

MICROPOLIS USERS GROUP

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HERE'S YOUR BASIC
DATA BASE SYSTEM

The November KILOBAUD/MICROCOMPUTING contains an article on a Mailing Label program for Micropolis BASIC. More importantly, it reminded me of a set of previous articles on a data base management system which ran in the JAN/FEB/MAR issues of the same magazine. Both the routines were written by Joel Shapiro, 491 Kenilworth Court, Des Plaines IL 60016. The routines interact, i.e., the labels come from the data base. The system isn't limited to name and address files. Up to 30 fields per record can be defined, each of any length, as long as the total record does not exceed 248 characters. Report format is selectable, numerical and dollar fields can be totaled at the end of reports, and multiple (up to 10) sorts are available.

All the code is listed in the articles, but an easier path is to send \$20 to Joel at Bonjoel Enterprises, PO Box 2180, Des Plaines IL 60018. In return you get both programs on a MOD II disk. For the moment, if you have a MOD I, you'll have to type it in - unless you can get Joel to do a special job.

I believe that you can't go wrong by buying this package. The best way to learn your system is to see some decent code. This code is certainly decent. As a "professional" system, it may leave some things to be desired - it's got to be relatively slow, the records don't seem to be keyed, and the logical record size is small (248 characters, as compared to, for instance, 6100 for the CCA system shown last month.

Still, compared to the things I write, it's relatively sophisticated and I can learn a few things by studying what Joel has done. The cost is about 10% of any other available data base system, 1% of some of them. You can, of course, modify the code if you wish to have functions which differ from Joel's.

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FIRST TRY AT ASSEMBLY
LANGUAGE PROGRAMMING

Assembly language programming scares most people. The mnemonics are strange; there are more rules to remember and more steps to go through to get a program running. When it doesn't run, more often than not, you're left with a blank screen and a dead keyboard - no nice prompts telling you what was wrong with your instruction like you get in BASIC.

So why do it? The prime attribute is speed, somewhere in the neighborhood of 10 to 20 times faster program execution. Memory space is conserved, although that isn't as evident when you're calling an assembly language program from BASIC, as I'm about to do. If you can run completely under MDOS you open up 12,264 bytes of memory, compared to having the BASIC interpreter loaded. Then there's the old ego trip of just being able to conquer a difficult task.

Here goes. I'm going to be overly simplistic and hope I don't skip the explanation of an important point which might be obvious to me but vague to you. If you run into trouble, READ THE MANUAL. If all else fails, give me a ring.

(1) Mount a disk in drive-0 that has, as a minimum, RES, MDOS, BASIC, LINEEDIT, SYSQ1, and either ASSM or ZSM on it.

(2) Type (you have to press (RETURN) after all commands)

```
MDOS
LINEEDIT
NAME "ASMTEXT"
AUTO 10
```

(3) Now, when you press the space bar the number '0010' followed by a blank will print on the screen. After each line (defined by pressing RETURN) you press the space bar again to get a new line number.

(4) Type in the following program. You type in one extra space before the text on all lines except 40, 60, 130 and 180. Be careful to put in the trailing blanks on lines 180, 190, and 200.

```
0010 LINK 'SYSQ1'
0020 ORG 07800H
0030 MVI D,16
0040 LOOP1 LXI H,MESS
0050 MVI C,62
0060 LOOP2 MOV B,M
0070 CALL @COUT
0080 INX H
0090 DCR C
0100 JNZ LOOP2
0110 DCR D
0120 JNZ LOOP1
0130 LOOP3 CALL @CIN
0140 MOV A,B
0150 CPI 0DH
0160 JNZ LOOP3
0170 RET
0180 MESS DT 'HELLO THERE! '
0190 DT 'LOOK WHAT I DID!! '
0200 DT 'EX-CEL-LENT, RIGHT '
0210 DT 'ON, ZOWIE.'
0220 DT 0AH,0DH
0230 END
```

(5) You can play with LIST, LISTP and the TAB commands now if you wish, but it isn't necessary for this discussion. To proceed, you write your program to disk and return to MDOS by typing-

```
SAVE
DOS
```

