

NEWS

Vol 3

North Texas IBM Personal Computer Users Group

No. 1

Special Interest Programs

Programmers

PC jr. discussion from the general membership meeting spilled over into the Programmer's Special Interest Group meeting for December. Various rumors on such subjects as operating system compatibility among the jr., PC, and XT were reviewed, including the plausibility that a shortage of paper clips is caused by their natural migration into the form of coat hangers.

The announcement of the PC-DOS-compatible Tandy TRS-80 model 2000 was discussed regarding its use of the progressive 80186 microprocessor (Morgan & Waite, Appendix A, states that the 80186 can do everything that an 8086 can do and more, with a lot fewer support chips, and do it faster by about 30 percent). Again in the rumors category, "windows" has been seen running on the new Tandy machine.

Suggestions for future programs should be made to Group Chairman Neil Bennett at 238-7650.

Dick Gall

Other Special Interest Groups

A volunteer reporter is needed from each of the other SIGs to provide a summary of meeting events, and a short statement of "coming attractions" for this column.

We also need leaders for the BASIC Applications, and the Communications & Networking SIGs. (See note on page 2.)

Election Reminder

Election of our next President and three Directors at Large will be held at the January meeting.

If you wish to vote and cannot be present at the meeting, mail your ballot prior to the meeting to Alan Elliott, President. Alan's address is 1028 N. Madison Ave., Dallas, Texas 75208

A g e n d a

Presentations for this Month are as follows:

1. Rep from Digital Research will discuss Concurrent CP/M 3.1: Multi-Tasking (256 Tasks), 4 Windows, Shared Code, 8087 Support, & PC DOS Support
2. Presentation on the Graphics Plus Board by a Rep from STB Systems

Chris

Room Assignments

See page 3.

Membership Renewal

See page 11.

Next Meeting January 14, 1984

Jesuit College Preparatory School
12345 Inwood Road, Dallas, Texas
(See map on page 12)

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 fourth Friday of the month prior to publication.

Articles:

Column width is 56 characters. Article submission is preferred by modem or SSDD disk (ASCII format). Type-written copy is acceptable.

North Texas IBM Personal Computer Users Group

A non-profit, independent group, not associated with IBM Corporation. The Group meets on the second Saturday of each month. See page 1 for meeting time and place.

Officials:

President Alan Elliott (214)941-8475
 Program Chairman Chris Morgan (214)446-0484
 Treasurer Bill Hood (214)350-9784
 Secretary Charles Kroboth (214)699-8088

Special Interest Groups:

Beginners Mike Durbin (214)271-8779
 Business Applic. Dick Barr (214)692-2605
 Disk of the Month Doug Windham (214)271-5727
 Programmers Neil Bennett (214)238-7650
 BASIC Applications (open)
 Comm & Networking (open)

Telephone (during business hours) (214)361-0304
 Bulletin Board SYSOP: Mark Collard (214)223-0983
 (24 hrs, download & upload, messages, 300/1200)

Dues: Professional Membership - \$36.00 year
 Regular Membership - \$24.00 year
 Student membership - \$12.00 year
 Payable in January. Dues are prorated for balance of year when applicant joins after January. Mail dues to: Treasurer, NT IBM PC US, 10400 N. Central Expwy #210, Dallas, TX 75231

SIG Notes:

BASIC Applications and Communications & Networking Groups are looking for leaders. If you're interested in heading up one of these SIGs, contact Alan Elliott for details.

EDITORIAL

Election of officers will take place at the January meeting. The nominating committee has announced nominees as follows:

President-Elect:
 Chris Morgan

Directors at Large:
 (three to be elected)
 Ken Land
 Neil Bennett
 Will Janoschka

These are members who have been extremely generous with their time and effort for benefit of the Group over the last couple of years. They have done an excellent job in the guidance of our club and have offered to continue. We should take them up on their offer. We should also do some soul-searching on our own to see if we have done our part to assist in the operation of our club. Constructive suggestions and assistance are always welcome. Have you offered yours?

