

<p>OTTAWA IBM P.C. USERS' GROUP</p>	<p>NEWSLETTER</p>
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April 15, 1986 -- issue 86(2)

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* Meeting schedule: *

* 8:00 pm, last Wednesday of every month except July and December, *

* April 30, May 28, June 25, . . . *

* *

* They will be at the NRC Auditorium, 100 Sussex, until at least June. *

* (Gothic building opposite city hall - parking in rear) *

I need all the material I can get for the newsletter. Unfortunately I don't have a modem (yet), but if you give me a call I can drop round with a disk.

April meeting speaker:

Ian Eason of BNR on evaluating and choosing a local area networking system and the trials and tribulations of setting it up once you have it.

Disk 29 will be available at the March meeting. Here are the highlights:

ACCELER.TXT	- Speeding up disk access under PC-DOS 2.1
BANNER.BAS	- Make BIG signs on any printer.
CPU.COM	- Lock your keyboard with a password while you go for coffee.
DOS-EDIT	- Re-execute any command that is still on the screen.
FDA.COM	- Finds files in any subdirectory and on any drive. Returns the file size, date/time saved and full path name.
G-BUSTER.BAS	- Draws the "Ghost Buster" symbol.
MONOGRAF.DRV	- A driver for Lotus 1-2-3 for graphics on a monochrome monitor.
QUICKEYS.COM	- Speed up your keyboard.
SPCINV.COM	- Space invaders with a few interesting changes.
SWTCHBOX.BAS	- A challenging strategy game for two.
TFILER.COM	- A multi-utility for handling your printer and files.
TLU.COM	- Library utility to help keep related files together.
UNCRASH.COM	- Recover from keyboard lockups without re-booting.
VIEW.EXE	- Displays the first few lines of a wildcard group of ASCII text files file or group of text files.
WC.EXE	- Count characters, words and lines in any text file.

Disk Subscriptions

Disk subscriptions are now available for monthly disks 29 to 38. Subscriptions cost \$45. As an incentive to buy early, if you purchase your subscription by the end of the March meeting, there will be a bonus disk thrown in. You may have your choice of Disk-00 or Disk-DB. Disk-00 contains the text files (in the form DISK-xx.TXT) for all the monthly disks as well as an up-to-date list of the contents of the Specialty Library. Disk-DB contains a PC-FILE database of all the programs on the monthly disks. You can do searches based on filename, file size, categories, disk number and so on. PC-FILE III (available in the library) is required if you choose DISK-DB.

DISK-00 and DISK-DB are available at any time from the library at the regular rates (\$5./disk). For the members' convenience, there is a new policy that will make it easier for you to update your copy of DISK-00 or DISK-DB. Bring in an original (it must be have the original library label and be in good condition) of either disk and you can swap it for an up-to-date copy for \$2. You will not have to wait till the next meeting to pick up the disk. Note that this only applies to DISK-00 and DISK-DB.

Don't forget that if you submit programs to the software library, we will swap your disk for any other disk in the library. I would like to thank those who have submitted programs.

Chris Taylor

One of the most irritating things about computer jargon is the overuse of TLAs (three-letter acronyms). LEDs (light-emitting diodes) blink at us while MOVs (metal-oxide varistors) provide protection against voltage surges on the power lines. Inside the machine so protected we find PCBs (printed circuit boards) covered with DIPS (dual in-line packages, the usual containers for chips) of ROM (read-only memory) and RAM (which stands for random access memory but means read/write memory (ROM is also actually a random access memory (the opposite of serial access) since you can access it in any order) Never having learned LISP I can't handle all these parentheses!)), or perhaps some SIPS, certainly MOS and TTL with perhaps some ECL doing the DMA

Does anyone remember the song from "Hair":

LBJ took the IRT down to Fourth Street USA...

A parody for the newsletter would be most welcome. Voice synthesis and electronic accompaniment optional.

But then there is the greatest of all TLAs, the three magic letters as in "Nobody ever got fired for buying IBM." There are many interpretations of those three initials from the outsider's "Imitation Burroughs Machines" to the employees who think they stand for "I've Been Moved." I even have one in Arabic. I'll save it for another issue since explaining the translation gets a little complex.