(6) To assemble the text into an object, or load, module, type-
 ASSM "ASMTEXT" "ASMLOAD" "C"
 or, on a Vector Graphic
 ZSM "ASMTEXT" "ASMLOAD" ""

This will create a load module named ASMLOAD and print a listing on the screen ("C"=console), if you used ASSM. ZSM doesn't support the "C" option. If you want to get a printer listing (mandatory with ZSM), type "" instead of "C". Again, all the options are explained in the manual. Either the screen or the printer will show:

```

0000          0010          LINK  'SYSQ1'
0000          0020          ORG   07800H
7800 16 10          0030          MVI   D,16
7802 21 1E 78      0040 LOOP1    LXI   H,MESS
7805 0E 3E          0050          MVI   C,62
7807 46            0060 LOOP2    MOV   B,M
7808 CD 7F 07      0070          CALL  @COUT
780B 23            0080          INX   H
780C 0D            0090          DCR   C
780D C2 07 78      0100          JNZ   LOOP2
7810 15            0110          DCR   D
7811 C2 02 78      0120          JNZ   LOOP1
7814 CD 7B 07      0130 LOOP3    CALL  @CIN
7817 78            0140          MOV   A,B
7818 FE 0D          0150          CPI   0DH
781A C2 14 78      0160          JNZ   LOOP3
781D C9            0170          RET
781E 48 45 4C      0180 MESS    DT    'HELLO THERE! '
7821 4C 4F 20
7824 54 48 45
7827 52 45 21
782A 20
782B 4C 4F 4F      0190          DT    'LOOK WHAT I DID!! '
782E 4B 20 57
7831 48 41 54
7834 20 49 20
7837 44 49 44
783A 21 21 20
783D 45 58 2D      0200          DT    'EX-CEL-ENT, RIGHT '
7840 43 45 4C
7843 2D 45 4E
7846 54 2C 20
7849 52 49 47
784C 48 54 20
784F 4F 4E 2C      0210          DT    'ON, ZOWIE.'
7852 20 5A 4F
7855 57 49 45
7858 2E
7859 0A 0D          0220          DB    0AH,0DH
785B              0230          END

```

(7) Now load BASIC. Type in the following program, which I saved as ASMBASIC. Line 20 must have the same '16R' number as the ORG line in the assembly program. Line 10 should be one hex number less than the one in line 20. Changing of these numbers is described later.

```
10 MEMEND 16R77FF
20 DEF FAA=16R7800
30 LOAD "ASMLOAD"
40 A=FAA(1)
50 END
```

(8) Run it. Are you impressed? That's only half as fast as you can get it, but that takes customizing to your system, which I don't want to get into here.

WHAT'S GOING ON

To understand assembly language you need to read at least some elementary explanation. My suggestions are:

'8080A/8085 Assembly Language Programming' by Lance Leventhal
'Scelbi 8080 Software Gourmet Guide and Cook Book' by Robert Findley

In addition, you should gain knowledge of the routines in both MDOS and in your Monitor. The Monitor is what is normally in ROM and what controls the system before you load MDOS. We all have pretty much the same MDOS. All three of my systems have identical MDOS code, although they all have different RES modules, and have different Monitors. When you configure the Micropolis system, you are modifying only the RES module. Theoretically, we all have the same entry points to the MDOS routines. These entry points are listed in the SYSQ1 and SYSQ2 files. You can load, list and print the SYSQ files with LINEEDIT. In this example, we are using two MDOS routines, @CIN and @COUT. Explanations of what they do, as well as what all other MDOS routines do, are presumably contained in the documentation you received with your system.

As long as we've gotten this far, we might as well walk through the code. Line 10 links the equate addresses of MDOS, that is, it defines where the entry points of @COUT and @CIN are. Line 20 specifies where the object code is to be loaded. I set the load to be at 07800H, which is 30K, on the assumption that everyone has 32K of memory. This number can be changed to the last 2K of your available memory (or to monitor RAM). For instance, for a 48K system, change the number to 0B800H (46K). If you change the ORG, you have to change your BASIC program (MEMEND 16RB77FF:DEF FAA=16RB800).

