Lawrence Berkeley National Laboratory

LBL Publications

Title

Software Tools Communications Vol 2 No 1

Permalink

https://escholarship.org/uc/item/4626r95k

Author

Lawrence Berkeley National Laboratory

Publication Date

1980-04-01

Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at https://creativecommons.org/licenses/by/4.0/

eScholarship.org Powered by the California Digital Library
University of California

RECEIVED
MAY 14 198
Ref. Lib.
LBL LIBRARY

Software Tools COMMUNICATIONS

VOLUME 2 NUMBER 1 APRIL 1980

--- POSSIBLE MERGER WITH USENIX ---

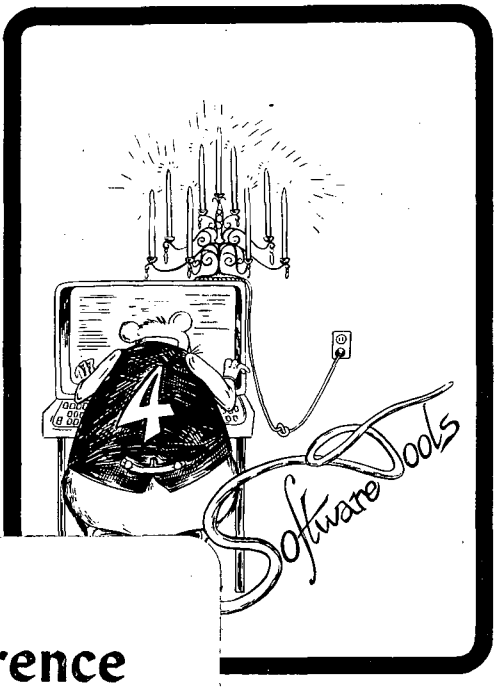
The Software Tools Users Group now numbers over 800, with interest still rising. Such a large group is difficult to maintain without some sort of official organizational structure and funding. It has been suggested that the Software Tools Group merge with the USENIX organization since our interests are similar. In fact, according to their Articles of Association, the USENIX group's purpose is "To foster the free exchange and communication of information relating to [Unix systems and the C language]...and to any other programming language, system of programming or operating systems of interest to the members of the association", thus opening up membership to groups such as ours.

The identity of the Tools group could still be maintained through special tools sessions at the biannual meetings, and through a separate section of the USENIX newsletter devoted to the software tools. It is also likely that the Tools group would maintain its own liaisons, communications editor for newsletter articles, and special interest groups. Some sort of direct communication lines to the USENIX Board of Directors might also be arranged.

Such a merger would require that the Tools group members pay a registration fee to join the USENIX/Software tools association, although a specific amount has not been worked out yet.

The USENIX group is very amenable to such a merger, but we are interested in hearing the Tools Group's feelings before working out any details. Anyone who would like to make comments should contact:

Debbie Scherrer
CSAM
Lawrence Berkeley Laboratory
Berkeley, CA 9472
415-486-5881
FTS 451-5881
Scherrer@LBL-Unix



For Reference

Not to be taken from this room

PUB 402

-- CALL FOR PAPERS --
Meeting in Delaware in June

The next meeting of the software tools users group will be held at the University of Delaware on June 16, again preceeding the Usenix users group meeting there. Talks may include descriptions of projects using ratfor and/or the tools, newly created or enhanced tools, testimonials, thoughts about future directions for the tools, or whatever else might strike the fancies of tool lovers. Anyone interested in giving papers, or simply saying a few words, at the meeting should contact:

George Pajari
Clarendon Datex Ltd.
73 Water Street, 4th Floor
Vancouver, BC V6B 1A1
604-688-1515

or

Professor Robert Munn
Department of Chemistry, Box 42
University of Maryland
College Park, MD 20742
301-454-5425

--- STANDARDIZATION OF PRIMITIVES AND TOOLS ---

On April 9, Allen Akin of the Georgia Institute of Technology, David Hanson of the University of Arizona, and Debbie Scherrer of Lawrence Berkeley Laboratory met to discuss finalizing the list of primitives, utility routines, and tools which will be included on the basic distribution tape and supported by the Tools group. What follows is a list of recommendations developed at the meeting:

1) The basic distribution tape will be divided into 3 sections:
   Part 1 - Generally useful tools, including all those created by Kernighan and Plauger, most with enhancements. All these will require only the standard set of primitives and will be as portable as the original K-P set.
   Part 2 - Additional tools, including alternate versions of tools in Part 1, which will be made available as-is. Some of these may require additional primitives.
   Part 3 - Names and addresses of installations able to provide primitives packages and/or complete tool sets for specific

DISCLAIMER

This document was prepared as an account of work sponsored by the United States Government. While this document is believed to contain correct information, neither the United States Government nor any agency thereof, nor the Regents of the University of California, nor any of their employees, makes any warranty, express or implied, or assumes any legal responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by its trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or the Regents of the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof or the Regents of the University of California.

machines and operating systems.

2) All tools on Part 1 of the tape will be compilable by the preprocessor provided on the tape and their documentation will be readable by the formatter provided.

