

NEWS

Vol 2

North Texas IBM Personal Computer Users Group

No. 7

Special Interest Programs

Programmers

I got home on Saturday to find a postcard from our normal scribe, Dick Gall, who is on a business trip in Europe. Dick asked me to find someone to take notes for the meeting, so I guess I'm it. We did not have a set topic for this month, so I gave a talk I had prepared for a group at the APPLE club on the new standard BASIC. [See BYTE, June 1982, p182]. Microsoft BASIC seems to be the defacto standard in the industry.

I told the group about the new BASIC I am building for the IBM PC. This will be compatible with IBM source and data disks, able to reference all memory [if you have 576kb, you can use it all] and run about 2-3 times faster. There will be about 12 display screens where the user can see every aspect of his program working at full speed or single step. I am interested in finding beta test sites for the product. The 8087 is being used in the initial versions.

We did not find a topic for July. Please call me (238-7650) with suggestions.

Neil Bennett

Communications & Networking

We had a very successful meeting last month and will always strive to serve as an open discussion group to answer the needs of the novice as well as professional.

Last meeting we discussed all types of Communications hardware and software. In the future we will address the subject of Hard Disks as well as Networks (both local "LAN" and general communications networks). ▷

A g e n d a

The presentation this month will be by a representative of INTECH Company on its new UNIX-like, multitasking operating system for the IBM PC that also emulates MS-DOS. Chris

June Disk of the Month Problems?

If you had trouble getting the June disk to operate properly, you're in good company. It seems there was a quality control problem and some of the disks wouldn't play! If yours is bad, return it at the next meeting for a replacement or refund. (If it's any consolation, Will said he fired the entire Quality Control Department!)

John

A bulletin board service has been offered for use by the entire club. The brave soul who offered the service is Mark E. Collard. The board number is 223-0983 and Mark's voice number is 223-6382. We will be interested in seeing how much use the club can make of this service. We will be putting PC-TALK III on the board for people to use, and hope to use the board for a communications device for all North Texas PC User Group members.

For July we will be following up with more discussions of Communications techniques, hardware, and software. We will also discuss the possible uses of the Club Bulletin Board.

Bob Van Wyk
(214) 231-1400 ext 222 (w)
(214) 867-5012 (h)

Next Meeting July 16, 1983
Auditorium, Cox School of Business, Fincher Building
SMU Campus
(See map on page 2)
9:30 TO 12:00



North Texas PC NEWS

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Deadlines:

All material for publication in PC NEWS (articles and ads) must be received by the NEWS staff no later than the first Saturday of the month in which publication is desired.

North Texas IBM Personal Computer Users Group

A non-profit, independent group, not associated with IBM Corporation. The Group meets on the third Saturday of the month at 9:30 AM in the Auditorium, Cox School of Business, Fincher Building, SMU Campus. (Check meeting notice on page 1 for any late changes.)

Officers:

President Alan Elliott (214)941-8475
 Program Chairman Chris Morgan (214)446-0484
 Treasurer Bill Hood (214)350-9784

Special Interest Groups:

Beginners Mike Durbin (214)271-8779
 Business Applications (open)
 Disk of the Month Will Janoschka (214)231-6449
 Programmers Neil Bennett (214)238-7650
 BASIC Applications Charles Loftin (214)492-3594
 Comm & Networking Bob Van Wyk (214)696-0254

Special Group

Bylaws Committee Fred Williams (214)245-4319

Dues: Professional Membership - \$36.00 year
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 Student membership - \$12.00 year

Payable in January, dues are prorated for balance of year when applicant joins after January. Dues should be mailed to Treasurer, NT IBM PC UG, 10400 N. Central Expy #210, Dallas, TX 75231

Notes on Special Interest Groups:

1. A volunteer is needed to lead the Business Applications SIG. Coordinate with Alan Elliott for particulars and ground rules.
2. The BASIC Applications SIG does not meet every month... It meets only for special applications in BASIC as announced in PC NEWS. Contact Charles Loftin if you have a specific subject you would like to propose for a meeting.

PC NEWS Financial Report

15 June 1983

January through June 1983 Issues

INCOME:

Balance from 1982 \$ 58.49
 Adv, Labels, Misc 639.45
 Cash from Treasury 1213.00

Total Income \$1910.94

EXPENSES:

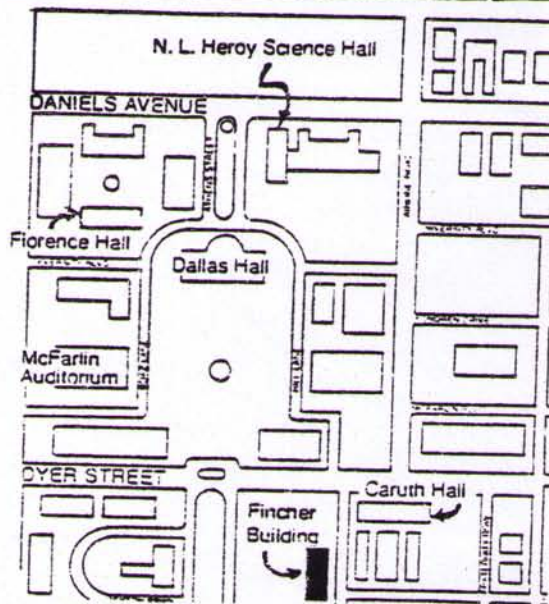
Postage \$ 494.60
 Office Supplies 122.22
 Misc Copies 1.54
 Printing 956.66
 Art Supplies 1.50
 Telephone Calls 10.33

Total Expenses \$1586.85

BALANCE 15 Jun 1983: 324.09

\$1910.94

* Includes one issue of Bylaws



Next Meeting
 Auditorium,
 Cox School of Business,
 Fincher Building
 SMU Campus

Son of Resources or FREE/CHEAP Communications

by Carrington Dixon

So you've spent several hundred dollars on a modem, you've got the copy of PC-Talk that was on last month's Disk-Of-the-Month, what do you do that doesn't involve spending even more money on sign-up fees and connect charges or long-distance phone bills? Fortunately, there are two good answers to that question in the Dallas area.

If you've been coming to the meetings regularly, you've already heard of STARTEXT. STARTEXT is a videotext service of the Fort Worth Star-Telegram. It's not free but it's so cheap that it almost is... The fee is \$7.95 per month -- no extra charge for connect time or for anything else. An hour on The Source would cost you just about that. They currently claim over six hundred subscribers which makes them the fourth largest commercial videotext service in the country, after Dow-Jones, CompuServe and The Source.