Line 30 loads the D-register with the number of times to print the text to the screen, which is LOOP1 cycles, 16. Line 40 loads the HL-register with the address of the text. Line 50 loads the C-register with the text length, which is LOOP2 cycles, 62. To get this number I manually counted the characters in the text string (don't forget to include 2 for the 0A,0D line feed/carriage return).

Line 60 moves a byte from memory, i.e., the address contained in the HL-register, to the B-register. Line 70 calls a MDOS routine which writes the contents of the B-register to the screen. Line 80 increments the HL-register so that it points to the next character of text. Line 90 decrements the C-register. When the C-register reaches zero, the entire text string is written.

Line 100 tests the zero-flag. If it is non-zero, i.e., the previous operation (decrementing the C-register) did not result in a zero value, then jump (JNZ=Jump Non Zero) to label LOOP2 and output another character.

When the program reaches line 110, then the C-register equals zero and the previous JNZ did not cause a jump. Therefore, one line of text has been written out. Line 110 decrements the D-register. When the D-register reaches zero, the text line has been written sixteen times. Line 120 tests the zero-flag. If it is non-zero then jump to label LOOP1 and output another line.

Line 130 calls a MDOS routine which inputs a character from the keyboard and puts it in the B-register. Line 140 moves this character to the A-register so it can be tested (compared). Line 150 compares the contents of the A-register with the byte immediately following this instruction. Specifically, look to see if it is an 0DH, or more specifically, have you pressed the carriage-return key.

If the compare did not show the A-register and the byte to be equal, jump to label LOOP3. What this does is have the program cycle, waiting for you to press RETURN. You can press any key you want and nothing happens until you press RETURN. When RETURN is pressed you will return to BASIC and get the READY prompt.

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SOFTWARE FOR MICROPOLIS

The Software Vendor Directory, which I mentioned last month, arrived. Separation of software is done by hardware or operation system, the Micropolis system being one of 32. Of the 844 vendors listed, Micropolis accounts for 28. I've listed only these vendors. Since the bulk of the membership's hardware is based on Vector Graphic, Processor Technology, Imsai & MITS Altair, subsequent newsletters may address these listings.

Joan McDaniel, Micro-Serve's president, is updating the directory on approximately 6-month intervals. From our point of view, the directory is still rudimentary. For instance, there is no distinction between CP/M-on-Micropolis and Micropolis-on-Micropolis. I intend to write the vendors to get more details on their software packages. I'll pass the results along.

Use the directory by finding the software-type from page 6 or 7. The number following the software types indicates the vendor number. Then look up the vendor on pages 8 and 9. Each vendor has abbreviations of software-types offered.

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(Text continued on page 10)

Micropolis Corp.
7959 Deering Avenue
Canoga Park, California 91304

PHONE: (213)703-1128

SOFT SOFTWARE...VENDOR NUMBERS.....
NAME CATEGORY

PERSONAL

CAI-Computer Aided Instruction..676.....TOTAL=1
HOM-Programs for the Home..070-676.....TOTAL=2
PER-Programs for Personal Use..070-136-676.....TOTAL=3

PROGRAMMING

BAS-BASIC Language..282.....TOTAL=1
COM-Compiler..415.....TOTAL=1
CVT-Convert Program.746.....TOTAL=1
DAT-Data Transfer.415.....TOTAL=1
DBM-Data Base Manager..168-195-282-445-795-818.....TOTAL=6
EDT-Editor..346.....TOTAL=1
LIN-Other Language..489-511.....TOTAL=2
MAC-Macro Assembler.346.....TOTAL=1
M/U-Multiple User Operating Sys..415.....TOTAL=1
O/S-Other Operating Sys..346-415-489-746-821-835.....TOTAL=6
SEC-Security..363.....TOTAL=1
SOR-Sort Program..168.....TOTAL=1
SOU-Sound Program or device..140.....TOTAL=1
T/P-Telecommunications..415.....TOTAL=1
UTL-Other Utility...168-346-363-414-489-746-795-818-821.....TOTAL=9

