X 24 characters, but we are simulating a 160 X 72 display. Therefore, the program must determine to what position the character is to be written, examine the character that is already there, modify the character that is already there based on the new point to be plotted, and write a new character to the same position. The program "GRAPHIC-B" performs this function in MICROPOLIS BASIC on a Vector computer. The user's program calculates a point to plot in terms of X and Y where X=1 and Y=1 is at the lower left-hand corner of the screen. The plotting subroutine is then called and the point is plotted.

Plotting points from BASIC is a relatively slow process because, for some reason, the PEEK and POKE commands are not particularly fast. However, I have written an assembly language subroutine that may be called from BASIC as an assembly language function that is about 10 times faster. It is available from the MUG library at the usual terms for anyone seriously interested in plotting graphs.

In future columns, we would like to present information of general interest to MUG members and welcome your questions and comments. If you have any suggestions on topics you would like to see addressed here please write Buzz Rudow at MUG or Burks Smith at DATASMITH.

.....



The function  $Y=\cos(X)-X\sin(X)$  plotted on a Vector Mindless Terminal using the standard graphic characters and a modification of the plotting program. The X and Y axis as well as the function were drawn using the program. The picture is the negative image of a photograph of the terminal screen.

.....

```

1 ! *** GRAPHIC-B ***
2 ! DEMONSTRANTION OF FLASHWRITER II PLOTTING LOGIC
3 ! WRITTEN BY BURKS A. SMITH
4 !           DATASMITH
5 !           BOX 8036 SHAWNEE MISSION, KS 66208
6 !           (913) 381-9118
7 !
10 !GRAPHIC TEST
20!PRINT CHAR$(4): !REMOVE ! TO CLEAR SCREEN
30 FOR X=1 TO 160: !WRITE A DIAGONAL LINE
40 Y=INT(X/2)
50 GOSUB 1000: !CALL GRAPHIC ROUTINE
60 NEXT X
70 STOP
80 !
1000 !<SUBROUTINE TO WRITE GRAPHICS CHARACTERS
1010 !
1020 IF X<1 OR X>160 OR Y<1 OR Y>72 THEN RETURN
1030 Y=72-Y
1040 C=INT((X+1)/2): !COLUMN
1050 L=INT((Y+2)/3): !LINE
1060 A=X-2*(C-1):!CALC COORDINATES WITHIN CHARACTER
1070 B=Y-3*(L-1)
1080 IF A=1 AND B=1 THEN V=0: !UPPER LEFT
1090 IF A=1 AND B=2 THEN V=16: !MIDDLE LEFT
1100 IF A=1 AND B=3 THEN V=8: !LOWER LEFT
1110 IF A=2 AND B=1 THEN V=4: !UPPER RIGHT
1120 IF A=2 AND B=2 THEN V=2: !MIDDLE RIGHT
1130 IF A=2 AND B=3 THEN V=1: !LOWER RIGHT
1140 M=16RF000+(80*(L-1))+C-1: !VIDEO ADDRESS
1150 G=PEEK(M): !GET CHARACTER THERE
1160 IF (G AND 16R007F)>=ASC(" ") THEN G=0
1170 IF G >= 16R0080 THEN 1280: !REVERSE VIDEO SET
1180 IF V=0 THEN 1240: !REVERSE VIDEO TO SET
1190 G=G OR V: !ELSE SET GRAPHIC
1200 !<RETURN ENTRY POINT
1210 POKE(M)=G: !WRITE TO MEMORY
1220 RETURN: !NORMAL EXIT
1230 !
1240 !<REVERSE VIDEO TO SET
1250 G=(NOT G) AND 16R009F: !FLIP ALL BITS
1260 GOTO 1200: !AND RETURN
1270 !
1280 !<REVERSE VIDEO ALREADY SET
1290 IF V=0 THEN RETURN: !IGNORE DUPLICATE
1300 G=(NOT G) AND 16R00FF: !FLIP ALL BITS
1310 G=G OR V: !SET GRAPHIC CHARACTER
1320 GOTO 1240: !NOW GO FLIP AGAIN

```

.....