Other suggested interpretations are hereby solicited. The best of them will be printed. I'd also like to solicit interesting quotations. Here are a few of my favorites for starters:

"AI is the designer jeans of computer science."	Alan Kay
Kay headed the Smalltalk project at Xerox PARC;	the mouse and
windows user interface used on Macintosh and in some PC software	
was one of the by products of this work.	
"Premature optimisation is the root of all evil"	Knuth
Knuth's classic "The Art of Computer Programming" is the standard	
reference for anyone trying to optimise anything. Where else can	
you find several hundred pages just on sorting techniques?	

and some definitions:

Feature: a bug as described by our marketing department. from an early Apple manual.

One wonders if there is a corollary:

Industry standard: a bug as described by IBM's marketing department.

High-level language: a method of slowing the system down so the innumerate can cope.
Recursion: see recursion.

Both of these are from Stan Kelley-Bootle's "The Devil's DP Dictionary," a book no literate computer user should be without.

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The AUTOCAD specialists Come-and see-the first Tecmar optical character reader In Canada. Laser printers, plotters, voice recognition, custom software and much much more.

The SAS statistics package seems to be influencing a number of developments. First, the SAS people ported Lattice C to the 370 architecture so they could have compatible development environments on PC's and the big IBM boxes. I can't see why they didn't just use Unix on both machines, since they'd get a number of options at every stage that way:

	From IBM:	From others:
on the XT:	PC/IX	Venturcom Venix
on the AT:	Xenix	Microport (cheap!) or Venix
on the RT:	AIX	
on mainframes:	VM/IX	Amdahl UTS

But, if you really want only C and not the whole Unix environment, or if the systems folk around your local mainframe don't want to hear about alternative operating systems (even though VM/IX and UTS run under VM), then this may be just the product.

I know of only two other C compilers for IBM mainframes. One is a new entry from Watcom products in Waterloo; I have no details. The other, Whitesmiths C, was the first commercially available C compiler (& the first non-Unix C?) and is available for a number of machines, including PCs and the big IBMs. The company also does Pascal compilers. Reviews of Whitesmiths products I've seen have all been positive, but the only user I've ever talked to (using the first release of their Z-80 compiler, some years ago) said their documentation was among the worst he'd ever seen.

Meanwhile SAS's PC statistics package has some competition. There's a new SAS look-alike from:

The Bass Institute	phone: 919 - 933 - 9894
P.O. Box 349	
Chapel Hill, NC 27514	

The person who told me about it knew the developers but didn't really know the product and I'm not an SAS user, so I didn't get much detail. It sells around \$100 US, though, and is supposed to be fast. Anybody who checks it out, please give the newsletter some comment.

A catalog from:

Elsevier Science Publishing
POB 1063
Grand Central Station
NY, NY 10163

showed up among my not-so-junk mail today. New books include:

Applied Statistics and the SAS Programming Language,	Cody & Smith
Statistical Software for Microcomputers,	J.B. Siegel

The latter, at \$99 US, compares 40 packages and suggests benchmarks. Elsevier are also software publishers; their latest in this area is SPSS/PC+ in three modules at \$295 US each.

And for the non-statisticians:

Elsevier are also publishing the "X/OPEN Portability Guide", documenting an effort by six major European players -- Bull, Ericsson, ICL, Olivetti, Phillip and Siemens -- to make applications portable across their various hardware. Key components are System V Unix (which implies a standard for the C compiler and libraries), a common ISAM method and a common dialect of Cobol. I wonder if this group have solutions for the bilingual character set handling problem that is a recurring theme in our meetings' question periods. Other interesting questions are what they're doing about networking and whether they're also supporting the other languages provided with AT&T's System V source -- Fortran 77 and Snobol.

Handy Hints Department:

If you just send a bunch of files to the printer with, for example:

```
copy *.bat lpt1
```

the text gets run together and you get one long undifferentiated listing of all your batch files. You do, however, get a nice list of the filenames on your screen. A better command sends this list to the printer as well:

```
copy *.bat lpt1 > lpt1
```

Turns out the list of filenames and the listing get interspersed in a useful way and the net result is a listing with the appropriate title inserted before each file.