GENERAL BUSINESS

ANL-Business Analysis..605-818.....TOTAL=2
A/P-Accounts Payable...070-136-638-676.....TOTAL=4
A/R-Accounts Receivable...070-136-638-676.....TOTAL=4
G/L-General Ledger..136-231-240-425-638-676.....TOTAL=6
INV-Inventory..070-136-638.....TOTAL=3
MLT-Maillist..070-414-605.....TOTAL=3
O&A-Osborne/McGraw Hill Business Packages G/L-A/R-A/P-PAY-JOB
511.....TOTAL=1
PAY-Payroll...136-240-622-638.....TOTAL=4
TAX-Tax Package...622.....TOTAL=1
W/P-Word Processing..363-511-561-677-818-821.....TOTAL=6

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INDUSTRY PACKAGES

CPA-Certified Public Accountant..605-622.....	TOTAL=2
MED-Medical..818.....	TOTAL=1
PTR-Professional Time Reporting..561.....	TOTAL=1
RST-Real Estate..385.....	TOTAL=1
SAL-Sales Analysis...676.....	TOTAL=1
STA-Statistics..070.....	TOTAL=1

OTHER

CAT-Catalogue or extensive line of software too large to list 415-511.....	TOTAL=1
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28 Total Vendors listed

Note: See CP/M Section Also

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070	BASICALLY SPEAKING A/R-A/P-INV-MLT-STA-HOM-PER	719 ANNA LEE LANE BLOOMINGTON IN 47101
136	COMPUMAX PHONE (415)321-2881 PER-A/R-A/P-G/L-INV-PAY	467 HAMILTON AVENUE # 301 PALO ALTO CA 94301
140	COMPUTALKER CONSULTANTS SOU	1730 21ST STREET SUITE A SANTA MONICA CA 90404
168	COMPUTER SERVICES PHONE (714)438-9137 UTL-DBM-SOR	P.O. BOX 81243 SAN DIEGO CA 92138
195	CREATIVE COMP APPLICATIONS PHONE (213)798-4529 DBM	2218 GLEN CANYON ROAD ALTADENA CA 91001
231	DATA MASTER PHONE (712)382-2738 G/L	1024 MAIN STREET HAMBURG IA 51640
240	DATASMITH PHONE (903)888-8486 G/L-PAY	15501 WEST 109TH ST LENEXA KS 66219
282	EIDOS SYSTEMS CORP PHONE (615)242-8893 BAS-DBM	315 WILHAGAN ROAD NASHVILLE TN 37217
346	HEMENWAY ASSOCIATES INC PHONE (617)426-1931 UTL-O/S-MAC-EDT	101 TREMONT STREET SUITE 208 BOSTON MA 02108
363	INFINITY MICRO PHONE (408)988-1867 UTL-W/P-SEC	P.O. BOX 4627 SANTA CLARA CA 95050
385	INVESTMENT ANALYSIS SYS RST	P.O. BOX 282 PALOS VERDES E CA 90274
414	LIFEBOAT ASSOCIATES PHONE (212)860-0300 UTL-MLT	1651 THIRD AVENUE NEW YORK NY 10026
415	LIFEBOAT ASSOCIATES PHONE (212)580-0082 DAT-M/U-O/S-CAT-COM-T/P	2248 BROADWAY NEW YORK NY 10024
425	MANAGMENT INFO SPECIALISTS G/L	4823 SOUTH 25TH STREET MILWAUKEE WI 53221