Anyone wishing to nominate additional candidates at the meeting will be allowed to do so. Before doing this however, please be sure your proposed candidate will accept the nomination.

John

Membership Renewal

Our membership year ends in December.

A membership renewal blank is printed on the last page of this issue of PC NEWS. Please return this form at the January meeting (or mail to the Treasurer) with your dues payment for 1984.

Partial year payment is allowed only when applicant joins after the beginning of the membership year, or by special arrangement with the Treasurer.



Word Proof

by Carrington Dixon

Word Proof is finally available! Word Proof is IBM's new spelling checker and thesaurus program. It is menu driven and thus one of the easiest programs to use that I have encountered in some time. It comes with its own full screen editor and has enough facilities to qualify as a rudimentary word processor. It requires at least 96K of memory and one disk drive (you'll probably be happier with two). It sells for the amazingly low price of \$60.

Once passed the proprietary notice the first thing you see is the Word Proof Main Menu. This menu offers several options but the one that will be used most frequently is option 1, Create, edit or proof file. Once you enter this option you will be prompted for a file name. If the file already exists, it will be loaded; if it does not it will be created. If you are proofing an existing file, you will now be presented with the first twenty some odd lines of text. To proof this file all that is need at this point is to press the F2 key. Even though the program accesses the diskette to read from its dictionary, the proofing proceeds as a rapid pace. When a word is encountered that cannot be found in either the main or auxiliary word lists, Word Proof displays a new menu in a window that overlays the text. This menu displays the word in question and gives you five options: 1) List the possible spellings, 2) Ignore word and continue scan, 3) Word correct, remember and continue spelling check, 4) Word correct, remember and stop spelling check, or you may press ESC to return to the edit mode. If option 1 is selected, Word Proof will search its word list for words that it thinks may be what you wanted to spell. In a few seconds a new window will overlay part of the text; this window will list the suggested words that Word Proof found. There may be one word or a half dozen words suggested. If one of the words is what you wanted, you can move the cursor so that that word is highlighted and press Enter; Word Proof will make the substitution and continue its scan. If none of the words is satisfactory, you may press the ESC key and return to the editor to manually correct the word.

Word Proof is generally very good in suggesting the correct word. I have found that it does have some blind spots. Its suggested words are generally of the same length as the misspelled word, which can cause it to miss some seemingly obvious corrections. It seems to consider the first letter of the word to be correct. Thus it may not be helpful when you are unsure whether a word begins with 'en-' or 'in-'. In cases like that, your best bet is to return to the editor, make your best

stab at correcting the word and then checking the new spelling for that word only with the F3 key.

Word Proof can suggest correctly spelled words but it cannot tell which word would fit your meaning. If you give it the word 'bazare', it will suggest both 'bazaar' and 'bizarre' but you will have to go to a printed dictionary to discover which is a noun meaning a kind of market and which an adjective meaning strange. In the same way it will not catch errors of grammar or sense. If your misspelling happens to match that of some correct word, Word Proof will scan happily on by. The manual has a section devoted to some of the more common problem words of this sort that the program itself is helpless to catch.

Word Proof comes with a standard word list that contains some 125,000 words. In addition it can create a permanent auxiliary word list of some 6000 characters (about 600 words), based on the words that the user has indicated were correct when flagged during proofing. This auxiliary word list can be edited via an option from the main menu. Its creation is almost automatic but the user must remember to save it before he exits Word Proof or the updates from that session will be lost. Once this permanent auxiliary word list is full, Word Proof can support an additional 2000 characters which can be used only for the duration of the program and cannot be saved.