WATCH THOSE R'S AND E'S

by Joel Shapiro, Bonjoel Enterprises  
PO Box 2180, Des Plaines, IL 60018  
Copyright (C) 1981

One of the nicest features of Micropolis BASIC is that it allows you to save a lot of core by eliminating all blanks between statements and variables. A problem exists, however, when variables such as R, R1, R2, etc., and E, E1, E2, etc., are used in a program.

The problem is that the interpreter may see the 'R' as definition of a Radix value and the 'E' as definition for Scientific Notation given the proper set of circumstances. At least, that's what has been happening to me with my copy of version 4.0 BASIC. The problem can be best illustrated with the following code.

```
10 A=2
20 IFA=2R=5
30 PRINTR
```

```
RUN
0
READY
```

The reason for the error is that the interpreter sees 2R as a Radix. Separation of the 2 from the R by a blank will eliminate the problem.

An example of the problem encountered with E's is described by the following;

```
5 B=10
10 IFB=10E=1
15 PRINTE
```

```
RUN
STATEMENT NOT FOUND
READY
```

I really can't decide what happened here but this and other errors are typical when the E isn't spaced from the preceding part of the argument or separated with a THEN. A THEN can also be of some help with the R situation as described above but a blank probably uses less core.

After encountering these problems in many programs I have learned to assign R and E after all other variable names have been assigned. This way I can avoid the problem and if they're assigned late in program development, I can become attentive to the problem and double-check their application.

.....

CP/M TECHNICAL TIPS

by S. Tattersall, ITT  
London Road, Harlow, Essex, England CM179NA

A CBASIC "STOP" BUG

In version 2.02/2.04 of CBASIC the "STOP" function does not always work properly, especially after disk input/output. A simple subroutine can be inserted into the program to ensure proper return to CP/M.

```
REM SUBROUTINE TO EXIT FROM CBASIC
POKE 0000H,0C3H
CALL 0000H
```

CP/M DOES NOT SAVE

In CP/M version 1.4X, you cannot perform two consecutive SAVES on the same contents of TPA, because the first SAVE causes a directory operation that changes several areas of the TPA. In version 2.2, however, this problem has been fixed - the user can perform two consecutive SAVES on the same TPA.

THE MICROPOLIS MODEBYTE

The MODEBYTE allows the following features to be set:

Pre-write read	80H Active
Read after write	40H Active
Write protect detect	20H Not active
Enable interrupts after disk access	10H Active
Run AUTO.COM after warm boot	2H Not active
Run AUTO.COM after cold boot	1H Not active

The MODEBYTE is usually set to DOH and is located at BIOS+5FFH or 24FFH in SYSGEN.

.....

LIBRARY IMPROVEMENTSTHE PROBLEM

A minor problem exists with the Library. Only those programs which don't "manipulate" the screen will work properly for all members. Any screen manipulation makes the program hardware-dependant. Most of the programs only use the 'clear screen' command. A few get pretty complicated. For some of you who are just beginning to program, conversion of these programs to run on your system may be a large, difficult chore. But I have a solution.

THE SOLUTION

My latest idea is to specify location 165 (0A5H) as the console designator. Each disk will contain a CONFIGURE program which will ask for console type and then POKE a variable in location 165. All the programs will contain a modified version of Dave Lands configuration subroutine (MUG, February newsletter) which will access this variable and therefore automatically configure for your console. I'd like to specify locations 157 through 164 as the date-holder. The date function, and the basis for the console idea, are the result of Don O'Brien's article printed in the April issue.

The synthesis of the ideas of two members and myself into a product for the library is indicative of the power of the MUG. I program in both my jobs and have used the above concepts in "real" programs. As I indicated in previous newsletters, I incorporate almost all the ideas into my programs. I'm very appreciative of you people who are sending in your programming tips.

Then again, it may not work. If any of you currently use this area, or any of the area between 0 and A6, for another purpose, let me know. There isn't any sense in making a "universal" routine that isn't universal. I already know that I have a problem with locations 0-3 and my CCS monitor. The RST instructions reference some of the lower addresses.