For your almost eight bucks you get current news -- what would you expect from a newspaper? You also get all kinds of features (newspaper type) and columns. The news is very current; I have read stories that were time-stamped only minutes before I signed on. The various news features and columns change less often, typically once a week; although, some like the Elston Brooks column from the parent print-paper change several times a week.


STARTEXT is Command rather than Menu driven. This means that you have to know a few keywords in order to get any response from the computer. This is a slight problem for the new user but not a major one and is probably a plus for the experienced user who would rather not sit through repetitions of the same menu at 300 baud. Only a few keys need be memorised as most of the common ones (NEWS, WEATHER, BUSINESS, etc.) point to others and all of the documentation is online.

STARTEXT has added features regularly over the two months that I have been a subscriber. It has recently added a Computer Exchange and several other computer oriented items. They do not yet offer electronic mail but have promised it before years end. Response to user commands was slow when I first began using the service but has improved considerably with the advent of their Version 2 software.

The best news in cut-rate communications is that there is now an IBM-PC Bulletin Board that is a local call. Mark Collard is running a bulletin board in Desoto that is dedicated to the PC. No news or features here, just a chance to exchange information via the bulletin board message facility and download public domain software. The bulletin board has been in operation only a few weeks, but it already has a significant amount of software that is free for the downloading. If you were wondering about the XMODEM protocol in the new PC-TALK III, this is what it is for. The 'handshaking' in this protocol helps to eliminate the transmission errors that sometimes appear in ASCII files that are sent over telephone lines and even allows the transmission of binary data such as ".EXE" and ".COM" files.

The Board operates at the two standard speeds, 300 and 1200 baud, and at the maverick speed of 450 baud. There is an explanation of this speed and the 'inserts' to PC-TALK to support it on the Board. Anyone interested in communications should read the explanation even if they have a 1200 baud modem and intend to use the higher speed.

If Mark Collard is at this month's meeting, he should stand up and take a bow. He has produced a fine bulletin board that would be worth calling even if it were long distance; as a local call it is THE outstanding bargain in communications is Dallas today.

Carrington 

STARTEXT
P.O. Box 1870
Ft. Worth, TX 76101
Phone (voice): 429-2655 ext 832

RBBS-PC Bulletin Board in Desota TX
SYSOP: Mark Collard
VOICE: 223-6382
MODEM: 233-0983
24 hrs 7 days/week
300 - 450 - 1200 Baud
Even or No Parity.



8087 Miles per Hour

by Neil Bennett

The 8087 is a numerics co-processor for the 8086/8088 microprocessor. IBM has now made it official (InfoWorld) that the empty chip carrier on the PC motherboard is for the 8087; something everyone had guessed at least a year ago. A recent issue of Personal Computer Age was devoted to the 8087.

The 8087 does floating point arithmetic by hardware. Compared to software functions in the 8088, the 8087 is about 100 times faster for floating point multiply and divide and maybe 1000 times faster for things like exponentiation. But these figures don't mean much. The 8087 just sits there looking pretty unless software makes use of it. Software houses are just beginning to bring out packages that will make use of the 8087 if it is there. Even so, don't expect a 100 fold increase in speed for all your applications. The sieve benchmark is about 20% faster with integer arithmetic than with single precision floating point. If the 8087 was used, it could make the floating point speed about the same as integer arithmetic speed, i.e. a 20% speed improvement overall. As Garfield would say, "Big fat hairy deal!". But there are other applications; any assembler program that is doing lots of floating point arithmetic, such as graphics, would show a dramatic increase in speed.

The 8087 uses integer, floating point and even packed decimal data. All these external forms are converted to an internal temporary form of some 80 bits long. The range of numbers in that internal mode is up to ten to the 4932. Compare this with the double precision range of ten to the 308. All this makes life a dream for a system designer; if you want to convert from integer to double precision floating point you just have to load the integer and store as a double precision floating point. To convert from an ascii number to integer you just have to pack it to bcd and load it and store as an integer.

The 8087 is a parallel processor to the 8088. The 8088 can give the 8087 some work and then maybe go away and do something else for a while. A synchronizing signal tells the 8088 when the 8087 has finished. There are many "styles" of arranging the workload between the 8088 and 8087. The simplest is for the 8088 to start the 8087 number-crunching and then sit idling for the operation to finish. This approach treats the 8087 as an extension to the 8088 instruction set. Another approach

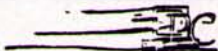
would be for a multi-tasking operating system to continue another task while the 8087 is working. The 8087 can be made to generate an interrupt when it completes.

The opcodes to use the 8087 are not included in the assembler. Packages of macros are available to translate the 8087 mnemonics to 8088 instructions. The macro system I am using is from Southwestern Data Processing. The macros attempt to solve the problem of synchronizing with the 8087 by wait instructions. The wait sits in the idle state till the synchronizing signal comes along. If the 8087 is being used in the extension mode you must have a wait between 8087 instructions. [If you don't have a wait, the 8087 won't be able to accept the second instruction; if you have two waits you might sit there forever waiting for that synchronizing signal to come along a second time]. The safe thing for the macro is to issue the wait before the 8087 instruction. However, if you are asking the 8087 to store information in the 8088 memory (such as the result of a calculation), the 8088 is free to go ahead as soon as the 8087 picks up the instruction. The 8088 can access the memory before the 8087 puts the information in!. Under these conditions you must use a wait instruction after the 8087 instruction as well as before. I found this out with a subroutine using the 8087 which worked perfectly when single-stepped with a trace, but it would not work at full speed.

I have now developed a full package of arithmetic routines in assembler using the 8087. If you have the macros, I would be happy to share my routines with you. But, be warned, not all the macro packages use the standard mnemonics.

I bought my 8087 from Microware. You end up with a black chip with about 40 legs and if you damage just one of those legs you have blown your dollars. Here is how to install it. The warning about static electricity is serious! First get as much access as possible around the empty carrier; maybe take out peripherals boards to get more room. PLACE the 8087 chip on the carrier; do not exert any force. The notch should be at the same end as the 8088. Use a flashlight to see if the legs of the 8087 are too wide apart for the carrier. If they are too wide apart, put the 8087 on its side on a flat surface. [Non conducting!] One set of legs will be on the surface, the chip itself will be vertical and the other

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(continued)

set of legs will be horizontal, up in the air. Get another non conducting flat surface [a plastic ruler would be ideal] and place it gently on the top set of legs. Using gentle force push the legs together. Measure the width of the legs repeatedly against the carrier till you are quite happy that everything is aligned properly. [I repeated this 6 times] Use both thumbs to push the 8087 into the carrier. Avoid a rocking motion as this can weaken the legs.

Neil


INFOWORLD Vol 5, No. 26. June 27th, 1983. p 1.

