

THE STACK

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P.O. BOX 71, Hicksville, N.Y. 11802 (516) 293-8368

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Official Newsletter Of the LONG ISLAND COMPUTER ASSOCIATION, INC.  
President, Al Stone Vice President, Stan Misel  
Secretary, Frank Davidoff Treasurer, Aileen Harrison  
Stack Editor, Al Levy LICA Bulletin Board (516) 561-6590  
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PRESIDENT'S MESSAGE

I am pleased that Stan Misel proved to be an excellent Chairman at last month's General Meeting while I was unavoidably absent. As in private business, it's reassuring to know that our club has a capable cadre who guarantee a continued level of performance consistent with our six year history of accomplishment and growth.

An issue was raised at that same General Meeting to which I feel compelled to respond. L.I.C.A. has remained preeminent among local computer hobbyist organizations because we have always taken the widest possible view of our purposes. We have tried not to forget that we were all beginners once, and thus have sought to continue to invite new beginners to join us, and to make them feel welcome among us. We are ever mindful that all speakers and all presentations cannot be of overriding interest to everyone attending our meetings. The continuing hope is that there will be something of value for everyone.

Many of our members are employed in some area of either computers or data processing. Many are students with a very understandable curiosity about what awaits them in the world beyond their schools and universities. It is therefore most appropriate that we occasionally have persons address our General Meetings who are aware of both the employment opportunities and educational and experiential prerequisites that will be faced in the so-called "real world".

Further, I understand that an objection was raised on the subject of "commercialism" in regard to speakers' subject matter. My friends, let us not be so naive as to think that companies such as IBM, 3M, and Intel supply L.I.C.A. with excellent and informative speakers replete with audio-visual support and demonstration computer systems for wholly altruistic reasons. Ours is a capitalist society, and there is nothing inherently wrong with "pitching" one's products, so long as the overall effect is to inform and to educate. Besides, such presentations often lead to special purchases, discounts, or "group buys" for our members (who constitute a rather specialized market, you must admit).

So long as I am President of this Corporation I will exclude no speaker nor subject from consideration so long as time permits and a demonstrated interest among our membership exists to hear that speaker. Please contact Mr. Davidoff our Secretary, Mr. Levy The STACK Editor, or myself should you wish to appear on any future agenda.

THE SECRETARY'S REPORT ON LICA MEETING OF 21 JANUARY 1983

Our President Al Stone has unfortunately been hospitalized and has just returned home. We wish him a speedy recovery. In his absence, Stan Misel took over the running of the meeting.

At the December meeting, some questions had been raised regarding the election of Executive Board members. Stan stated that to resolve the question all seven nominees have been invited by the President to serve on the Board. The new Executive Board will meet in about a week. Copies of the LICA constitution and some proposed revisions were distributed to LICA members and will be brought up for discussion at a future meeting.

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6502 Group--George Carlson reported that the principal activity of the last meeting was to try to interface a TRS-80 Color Computer with a Shugart disk drive. More work remains to be done.

6800 Group--No report.

IBMPC Group--Stuart Greenberg reported on various activities:  
Discussion of SuperCalc with Basic using command files.  
Reinking Epson printer ribbons.  
Sears service contracts.

PET Group--Phil Cochems reported no activity.

CPM/S100 Group--Augie Schwab reported on the activities:

A speaker from Grumman discussed user-defined functions in Basic. He showed how by relatively simple definitions, complex mathematical and graphical functions could be generated. The members who had the experience to follow his discussion said it was excellent.

Various members reported on old and new files available in the CPMUG and SIGM libraries. Files mentioned were FIND, DX, SWEEP, LISTT.

TRS80 Group--Ed Zuilkowski reported that Radio Shack announced a new computer, Model 12. It will have a Z80, ??Kram, and two thin 8" drives holding 1 1/4 Mbytes.

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A member mentioned a problem with the Commodore 64 computer. The character generator ROM is too slow and causes interference. A fix is available.

Phil Cochems announced that the AHRC again offers the use of their facilities to LICA for their second annual Flea Market.

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THE SECRETARY'S REPORT (continued)

Phyllis Lehmann, a professional recruiter, spoke about the microcomputer job market. She said that microcomputer job opportunities are increasing. The influx of micros in business applications to some extent threatens some applications of mainframe computers.

The computer languages most in demand in commercial applications, in her experience, are COBOL, PL/I, RPG, BASIC and Assembler. There were comments from the members that universities seem to be stressing the teaching of PASCAL even though it was little used outside of the academic world. (This is the latest variation of the old question as to whether universities should be vocational schools.)

During the talk, a question was raised about the propriety of having a recruiter address LICA. The vast majority of members felt that as long as the talk was kept general, it was of interest and worthwhile.

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Professor Michael Barnett of Brooklyn College had a demonstration of graphics on the Apple II computer. He spoke about his new book, "Personal Graphics" which showed the extensive range of graphics which could be done with a small computer like the Apple. The book shows many procedures such as Bezier curve fitting which previously could only be done with elaborate programs on large machines.

Complex graphics for commercial and scientific applications can initially be done on a small computer and the data then sent to a large computer for better high quality presentation. In this way, micros are supplanting many mainframe applications and in fact forming an efficient team. (This is the same point made by the previous speaker.)