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445	MICRO APPLICATIONS GROUP DBM	7300 CALDUS AVENUE VAN NUYS CA 91406
489	MICROPOLIS CORP. PHONE (213)457-8990 UTL-O/S-LIN	7959 4TH STREET SAN RAFAEL CA 94901
511	MINI MICRO MART PHONE (315)422-4467 CAT-O&A-LIN-W/P	1618 JAMES STREET SYRACUSE NY 13008
561	ORGANIC SOFTWARE PHONE (415)-455-4034 W/P-PTR	1492 WINDSOR WAY LIVERMORE CA 94550
605	PROFIT GROWTH CREATIONS PHONE (714)776-0606 ANL-CPA-MLT	520 NORTH BROOKHURST SUITE 122 ANAHEIM CA 92801
622	QUICK-TAX LTD. PHONE (212)351-6145 TAX-CPA-PAY	DIV. OF J A ABBOT INC 319 CLAWSON STREET STATEN ISLAND NY 10306
638	RETAIL SCIENCES INC PHONE (404)231-2303 A/R-A/P-G/L-INV-PAY	3384 PEACHTREE N.E. SUITE 254 ATLANTA GA 30326
676	SMALL BUSINS COMP SERVICE PHONE (217)367-7806 CAI-HOM-PER-A/R-A/P-G/L-SAL	813 MAC ARTHUR DR URBANA IL 61801
677	SMALL BUSN APPLCN INC PHONE (713)-528-5158 W/P	3220 LOUISIANA SUITE 205 HOUSTON TX 77006
746	SYSTEMATION INC PHONE (312)481-2420 UTL-O/S-CVT	P.O. BOX 75 RICHTON PARK IL 60471
795	THE SOFTWARE STORE PHONE (906)228-7622 UTL-DBM	706 CHIPPEWA SQUARE MARQUETTE MI 49855
818	UNIVAIR INTERNATIONAL PHONE (314)426-1099 W/P-ANL-UTL-DBM-MED	10327 LAMBERT INTL ARPRT ST LOUIS MO 63145
821	VECTOR GRAPHIC INC PHONE (213)991-2302 UTL-O/S-W/P	31364 VIA COLINAS WESTLAKE VIL CA 91361
835	WILSERV INDUSTRIES PHONE (609)227-8696 O/S	P.O. BOX 115 HADDONFIELD NJ 08033

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LETTERS

Happy to say, I received a lot of nice comments in the mail this month. Thanks for the support, guys. Some of the letters (minus the rave reviews) follow. The rest come next month after I check on a few things they question.

.....

Buzz,

I thought that I should let you know that I have an operationg modem. I use a D.C. Hayes S-100 modem. This is a hard wired unit, not an acoustic modem. The software supplied is normally meant to be used with CP/M but if you do not wish to explore the full power of the unit you could use this with MDOS.

The software allows half or full duplex operation, baud rates of 110 or 300, data capture to memory where you may name a file and save the data to disk, dial a phone number or redial the number if busy, change the word length from 5 to 8 bits, select even, odd or no parity, set STOP bits for 1 or 2 bits, have the capture buffer printed to the console, or transmit a named file from disk through the modem.

All of these functions can be called with a "^A" (control A). This will cause some conflict with certain timesharing systems but D.C. Hayes does supply you with the source code and you may create various versions of your modem control program.

This modem was not inexpensive as I paid \$400.00 last December for it. I am very satisfied with the operation and the reliability of the unit. The system is supplied as a S-100 card, a ribbon cable, and the interconnect dial box for use outside of the computer. The dial box has a modular telephone jack which makes connection to the telephone easy. The modem is a FCC registered device so that problems with Ma Bell will not occur.

I highly recommend this unit and hope that this letter can provide the members with useful information.

Dave C. Culbertson
Custom Electronics Inc., 238 Exchange St., Chicopee, Mass. 01013

.....

Buzz,

Can anyone tell me why I can format a disk and then run into PERM I/O errors on that same disk later. I had 50 Memorex disks of which 30-35 are unusable because of this problem. Could it be my drive alignment?

Ted Schoenke
3014 South Tenth, Manitowoc WI 542204

Ted: Boy, that's a lot of errors. I suggest you try 3M (Scotch), Dysan, or BASF disks. Some disks don't have the signal-to-noise ratio necessary for the quad density. Sometimes even the normally best disks can have bad batches. They should be returned to your place of purchase. Perhaps you should monitor the disk environment, also. You know the little magnets (disguised in pretty plastic) used to hold typing to typing stands? The girls who work for me

had no idea it was very bad to lay one down on a disk. Coffee cups, too much smoke, finger prints, arcing vacuum cleaners, high static electricity - lot's of things can cause I/O errors. If after looking into all of the above, you still get errors, it's evidently not the disks. Since you have two drives, see if you can determine if the problem is in one or the other. It's improbable that both drives would be misaligned. Then call Jim Molenda at Micropolis (213) 709-3300. He'll be able to solve, or direct you to the solution of your problem.