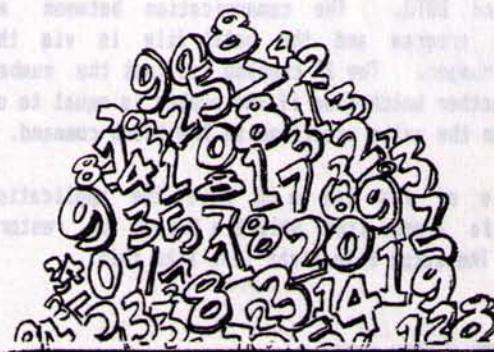
Personal Computer Age Vol 2.3 March 1983.

Southwestern Data Processing, P.O. Box 40876, Tucson, AZ 85717. Ph. (602) 881-4454. Full 8087 extensions to the Macro-Assembler; \$49.95. Supplied with a very useful 93-page manual which has the full 8087 instruction set with examples and sample programs.

Microware, P.O. Box 79, Kingston, MA 02364. Ph. (617) 746-7341. The quantity-one price is \$223. The quantity-100 price is \$180. Contact them about other quantities such as 50-99, or 250-1000. 180-day warranty against defects in the chip. Warranty does not apply to pins damaged when the chip is being installed.

"Getting Started With the Numeric Data Processor", Application Note 113 by Bill Rash. INTEL, 3065 Bowers Avenue, SV 3-3, Santa Clara, CA 95051

"Making Mainframe Mathematics Accessible to Microcomputers" also from INTEL. 



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Programming Topics

Using the ERRORLEVEL in DOS 2.0

DOS 2.0 has provided a new set of subcommands for batch files. These commands can control the flow of batch processing so that steps can be skipped and looping can take place. Two of the commands that accomplish this are IF and GOTO. The communication between an application program and the batch file is via the ERRORLEVEL number. The IF command can test the number and GOTO another batch line if the number is equal to or greater than the value specified in the batch command.

One example of its use is to have the application program (via a menu item) select a backup or restore function. The batch file might look like this:

```
:START
MYPROG1
IF ERRORLEVEL 3 GOTO ERR3
IF ERRORLEVEL 2 GOTO BK
IF ERRORLEVEL 1 GOTO RES
GOTO ERR3
:BK
BACKUP *.* A:
IF ERRORLEVEL 1 GOTO ERR
GOTO START
:RES
RESTORE A: C:\
IF ERRORLEVEL 1 GOTO ERR2
GOTO START
:ERR
PAUSE *** BACKUP ERROR
GOTO EXIT
:ERR2
PAUSE *** RESTORE ERROR
GOTO EXIT
:ERR3
PAUSE *** PROGRAM ERROR
:EXIT
```

If the program MYPROG1 sets the ERRORLEVEL to 2, the IF command will cause the batch file to skip down to the ":BK" label and continue from there thus executing the BACKUP command and looping to return to execute the application program again. A value of 1 will execute the RESTORE and loop back. Any other value will branch to the error message.

The BACKUP and RESTORE commands also set the ERRORLEVEL which will be used to stop the processing if something goes wrong.

The use of this technique requires that MYPROG1 be able to set the ERRORLEVEL. But BASIC does not have a direct way of setting the ERRORLEVEL. The ideal place would be a parameter to the SYSTEM statement. No matter, we'll just poke the old error value in and be on our merry way. Wrong! DOS resets the error value at each program exit. Thus when BASIC ends, the value we so carefully set is wiped out before the batch file can test it.

Well, the next best thing is to write our own exit to BASIC, but that's too much for me.

Another option is to poke a value in a place that won't be bothered and have a small assembler program execute immediately following the BASIC program to set the error value using the DOS function to 4C. This I can do and have done. If anyone wants to use this program (a huge 128 bytes), it is available for the asking.

Bill Hood

1



User Application Programming

In the book entitled "Application Development Without Programmers", James Martin observes that the number of computer programmers and overall programming productivity must increase drastically if we are to satisfy the coming crushing demand for applications programs. He mentions estimates that the number of computers used for commercial and scientific applications may grow by 25% per year over the next ten

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Programming Topics

(continued)

1-2-3 User Application Programming (continued)

years. If programmer productivity stays constant, the number of programmers needed will be ninety-three times the number that we have now. Simply put, something must be done about the amount of hours it takes humans to develop application programs. Programmers must be replaced, or more properly displaced by the large number of future users with little or no computer experience.

I have had the opportunity to evaluate the Lotus 1-2-3 program, and I believe it to be a step in the direction of providing a means for people to interact with the computer without having to possess either a degree in computing science, an enormous amount of free time, or an enormous amount of money to pay for it. A lot of care has gone into always providing the user with a menu of what it expects. 1-2-3 has the speed of a command driven system in that terse one-character codes are all

that is typed. This allows the experienced user to proceed very quickly. The inexperienced or casual user can stay and ponder over the ever present menu of what the computer considers reasonable at that particular point.

1-2-3 is first a spreadsheet, secondly graphics, and thirdly data base. The spreadsheet and graphics capabilities are tremendous, but the data base capabilities are somewhat of an exaggeration of the term. In addition to the major features, 1-2-3 provides some very handy utilities for using your printer, hooks to the normal DOS file commands, and has an intriguing capability they call "macros". I will try to briefly describe all of these features.

All aspects of your typical visi-clone spreadsheet are within the spreadsheet portion of 1-2-3. Compared to SuperCalc specifically, the features are much richer. For example, SuperCalc 1.0 gives a total of about twenty-five built in functions. 1-2-3 gives over fifty. Several split screen and title options are available. ▶



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1160 Park Boulevard
Plano, Texas 75074
(214) 424-3582

WILDCAT COMPUTING, INC.

Programming Topics

(continued)

1-2-3

User Application Programming (continued)

The spreadsheet size is generous, a mere 2048 rows by 256 columns. I found this to be more of a theoretical limit because I always seem to run out of memory before I fill the sheet. I have 320 KB, and the RAMemory seems to be gobbled up much faster than with SuperCalc. Storing the files on floppies seems to be reasonably efficient. The major constraint always seems to be RAM.

In setting up a spreadsheet, one frequently has to specify a range of cells to take something from, or do something to. Specifying a range of cells in 1-2-3 is much easier than in SuperCalc. In addition to the old fashioned typing of range boundaries, 1-2-3 makes creative use of the direction arrows and reverse video display to provide a quick and easily visualized method of indicating the range. For a third method of indicating ranges, 1-2-3 allows ranges to be named and referenced by that name. You can use these assigned names in formulas such as @SUM(Deposits) rather than @SUM(D11..F30), and in a variety of other places. When entering keyboard commands, a range name can also be used, with the additional aid of a function key which displays all of the currently defined range names.