MEMBER RESPONSE REQUIRED

The details of implementation will wait until next month. However, I need to acquire the information for control characters for any display terminal not listed below. If your terminal is not listed, please send me the codes for the functions listed in the February newsletter. In addition, if your terminal supports writing to a specified location, tell me the set of control characters necessary for that function. If you don't know how to determine the control characters, send me the pages of your manual which address the subject. I'll figure out which ones to use.

While you're at it, sent me the Top Of Form, or Page Eject, control characters for your printer.

TERMINALS SUPPORTED

```
HAZELTINE 1500
DYNABYTE NAKED TERMINAL
EXIDY SORCERER
VECTOR MINDLESS TERMINAL
PROC TECH VDM (SOL)
```

TELEVIDEO 912/920  
SOROC IQ 120  
CDS VERSATILE 4

#### WARNING

Be sure to understand, folks, that currently, the library programs will PROBABLY NOT WORK WITHOUT SOME MODIFICATION. Generally, it's just a matter of finding the clear screen command and changing it (or them) to your required code.

As far as I know, my system produces good copies for the Library disks. the drives I use are new and 3M disks are second in quality to Dysan. Yet there have been two instances of people not being able to read a file. It was solved by reading from their alternate drive.

So, if you can't DISKCOPY from zero to one, try going one to zero. If that doesn't work, there are two options. One - send the disk back for a new one. Two - determine which file has the error on it and I'll send you a listing of that file.

These drives do need occasional maintenance, you know. The heads get out of alignment - and get dirty. You can clean the heads with one of the "cleaning" disks on the market, or by using a cotton swab and isopropyl alcohol (just like you'd clean your tape recorder).

.....

#### DISK RUDIMENTS - Part 2

The "standard" of the floppy disk is the IBM format. The IBM disk is 8 inches in diameter, rather than our 5 1/4 inches (frequently just called 5 inch). The density of the tracks, discussed last month, is 48 per inch. IBM used slightly under 2 inches of disk to make a 77 track disk.

Each track is broken-up into sectors; each sector into bytes. A byte is the smallest addressable portion of memory and is almost universally an 8-bit piece of data. For those of us with 8-bit computers, a byte is the same as a word. If you're working on a 16-bit machine, a byte is a half-word, since the word size is 16-bits long.

IBM put 26 sectors on each track. Each sector held 128 bytes. The capacity of the "standard" IBM disk is therefore (128 bytes per sector) x (26 sectors per track) x (77 tracks) = 256,256.

When you down-size a disk from 8 inches to 5 1/4 inches, something has to go. First, you normally read and write to a one inch portion of the disk, rather than 2 inch band. If the track density is kept at 48 per inch, you normally end up with 35 tracks (slightly less than an inch of usable disk). Secondly, picture a circle of pennies laid on the circumference of an 8 inch disk. Think of the pennies at sectors. Suppose there were 26 of them. Now, try and put them on the circumference of a 5-inch disk. Can't do it, so obviously the number of sectors per track has to be decreased.

Micropolis chose to use 16 sectors per track. A single density Micropolis would have (128 x 16 x 35) a capacity of 71,680 bytes. Such a beast doesn't exist.

#### DOUBLE DENSITY DISK

Double density normally refers to increasing the density of the bytes within a track. The Micropolis MOD I drives are double density. Each sector has 256 bytes in it. The capacity is therefore (256 x 16 x 35) = 143,360.

"Quad-density" is the addition of an increase in the packing of the tracks. In the same width of disk, Micropolis put 77 tracks instead of 35 (track density went from 48 inches to 100 inches). When I

competition computer shop told me I was crazy. "Why, we can't get a reliable double density drive. You can't possibly expect a quad-density drive to work. You'll loose data all the time". Ha! I don't think I've ever lost a bit. Other manufacturers are beginning to make quad-density drives now, but Micropolis certainly led the field by years.