Room Assignments

9:30am - 11:00am

Auditorium General Meeting

11:00am - 12 Noon

Room 105 Beginners Group
 Room 106 Advanced Programmers
 Room 107 BASIC Applications
 Room 111 (open)

12 Noon - 1:00pm

Auditorium Business Applications
 Room 111 Engr & Scientific
 (w/Apple)

1:00pm - 2:00pm

Room 107 Ham Radio/Modem/Comm
 (w/Apple)

Word Proof

(continued)

Word Proof has a synonym dictionary to aid you in those times when you cannot think of exactly the right word. This is where that second disk drive comes in very handy. Place the diskette with the synonym list in drive B, locate the cursor somewhere under the word for which you want the list on synonyms, and press the F4 key. Word Proof will search its lists for a few seconds and then display its list of synonyms in a window overlaying the text. If the word you have chosen can be more than one part of speech (remember Word Proof cannot tell from context) the list will be divided by part of speech. You may select a new word with the cursor positioning keys and press Enter or, if none of the words seem an improvement on the original, you may press ESC to return to the editor.

The editor itself is a fairly complete full screen editor. It makes full use of most of the PC's special keys, Home, PgUp, End, PgDn, the forward and backward Tab keys and the four cursor positioning keys. The carriage return symbol can be displayed or not by toggling the Alt-M key. Full lines can be deleted via the F9 key (and the immediately previous delete can be undone via Alt-F9). The only major feature that seems to be missing is the ability to rearrange sections of text via move or copy commands, a feature that is often referred to as 'cut-and-paste'.

Word Proof works on ASCII text files. It can thus accept as input files created by any program editor and by most word processors. It can be made to accept at least some of the special characters that many word processors insert into the text. The manual makes suggestions as how to best fit Word Proof to the various word processors that are sold under the IBM logo. Fitting it to other word processors is left to the ingenuity of the user. The Word Proof editor can, of course, be used to originate files. It does this with great ease as it supports 'word-wrap' so that you do not have to worry about line lengths and need press 'carriage return' (aka Enter) only at the end of each paragraph. If you intend only to print the file via Word Proof's printing facility, this is very handy and convenient. Be warned, however, that many programs cannot handle text files in which the carriage returns are further apart than 256 bytes. You can, of course, insert a carriage return manually at the end of each line, but, if you plan to use the text file with other programs, it might be wise to create it with some other editor and use the Word Proof editor only for proofing and minor corrections.

Word Proof comes in the standard IBM slip-case binder. The manual is at least up to the usual IBM PC standard, which in turn is better than the IBM mainframe standard. The first few chapters form an excellent tutorial and the latter chapters a reference section. The standard IBM Reference Card is supplied as is a cardboard template to place around the Function Keys. Word Proof's on-line help feature makes the template less necessary than with some programs but it is a nice thing to have; I wish more programs came with one.

Word Proof is not a complete word processing package, nor was it meant to be. It is much more than 'merely' a spelling checker. It could easily be used as a bare-bones or 'correspondence quality' word processor. With its low price and high quality it makes an extremely useful adjunct to any word processor that you may already have or plan to buy in the future.

Carrington

III

Complimentary Memberships

The Club offers complimentary memberships to members who submit original articles for publication in PC NEWS.

GROUND RULES

Subject Matter. Articles may cover any aspect of the IBM Personal Computer (or work-alike) world. Main criteria is that they be of interest to members of our group. Some typical subjects include: Hands-on review or personal experience with new software, hardware or techniques... Peripheral interconnection problems and solutions... How-to articles on furniture, diskette storage, printer paper control... A standard "tree" structure for the average hard disk user... etc, etc

Number and Length of Articles Required. Four or more articles during one membership year. Each article must be a minimum of 400 words.

Format. Standard one-column width is 56 characters; two column max is 120 characters. Copy in ASCII format on disk or transmitted by modem whenever possible. (Sorry, no double sided disks at this time - I'm still operating single sided...) DOS 1.0 or 2.0.

Notify Treasurer. In January, eligible members provide a listing of their published articles to the treasurer in lieu of cash for next year's dues.



**PC NEWS
Communications**

We're now uptown!

We have a Smartmodem 1200 connected to our PC in the Editor's office... It's great! The Board of Directors authorized the purchase from club funds. Use it... Transmit lots of articles so we can get our money's worth!

Remember, when preparing your articles for publication use a column width of 56 characters, ASCII format. Call me at (817)275-4109 to set a time and I'll call you back for transmission.