One major difference from the vanilla spreadsheet is the absence of a replicate command; only a copy command is provided. Instead, 1-2-3 gives you the opportunity of specifying an absolute or relative address. For example, a reference to C4 in cell E5 is a relative reference (One row up, two columns left). An absolute reference of \$C\$4 in cell E5 means absolutely C4. If E5 were copied to cell G14, the relative address would be translated to E13, while the absolute address would remain \$C\$4. SuperCalc gives me the option of specifying absolute or relative at the time that I copy, while 1-2-3 makes me think about it at the time I enter the formula reference. I found the 1-2-3 approach, well, very different, and I have not yet adjusted to this method, but over time I may even grow to prefer it. It is more flexible, in that a relative row and absolute column, or vice versa can be specified.

In a word, the graphics are wonderful. The most impressive feature is speed. In fact, all of 1-2-3 is fast in comparison to most other spreadsheets. This is

because 1-2-3 is coded in assembler with speed as a major objective. The first version has been specifically designed for the IBM-PC, or Compaq, so you can expect a good fit to our machines. The graphics are flexible, and can be printed on an IBM graphics printer or an Epson with GrafTrax. If you have both the monochrome display and a color monitor, it makes use of both by displaying the spreadsheet on mono and the graph on the color monitor at the same time. If you have only the color monitor, the spreadsheet is swapped only while you are viewing the graphics. If you have only the monochrome display, you miss out on a very major feature of 1-2-3, and only get to print the graphics. I understand a new version of 1-2-3 will support graphics on the mono display via the Hercules card. The graphics display is part of the worksheet portion, and to print it you have to first save it from the worksheet, swap a floppy, execute the graphics printing options. This inconvenience is probably unavoidable because some pretty hefty processing and sorting is required to accomplish this task.

1-2-3 has defaults for most things, as you might expect. Additionally, after a user strays from the default in a particular situation, 1-2-3 will usually remember this, and the new parameters become the default the next time the situation is entered, even from session to session. If you are likely to need more than one customized situation, 1-2-3 will let you name them (as with ranges), and later refer to that name rather than each specific parameter.

The "data base capabilities" means sort and query. Sorting allows a primary and secondary key, specifying ascending or descending order, performed on any specified range. The queries allowed are the find, extract (copy to another place), unique (eliminate duplicates), and delete (eliminate blank space). Specifying the criteria (which cells should be involved) can range from the very simple to the hopelessly complex. Some very complicated operations are given the name "statistical functions." They allow you to do things like fill a table of numbers similar to a FORTRAN DO loop, specify a frequency distribution, and specify a series of values of one cell and create a table of dependent formulas.

By far the most "magic" capability is the "macro" facility. This permits the user to store a series of keystrokes into a range of cells and "execute" these

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Programming Topics

(continued)

1-2-3

User Application Programming (continued)

commands at the touch of a key. All the primitive elements of computer programming are present: IF's, Repetitions, Goto's, and pauses for user input. 1-2-3 even allows hooks into its own menu facility to allow users to create their own menus (user selected CASE statement). I believe this capability, clumsy as it may be at present, will catch on with spreadsheets like the concept of stored programs did with computers decades ago. This is because it allows an experienced 1-2-3 user to specify a very complicated set of keystrokes that can be executed by a very inexperienced user. These capabilities are completely absent in SuperCalc, but less sophisticated than the data capture capabilities of Dbase II. They are well embedded into the spreadsheet jargon, however, and can provide that much needed front end for the customization to specific applications. The interpretative nature of a "macro" makes it quite simple in concept and at the same time very flexible. You can even write self-modifying code, thank goodness this wasn't advertised as a feature.

In review, I find 1-2-3 possessing all the attributes of an end user computer language. This is a first evolution of the spreadsheet, and there will be many more to follow. It provides the sophisticated end users with a way of generating application programs customized to their problems. It also provides a path for the sophisticated end users (programmer's displacement) to chart a course for an unsophisticated end user to follow using the applications terminology rather than the end user computer language itself.

If an effective method of computer/user communication can be achieved, then the barrier is closed, and each party knows where the other one stands. This idea was emphasized to be by a piece of computer output attached to the wall of an office I recently moved into. It read: "A computer is an incredibly fast, unerringly accurate, tireless, totally willing, unbelievably stupid mechanical clerk. It follows instructions with a blind obedience which is frequently exasperating because erroneous or ridiculous instructions are obeyed as efficiently and uncomplainingly as if they were reasonable."

Tom Prickett



PC COMM



by Chris Jacobs

Dow Jones News/Retrieval session

Chris Jacobs

817-465-0807 (H)

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CompuServe 71445,376

06-14-83

//menu

MASTER MENU

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This is sample session from Dow Jones and will give you an overview of their offered databases and the access costs. Our next article will have a CompuServe IBM PC SIG introduction. To find out more about accessing CompuServe or your company's mainframe, come to the user's group SIG for communication and networking. The meeting is after the general session. Both questions and expertise are welcome.

PC COMM PC COMM PC COMM PC COMM PC

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 //SPORTS SPORTS
 //STORE COMP-U-STORE
 //SYMBOL SYMBOLS DIRECTORY
 //WTHR WEATHER
 //WSW WALL \$TREET WEEK
 FOR HELP, TYPE CODE AND HELP.
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 //intro

WELCOME TO //INTRO, THE FREE NEWSLETTER OF NEWS/RETRIEVAL.

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 - 8 //ENCYC IS UPDATED
 - 9 FREE-TEXT SEARCH ENHANCED

LIST OF PRICES FOR NEWS/RETRIEVAL USAGE

 UNDER THE NEWS/RETRIEVAL PRICING STRUCTURE, THE DATA BASES ARE ORGANIZED INTO FOUR EASY-TO-REMEMBER SERVICES, EACH

WITH ITS OWN PRICE.
 ALSO, NEWS/RETRIEVAL IS

AVAILABLE UNDER THREE PLANS, STANDARD MEMBERSHIP, BLUE CHIP MEMBERSHIP AND EXECUTIVE MEMBERSHIP.

PRESS RETURN FOR PRICE LIST.

DOW JONES BUSINESS AND ECONOMIC NEWS
 (//DJNEWS, //WSJ, //UPDATE)

 PRIME TIME RATE PER MINUTE

STANDARD	BLUE CHIP	EXECUTIVE
\$1.20	\$1.20	\$.80

NON-PRIME TIME RATE PER MINUTE

STANDARD	BLUE CHIP	EXECUTIVE
\$.20	\$.13	\$.13

FREE-TEXT SEARCH (//FTS) OF THE DOW JONES NEWS DATA BASE IS ALSO A PART OF DOW JONES BUSINESS & ECONOMIC NEWS.