Anyhow, the MOD II quad-density drive has a capacity of 256 x 16 x 77 = 315,392. That is more than the capacity of the standard IBM floppy and it obviously makes me feel very superior to the TRS-80 guys with their 44,800 to 102,400 bytes.

Of course, there is always a negative side. The only one I know of, however, is compatibility. A drive that is designed to read data in a particular manner, won't read data written on a disk in a different manner. MOD I's can't read MOD II data, nor TRS-80, for, even though the TRS-80 has 35 tracks (as do MOD I's), they have only 10 sectors versus on 16 sectors.

#### FINDING THE SECTORS

IBM finds the sectors by use of software. There is one position-indicating hole in the disk. When a photo relay system senses the hole passing over it, the drive is at the start of a track. Determination of the following sectors is done by de-coding the data on the disk. This is called "soft-sector".

Micropolis used "hard-sectoring". Seventeen position-indicating holes are in our disks. When a photo relay sees two holes are close together, the drive at the start of the first sector. When the system sees succeeding holes, it knows it is at the start of subsequent sectors.

#### NO STANDARDIZATION

The variety of methods used for placing data on a disk are staggering: Track densities from 35 to 100 or more tracks per inch; sectors per track of 10 to 32; bytes per sector of 128 and 256. It's somewhat puzzling that so many variations exist. One would think that standardization would help everyone. I guess that the industry is still too young.

.....

#### S/W VENDORS DIRECTORY

The S/W Vendor Directory is now available. I can't say 'finished', as I don't believe it will ever be finished. There is too much data, and the situation changes daily. I certainly don't have all the available software. More software is being released, people go out of business or stop selling a particular program, prices change - all this, and more, make a S/W Vendors Directory a very dynamic thing.

This directory was intended to be available only on a disk. You must have a printer to use the programs. I can supply printouts instead of the disk, but turn around may be a few days longer than when sending a disk. By having the programs and the data, you can modify them in any way you wish. The S/W Vendors Directory is copyrighted. Don't resell the system.

The data currently consists of 50 Vendors and 200 S/W items. The system includes those two data files, sorted variations of those files, and a set of 8 programs. You can print data in the following ways:

1. Sequential Vendors:
  - a) company
  - b) address
  - c) phone
  - d) contact person
  - e) date of last update
2. Alphabetic sorted vendors:
  - a) name

- b) pointer to record number on Sequential Vendor print.
- 3. Sequential Software:
  - a) company
  - b) program type
  - c) program name
  - d) cost
  - e) system required
  - f) language in which program was written
  - g) hardware requirements
  - h) date of last update
- 4. Alphanumeric by Vendor software (short):
  - a) vendor name
  - b) program type
  - c) pointer to position in sequential S/W print.
- 5. Alphanumeric by Vendor software (long):
  - a) company
  - b) program type
  - c) program name
  - d) cost
  - e) language in which program was written
  - f) hardware requirements
  - g) date of last update
- 6. Alphanumeric by program type:
  - a) program type
  - b) vendor name
  - c) pointer to position in sequential S/W print.
- 7. Alphanumeric by program name:
  - a) program name
  - b) pointer to position in sequential S/W print

Enhancements to the system, besides the updating of data, are intended to include a display to screen, an option for operating system (MDOS, CP/M, OASIS, ETC.), and the addition of three lines of descriptive text.

The data is currently categorized by forty minor types and ten major types.

For the time being, the S/W Vendors directory is available as though it were a library disk. However, maintenance of this directory will be involved and expensive. If there is a demand for this product, I'll maintain it, but the price will go to a flat \$25. Please understand, the data is not particularly current. Some companies may no longer exist, and the prices are certainly going to be questionable. In other words, it's still rough but it's something.

By the way, this is not just MDOS software. It certainly includes CP/M, will include OASIS, and may include other systems such as FORTH.

.....