Professor Barnett was an effective and humorous speaker. It was unfortunate that he did not discuss the graphics presentation that kept running through the meeting nor describe his book or any of his procedures in detail. It was reported to me that the furor over "commercialism" prompted him to omit much of what he had planned to say.

Frank Davidoff, secretary

MONTHLY MEETINGS

All meetings, except IBM PC/UG and 6800 UG are held at the New York Institute of Technology, Old Westbury Campus. LICA meets each month on the third Friday evening at 8:00 in Room 508, Building 500. See the back cover of the Stack for map and directions.

Our next general meeting will be held on the 18th of February. Our speaker will be Ken Aupperle of Intel Corporation. We expect this to be one of our most exciting evenings.

## REPORT FROM S-100

The S-100 subgroup met January 14. The first part of the meeting was a discussion by the CP/M Users Group, chaired by Bob Kowitt. The members discussed various public domain software that each found especially useful.

For the last few months the S-100 group has been listening to each other explain CP/M to our new or uninitiated members.

Tonight we had a refreshing treat, an exciting speaker with a novel approach to expressing some mathematical relationships.

Al Vachris from Grumman Aerospace spoke on techniques for finding maximums, minimums, distances between points, areas, which side of a line points lie on, and finding functional relationships between points. He did this by "building a zoo of user-defined functions." He demonstrated the great potential of these BASIC functions for programming power and standardization.

Al is experienced in Fortran and has recently acquired a machine that supports CP/M and an extended BASIC. He has become fascinated with user-defined functions in BASIC for emulating routines in Fortran. His elegant approach to uses for these functions has inspired many of us to enhance our programming.

Pick an I and a J and run it through his zoo.

Define a maximum function:

```
DEF FN MAX(I,J) = (I+J + ABS(I-J))/2
FN MAX(I,J) = I for I>J
FN MAX(I,J) = J for I<J
FN MAX(I,J) = I=J for I=J
```

Similarly, a minimum function:

```
DEF FN MIN(I,J) = (I+J - ABS(I-J))/2
```

To define a clock arithmetic, base J:

```
DEF FN CLOCK(I,J) = (I-1) MOD J + 1
```

Now let's go to geometry in a plane. Draw a graph, pick some points and try these.

To calculate the length of a line segment between points (XA,YA) and (XB,YB):

To calculate the area of a triangle with vertices (XA,YA), (XB,YB) and (XC,YC):

```
DEF FN ATRI(XA,YA,XB,YB,XC,YC) =
.5*((XB-XA)*(YC-YB)+(XB-XC)*(YB-YA))
```

This isn't just an ordinary area. These are signed areas. A counter clock-wise path will produce a positive area. A clock-wise path will produce a negative area.

REPORT FROM S-100 (continued)

To calculate the distance of a point (XP,YP) from a directed line segment from point (XA,YA) to point (XB,YB):

```
DEF FN DLINE(XA,YA,XB,YB,XP,YP) =  
  2*FN ATRI(XA,YA,XB,YB,XP,YP)/FN XLNGTH(XA,YA,XB,YB)
```

First note that Al is using two other functions to define the function FN DLINE. Then look at the relationship

If FN DLINE>0, (XP,YP) is to the left of the line segment.  
If FN DLINE<0, (XP,YP) is to the right of the segment.  
If FN DLINE=0, (XP,YP) is on the line AB.

There is a lot of useful material here (and this is only the beginning of his talk!). Some of us are getting the idea that this could be applied to graphics. Fortunately for us, Al Vachris is a member of LICA. Thanks Al, for an elegant, inspiring presentation. We are looking forward to learning more from you at future S-100 meetings.

Jackie T.

Employment in Technology - Angelo Tulumello

In commerce, the only reason one person pays another is to get a return on his money. This is also true in science and technology. It is true in computer science and programming in general. An employer wants not only a return but the best return he can get on his employment dollar.

When a field is new or growing rapidly, trained personnel are in short supply. As a result, people employed in the field do very well. They get wages that are increased at a rate faster than the gross national product and enjoy security in employment plus many options to change jobs if they wish. This was true in chemistry in the early 40s and 50s, electrical engineering in the 50s and 60s and computer science in the 70s and 80s. These conditions attract people until the labor supply exceeds the demand.

When supply exceeds demand, both may still increase, but the employment market shows certain characteristics. Salary increases do not keep up with the GNP. Old skills have lower value and older professionals who are not in a position to change with the times find it difficult to keep up with inflation. Few industries can make money on the services of an electrical engineer who was graduated 20 years ago as a vacuum tube circuit designer.

Characteristics of a saturated market are a demand for personnel that can deliver a more immediate return for the investment in them. Advertisements in 1960 asked for **ELECTRICAL ENGINEERS**. By 1965 the needs were expanded to **ELECTRICAL ENGINEERS WITH SEMICONDUCTOR DESIGN EXPERIENCE**. By 1970- **DIGITAL DESIGN ENGINEERS WITH EXPERIENCE IN SIGNAL PROCESSING**, in 1975- **MICROPROCESSOR DESIGN ENGINEERS WITH EXPERIENCE IN DATA TRANSLATION AND SIGNALPROCESSING**

[ continued on page 6 ]

Employment in Technology - Angelo Tulumello (cont.)