//FTS IS PRICED THE SAME AS THE OTHER DATA BASES FOR PRIME-TIME USAGE.

BUT IT IS PRICED AT \$.60 PER MINUTE DURING NON-PRIME TIME FOR STANDARD SUBSCRIBERS AND \$.40 PER MINUTE DURING NON-PRIME TIME FOR BLUE CHIP AND EXECUTIVE MEMBERS.

DOW JONES QUOTES
 (//CQ, //HQ, //DJA)

 PRIME TIME RATE PER MINUTE

STANDARD	BLUE CHIP	EXECUTIVE
\$.90	\$.90	\$.60

NON-PRIME TIME RATE PER MINUTE

STANDARD	BLUE CHIP	EXECUTIVE
\$.15	\$.10	\$.10

GENERAL NEWS AND INFORMATION SERVICES

(//ENCYC, //MENU, //MOVIES, //NEWS, //SPORTS, //STORE, //SYMBOL, //WSW, //WTHR)

PRIME TIME RATE PER MINUTE		
STANDARD	BLUE CHIP	EXECUTIVE
\$.60	\$.60	\$.40

NON-PRIME TIME RATE PER MINUTE		
STANDARD	BLUE CHIP	EXECUTIVE
\$.30	\$.20	\$.20

FINANCIAL AND INVESTMENT SERVICES
 (//DSCLO, //EARN, //FORBES, //MEDGEN, //MMS)

 PRIME TIME RATE PER MINUTE

STANDARD	BLUE CHIP	EXECUTIVE
\$1.20	\$1.20	\$.80

NON-PRIME TIME RATE PER MINUTE

STANDARD	BLUE CHIP	EXECUTIVE
\$.90	\$.60	\$.60

//DSCLO CARRIES AN ACCESS FEE OF \$4 FOR EACH COMPANY SEARCH IN PRIME TIME OR \$2 IN NON-PRIME TIME. IT IS NOT VOIDED BY FREE TIME OFFERS AND ALSO MUST BE PAID BY THOSE WHO RECEIVE FREE TIME WITH THE PURCHASE OF A SOFTWARE PACKAGE PUBLISHED OR AUTHORIZED BY DOW JONES.

NEWS/RETRIEVAL IS AVAILABLE 22 HOURS PER DAY, SEVEN DAYS A WEEK, FROM 6 A.M. TO 4 A.M. EASTERN TIME.

USAGE RATES ARE DIVIDED INTO PRIME AND NON-PRIME HOURS AS FOLLOWS:

TIME ZONE	PRIME	NON-PRIME
EASTERN	6 AM-6 PM	6:01 PM-4 AM
CENTRAL	5 AM-6 PM	6:01 PM-3 AM
MOUNTAIN	4 AM-6 PM	6:01 PM-2 AM
PACIFIC	3 AM-6 PM	6:01 PM-1 AM

NOTE: IF YOU LOG ON BEFORE 6:01 P.M. LOCAL TIME, THE ENTIRE SESSION WILL BE BILLED AS PRIME TIME.

WEEKENDS, NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL

PC COMM PC COMM PC COMM PC COMM PC C

DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING AND CHRISTMAS DAY ARE BILLED AT NON-PRIME RATES.

//FTS IS AVAILABLE MONDAY THROUGH FRIDAY FROM 6 A.M. TO MIDNIGHT EASTERN TIME.

THE ABOVE PRICES APPLY ONLY IN THE 48 CONTIGUOUS STATES AND AT A TRANSMISSION SPEED OF 300 BAUD.

A TRANSMISSION SPEED OF 1200 BAUD PROVIDES DATA UP TO FOUR TIMES FASTER, AT A PRICE 1.7 TIMES HIGHER THROUGH JUNE 30.

BEGINNING JULY 1, CHARGES FOR ACCESSING NEWS/RETRIEVAL AT 1200 BAUD WILL BE 2.0 TIMES HIGHER THAN 300 BAUD RATES.

CONNECT TIMES ARE ROUNDED TO THE NEAREST MINUTE.

USAGE IN ALASKA, HAWAII AND FOREIGN COUNTRIES EXCEPT CANADA IS BILLED AT \$1 PER MINUTE.

THE \$1 PRICE HOLDS REGARDLESS OF DATA BASE OR TIME.

PROGRAM AND USAGE COSTS MAY BE TAX-DEDUCTIBLE. CONSULT YOUR TAX ADVISER.

DOW JONES SOFTWARE

PRESS FOR

- 1 DOW JONES MARKET ANALYZER NOW AVAILABLE ON IBM
- 2 DOW JONES MARKET MICROSCOPE
- 3 DOW JONES MARKET MANAGER
- 4 DOW JONES CONNECTOR
- 5 DOW JONES PLANS EXPANDED SOFTWARE MARKET



WHO, WHAT, WHERE:
USAGE IDEAS FOR SUBSCRIBERS

AS YOU MIGHT EXPECT, A SERVICE AS DIVERSE AND FAR-REACHING AS NEWS/RETRIEVAL HAS MANY APPLICATIONS.

PRESS FOR

- 1 FAMILY USAGE IDEAS
- 2 BUSINESS MANAGER APPLICATIONS
- 3 INVESTOR USAGE TIPS

NEWS/RETRIEVAL AND YOUR FAMILY

WHETHER YOU'RE PLANNING A WEEKEND TRIP, CATCHING UP ON YOUR FAVORITE SPORTS TEAM OR DOING A RESEARCH PROJECT, CHECK NEWS/RETRIEVAL FIRST.

WANT TO KNOW WHAT'S GOING ON OUTSIDE YOUR DOOR -- AND AROUND THE WORLD -- RIGHT NOW?

YOU CAN ACCESS //NEWS TO

FIND OUT.

THE NEWS/RETRIEVAL WORLD REPORT GIVES YOU FRONT PAGE WORLD AND NATIONAL NEWS OFTEN BEFORE IT WOULD APPEAR IN PRINT.

MAJOR STORIES ARE UPDATED FROM 8 A.M. TO 7 P.M. EASTERN TIME EACH BUSINESS DAY.

IN ADDITION TO "FRONT PAGE" STORIES, THE WORLD REPORT CONTAINS 15 TO 20 STORIES IN THE NATIONAL NEWS SECTION AND 15 TO 20 FOREIGN NEWS STORIES.

SPEND A FEW MINUTES TO INCREASE YOUR KNOWLEDGE.