(Thanks to whoever gave me this information at the last group meeting. I was involved in about four conversations at that point and am not entirely certain who it was. George?)

And Harry Gross's batch file to run Sign Master from a RAM drive:

```
scrnsave
astclock
superdrv c:/m=212
MODE ,R
buferset                               (repeat four times on four lines)
COPY SIGN.EXE C:
```

(also copy SIGN2.EXE, SMCONFIG.EXE, CONFT.DRI, CABLE*.EXE, PALCOMT.EXE, FONT *)

```
C:
sign
```

```
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```

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	etc.		phone: 733 - 7989

```
*****
                GENERIC TRANSFORMS                733 - 7989
*****
```

one of the most frustrating things about DOS is that it is a one-task system. There are assorted fiddles to get things like background print spooling or to hide resident programs in parts of memory DOS doesn't know about and Jump into them with tricky key combinations. There are even some programs -- the "see" editor distributed with DeSmet C and the ProComm freeware communications package, for example -- that give you an "escape to DOS" so you can get out of them, run one or more DOS commands and return to find the original program as you left it. But there is no general mechanism to make the processor divide its time among several tasks. This can lead to a fairly horrendous waste of resources as the CPU sits idle waiting for you to type the next character, for the disk to spew forth some data or whatever.

One solution is to get rid of DOS and replace it with a multitasking operating system. Possibilities abound. There are at least four versions of Unix available for PC's and/or AT's, all based on the same AT&T source code, though perhaps on different releases thereof and with each vendor making somewhat different decisions on which components to include. Unix lookalikes such as Coherent or Oasis are another option, not one I can see any sense in, but then I'm a Unix bigot.

Two Canadian-built operating systems offer something I can see sense is a somewhat Unix-like environment with built-in network support plus the ability to run a DOS process under control of the multitasking system. These are QNX from Quantum Software in Bell's Corners and Waterloo Port from Waterloo Microsystems.

Any of the above provides a C development environment, and most of them support other languages as well. For something completely different, one might buy Forth Inc.'s PolyForth, a complete multitasking Forth system. Local users I know rave about this, but then they're Forth bigots. Another possibility is Pick, an operating system with some built-in database management capabilities.

If you need reliable, genuine, multitasking immediately then choose one of the above and pay what it costs. If all you really want is the ability to have several programs loaded at once and switch between them at will, without ever running "foreground" and "background" tasks concurrently, then a DOS extension may fill the bill. The following info on some of them is an edited version of net transactions:

Can anyone give me any information of a product called E-2 DOS-IT? The product is supposed to run programs concurrently under DOS, using about 8K of memory for itself.

Manufacturer is: Hammer Computer Systems, Inc.
900 Larkspur Landing Circle, Suite 250
Larkspur, CA 94939
(415) 461-7633
(800) 228-9602

I have had no experience with this product. HOWEVER - I can give a -roundup of a few multitaskers in general.

I personally have three: Double-Dos (I forget who makes it), MultiLink (The Software Link), and a brand new *freeware* DOS-shell/multitasker called DOSamatic (Marin Pacific something-or-other).