Come 1980 and the need is for CMOS MICROPROCESSOR DESIGN ENGINEERS WITH HANDS ON EXPERIENCE OF HARDWARE DESIGNED TO PROCESS ALIEN RADAR AND SONAR SIGNALS, SOLD BY MY COMPETITOR.

In effect there is very little market for anything other than a narrowly defined specialist and for very few of them. These characteristics are beginning to appear in the employment market for programmers.

- 1) Salary increases for programmers have not increased as the GNP since 1981.
- 2) In the 60s a programmer worked with Fortran.
- 3) In the 70s he should know Cobol too.
- 4) By the late 70s he needed Cobol and Fortran and experience on the PDP-11.
- 5) Today the demand is much more specific, but it's there for those who can handle Fortran, C, Cobol, highbol, lowbol, and snowbol as applied to games and graphics.

It happened to other fields before programming and you can bet that the absolute demand for programmers is beginning to be exceed by the supply. You can be certain that the employment demand for computer programmers is still better than the market for people with backgrounds in history, Sumerian cuneiform and lieder singing, as is almost any technical-wealth producing field. When the oil companies realize that much of the Sumerian cuneiform discusses inventories of bitumen in Iraq, and that this is usually associated with oil, there will then be a shortage of experts in Sumerian cuneiform.

Young people have entered all these fields. All of them survive, but it's a lot more fun if you are creative and bear in mind that you need skills that produce wealth. You can do it in business for yourself or working for someone else. It helps if you have more than one field of experience. Many people don't start that way, but work their way into it. If you are getting started, this might be something to keep in mind.

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Now is the time to renew your membership. 1983 dues were due in January. This will be the LAST copy of the STACK mailed to members who are not paid up.

Members wishing to pay dues via the U.S. MAIL should send all checks to:

Aileen Harrison  
36 Irene Lane East  
Plainview, N.Y. 11803

Dues will also be collected at our monthly meeting .

At the suggestion of our STACK editor, Al Levy and our former secretary, Jackie Tulumello, I have agreed to start a monthly column on technical subjects that hopefully will be of interest to a reasonably large part of LICA. There are many very knowledgeable people among LICA members and the intention is to get some of this knowledge into our newsletter where it will get a wide degree of exposure.

Everyone is encouraged to submit contributions, preferably by modem, to me (593-6844) or to Al Levy (293-8368). If modem transfer is not practicable, send the material in by any other way. In addition, I plan to periodically ask some of our well-known experts to reveal some of their special techniques.

This month's column is about getting more than 256 I/O ports from a computer using a Z80 microprocessor.

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**64K I/O Ports Using a Z80 Microprocessor**

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The popular and ancient 8080 microprocessor generally does its I/O (except for disk control) by using ports. There are two instructions for this purpose, IN and OUT. A typical IN instruction such as "IN 1BH" will put a data byte from port 1B into register A of the microprocessor. This is done by putting the port data byte on the eight lines of the data bus and the port address on the lower eight lines of the address bus (A0-A7). The OUT instruction works in a similar manner.

Because these instructions use one address byte (and therefore eight address lines), it is possible to address only 256 I/O ports. For many users this number of ports is more than enough; however there are some applications such as instrumentation, where it is desirable to have more.

It should be mentioned that it was conventional in many 8080 microprocessor CPU boards to "mirror" the address lines; that is, to put the same port address on the upper eight address lines as well as the lower eight. With this procedure, the external I/O device had a choice of decoding the upper or the lower eight address lines. Some CPU boards using a Z80 maintained this convention. To obtain the 64K ports available with a Z80, it is necessary to "unmirror" the upper eight address lines. My North Star board, for example, provides a single jumper change for this purpose.

The Z80 microprocessor has the same two I/O instructions as the 8080, which use the A register for data transfer. Using Z80 mnemonics, the IN instruction is "IN A,(port)", where A is the A register and (port) is the port address. However the Z80 has several additional I/O instructions, two of which I will describe in detail. These instructions permit any register to be used for the data transfer. The IN instruction is "IN r (C)". Here the (C) means that the port address as contained in the C register and the data byte from the port will be transferred to register r. The OUT instruction, "OUT r (C)" works in a corresponding manner.

TECHNICAL TOPICS by Frank Davidoff (continued)

Thus far we can see that the Z80 is more flexible than the 8080 but it appears to be still limited to 256 ports. A little known fact about these latter two instructions is that they also put the contents of the B register onto the upper eight lines of the address bus. Therefore if we first load register B with the desired value for address lines A8-A15, then load register C with the desired value for address lines A0-A7, and then execute the IN or OUT instruction, the computer can address any one of 64K ports since all sixteen address lines are being used.

One practical problem in the application of this Z80 capability is that the external I/O device must be able to decode the sixteen address lines. Almost all I/O devices decode only eight lines. It may be necessary to add a decoder to the I/O device. It should be remembered that it is not necessary to decode all the lines if the full 64K ports are not desired. Decoding just address lines A0-A8 will give 512 ports, and so forth.

Other Z80 I/O instructions permit transferring data directly between ports and memory rather than between ports and registers. These instructions also decrement a byte counter and some repeat automatically until the byte counter is zero, thus providing block transfer of data between I/O ports and memory.