//ENCYC IS A 20-VOLUME ENCYCLOPEDIA THAT GIVES YOU MORE THAN 28,000 ARTICLES ON TOPICS FROM AARDWARK TO ZUCCHINI.

USE //ENCYC TO HELP YOUR CHILD WITH A SCHOOL RESEARCH PROJECT, OR USE IT YOURSELF TO BONE UP ON A HOBBY OR TO LEARN ABOUT ECONOMICS. //ENCYC'S FORMAT MAKES IT CONVENIENT AND EASY TO USE.

WHETHER YOU'RE ATTENDING A FOOTBALL GAME, GOING TO A MOVIE OR HAVING A COOKOUT, CONSULT NEWS/RETRIEVAL BEFORE YOU START.

//SPORTS PROVIDES YOU WITH STORIES, SCORES, STATS AND STANDINGS ON YOUR FAVORITE TEAM AND ITS PROSPECTS UPDATED SEVEN DAYS A WEEK WITH SPECIAL AFTERNOON UPDATES SATURDAY AND SUNDAY.

//WTHR WILL INDICATE THE LIKELIHOOD OF SUNNY WEATHER -- WHETHER YOU'RE GOING ACROSS THE STATE OR AROUND THE WORLD.

AND IF THE FORECAST CALLS FOR RAIN, YOU CAN PICK A MOVIE FROM THE MORE THAN 50 REVIEWS AVAILABLE IN //MOVIES.

LISTINGS INCLUDE NEW RELEASES, CURRENT SHOWINGS AND COMING ATTRACTIONS.

REVIEWS ARE FROM CINEMAN SYNDICATE.

THEY PROVIDE RATINGS (GREAT, GOOD, FAIR, BORING) AS WELL AS AUDIENCE CLASSIFICATION CODES (G, PG, R, ETC.).

//MOVIES CAN BE AN INTERESTING AND INFORMATIVE WAY TO AVOID SPENDING MONEY ON A FILM YOU DON'T LIKE.

NEWS/RETRIEVAL AND THE BUSINESS MANAGER

LEARN ABOUT COMPANIES YOU FOLLOW -- COMPETITORS, CUSTOMERS, PROSPECTS OR SUPPLIERS.

YOU CAN MONITOR PRICE AND EARNINGS CHANGES, SALES TRENDS AND ACQUISITION OPPORTUNITIES BY GETTING THE LATEST CORPORATE NEWS AND EARNINGS INFORMATION.

CHECK //DJNEWS (USING THE COMPANY CODES) BEFORE CALLING ON HOT PROSPECTS.

OR USE //DJNEWS AS A REFERENCE TOOL FOR MAKING RECOMMENDATIONS OR PREPARING A REPORT.

PC COMM PC COMM PC COMM PC COMM PC

GET INSIDE THE BOARDROOM WITH 10 -K AND OTHER SECURITIES AND EXCHANGE COMMISSION FILINGS IN DISCLOSURE II (//DSCLO).

OR YOU CAN OBTAIN PRICE AND FUNDAMENTAL DATA ON A SPECIFIC COMPANY BY ACCESSING MEDIA GENERAL FINANCIAL SERVICES (//MEDGEN).

EVEN REVIEW ANALYST EARNINGS FORECASTS WITH THE CORPORATE EARNINGS ESTIMATOR (//EARN)

TRACK STOCK PRICE PERFORMANCE WITH CURRENT QUOTES (//CQ) AND HISTORICAL QUOTES (//HQ). (CURRENT QUOTES ARE DELAYED A MINIMUM OF 15 MINUTES).

YOU CAN USE A PERSONAL COMPUTER AND DOW JONES SOFTWARE TO RETRIEVE, STORE AND EVALUATE DATA ON YOUR STOCK PORTFOLIO.

GOVERNMENT REGULATIONS AFFECT US ALL, AND YOU CAN KEEP UP TO DATE WITH THE LATEST REGULATIONS BY USING //DJNEWS.

IF YOU WANT NEWS ABOUT THE INTERNAL REVENUE SERVICE, FOR EXAMPLE, CHECK G/IRS.

IN ADDITION, YOU CAN GET NEWS FROM ANY OF THE THREE BRANCHES OF THE FEDERAL GOVERNMENT BY CHECKING G/CNG FOR THE LEGISLATURE, G/EXE FOR EXECUTIVE AND G/JUS FOR THE JUDICIARY.

A COMPLETE LIST OF GOVERNMENT CATEGORIES BEGINS ON PAGE 175 OF THE NEWS/RETRIEVAL FACT FINDER.

ALSO, //DJNEWS HELPS YOU KEEP UP WITH BREAKING BUSINESS NEWS.

//DJNEWS PROVIDES NEWS FROM THE WALL STREET JOURNAL, BARRON'S AND THE DOW JONES NEWS SERVICE -- THE MOST RELIABLE AND RESPECTED SOURCES OF BUSINESS AND FINANCIAL INFORMATION TODAY.

SCAN HEADLINES AND RETRIEVE STORIES AS RECENT AS 90 SECONDS OR AS FAR BACK AS 90 DAYS.

THE WALL STREET JOURNAL HIGHLIGHTS ONLINE (//WSJ) INCLUDES SUMMARIES OF TOP STORIES FROM THE WALL STREET JOURNAL AND IS AVAILABLE AT 6 A.M. EASTERN TIME EACH BUSINESS DAY.

AS YOU MAKE DECISIONS ON YOUR GROWING BUSINESS, FIND OUT HOW IT MIGHT BE AFFECTED BY ECONOMIC TRENDS.

YOU CAN GET ECONOMIC NEWS AS IT BREAKS FROM THE I/ECO CATEGORY OF //DJNEWS.

THE WEEKLY ECONOMIC UPDATE (//UPDATE) PROVIDES A DIARY OF EACH WEEK'S TOP ECONOMIC NEWS AS WELL AS ANALYSIS OF THE EVENTS.

AND MONEY MARKET SERVICES (//MMS) SUPPLIES A BROAD WEEKLY SURVEY OF ECONOMIC CONDITIONS WITH SPECIAL FOCUS ON THE MONEY MARKETS, COMPLETE WITH CHARTS.

NEWS/RETRIEVAL
AND THE INVESTOR

INVESTORS NEED TO BE ABLE TO ANALYZE PROSPECTIVE INVESTMENTS QUICKLY, THOROUGHLY AND ACCURATELY. NEWS/RETRIEVAL CAN HELP.

YOU CAN GET INFORMATION ON A COMPANY'S STOCK PRICE AS WELL AS OBTAIN FUNDAMENTAL CORPORATE INFORMATION FROM MEDIA GENERAL FINANCIAL SERVICES (//MEDGEN).