ASMTXT	OBJ	00	routines as shown in nsl'r 5.
PRINT.DIR	BAS	00	Maschino, G. Automatically sequences through and prints the DIR files of your disks.
ENTRYV3	BAS	00	Warner, D. Involved VISICALC type of program. Makes extensive use of SOROC Ctl Codes.
GRADES	BAS	00	Raney, M. Set of programs for the teacher which record, weight, and average test scores.
GRAD.TEXT	SRC	00	
LOG	DAT	00	
READING1	DAT	00	
READING2	DAT	00	
READING3	DAT	00	
WRITING1	DAT	00	
WRITING2	DAT	00	
WRITING3	DAT	00	
MATH1	DAT	00	
MATH2	DAT	00	
MATH3	DAT	00	
GRAPHIC-B	BAS	00	Smith, B. Graphics program for Vector Graphic, followed by a fast assembly language version - see newsletter 11.
S/PLOT	SRC	00	
P.M.W.P.	BAS	00	MacKenzie, M. The Poor Man's Word Processor. Uses BASIC DATA statements.
S/SORT	BAS	00	Findlay, K. Set of programs for automatic set-up and execution of Systemation's SORT/A - SORTDOC is documentation.
SORT	BAS	00	
SYSDISK	DAT	00	
SORTOUT	DAT	00	
LISTDAT	BAS	00	
CHAIATEST	BAS	00	
SORTDOC	SRC	00	
S59000	BAS	00	Rudow, B. Four routines forming basis for auto-configuration. Not implemented. S60000
S60000	BAS	00	
S61000	BAS	00	
S57000	BAS	00	is an expanded and modified version of Dave Land's configuration in newsletter 8.
VERIFY	BAS	00	Callaway, J. Tells user if a variable is all blanks or zero length.
FILTER	BAS	00	Takes string, purges \$, comma, and converts to number - or issues an error message.
FINDSPACE	BAS	00	Finds first char in last name.
DATEFORM	BAS	00	Formats a date entered in numeric form.
TITLES	BAS	00	MacKenzie, M. Centers and boarders titles.
COPY	BAS	00	Sugarman, D. A BASIC filecopy program.
RENUM	BAS	00	Renumbers a file that has left most chars as record number.
REPORTER	BAS	00	Special formatting print pgm.
REPORT	BAS	00	
LOOK	BAS	00	Callaway, J. Allows inspection of files.

MUG MOD II Library Disk 03, Revision 00

NEW LIBRARY DISKS

MUG MOD II Library Disk 02, Revision 00

Name	Type	Rev	Author/Description
====	====	===	=====
TIMECARDS	BAS	00	Marion, H. Generates time-
REGTICARD2	BAS	00	cards for either 2 or 4
REGTICARD4	BAS	00	entries per day.
TAPEREC	BAS	00	Shapiro, J. Aids in genera-
TAPE.TEXT	SRC	00	ting a balanced tape when tap-
			ing records- see newsletter 11.
P/DIM	BAS	00	Zale, B. BASIC save memory,
RETRIEVE	BAS	00	restore memory routines - see
			newsletter 10.
INKEY.B	BAS	00	Rudow, B. Substitute for the
INKEY.T	SRC	00	MICROSOFT INKEY function - see
INKEY.L	OBJ	00	newsletter 9.
DATAFILE	BAS	00	Hogan, T. Database manager for
			personal data.
BPOLE	BAS	00	Callaway, J. Tests screen or
			printer with characters - see
			newsletter 6.
STATEABB	BAS	00	Shapiro, J. Lists state ab-
			breviations.
ASMBASIC	BAS	00	Rudow, B. Assembly language

Name	Type	Rev	Author/Description
====	====	===	=====
ATOM-20	BAS	00	Land, D. Games, Games, Games.
LUNAR	BAS	00	Nothing guaranteed at the mo-
SORCERY	BAS	00	ment. However, most look like
ELIZA	BAS	00	they contain no control char-
STARTREK	BAS	00	acters.
SPACEWARS	BAS	00	
RSP	BAS	00	
CIVILWAR	BAS	00	
KIDMATH	BAS	00	
LOVE	BAS	00	
8-BALL	BAS	00	
ANIMALS	BAS	00	
SLOT	BAS	00	
CHECKERS	BAS	00	
CHECKERS1	BAS	00	
GAME	BAS	00	
GUESS	BAS	00	
TICTACTOE	BAS	00	
CHARACTERS	OBJ	00	
BANNER	BAS	00	
PIE	BAS	00	
PIEPAN	DAT	00	
BOAT	DAT	00	
NEWBANNER	BAS	00	
ADVENTURE	BAS	00	Land, S. And more games.