If you have new programs or other material suitable for publication in PROGRAMMING TOPICS please transmit to Tom Prickett at (214)690-9087. Tom needs some time to coordinate PT material, so please get with him at least 48 hours before the NEWS deadline.

Copy deadline for the next issue of PC NEWS is January 28th. Final copy deadline is regularly the fourth Friday of the month... but don't wait til then if you can avoid it. Get ahead of the game! Try for the third Friday... or the second! Preparation of the newsletter is much less hectic if the articles are on hand a week or so ahead.

John

DOW JONES NEWS/RETRIEVAL

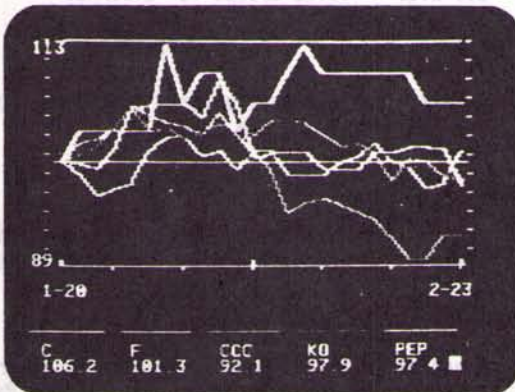
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IBM	100	1/15/83	110.00	113.00	11,300.00	300.00
MSFT	50	1/15/83	20.00	22.00	1,100.00	100.00
DISC	100	1/15/83	10.00	11.00	1,100.00	100.00
GE	100	1/15/83	10.00	11.00	1,100.00	100.00
PG	100	1/15/83	10.00	11.00	1,100.00	100.00
W	100	1/15/83	10.00	11.00	1,100.00	100.00
SPY	100	1/15/83	10.00	11.00	1,100.00	100.00
TOT					36,900.00	700.00

PRINT DISPLAYED REPORT (F, N OR ALL) TO EXIT) 7.

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Disk of the Month

by Doug Windham

NEW PERSONNEL

As most of you know, Will Janoschka has handled the public domain software thru the disk of the month for the club for over a year now. I approached Will several months ago about assisting him with the disk of the month program. He asked if I would consider taking it over completely. I thought about it and told him that I was interested, so here I am.

With that as an introduction, let me tell you a little about my experience with micros and public domain software. I got my first micro (an Apple II) in December of 1980. It was a big machine (16k RAM, RF modulator, and cassette recorder). My hardware and my interest in micros have grown as rapidly as my wallet will allow. I started working with the Apple user group in the fall of 1982 with their disk of the month program. I have seen their program library snowball over the last year or so. They currently have over one hundred diskettes in their library. The reason I mention the Apple group, is that I hope to help our group's library grow in the coming months and years ahead, much like the Apple group has.

The first thing I would like to announce is the change of location for the sale of disks at the meeting. I will be in the cafeteria before the general meeting and after the main meeting and during the early afternoon. The table will be clearly marked. SEE YA THERE !!!

Doug

DISK DETAILS

Price: \$5.00 Available at the meeting, in the cafeteria at a specially marked table, before and after the general meetings. Media: SSDD 5 1/4" diskettes formatted without DOS (160k). Public domain software only, standard full disclaimers. Call disk of the month chairman Doug Windham at 271-5727 evenings before 9pm to submit material and programs for future Disk of the Month issues. All back issues will be available at the meeting.

JANUARY HIGHLIGHTS

PASCAL PROGRAMS

This disk provides a over a dozen sample Pascal programs. Some are very simple, others are more complex. Most are quite short, while a few are fairly long. All will compile on a 128k machine with two regular (160k) disk drives. Below is a brief description of some of the programs on the disk.

TABSET1

A very basic Pascal program which shows how the printer can be accessed, and which sets tabs on an Epson MX-100.

PRINTER

A useful utility which can be used to print a whole series of files.

GETDIR

A brief Pascal program that uses an assembly language routine (GETSEC), provided in both source and object, to show how one can access a disk directory through Pascal and Assembler.