OR IF YOU WANT TO SEE A FORECAST OF A COMPANY'S EARNINGS PROVIDED BY A PANEL OF ANALYSTS, CHECK THE CORPORATE EARNINGS ESTIMATOR (//EARN).

DISCLOSURE II (//DSCLO) WILL PROVIDE YOU WITH EXTRACTS FROM DOCUMENTS FILED WITH THE SECURITIES EXCHANGE COMMISSION.

IN ADDITION, //DJNEWS PROVIDES A WEALTH OF INFORMATION, ACCESSIBLE BY COMPANY CODE.

AND THE INFORMATION IN //DJNEWS CAN BE SEARCHED QUICKLY AND EASILY USING FREE-TEXT SEARCH.

IN TODAY'S FLUCTUATING SECURITIES MARKETS, AN ABILITY TO TRACK CURRENT AND HISTORICAL STOCK PRICES CAN BE CRUCIAL.

NEWS/RETRIEVAL MAKES BOTH CURRENT AND HISTORICAL STOCK QUOTES AVAILABLE ON DEMAND.

CURRENT QUOTES (//CQ) ARE AVAILABLE ON A 15-MINUTE DELAY BASIS FROM THE EXCHANGES.

HISTORICAL QUOTES ARE AVAILABLE ON A DAILY BASIS GOING BACK A FULL YEAR, AND MONTHLY AND QUARTERLY SUMMARIES CAN ALSO BE OBTAINED.

ALSO, HISTORICAL QUOTES CAN BE GRAPHED AUTOMATICALLY USING THE DOW JONES MARKET ANALYZER, A COMPUTER SOFTWARE PRODUCT DESIGNED FOR USE WITH THE APPLE II COMPUTER. FOR MORE INFORMATION, CONTACT CUSTOMER SERVICE.

AS INTEREST RATES FLUCTUATE RAPIDLY, FIXED-RATE INVESTMENTS BECOME MORE IMPORTANT.

CURRENT PRICE INFORMATION FOR SUCH INSTRUMENTS CAN BE FOUND IN //CQ.

PRICE INFORMATION ON U.S. TREASURY BONDS AND NOTES IS UPDATED EACH BUSINESS DAY.

ALSO, YOU CAN EVALUATE YOUR ENTIRE INVESTMENT PORTFOLIO IN MINUTES, WHETHER YOU OWN 10 STOCKS OR 100.

CURRENT QUOTES CAN BE RETRIEVED IN //CQ, AND WITH A PERSONAL COMPUTER AND SOFTWARE, THE VALUE OF THE PORTFOLIO CAN BE CALCULATED AUTOMATICALLY.

SHORT- AND LONG-TERM PROFITS AND LOSSES ALSO MAY BE CALCULATED AND USEFUL REPORTS PRINTED.

YOU CAN TRACK A NUMBER OF PORTFOLIOS -- YOUR OWN AS WELL AS THOSE OF CLIENTS OR COMPETITORS.

THE SOFTWARE ALLOWS YOU TO STORE THE PURCHASE PRICE, PURCHASE DATE AND OTHER INFORMATION FOR YOUR SECURITIES.



PC Update

The following news items are reprinted with permission from Computer Industry Update published by Industry Market Reports, Los Altos, CA.

HARDWARE

Amdek of Elk Grove Village, CA announced the Multiple Adapter Interface board which provides 128KB of memory and allows a user to select between monochrome or colored graphic applications. The board is \$799.

Automated Business Machines of Laguna Hills, CA unveiled a Z80A-based board for the PC enabling up to 12 IBM 3101 terminals or PCs to be attached through RS-232C interfaces. To a host the managing PC looks like a 3274 controller and the 3101s and the on-line PCs like 3278s.

Disc Tech One of Santa Barbara, CA introduced a 14" 80MB Winchester disk drive subsystem for the PC for \$5,500. Volume discounts are available.

Easitech of Atlanta, GA, a recently formed spin-off of Quadram, unveiled the Easiboard multifunction add-on board for the PC. The board has Centronics-compatible parallel printer port, RS-232 asynchronous serial

communications port, a buffer spooler, a real-time clock calendar, memory expansion of up to 256KB, a printer switcher and three high-speed independent electronic disk emulators. Suggested retail list price is \$325 with no memory, \$395 with 64KB installed and \$595 with 256KB installed. Shipments began in June.

Gateway Microsystems of Austin, TX announced an integrated hardware/software product which allows the PC to emulate 2780/3780 Bisync communications at speeds up to 4800 bps. The Microgate is \$895.

Information Technologies of Scottsdale, AZ announced the Linkup hardware/software package for the PC. Options support TTY, DEC VT52.100, IBM 3101 and 2780/3780 emulation as well as ASCII Block Protocol and a print spooler. The Linkup costs \$1,195.

Intelligent Technologies International of Palo Alto, CA unveiled two versions of an integrated telecommunications package for the IBM PC. The PC Express allows an IBM PC to provide micro-to-micro communications, electronic mail, direct access to mainframes and a variety of automated telephone management capabilities. One option without 3270 emulation costs \$895. With 3270 emulation, the price is \$1,295.

M&R Enterprises of Santa Clara, CA introduced the Sup'r Extender providing six additional expansion slots for the PC. Suggested retail price is under \$500.

JULY

SPECIALS



	RETAIL	MCP
THE HOME ACCOUNTANT PLUS	\$150.00	\$ 98.00
FCM (FORMERLY FIRST CLASS MAIL)	124.95	85.00
SPANISH FOR THE TRAVELER + A COMPLIMENTARY SUBSCRIPTION TO SOFTALK	60.00	45.00
TANDON DISK DRIVES 100-2	500.00	254.00
TG JOYSTICK	64.95	45.00
ADAM & EVE GAME PADDLES	34.95	29.95
EPSON RX 80	499.00	349.00
EPSON MX 100 F/T	849.00	650.00
EPSON FX 80	700.00	585.00

METROPOLITAN COMPUTER PRODUCTS

801 Avenue K, Suite 4, Plano, Texas 75074 214-578-8504



PC Update

(continued)

Memory Technologies of Logansport, IN announced the Versa-RAM Plus II board, a modular multifunction expansion board which adds up to 512K bytes of memory to the PC. The board is \$475.

Mountain Computer of Scotts Valley, CA introduced the Mountain Hard Disk Controller that permits PC users to upgrade to XT capability and enables current XT users to add extra disk drives to their systems. The controller under MS-DOS 2.0 permits connection of two disk drives to the PC with over 20MB of storage each. The price of the controller is \$1,445.