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The Stack is now available at the following locations  
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Compu-Aid	222-68Braddock Ave	Queens Village
Computerifics	14 Cold Spring Road	Syosset
ComputerLand	79 Westbury Ave	Carle Place
Computerland	6181 Jericho Turnpike	Commack
Computer Microsystems	1196 Northern Blvd	Manhasset
Cousins Video	1238 Hicksville Rd	Massapequa
Future Visions	70 Broad Hollow Rd	Melville
Harrison Computer Ctr.	2263 Broadhollow Rd	E.Farmingdale
Heathkit Electronic Center	15 Jericho Tpke.	Jericho
L.I.Computer General Store	103 Atlantic Ave	Lynbrook
Programs Unlimited	20A Jericho Tpke	Jericho
Programs Unlimited	Smithtown Mall	Smithtown
Programs Unlimited	5002 Jericho Turnpike	Commack
Software Emporium	151 Mineola/Willis Ave	Roslyn Hghts
Spartan Electronics	6094 Jericho Turnpike	Commack
The Video Lady	416 S Oyster Bay Road	Plainview

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PLEASE NOTE  
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Due to the fact that I broke one spoke on my 15 cpi printwheel, this issue of the stack is being printed at 10 characters per inch. As a result I can only print about two thirds the usual amount of information in the same number of pages. My apologies to those people who submitted articles that did not get printed. I am having no luck in locating another wheel. If you know where I can get a Qume #8290 WP Gothic-15 wheel or if you wish to donate one to LICA or, if you have anything to contribute to the Stack, messages can left on my office phone via voice or modem. Al Levy (516) 293-8368.

### Editorial - Al Levy

My thanks go to Dave Goldberg through whose efforts LICA was treated to a demonstration and talk by Michael P. Barnett.

Michael Barnett was born in England, has B.S. and Ph.D. in Chemistry from King's College in the University of London, has worked for IBM, RCA and a publishing company. He has taught at the University of London, MIT, Columbia and now at Brooklyn College. Mr. Barnett has published 3 books and over 70 papers, spoken at meetings throughout the U.S. and England plus several other countries. He has pioneered major uses of computers in chemistry, economics, education and publishing, and recently has produced a book entitled "Personal Graphics" by a new development- pictorial electronic typesetting - described in the book itself. He is a past chairman of the Office Automation section of the Association for Computing Machinery and a member of the ACM board that is responsible for the 32 sections of the ACM.

Mike, a Professor of Computer Science at Brooklyn College, wrote this 200 page book with his high school son Graham. Ten of its three dozen programs ran as a continuous background to the LICA meeting which finished with a lively question and answer discussion. I was somewhat surprised to learn that Professor Barnett learned enough from his teen age son to get started on personal graphics. It is not so surprising to discover that his ideas for the programs come from 35 years of computing in industry and government and teaching it at all levels.

I was pleased to discover that each program, and what it does is explained simply. There are nearly two hundred pictures of the graphics that are produced, lists of variables, hundreds of REMs and simple formulas for use when needed. The book could be used in education and professional development or as a resource for teachers, pupils and parents. The Applesoft BASIC programs can be adapted for many other personal computers with hi-res graphics just by changing the PEEKs and POKEs and maybe one or two other details.

For example, you will meet Cuthbert the Calculating Cat who does arithmetic by wagging his tail and stamping his feet and Cyrus the Sensitive Centipede who doesn't like banging his head. You can see a bar chart program illustrated with Ghoulish Goulash record sales ("I'm Bats about You", "The Vamp and the Vampire") and pie charts of Gourmet Exports (Canned Piranha Meuniere-ugh-who ate who). With each of the programs there are "Suggested Variations" to challenge the reader, and give hours of fun and while developing new applications. There are practical examples of interactive graphics program design and prototypes of programs that I know are sold in packages for hundreds of dollars. For the unsophisticated programmer there are ways to use SIMPLE math for graphics applications, many of which were hidden behind formidable formulas and expensive equipment in the past. I believe this book has the distinction of being the first document completely typeset (including pictures) by its own programs. It is most definitely for the more experienced and/or serious programmer. It belongs in every school library.

#### **PERSONAL GRAPHICS FOR PROFIT AND PLEASURE**

Little, Brown and Company-(617-227-0730) price \$14.50  
Program disk from TYCON Corp., CN 5258, Princeton NJ 08540  
(\$24.95 + \$1.50 shipping)

LICA has been offered a group buy. Sign up at the meeting or call me at the office for information.

## Personal Graphics and High Technology-by Michael P. Barnett

The graphics capabilities of personal computers impact high technology as well as pre-college education, business and recreation. Mathematical and algorithmic efficiency is essential in many engineering and design applications and this can be achieved quite often with simple ideas. For example, in Bezier fitting, the smoothing functions are binomial probability distribution functions. The complete set of these for a single interpolation point can be computed just by 3 additions and 2 multiplications per control point, using a simple recurrence formula (Personal Graphics, p. 139). The PASCAL program in a conventional graphics text computes each function separately using exponentiation and factorials of several numbers. Wasteful on a large number cruncher, this would be fatal on a micro.