FLUSH

A short command file useful for cleaning up the residue of a Pascal compilation and test (.OBJ, .LST, .MAP, .EXE, etc. files). A call to "FLUSH XYZ" will scratch all XYZ.--- files except for XYZ.PAS.

COPYFILE

A fairly basic Pascal program that shows how text files are defined, read, and copied.

DUMPFIL

A more complex Pascal program, which will produce a combined hexadecimal and ASCII dump of a file.

XREF

A useful utility program which will generate a cross-reference of your Pascal program. A long Pascal program.

TIMM, TIMU, TIMI

A group of files, which illustrate the concept of a Pascal unit. File TIMU is the unit itself; file TIMI is the interface; and file TIMM is a main program which uses the unit. The unit itself illustrates the use of the DOSXQQ function to call on DOS services.

S.T.A.R.T.E.X.T. Observer

S.T.A.R.T.E.X.T. has been declared the largest Local-Area Service in the nation by the new COMPUTER PHONE BOOK, a new 466-page book compiling information on online services. STARTEXT is a metroplex news and information service provided by the Ft. Worth Star-Telegram newspaper. Multiple metro lines are used to service Dallas customers.

The service was introduced to club members by a presentation at the April 1983 meeting, and a demonstration was available at the November meeting. Editor Gerry Barker has initiated a campaign to increase the number of Dallas-area subscribers, and three new metro lines are being added as of year-end.

Electronic mail service was initiated during the second half of 1983, enabling subscribers to enter

messages online for other subscribers. Release 3 of the system software is scheduled to go operational during the first quarter of 1984, and with it will come the availability of 1200 baud service.

STARTEXT service is \$7.95 per month for unlimited access time, and is available for a 3-month minimum period. An order form is available from the STARTEXT office by calling (metro) 429-2655 ext. 832 during business hours.

In addition to the E-Mail service, STARTEXT provides local and national news, several computer columns, movie and book reviews, weather, daily stock market quotations, classified ads, features, and sports.

Dick gall



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APPLAUSE**

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ATTENTION TO
DE TAIL**



HARDWARE

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Programming Topics

Lotus 1-2-3 to the Limit

This is yet another article about Lotus 1-2-3. Before you stop reading, let me assure you that this is not the typical ravings about all the wonderful things you can do, but an exploration of some of the things that you can't. I find I often learn more from my hard fought failures than from my "piece of cake" successes. I'll try to illustrate some limits of 1-2-3 with an application I have found to be quite interesting.

I am obviously not a 1-2-3 salesman, but I too experienced the raving phase that we all tend to go through in the discovery of a fast, flexible, well debugged, and documented general purpose application. So, before you read all the negative comments that follow, let me assure you that I rate 1-2-3 as one of the finest of the mass marketed application programs of 1982.

First and foremost, the "Memory Full" message is probably familiar to even the casual user. The Lotus solution is to throw it some more memory. I usually run with 320KB of memory, and found "Memory Full" to be a common occurrence while developing the illustration appearing on the following pages. This is a 1-2-3 graphic which sucks up 544KB (I was fortunate to be able to borrow another memory board). I believe 544KB is thought sufficient to cover most worst case scenarios. All of the figures mentioned below are based on a 544KB system.

The first question I wanted to ask was whether it is even possible to use all of the rows and columns that

Lotus gives. The answer is no. Lotus gives you cells beginning at A1 and extending to IV2048. This are 2048 rows and 256 columns, a grand total of 524288 cells. Asking Lotus how much memory is left is easy; a "/WS" (Worksheet Status) tells me there are 456652 bytes available on an empty worksheet. If I were to try to put something in every cell, I would have less than one byte available per cell. Based upon this, I would speculate that it is impossible to fill every cell with anything.

I set about to prove this by putting a 1 in cell A1 and attempting to copy cell A1 from A1 to IV2048. You guessed it, "Memory Full". To find out how far it got, one can press the END key followed by the HOME key, and it will jump to the end of the active area. This was BC2048. Everything to the left was ones, and to the right, nothing. Only 59392 cells were filled before memory was exhausted, approximately 11 percent of the worksheet cells, an average of 7 bytes per cell.