Personal Systems Technology of Irvine, CA introduced the 8088-based Persyst DCP/88 which turns the PC into HASP remote job entry terminal to IBM mainframes. The system runs under DOS and is \$1,690.

Quadram, a subsidiary of Intelligent Systems of Norcross, GA introduced the Quadlink board allowing the PC and XT to run Apple software. The retail price is \$680. Limited shipments were set for June.

Sysgen of Fremont, CA announced 10 and 20MB Winchester disk subsystem with high-speed streaming tape cassette backup. The Sysgen II-10 is \$2,995 and the Sysgen II-20 is \$3,795. The streaming cassette tape unit alone is \$995.

Techmar of Cleveland, OH announced the PC-Mate Speech Mate, a voice synthesis board for the Personal Computer. The board is \$395 and the software support package is \$95. An auxiliary vocabulary unit is \$100.

Ven-Tel of Santa Clara, CA introduced the PC Modem Speed Adapter which increases the baud rate of the PC Modem Plus to 1200 bps on the PC and XT. The adapter is \$360 or \$749 with the PC Modem Plus and is available immediately.

Xerox, VisiCorp and 3Com plan a joint development project to enable PC users running VisiOn to access Ethernet. Xerox will develop network applications for VisiCorp to market with VisiOn. 3Com will provide protocol software and the Etherlink plug-in card.

SOFTWARE

Advanced Software Products of Delray Beach, FL introduced the Virtual Cobol Host compiler for OS/VS and the VM-86 multitasking, multiuser supervisor with virtual memory. The packages permit users of the Displaywriter and the Personal Computer to centrally develop and maintain interactive Cobol applications. The Virtual Cobol Host compiler is \$5,000 for a perpetual license and the VM-86 is \$1,000 per system.

Digital Research announced a new version of Concurrent CP/M-86 for the PC XT. It is separately priced at \$350. However, the product is promoted in three separate

packages bundled with PC Accounting Pack, PCBasic Pack or PC Pascal/MT+ Pack at prices ranging from \$1,140 to \$1,495. The prices represent \$700 to \$1,000 savings over the separately priced packages.

FutureNet of Canoga Park, CA introduced the Vterm package that allows transfer of electronic schematic data from the PC to DEC VAX or PDP-11 systems with use of the firm's Dash-1 Schematic Designer for \$200.

GTCD of Rockville, MD announced the Vector Sketch computer-aided design package for the PC. The package with a digitizer is \$2,995.

Information Builders of San Diego, CA is offering a version of its Focus data base management system and fourth-generation language for the PC. It is supplied as software and a PC/Focus accelerator Board which provides an additional 512KB of memory. PC/Focus is \$2,600 plus \$750 for the accelerator board. For mainframe users of Focus the price is \$2,200.

Lotus Development adapted the graphics segment of 1-2-3 to support the Hercules graphics card which is compatible with the PC bus and supports high-resolution bit-mapped graphics on the IBM monochrome display.

Peachtree Software introduced the PeachText 5000 bundled package for the PC and compatible machines. The package includes PeachText word processor, Random House Electronic Thesaurus, Spelling Proofreader, The PeachCalc spreadsheet and the List Manager data base management system for \$1,995.

Professional Software of Needham, MA released the WordPlus-PC word processing program for the XT under PC-DOS Release 2.0 for suggested retail price of \$395.

Stoneware of San Rafael, CA announced that its DB Master data base management package is available for the PC for \$499. DB Master includes an integrated text editor and report generator and an array search facility.

Xtrasoft of Louisville, KY released small business retail software systems for the PC.

**SHOP
& SWAP**

FOR SALE: Hayes Smartmodem, 300 BAUD, manuals, etc. Hook to your asynchronous board, and PC-Talk communications software will get you there. \$200. Call Tom or Dianna Prickett - afternoons, evenings. (214) 387-3667.



**Disk of
the Month**



**SHOP
& SWAP**

JULY HIGHLIGHTS

CHESS. Adds the compiled (.EXE) version to the .BAS version in the January issue. Has difficulty levels from 1 to 21. Said to be unbeatable on 21.

CSPool & MSPool (.COM). Print spooler programs for color and monochrome systems.

CRYPT (.BAS & .DOC). An ASCII (standard text) file encoder with documentation.

UNPRO, UNPROTEC, UNPROKEY, UNPROINS. The keys to unprotecting BASIC files.

PERT.BAS. A micro version of the scheduling program.

SIMPLEX (.EXE & .DOC) Linear programming solutions generator program and documentation. by William Emery

CHECKCON.BAS. Checkbook balancing program.

EPSON.BAS. Printer setup utility.

CROSSREF.BAS. Lists variables used in a BASIC program.


MENU.BAS Select BASIC programs from a menu.

NFL-PIKS.BAS Pick the game scores.

ELIZA.BAS. Conversational program (short version).

MATH.BAS Math quiz for kids.

BBOX, INTGAME, MAGICSO (.BAS) MORE GAMES.

Will Janoschka 

(Four lines free each month to members, otherwise cost is 15 cents per word. Ads will run three consecutive months unless notified earlier to cancel. Ads must be renewed after three months if continuation is desired. Mail ads to the Editor.)

Consultants Directory Listing: deadline JULY 29
Microsystem Consultants Agency, 2116 E. Arapaho
Suite 155, Richardson TX 75081, or call 690-4224.
Extra lines, listings, ads avail., starting at \$5

FOR SALE: LOTUS 1-2-3 never opened. \$350. Contact
Jim Caraway at (214)661-8600 or (214)348-5378 in
the evening.

HALF HEIGHT TEAC DRIVE for IBM PC. DSDD. Use 2
and consume half as much power compared with 2
Tandon drives. Leaves your PC with enough power
for internal hard disk. Direct drive motor, metal
band positioning for greater accuracy with head
loading relay to reduce wear. IMMEDIATELY AVAIL-
ABLE IN QUANTITY. Special discount for members.
Dealers welcome. Also available - Apple
compatible half height drives. One year warranty
and service. (214)487-9385 NEWTEK Electronics

WANTED: Advertisers for N. Tex PC NEWS. Rates are
reasonable, exposure is great! Current circulation
approximately 210 PC users/owners. Contact John
Pribyl, at phone (817)275-4109 for particulars.

Member address labels for sale. Check with PC
NEWS Editor for price and details.

DISK DETAILS

Price: \$5.00. Available at the general membership meeting. Media: DSDD 5" diskettes formatted single-sided. Public domain software only, standard full disclaimers. Sales are made before and after the general membership meeting only. Call Will Janoschka at 231-6449 to submit material and programs for future Disk of the Month issues.



North Texas PC News
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Arlington, TX 76010



FIRST CLASS