Double-Dos is a very well-written multitasker if you only want 2 partitions [hence the name Double-Dos]. You load it up, and it asks you how much memory/partition (this can later be changed). It then sets up, and you happily work away, using ALT-ESC (a great key choice) to switch partitions. CTL-ALT-DEL (reset) brings you to a full-page menu with several options, depending on what you are doing, including reset. I have found very few incompatibilities (aside from programs which trap keyboard input 100%, thus not letting the keystrokes get to the system). I think DOUBLEDOS goes for under \$100.

MultiLink is the Cadillac of multitaskers. It costs *gulp* \$500, and gives a lot for it, but not enough to warrant the cost. \$200 tops, in my opinion. Anyway - using MLINK you can have up to 10 partitions, switching is done by ALT-Fn (n = partition # - 10 = foreground). The one MAJOR disadvantage with this is speed - VERY SLOW. It comes with a slew of utilities, though. To sum it up - MLINK sits on the shelf; I use DOUBLEDOS.

And the newest entry -- DOSamatic! This little gadget is almost too good to be true. It is a DOS shell (like lDIR, but better-designed) & multitasker in one! It can handle up to 7 tasks, and appears to be very fast. The shell supports DOS extensively, and uses pleasing colors and layout. This has several inconsistencies in the multitasking, but none yet in the shell. But who cares??? The program is free! And the freeware cost is \$39. And if someone registers a copy made from yours, you get 10%! Not bad... As if you haven't noticed - I like this program. Oh, one more thing - it has context-sensitive help (a la SideKick).

[End of Net transcript]

None of these, of course, allow concurrent execution of several tasks. They just make several tasks resident and let you switch. If you need concurrency, you have to buy it or build it.

For those inclined to hack their own. multitasking solutions, there are Several starting points one might consider. The March '86 PC Tech Journal contains an article on multitasking with assembler source for one multitasking executive and a favorable review of another that sells for \$75 US in C source code, CX/PC from:

INTR-soft
POB 351
Bedford, MA 01730
(617) 369 0642

Both systems are non-preemptive multitaskers in which tasks give up control of the CPU only by making calls to special library routines; they do not support the more sophisticated scheduling systems possible when tasks can, be pre-empted by higher-priority tasks. Nor can they timeshare processes which contain no calls to their scheduling routines. One might, I suppose, attempt to make any DOS program contain the necessary scheduler calls by trapping DOS interrupts and turning them into scheduler calls, but this might get tricky . . .

Another non-preemptive multitasking kernel in C is offered cheaply by:
The Austin Codeworks
1110 Leasewood Lane
Austin, TX

I have heard good things about other products from this company, but have not talked to anyone who's used the multitasking exec.

For Pascal users a potentially very interesting product is Mystic Pascal from: Mystic Canyon Software POB 1010 Pecos, NM 87552 (505) 757-6344 This compiler/editor system which sells for \$16 US (not a misprint!) includes support for concurrent processes and message queues between them. The mechanism is used by the system itself to allow background compilation during editing, but is also accessible to the programmer. We should have a review in the next issue.

Finally, at least three complete multitasking operating systems are available cheaply in source code. One is "Tonto", a Unix-like system designed within the constraints of 128K PC with only floppy disks. The author did an article on his file system in the Sept. '85 Byte (p.129) and offered C source for the whole system at \$60:

Brian McKeon
1-18 Manion Ave.
Rose Bay, Sydney, Australia

Judging by the quality of the article, this might be very worthwhile.

Then there's a company who offer not just one, but an assortment of multitasking operating systems for the PC:

Wendin
Box 286
Cheney, WA 99004