But what about another data type, for example, a short character string? Next, I tried a character

string one character long in cell A1 and attempted to copy cell A1 from A1 to IV2048. You guessed it again, "Memory Full". It only got to V2048. This meant 45056 cells before memory was consumed, approximately 9 percent of the worksheet cells, an average of 10 bytes per cell.

So what's the point of giving this many rows and columns when you can use only about 10 percent of them at best? Probably marketing, as it makes a very good pitch. I was somewhat in awe when I mentally laid out my first large spreadsheet. I was somewhat disappointed when I didn't even get close before experiencing "Memory Full." But Lotus has another solution: File extract and combine are conceptually equivalent to spreadsheet overlays. This allows you to work around your memory problem by paging them to disk.

Onward to your next probable constraint: "Disk Full". Perhaps I'll have a hard disk available sometime to push Lotus to this extreme in another article.

Now let's move to a real application. This is a Lotus 1-2-3 attempt at computer art that was to be used for a birth announcement. The graphic accompanies the article. It is basically an Archimedes spiral with five other functions which follow the spiral, but each follows its own deviation from the spiral. The calculations are easiest to do in polar coordinates (radius, angle), then translated to cartesian coordinates (X,Y). Four of the deviations are based on a sine wave, the fifth on a random number. The deviations are smallest at the origin, and gradually increase as the spiral unfolds. The more points that are involved, the smoother the curves, and by maximizing the number of data points, we are in an easy position to push Lotus as far as it is able to go. A look at the first page of the spreadsheet follows:

	A	B	C	D	E	F
1	angle	count	x	Main	Random	Sine
2				Spiral	Walk	Walk
3	-----					
4	MaxSpiral		Max Deviation =		8	25
5	21.9911	radians				
6			Half Deviation =		4	4
7	-----					
8	No. of points =	590	Inc =	0.02564	0.01282	
9	0	0				
10	0.03727	1	0.03724	-0.0013	-0.0061	0.00179
11	0.07454	2	0.07433	-0.0055	-0.0078	0.00680
12	0.11181	3	0.1112	-0.0124	-0.0047	0.01385
13	0.14909	4	0.14743	-0.0221	-0.0007	0.02115
14	0.18636	5	0.18313	-0.0345	-0.0679	0.02643
15	0.22363	6	0.21806	-0.0495	-0.0533	0.02717
16	0.26091	7	0.25208	-0.0673	-0.0437	0.02084

Column A is the angle. Column B is a count of how close we are to the number of points, cell C8. Column C

Programming Topics

(continued)



Lotus 1-2-3 to the Limit
(continued)

is the X cartesian coordinate. Column D is the Y coordinate for the basic spiral. Column E is the Y coordinate for the random function. Columns F, G, H, and I are the sine functions. The graph type is XY. The X data range is defined on column C. The A, B, C, D, E, and F range is defined on Columns D, E, F, G, H, and I respectively, rows 10 through 599. The boundaries of the X and Y values were restricted to (-20,20) for effective clipping.

Here are some comments on the graphics capabilities. Again, Lotus was not designed for computer art applications. It does a good job on two dimensional business graphics, but quickly reaches its limits for a graphic as complicated as this one. It contains approximately 3500 line segments. The graphic was printed on an Epson MX-80 equipped with Grafrax. It uses as many functions as Lotus will allow. Unfortunately, Lotus forces all functions to use the same set of X coordinates. The original idea had the deviations from the spiral in both the X and Y directions, but I had to settle for the Y only. As it turned out, the graphic developed an unplanned but

effective 3-dimensional effect due to this Lotus limitation. The graphic looked very good displayed in color.