ADVP2 BAS 00 Including the famous  
 AMESSAGE DAT 00 ADVENTURE!!  
 LIST DAT 00  
 AITEMS DAT 00  
 LIFE BAS 00  
 CAMEL BAS 00  
 TICTACTOE2 BAS 00 Callaway, J. The third  
 BATTLESHIP BAS 00 implementation of TICTACTOE,  
 MATH BAS 00 all different.  
 HI-LO BAS 00  
 ACEYDUCEY BAS 00 Rudow, T. Not to be outdone,  
 my daughter also has a few  
 games in the system.  
 .....

SOMETHING NEW - CHARGE IT

Starting this month the MUG will be accepting VISA and MASTERCARD charges. We hope this will make things a little easier for the non-U.S. people and maybe a few others who would rather "charge it". It eliminates the problem of obtaining a "U.S. Funds" check. The U.S. charge will be automatically converted to your currency.

But, there is a cost involved (isn't there always). If you wish to use your charge card please expect the cost to be 104% of the listed "cash" prices. Also, we ask that when using your charge card please state which card (VISA or MASTERCARD), your charge number, expiration date and name as shown on your card. Also be sure to sign any order you place as we will use this as your authorization of purchase.  
 .....

CURRENT MUG PRICE LIST

Product	US, Canada and Mexico	Airmailed Elsewhere
Newsletter, 12 months:	\$18	\$25
Newsletter, 3 month trial	\$ 5	\$ 7
Newsletter, single issue	\$ 2	\$ 3
Library Disks, MOD II 1, 2, & 3:		
With disk and program or article -	\$ 3	\$ 5
Without prog/article -	\$15	\$17
Library Disks, MOD I; 1A, 1B, 2A, 2B, 3A, 3B:		
With disk and program or article -	\$ 3	\$ 5
Without prog/article -	\$15	\$17
Library Disk, MOD I; Your choice of files:		
With disk and program or article -	\$ 8	\$10
Without prog/article -	\$20	\$22
Membership Disk; MOD I or II:		
With disk and program or article -	\$ 8	\$ 5
Without prog/article -	\$12	\$14
S/W Vendors Disk; MOD I or II:		
Thru July 81	\$15	\$17

VISA and MASTERCARD accepted. All prices are "cash" (check or moneyorder in U.S. funds). Charge orders billed at 104% of listed prices.  
 .....

THINK BEFORE YOU BUY

I haven't had any serious complaints about the utility of the programs on the Library Disks. Before I get some of you angry, I want to point out to you that the first three disks contain all sorts of stuff. Little of it has adequate documentation. Some of the files are just subroutines that can be incorporated into your programs. Some of the programs manipulate specific data structures which may or may not be useful to you.

So, if you order a disk, please be cognizant of the fact that these library disks are the first cut, Revision 00, of what I hope will eventually be a well organized, well documented, useful tool. At the moment, you must understand that while some of the programs are truly professional, that your're getting a data dump, not a professional production.  
 .....

MOD-I DISK OFFER

I imagine you MOD I guys feel like you're not getting a fair shake, as far as the library is concerned. You pay the same price but get half the product. However, as I said a few months ago, I have to FILECOPY a third of the files after doing DISKCOPY, because DISKCOPY doesn't work.

But I'll tell you what I'll do. I'll FILECOPY any set of files to a MOD I disk for \$5 extra. Pick anything from the three MOD II disks.  
 .....

LETTERS

CONFIGURATIONS, AND GAMES

Buzz,  
 OK, OK, here are the PRINTER configuration routines, too... along with some corrections to the console configuration modules we gave you last time! You want ALL our good stuff for free! (ED Note: You bet!! Everything I can get.)