Their products include "PCUNIX", "PCVMS", (one wonders how they avoid lawsuits over the trademarks) and an "Operating Systems Toolbox", at \$99 US each, all with C source. The Toolbox has kernel source and each of the others has source for its own utilities plus an executable kernel. The whole thing is built atop DOS; part of the kernel is a scheduler that catches DOS service requests from programs, queues them, and doles them out to DOS one at a time which is the only way DOS can handle them. I have just bought the Toolbox and had a look at the "PCUNIX" manual. Initial impression -- the "Unix" is missing many things but both packages give you a lot of code for the cost and some of it looks very good. For example, they've implemented pipes between processes as Unix does, with kernel-controlled buffer RAM, not with intermediate files as used in DOS and QNX. (I consider clumsy pipe implementation the worst flaw in the generally excellent QNX system.) I'll review the Toolbox in more detail once I understand some of it.

And then there's XINU which stands for "XINU Is Not UNIX." This is described in "Operating System Design: the XINU Approach" by Douglas Comer, Prentice-Hall '84. It includes sophisticated code for things like optimising disk head movement when servicing requests from multiple processes and handling message-passing between processes across network links. The book includes all the source code for the original version which ran on Digital's LS-I-11; mostly C with some assembler. Versions for other processors, created by Comer's students, are available from:

XINU Librarian
Computer Science Department
Computer Science Building
Purdue University
W. Lafayette, Indiana 47907

They send them on Unix 'tar' tapes and charge \$50 for tape copying. There is an 8086 version, which runs on are Intel 86/14, but none yet for PC's.

Finally, there may eventually be Gnu which stands for "Gnu's not Unix". This is a project of Richard Stallman, author of the well-known Emacs editor, (former?) MIT AI Lab staff member and important contributor to the operating system of LMI's LISP machine. Stallman believes that ownership and copyrights are concepts which simply should not apply to software -- that it is immoral to constrain the free flow of programming ideas. Gnu is to be a complete public-domain equivalent of Unix. So far the only component I know of that has actually been implemented is Gnu Emacs, a new version of the editor which is being distributed with the Berkeley 4.3 Unix tapes. Dr. Dobbs had an article on Gnu early last year and Pournelle's Byte column has more recently given the address of the free software center Stallman has founded, but I have neither article to hand so cannot give an address.

Local sources include:

Software Kinetics	Canadian distributors for Venix, a version of Unix
IBM dealers	other versions of Unix -- Xenix and PC/IX
Quantum Software	creators of QNX, a networked Unix-like system
Kanatek	dealer handling QNX
Blue Chip	dealer handling Wendin products & Multilink
PC User Group Library	ProComm, DOSamatic

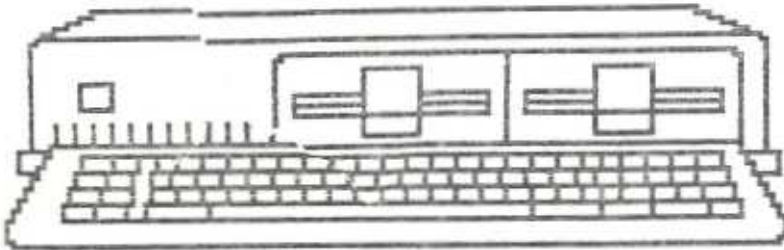
No doubt others have these products as well -- these are just the ones I know about.

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There is a Canadian-developed implementation of the Pascal language for the PC. Ho-Hum, you say? Think again. ALICE, a Pascal interpreter, is available to user group members for \$109 (a 15% discount from the \$129 list price).

As an interpreter, you have the same sort of immediacy that BASIC gives. You can write and run programs without having to compile them before you see if they perform as expected (or hoped!). As a Pascal, you have the structured programming that makes programs easy to write and understand. The features that really make ALICE interesting are it's program editor and it's debugger.

THE EDITOR

ALICE has a "syntax directed editor". It presents you with templates of correct Pascal structure with "placeholders" for the portions you must fill in. When you begin a new program in ALICE, you are presented with the following structure;