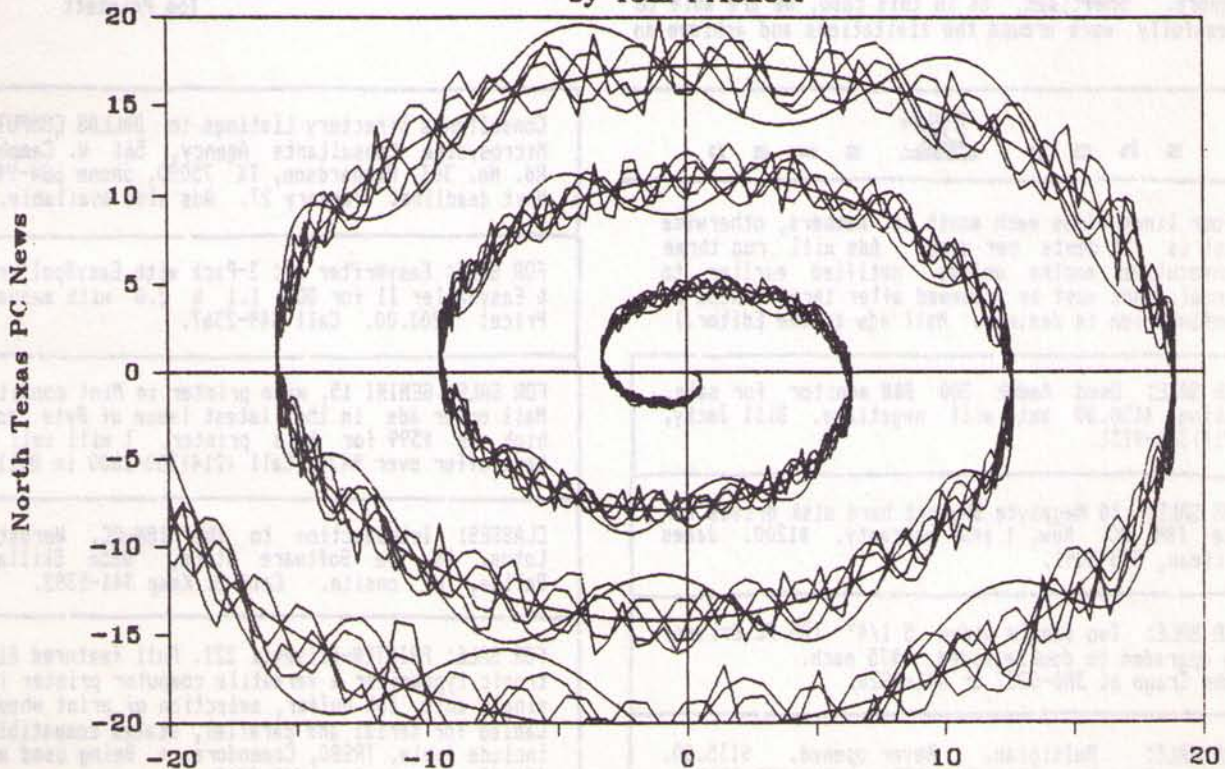
Lotus chose to implement the hard copy printing software separate from the spreadsheet. The memory limits were actually reached with the hard copy overlay, not the spreadsheet. This was apparently not anticipated by the developers because there are no capabilities to show how much memory remains or how far it got when a memory overflow occurs in the hard copy overlay. Oops! This resulted in a lengthy and frustrating trial and error process to get smooth curves with only 544KB.

The memory management of the hard copy overlay is deficient in other ways too. Space recovery is apparently not perfect, because if you view the PIC file before printing it, you will run out of memory when you try to print it. However, if you print it without viewing it, you do not run out of memory. I found the memory management of the main worksheet as you are copying and erasing cells too strange and unpredictable to even comment on.

The time required to perform recalculations is good when you consider the number of recalculations, even

! Birth !

by Tom Frickett



Lotus 1-2-3 to the Limit

North Texas PC News

Programming Topics (continued)

Lotus 1-2-3 to the Limit

(continued)

without an 8087 floating point box. It took almost 2 min., so I would suggest you switch the recalculation mode to manual. If you change a formula, you need to copy cells A10..110 to A11..A600. This takes about 2 min. 10 sec. I chose to always retrieve and save my files without rows 11 through 600 because it took another 2 min. to do this each way with the rows present, and 2 sec. when they were not. The time required to actually print the graphic was startling, about 25 minutes! It grinds away with a long pause between each line. But, it works.