.....

Buzz,

My system was bought primarily so I could develop a Farm Management Program. It should be refined enough to offer at year end and will provide for all financial transactions including check writing, financial statements, monthly reports, tax oriented yearly statements and production and field records for cotton, rice, soybeans, wheat and custom work.

I would welcome any information on how to get the most from my equipment .. should I be investing in a modem, etc.

I also wonder about what the future will bring and it's effect on the work I'm doing. What about Pascal? Will it replace BASIC? If a person wants to write a program that will find wide usage what is the best way to go about translating it from Micropolis BASIC?

Jim Harden
Route 1, Box 121, Cleveland Miss. 38732

Jim: All good questions. The answers are just from my point of view. I think I'm about to spring for a modem. Not because I definitely feel that it's an asset, but that it may be, and the concept is interesting, and it also sounds like fun. Could run up one's phone bill, however. As far as languages go, I wouldn't worry about BASIC being replaced. Computer scientists have this thing about inventing new languages. They will always find a situation where such-and-such a language would do "much" better. I suppose I believe that certain languages function better in such situations, but I don't believe that there is going to be the ONE perfect language that replaces all the rest. Pascal is getting a lot of press. I haven't worked with it, so I can't comment. I think most of us can do fine with BASIC. If you're really trying to write sophisticated programs, you're better off becoming an expert in one language than a novice in many. All the hot-shots that have Pascal and FORTH still have BASIC. I would stick to BASIC or assembly language if I wanted to market software. I doubt that selling Micropolis BASIC software is going to make anyone rich. If we assume that CP/M is the standard operating system, then CBASIC-2 is probably the most owned language. It certainly isn't the exclusive BASIC for CP/M. BASIC-80 is newer and it can be compiled or interpreted. My guess is that selling software in the micro market is tough. You need to generate a lot of different versions, both in language and in system interface. How do you translate? Trial and error. Use of Systemation's BEM and it's global change function sure simplifies things. There really aren't great differences between BASICS.

.....

Buzz,

I have a working split screen program that could be changed to use with any memory mapped video, so if you want it just ask. Also have an auto call for ham radio which will store a message or messages and print back later. Also a Baudot to ASCII and back conversion, print from memory routines using the (DT) op in assembly language, and a Morse code send routine. All are on the Micropolis Mod I system. If there are any hams out there they might want the whole package.

I have to get busy and get a modem program going for MDOS so we can exchange things. Hope I can get it done by the end of the year, but as busy as I am that may be hard.

Bob Barnum WB9UBM
1500 S. Ridge Rd., Beloit WI 53511

Bob: No one else knows, but we've talked about several other things, too. For the moment I decided not to print your assembly language I/O routines for the SOL. I still haven't tried them, and should try to make them a little more universal, also. So we'll be talking.

.....

Buzz,

Do you know how to recover data from a Mod 1 file when a condition occurs that gives a PARM ERROR when the data is accessed?

Norman Baker
5835 Indian Ave, San Jose CA 95123

Norman: Systemation's Disk Utility Package has a DRECOVER routine that has saved me twice in just such a circumstance. The Package sells for \$95 and contains 10 other routines:

SFILES - Sorted listing of the disk directory
DMAP - Maps each file on the disk
UNSCRATCH - Restores a scratched file
DCOPY - Copies disks, even with I/O Errors
DDUMP - Displays disk in hex and ASCII
DEDIT - Edits, in hex or ASCII, by file or sector
DVERIFY - Verifies disk, provides map of bad sectors
DCOMPARE Compares files on a byte-by-byte basis
CP/M-MDOS - Converts CP/M files to MDOS
MDOS-CP/M - Converts MDOS files to CP/M

The last two convert for format only. It doesn't mean you can run the results.

.....

Buzz,

I work for Texas A & M and we have some Farm Budgeting programs to share with anyone interested. If they send me a disk I'll copy them and return. (Ray has MOD II drives.)

Ray Sammons
4613 Matador, Amarillo TX 79109

12/1/80