Another example - everybody knows that a line can be represented by its slope and intercept, except when it is vertical. Consequently, programs that deal with geometrical objects have to treat vertical lines as special cases. You can use homogeneous coordinates, of course, if you have a handle on these, but a much simpler method of avoiding special cases is to use the normal equation of a line (Personal Graphics, p. 171). That seems to have dropped from the math syllabus in the 1920s, but is very useful in graphics programming. It represents a line as

$$Ax + By + C = 0,$$

where A and B are the cosine and sine of the angle between the x axis and a perpendicular to the line, and C is minus the perpendicular distance of the line from the origin. And there are lots of handy formulas in the old geometry books that are based on this normal equation.

Producing my book also marked an advance in high technology - all the illustrations were created on an Apple, representations were transmitted electronically to a UNIVAC 90/60 together with the text, and typeset in a place on a Videocomp electronic composition machine producing final pages without any manual make-up.

I thank the members of L.I.C.A. for their attention, provocative questions and warm reception.

Michael P. Barnett

### **Long Island Computer Association, Inc. - Special Interest Groups**

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SUB-GROUP	CHAIRMEN	PHONE(516)	Meetings Each Month
6502	Steve Perry	744-6462	
680X	Roger Kaucher	796-8746	
IBM	Marvin Freifeld	724-0574	2nd Friday 7:00
PET	Phil Cochems	333-4213	3rd Friday 7:00
PolyMorphic	Al Levy	293-8368	3rd Friday 7:00
S-100	Richard Wilson	747-4241	2nd Friday 7:30
TRS-80	Ed Zuilkowski	938-3320	2nd Friday 7:00
-	Now Forming	-	
Color Computer	S.Perry Jenkins	Box 62 Southampton NY	11968
NEC PC-8000	Jerry Worthing	735-2952	

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## IBM/PCUG-9 Excellence Is Not Enough

Bravo! IBM has produced the finest set of manuals for a personal computer. Boo! IBM has not made the instructions for their personal computer intelligible to the average purchaser (and some are obtuse to those most familiar with personal computers).

The dichotomy represented by the above statements is exasperatingly true. The computer is undoubtedly the most complex machine in our homes or offices. It is most likely more complex than ALL the machines in our homes and offices combined. The permutations and combinations of all the different instructions necessary to operate the hardware and software is staggering.

It is much too easy to say that IBM should have or could have done this or that to make our lives easier. But it won't make our lives any more productive to blame the "other guy". There are a variety of ways that we can help ourselves to make the computer more intelligible; we can go to school, we can enlist the aid of other users, we can study, we can even buy 'aids' (LISA is only \$10,000). There are only two things we should not do; we should not expect to be spoonfed and we should not gripe (well maybe only a little).

I have been trying to get Joe Daniels to speak before our group ever since I've known him. He has a habit of turning my thinking onto new paths. The last time he spoke to me I had the discomfort of learning that my approach to the computer is WRONG. I have the habit of using utilities (nothing is wrong with that) but I can't generate my own (and there is plenty wrong with that). If you've never thought about the topic or think that there is something wrong with the conclusion then you need to hear Joe Daniels. I've invited him to our next meeting. He says that he isn't a good public speaker but sometimes the ideas presented can all but speak for themselves.

### CONTACT!!!!!!!

Contact has been made. The Red Sea has parted and the heavens have opened to make the truth known. Well maybe not quite anything as dramatic as all that; but this Friday I heard from IBM in Boca Raton. It seems that they are exploring the possibility of setting up some direct services to the purchasers of the IBM PC and the User Groups that have formed. Some of the things we discussed were the distribution of the Announcements and Updates, a clearinghouse for public domain software, establishment of some form of OBB (Official Bulletin Board), the desirability of establishing some form of information interchange before a question got to Big Blue, formal visits from representatives of IBM, our IBM PCUG and on and on. The conversation lasted for more than a half hour on IBM's nickel. I certainly hope something positive comes from the contact.

I find myself reviewing three programs, one of them the Basic Development System by Ken Snapp is working very well. It is an addition to the disk Basic (or Basica) and is resident with the Basic program at all times. It is distinguished from the raw Basic program by ending in the extension .BDS instead of .COM.

It adds :

- \* Keyboard shorthand functions and debugging aids.
- \* Crossref for variables, line numbers and numeric constants.
- \* Crossref for strings and keywords.
- \* Dynamic dump of values assumed by any (or every) program variable.
- \* Renumbering capability which allows relocation and/or duplication of blocks of code.
- \* Compression which both reduces the program size and increases the speed of program execution.
- \* Decompression to restore a Basic program to a much more readable form.

The Basic Development system does all the above from Basic; it is not necessary to leave Basic to accomplish any of the above using the BDS. The preliminary documentation furnished with the program is clear, concise and sufficient. Perhaps the only thing that is missing is a one (or two) page quick reference. The commands are well organized and easy to remember. For example 'F' (which stands for 'find') if followed by a period lists the findings to the screen. 'F,' lists the findings to the printer. Similarly 'V' (which stands for variable dump) if followed by a period dumps the variables to the screen and 'V,' dumps the variables to the printer.

**SUPER RENUM** the enhanced renumbering facility has a number of advantages over the Basic RENUM command.

Our group now has two program user groups. There is the DBase UG and the Pascal UG. The DBase UG will be meeting at 7:30 on Tuesday, February 15th at the home of Phil Sorrentino, 15 Caton St., East Northport. Phil is the chairman of our first operational subgroup. If you desire some more information about the subgroup please contact him at 368-6983.