There was another reason I chose to maintain the worksheet without rows 11 thru 600. When saved on a floppy file the file length was 2688 bytes without the rows and 262272 with them. The larger file consumed over half the disk. The PIC file containing the information for the hard copy was 34816, a sizable data compression after you eliminate all of the fluff.

Let me conclude by reiterating the points of this article. For large problems, even a fast program can become very, very slow. For large problems, programs can consume huge amounts of space, both memory and disk. Programs often begin to show their weak points when they exceed their boundary conditions. You can learn a lot when you cross these boundaries, and not all the boundaries are anticipated or handled well by their designers. Sometimes, as in this case, we are able to successfully work around the limitations and achieve an

acceptable, yet compromised finished product. There are sometimes pleasant surprises. Finally, every program has its boundaries, even the good ones. Lotus is no exception to this rule.

Now, for all of you spreadsheet hackers, da goods:

- E4: 8
- F4: 25
- G4: 10
- H4: 6
- I4: 6
- A5: 3.14159*7
- E6: 4
- F6: 4
- G6: 3
- H6: 2
- I6: 2
- C8: 590
- E8: +E4/\$C\$8
- F8: +F6/\$C\$8
- G8: +G6/\$C\$8
- H8: +H6/\$C\$8
- I8: +I6/\$C\$8
- A9: 0
- B9: 0
- A10: +A9+\$A\$5/\$C\$8
- B10: +B9+1
- C10: +A10*CCOS(A10)
- D10: -A10*ESIN(A10)
- E10: +D10+(@RAND*\$E\$4*\$B10/\$C\$8)-(\$E\$6*\$B10/\$C\$8)
- F10: +\$D10+(@SIN(\$B10*6.283185/F\$4))*\$B10*F\$8
- G10: +\$D10-(@SIN(\$B10*6.283185/G\$4))*\$B10*G\$8
- H10: +\$D10+(@SIN(\$B10*6.283185/H\$4))*\$B10*H\$8
- I10: +\$D10-(@SIN(\$B10*6.283185/I\$4))*\$B10*I\$8

Tom Prickett



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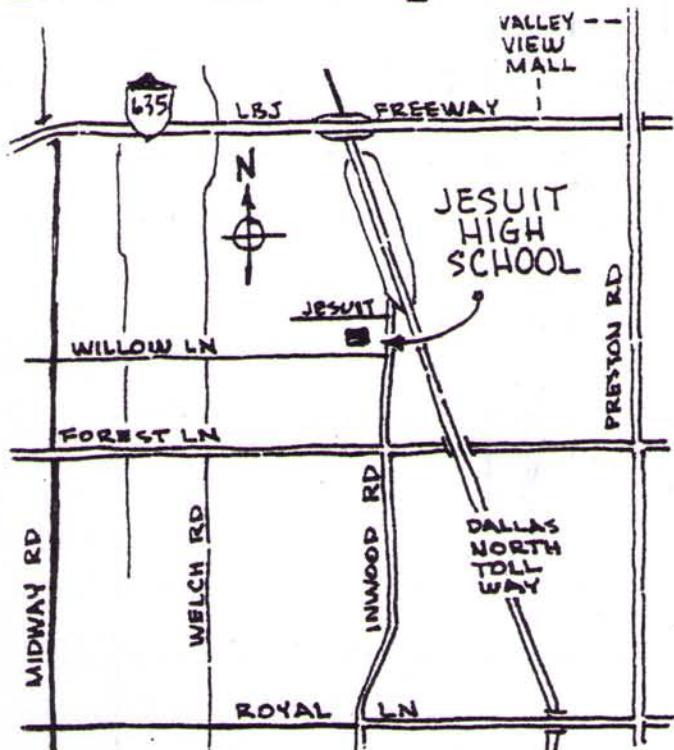
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