```

program program-name (input,output);
  {Comment that says what the routine does}
  Declarations
  begin
  Statement
  end.

```

Program-name, the comment line, declarations and statement are displayed in bold, underlined, or various colours depending on which type of display you are using (monochrome, monochrome with colour/graphics adapter, or colour display). This allows you to quickly move to the areas that require input.

If you move to the Declaration line and type var, the program responds with the structure for a variable declaration;

```

var
  Name : Type;      {Comment}

```

If you move to the Statement line and type for, ALICE presents the structure for a "for - do" loop;

```

for variable := start to finish do begin
  Statement
end;

```

The benefit is that, when programming with ALICE, you always have a syntactically correct program! ALICE will not allow you to modify things if the result is not correct syntax. For example, if you try to use a variable that has not been declared, ALICE will give an error message as soon as you finish the variable input. You may then:

1. Delete the undeclared variable, call up a list of valid variables, and replace the undeclared variable with a valid one, all in only three keystrokes!
2. Type VAR, press TAB, and ALICE will jump to the declaration area, place a declaration structure on the screen and allow you to input information on the new variable. One keystroke will return you to where you were in the program.

3. Ignore the error. ALICE will leave the error in reverse video. Two keystrokes will bring you back to the error anytime. You must correct the error before ALICE will run the program.

Because the program editor is tied so closely to ALICE Pascal, it does not operate like a conventional editor. It seems a little odd at first, but with the power it gives you, you quickly become accustomed to it. It's power includes three ways to perform most functions. The most commonly used for beginners is the menu system. It is easy, but can be slow as you navigate through multiple menus. Most commands may also be executed through the use of Ctrl and Alt keys. Power users will find this makes things very fast once you have learned the system. Commands may also be given by typing Alt X and then typing the command explicitly on the command as in POPB.;CK to return to former cursor location. (Alt-B) or SAVE FILESPEC instead of (Alt-S).

To speed things even more, ALICE has a built in macro facility. If you find that there are macros you use often, you can add them to an initialization file that is read in when ALICE is first loaded.

There are over 500 screens of help information, all contained in a 1351 help file. One of the niftiest help queries is "What can I type here". If the cursor is on a placeholder such as Statement, the program will respond with all the legal structures that could be placed there. If the cursor is on a variable, the program will tell you all declared variables that may be entered. A single keystroke will place the required variable in your program.

THE DEBUGGER

After you finish writing your program, you may run it or opt for debugging. Running the program is exactly the same as a BASIC RUN command. The screen will clear and the program will run. If you choose to debug the program, you are in for some treats!

ALICE will split the screen in two parts. The top of the screen is reserved for your program code, the bottom for program output. Press F2 to single step through the program. F2 must be pressed to execute each instruction. ALICE will move the cursor through your program as it executes instructions. Normal output will be shown in the bottom part of the screen. For anybody who has used the BASIC command TRON, this is how Microsoft should have implemented a trace feature.

At any time, you can interrupt the program to examine the variables and then continue stepping through your program. If your program is giving you problems, this should allow to find your logic errors.

You can also allow the program to run "full-speed", while watching the cursor move through the code. You can set break points in your program so that execution will pause for examination of variables.

DOCUMENTATION

ALICE comes with a 120 page Tutorial and a 200 page User Guide. Both are well written and easy to follow. The only index is in the back of the User Guide. Page references to the Tutorial have a T after them. It would have been nice to have an index in the Tutorial as well.

Neither manual attempts to teach Pascal. The Tutorial advises that novices should familiarize themselves with the basic principals of programming before using ALICE. There is a manual in the works called Learning to Program with ALICE Pascal, but it is not yet available,

WHO FOR

At first, I was a bit perplexed as to who the program was aimed for. The syntax directed editor seemed perfect for people new to Pascal, but one would expect more information on basic programming in Pascal, if it were aimed at the true beginner.

However, the program really is easy to work with. If you have some programming experience in any language and pick up a book on basic Pascal programming, you should be up and running in no time at all.

So, is the program for novices or experienced users? Actually, I think it's for both. The syntax directed editor removes drudgery for any programmer, and it's debugger is very good.

A compiler is on the way (release date unknown). Until then, if you stick to standard Pascal, you should have no problem compiling ALICE programs with your favorite compiler. As a matter of fact, if you hit Ctrl-F6, the file is saved, a shell command is issued, and Turbo Pascal is called up.

A demo disk is available from the software library or from

Graham Software Corp,
212 King Street West
Toronto, Ontario
M5H 1K5
1-800-587-9018

Ask for Denise Giroux and mention that you are a member of the users' Group.

Books for Pascal Users:

Sandy Harris

Niklaus Wirth "Algorithms + Data Structures = Programs"

This book by the inventor of Pascal is full of example programs. Some of them can save you a great deal of work since many of the common but tricky tasks like linked-list management and efficient sorting are covered.

Kernighan & Plauger "Software Tools in Pascal"

This book by two of the Bell Labs group that originated Unix and C describes the design and implementation of a set of Unix-like utilities including an editor, text formatter, macro preprocessor for extending any programming language, and an assortment of smaller tools. Complete source code is given in the book. The User Group software library has at least two versions of this code -- a three-disk set for Microsoft Pascal that even includes all the text K & P give for on-line manuals for the tools and a single disk for Turbo Pascal.