The Pascal UG will be meeting for the first time at Marvin Ereifeld's home, 3 Lindron Ave., Smithtown NY on February 8th at 7:30. For more information please contact him at 724-0574. Our group needs someone to contact speakers and serve as an key planner. If you are interested please contact me at the above number.

Be seeing you on Feb 11 at the NYIT, Commack Branch, on Jericho Turnpike near Commack Road at 7:30. Happy Computing, Marvin

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**PolyMorphic Users Group - First Meeting**  
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Al Levy will chair the first meeting of the Poly Users group on February 18th, one hour prior to the general meeting. All are invited to attend. The first session will be an exposition of Exec.OV which is the primary operating system of this S-100 micro. There will be a full discussion of System Commands plus a question and answer period for the new users in the group. A report will be given at the general meeting.

## Micro Thoughts - Al Levy

As a follow up to my last article the next three pages of the STACK contain the charts for the PET special characters. In addition, I am elated to report that I already have volunteers to write articles on the Cromenco and Northstar computers plus an article taking a serious look at CP/M. I am awaiting word from those of you who own other micros. Who wants to write up the TIMEX nee "SINCLAIR"? How about the APPLE, OSBORNE, or any of the TANDY products? There is time, but I would like to have a commitment.

I detest commercialism in LICA and would be the last to promote it. By hand delivering the STACK to many of the dealers, I have gotten to know and admire just about all of them. On occasion, I will report to the membership my experiences by writing up a "store of the month" type article. Keep in mind that the sales-people are aware that I own a PolyMorphic computer and that I cannot purchase hardware, software, nor any other big dollar items from them. At best I am a "hobbyist" who came in to schmooze or buy a magazine, at worst I am a pest who clutters up the store while they are trying to make sales. My report this month is on "FUTURE VISIONS" located on Route 110 in Mellville just between Northern State Parkway and the L.I.E.

I have been haunting this place for the two and a half years that they have been in business. Despite the fact that the owner "Mike" considers me to be a kook of the first order, he has always been willing to listen, appraise and help me make decisions for my business. All this despite the fact that all I could purchase from him was books and magazines. When LICA's hardware course needed text books, it was Mike who came to the rescue by special ordering the books from the publisher, and re-selling them to LICA at his cost. Besides being a knowledgable programmer, Mike has hired some of the most knowlegable people, and now he has a large although still growing staff. There are times that I listen to sales people in so-called computer/electronics stores and feel as though I would either gag or break out laughing from their sales pitches. At Future Visions I can honestly say that I overhear accurate, seriously considered advice to non-computer business people. I have on occasion taken the liberty of adding my own 2c worth and it has always been well received by the sales staff. (After all it is their store and they could tell me to shut up or get out.) From what I have heard, they truly give full support to each customer..... even after purchase of equipment. These days, FUTURE VISIONS is featuring the OSBORNE, NORTHSTAR, APPLE II, and the IBM-PC. It is apparent that they are well supplied with software for these and other brands. The "cute young girl" behind the counter, "Cookie" by name, tells me, they are the only independent IBM and OSBORNE dealer on Long Island.

I go there to browse through the wide selection of magazines and books. (On occassion I even buy something.) Unfortunately the public libraries are about five to ten years behind the times. If Barbara Rader can give "chef hats" to restaurants I am taking the liberty of giving FUTURE VISIONS a rating of 5 floppies. If you stop in, say hello to Pat for me.

TABLE 1—SCREEN POKE CHARACTER SETS FOR PET/CBM

POKEs shown are made to locations 32768-33767 for 40-column screens, and 32768-34767 for 80-column screens. Character set selection:  
 S - POKE 59468, 12 in all machines. AO - POKE 59468, 14 in PETs with Original ROMs. A - POKE 59468, 14 in all other machines.