Obviously, we are working on something BIG... but we're not quite ready to announce it yet. Watch this spot - you'll be one of the first to know!!

I'm also sending you our Games disk, which we provide to our customers for \$15.00 (obviously, we do not subscribe to the theory that there is big money in games). We consider this public-domain stuff, so have fun and DON'T CALL US about bugs, problems, or neat enhancements for games!!!

One of the programs on this disk is an ADVENTURE which needs over 80KB of disk files to drive it!!! I would be remiss if I did not attribute this monumental work to my son Steve, who at almost-13 is getting to be a fairly good programmer... as well as a fairly accurate two-fingered typist!!!

In answer to your question about the CURSOR RIGHT code, we did not include it because there is no discernable (to us, at least) industry standard in regards to how this feature works. Therefore, if we were to include it and use it, we would preclude a lot of standard terminal arrangements - and this is precisely what we are trying to AVOID!!!

If you would like to return our diskette filled with new goodies you might wish to share with us and our customers, we would appreciate it. We'll be looking forward to the next MUG Newsletter.

Dave Land, Computer Center  
 5815 Johnson Dr., Mission KS 66202  
 .....

Buzz,  
Here is my latest contribution to the MUG in the form of a new program, never before published. The program, TAPEREC; is one of the few personal programs I've had time to write in the past several months and is used for time balancing recordings (audio) to tape time. It will be very helpful to the music enthusiast and, since it uses quite a few of the Micropolis BASIC goodies shows the ability of our BASIC over others.

A text file is included on the disk which offers a short, descriptive article on the program and modifications required for the user's terminal.

Also thought you'd like to know that I had a rather long article prepared for KB but CP/M wiped out the file before I had a chance to make a backup. Can't mention the rhetoric I used but it reminded me of my Army days. Anyway, it looks like KB is out an article as I don't feel like writing it again. That's the problem with CP/M; you don't know if you have a problem until after you have it. Micropolis will not save a file unless it's a good copy. At least you get an error message!

Joel Shapiro, Bonjoel Enterprises  
PO Box 2180, Des Plaines, IL 60018  
.....

#### CLASSIFIED ADS

Micropolis Drives, Model 1015 MOD II, \$290.  
Suggested list for this drive is \$645. These drives can be used by almost any controller system; The Micropolis disk controller board, the TRS-80 using NEWDOS/80 for Apperat, Inc., etc.

Dave Austun, Online Memory Access Inc.  
P.O. Box 4096, Napa CA 94558  
(707) 253-8080

ED NOTE: These drives are bare-bones - the mechanical portion only. You need to have hardware knowledge to interface them. As I understand the situation, these drives could be used to replace defective mechanisms on current drives, or combined with power supplies and additional electronics to create a functional drive for Micropolis or any other system.

Published Monthly by the MUG  
Subscription rates:  
U.S., Canada, Mexico; \$18/year; Other, \$25/year

FIRST CLASS MAIL  
=====

FIRST CLASS MAIL  
=====

#### MICROPOLIS USERS GROUP

Buzz Rudow, Editor  
604 Springwood Circle  
Huntsville AL 35803  
(205) 883-2621

FIRST CLASS MAIL  
=====

I wonder - could you replace MOD I mechanisms with these mechanisms and have a MOD II system? Well, give Dave a ring if you're interested.  
.....

#### SYSTEMATION COMPILER

The compiler is available, but I can't run the review this month. A bug in the floating point routines held the release up until the end of May. Then Uncle Sam's Post Office didn't get me some literature before the Memorial day weekend that Bob Zale sent. Any other month, I would have held up publication a week. In this case, my business travel over the next two weeks prohibits that, so I had to put the newsletter to bed on Memorial day.

If you are on Systemation's mailing list, I'm sure you'll be getting a flier in the next few days. If not, and you don't wish to wait for a month for the review, contact Bob directly at (312) 481-2420, or drop him a note at Systemation, Inc., P.O. Box 75, Richton Park IL 60471.  
.....