POKE	S	A	AO																
0	0	0	0	32	Space			160	Space			192	Space			224	Space		
1	R	a	R	33	!	!	!	161	!	!	!	193	!	!	!	225	!	!	!
2	B	b	B	34	"	"	"	162	"	"	"	194	"	"	"	226	"	"	"
3	C	c	C	35	#	#	#	163	#	#	#	195	#	#	#	227	#	#	#
4	D	d	D	36	\$	\$	\$	164	\$	\$	\$	196	\$	\$	\$	228	\$	\$	\$
5	E	e	E	37	%	%	%	165	%	%	%	197	%	%	%	229	%	%	%
6	F	f	F	38	&	&	&	166	&	&	&	198	&	&	&	230	&	&	&
7	G	g	G	39	'	'	'	167	'	'	'	199	'	'	'	231	'	'	'
8	H	h	H	40	<	<	<	168	<	<	<	200	<	<	<	232	<	<	<
9	I	i	I	41	>	>	>	169	>	>	>	201	>	>	>	233	>	>	>
10	J	j	J	42	*	*	*	170	*	*	*	202	*	*	*	234	*	*	*
11	K	k	K	43	+	+	+	171	+	+	+	203	+	+	+	235	+	+	+
12	L	l	L	44	,	,	,	172	,	,	,	204	,	,	,	236	,	,	,
13	M	m	M	45	-	-	-	173	-	-	-	205	-	-	-	237	-	-	-
14	N	n	N	46	.	.	.	174	.	.	.	206	.	.	.	238	.	.	.
15	O	o	O	47	/	/	/	175	/	/	/	207	/	/	/	239	/	/	/
16	P	p	P	48	0	0	0	176	0	0	0	208	0	0	0	240	0	0	0
17	Q	q	Q	49	1	1	1	177	1	1	1	209	1	1	1	241	1	1	1
18	R	r	R	50	2	2	2	178	2	2	2	210	2	2	2	242	2	2	2
19	S	s	S	51	3	3	3	179	3	3	3	211	3	3	3	243	3	3	3
20	T	t	T	52	4	4	4	180	4	4	4	212	4	4	4	244	4	4	4
21	U	u	U	53	5	5	5	181	5	5	5	213	5	5	5	245	5	5	5
22	V	v	V	54	6	6	6	182	6	6	6	214	6	6	6	246	6	6	6
23	W	w	W	55	7	7	7	183	7	7	7	215	7	7	7	247	7	7	7
24	X	x	X	56	8	8	8	184	8	8	8	216	8	8	8	248	8	8	8
25	Y	y	Y	57	9	9	9	185	9	9	9	217	9	9	9	249	9	9	9
26	Z	z	Z	58	:	:	:	186	:	:	:	218	:	:	:	250	:	:	:
27	[	[	[	59	;	;	;	187	;	;	;	219	;	;	;	251	;	;	;
28	\	\	\	60	<	<	<	188	<	<	<	220	<	<	<	252	<	<	<
29	] ] ]	] ] ]	] ] ]	61	=	=	=	189	=	=	=	221	=	=	=	253	=	=	=
30	^ ^ ^	^ ^ ^	^ ^ ^	62	>	>	>	190	>	>	>	222	>	>	>	254	>	>	>
31	~ ~ ~	~ ~ ~	~ ~ ~	63	? ? ?	? ? ?	? ? ?	191	? ? ?	? ? ?	? ? ?	223	? ? ?	? ? ?	? ? ?	255	? ? ?	? ? ?	? ? ?

TABLE 3 - AMERICAN STANDARD CODE FOR INFORMATION INTERCHANGE (ASCII)

The ASCII Codes in Decimal Form:		English Names of the Special Characters:		Key to Control Code Abbreviations:	
0 NUL	32 SPC	64 @	96 `	ACK	- Acknowledgement
1 SOH	33 !	65 A	97 a	BEL	- Bell
2 STX	34 "	66 B	98 b	BS	- Backspace
3 ETX	35 #	67 C	99 c	CAN	- Cancel
4 EOT	36 \$	68 D	100 d	CR	- Carriage return
5 EOB	37 %	69 E	101 e	DC1	- Device control #1
6 ACK	38 &	70 F	102 f	DC2	- Device control #2
7 BEL	39 '	71 G	103 g	DC3	- Device control #3
8 BS	40 (	72 H	104 h	DC4	- Device control #4
9 HT	41 )	73 I	105 i	DEL	- Delete
10 LF	42 *	74 J	106 j	DLE	- Data link escape
11 VT	43 +	75 K	107 k	EM	- End of medium
12 FF	44 ,	76 L	108 l	ENQ	- Enquiry
13 CR	45 -	77 M	109 m	EOT	- End of transmission
14 SO	46 .	78 N	110 n	ESC	- Escape
15 SI	47 /	79 O	111 o	ETB	- End of transmission block
16 DLE	48 0	80 P	112 p	ETX	- End of text
17 DC1	49 1	81 Q	113 q	FF	- Form feed
18 DC2	50 2	82 R	114 r	FS	- File separator
19 DC3	51 3	83 S	115 s	GS	- Group separator
20 DC4	52 4	84 T	116 t	HT	- Horizontal tab
21 NAK	53 5	85 U	117 u	LF	- Line feed
22 SYN	54 6	86 V	118 v	NAK	- Negative acknowledgement
23 ETB	55 7	87 W	119 w	NUL	- Null
24 CAN	56 8	88 X	120 x	RS	- Record separator
25 EM	57 9	89 Y	121 y	SI	- Shift in
26 SUB	58 :	90 Z	122 z	SO	- Shift out
27 ESC	59 ;	91 [	123 {	SOH	- Start of heading
28 FS	60 <	92 \	124	SPC	- Space
29 GS	61 =	93 ^	125 }	STX	- Start of text
30 RS	62 >	94 _	126 ~	SUB	- Substitute
31 US	63 ?	95 -	127 DEL	SYN	- Synchronous idle
				US	- Unit separator
				VT	- Vertical tab

TABLE 2 - CHR\$ CHARACTER SETS FOR PET/CBM

The CHR\$ function prints all characters shown. Business keyboards do not print codes 161-191. No keyboard prints codes 96-127 or 224-255. Control Codes in *ITALICS* apply only to 80-column machines and the newest 40-column machines. Character set selection is as follows: S - POKE 59468, 12 in all machines. AO - POKE 59468, 14 in PETs with Original ROMs. A - POKE 59468, 14 in all other machines.

CHR\$ ACTION	CHR\$ S A AO	CHR\$ S A AO	CHR\$ S A AO	CHR\$ ACTION	CHR\$ S A AO	CHR\$ S A AO	CHR\$ S A AO
0	32 Space	64 @ @ @	96 Space	128	160 Sh Space	192 - - -	224 Sh Space
1	33 ! ! !	65 A a A	97 ! ! !	129	161 ! ! !	193 A a A	225 ! ! !
2	34 " " "	66 B b B	98 " " "	130	162 " " "	194 B b B	226 " " "
3	35 # # #	67 C c C	99 # # #	131 Run	163 - - -	195 - C c	227 - - -
4	36 \$ \$ \$	68 D d D	100 \$ \$ \$	132	164 - - -	196 - D d	228 - - -
5	37 % % %	69 E e E	101 % % %	133	165	197 - E e	229
6	38 & & &	70 F f F	102 & & &	134	166 & & &	198 - F f	230 & & &
7	39 ' ' '	71 G g G	103 ' ' '	135	167	199   G g	231
8	40 ( ( (	72 H h H	104 ( ( (	136	168 " " "	200   H h	232 " " "
9	41 > > >	73 I i I	105 > > >	137 Toggle Tab	169	201   I i	233
10	42 * * *	74 J j J	106 * * *	138	170	202   J j	234
11	43 + + +	75 K k K	107 + + +	139	171	203   K k	235
12	44 , , ,	76 L l L	108 , , ,	140	172	204   L l	236
13	45 - - -	77 M m M	109 - - -	141 Sh Return	173	205   M m	237
14	46 . . .	78 N n N	110 . . .	142 Graphic	174	206   N n	238
15	47 / / /	79 O o O	111 / / /	143 Set Bottom	175 - - -	207   O o	239 - - -
16	48 0 0 0	80 P p P	112 0 0 0	144	176	208   P p	240
17	49 1 1 1	81 Q q Q	113 1 1 1	145 Crsr Up	177	209   Q q	241
18	50 2 2 2	82 R r R	114 2 2 2	146 Rvs Off	178	210 - R r	242
19	51 3 3 3	83 S s S	115 3 3 3	147 Clear Scrn	179	211   S s	243
20	52 4 4 4	84 T t T	116 4 4 4	148 Insert	180	212   T t	244
21	53 5 5 5	85 U u U	117 5 5 5	149 Insert Line	181	213   U u	245
22	54 6 6 6	86 V v V	118 6 6 6	150 Erase Begin	182	214   V v	246
23	55 7 7 7	87 W w W	119 7 7 7	151	183 - - -	215   W w	247 - - -
24	56 8 8 8	88 X x X	120 8 8 8	152	184 - - -	216   X x	248 - - -
25	57 9 9 9	89 Y y Y	121 9 9 9	153 Scroll Down	185 - - -	217   Y y	249 - - -
26	58 : : :	90 Z z Z	122 : : :	154	186	218   Z z	250
27	59 ; ; ;	91 [ [ [	123 ; ; ;	155	187	219   + + +	251
28	60 < < <	92 \ \ \	124 < < <	156	188	220	252
29	61 = = =	93 ] ] ]	125 = = =	157 Crsr Left	189	221	253
30	62 > > >	94 ^ ^ ^	126 > > >	158	190	222	254
31	63 ? ? ?	95 + + +	127 ? ? ?	159	191	223	255

# HELP!

The **STACK** has grown in size (from 3-6 pages to 14-20 pages) and circulation is now 1,000 instead of 300. Typing, editing, printing and Collating etc. now takes about 40 hours a month and I am finding it a bit overwhelming. Membership in LICA is now 25% higher than last year and I expect that we will continue to grow at some phenomenal rate. I now need a few members to volunteer for the following jobs.

- 1) Corresponding Secretary- to answer the mail that received by the club. They are mostly inquiries and a form letter should do the trick.
- 2) Advertising Manager- To solicit ads and do follow work up on ads such as contacting the people who have requested rates, told me they want to take ads, etc. The work will involve a few phone calls, some PERSONAL visits (driving in Long Island), plus keeping records.
- 3) STACK accounts manager- Keep track of who took ads and when. The job: Bill those who owe money for ads, and contact me when ads are to be withdrawn.
- 4) Distribution (stapling)- I need a few more people for stapling and distributing the STACK to local stores. Areas include Plainview, Wantagh, Farmingdale, Melville and Jericho.
- 5) PRINTING & COLLATING- These jobs can be split among members who have some free during the week. The equipment is at my office (near Wellwood Ave. & Southern State Pky). No skill needed! I will of course assist and train anyone who helps.
- 6) REPORTERS- If this is your bag, talk to me either at the meeting or by phone.

Al Levy

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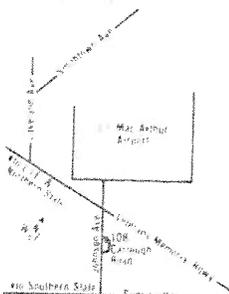
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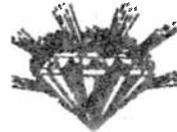
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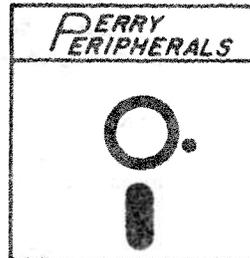
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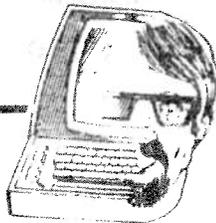
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