3) The following is the list of primitives which are expected to be implemented on the host machine (this list subject to approval by the Primitives Special Interest Group):

```
fd =   open(name, mode)     {mode=READ, WRITE, READWRITE, APPEND}
call   close (fd)
fd =   create (name, mode)
i =    getch (c, fd)
call   putch (c, fd)
stat = seek (n, fd)         {n is a two-word integer array}
stat = mark (n, fd)
stat = remove (name)
call   flush (fd)
stat = amove (name1, name2)
num =  readf (buf, n, fd)   {buf is an integer array}
num =  writef (buf, n, fd)
len =  getarg (n, arg, maxarg)
call   delarg (n)
yesno = isatty (fd)
? = date (dat, tim, ?*) {dat, tim are character arrays?}
      (format for this routine not finalized yet)
```

In addition, initialization routines and ending routines may be necessary, but it may be possible to hide these from the user on many systems:

```
call   initst
call   endst
```

4) A set of low-level utility routines have been defined. A portable version of these will be provided on the tape, but rewriting may be advisable on some systems:

```
len =  prompt (prompt_str, input_str, fd)
len =  getlin (line, fd)
call   putlin (line, fd)
call   remark (line)
len =  mkuniq (seed_str, buf, buflen)
```

5) A basic set of utility routines was also defined, and will be provided on the tape. These include:

ctoi	itoc	scopy	index	cant	error
length	addset	equal	type	fcopy	putdec
putint	putstr	getc	putc	clower	cupper
upper	lower	skipbl	getwrd	esc	strcmp
stcopy					

(and the pattern-matching library:)

match	amatch	omatch	patsiz	makpat	getccl
stclos	maksub	locate	catsub	filset	dodash

6) The basic set of tools on Part 1 of the tape will be a combination of the versions from the 3 installations. These include:

LBL	U of Az	GT
archive	common	concat
change	crypt	diff
compare	field	kwic
date	include	overstrike
detab	lam	page
echo	ll	rot
entab	macro	stats
find	mcol	unrot
form	mv	iota
sort	print	banner
translit	rm	
unique	sedit	
	show	
	split	
	tail	
	tee	
	tsort	
	wc	
	xref	
	format	
	pl	

The Ratfor preprocessor and the text editor will be defined by the appropriate special interest groups, then (presumably) implemented by GT, LBL, or U of Arizona.

7) The tools to be included on Part 3 of the tape include (but are not limited to):

shell - a UNIX-style command line interpreter (LBL)
mail - send/receive mail (LBL)
screen editor (U of Arizona)
dprint - a tool to optimize printing on a directional printer (Georgia Tech)
help - print help messages for user (GT)
ta - tape archiver (UofA)
UNIX-style file-naming package (UofA)
ratmac (combination of ratfor and extended macro) (U. of Maryland)

8) The group also decided upon a list of recommendations which will be sent to the committee evaluating ratfor preprocessors.

---- RATFOR SPECIAL INTEREST GROUP ----

A committee within the Ratfor Special Interest Group is currently evaluating a selection of ratfor preprocessors to determine the one to be supported by the group and released on the basic tape. The preprocessors being evaluated include those from the University of Arizona, Lawrence Berkeley Laboratory, Georgia Institute of Technology, University of Maryland (Ratmac), and Purdue University (Mouse4), plus a collection of documentation describing features implemented by several other installations. The group will most likely decide upon a group of desired features and then chose one of the preprocessors which could be most easily adapted to include all the features. Anyone wishing to make suggestions to the group should contact:

Dr. Walter Brown
Director, Computer Center
Moravian College
Bethlehem, PA 18018
215-865-0741 x345

--- REPORT FROM TEXT EDITING AND FORMATTING SPECIAL INTEREST GROUP ---

Colorado TEF-SIG Meeting

During the Boulder, Colorado Software Tools Meeting, the TEF-SIG met for about one hour to select a chairperson and secretary as well as choose the editor and formatter to include on the tools distribution tape.

For want of volunteers, only a chairman was selected (his address appears at the end of this article). As for the selection of the TEF tools to be put on the tape, it was decided that no one at the meeting knew the relative merits of the three contenders (University of Arizona, Georgia Institute of Technology, and Lawrence Berkeley Laboratory) well enough to make a meaningful decision. Hence the decision was made to allow the teleconference participants to choose the editor and formatter for the tape. It was suggested that the other editors and formatters be included on Part 2 of the tape, as alternates.

During the discussion, many interesting points were raised:

* The decision on which editor and formatter to select should be based on the ease of portability first, followed by clarity and amount of documentation. It seems that the three editors and formatters are all extensions of the originals as they appeared

in the Kernighan-Plauger book, hence the features available would at this point be of tertiary importance.

* The necessity of adhering to a standard syntax is much more important for a tool such as the formatter which typically obtains its commands from a file, as opposed to an editor which is usually driven by interactive input. The point was made that in the latter case a change in syntax involves only the retraining of the user, whereas in the former case many files may have to be converted. While this was not intended to down-play the importance of command standards for editors, it made apparent the need to have the formatter standard cast in cement to a greater degree than the editor standard.

* It appears that the current state of the art in text formatters is towards a higher level prefix form of command syntax, and the current standard as given in the Kernighan-Plauger book is sadly lacking.

* Work is being done elsewhere to develop a standard formatter syntax (i.e. by ANS X3J6), and our group should investigate such efforts before coming up with its recommendation for the Software Tools Group.

Miscellaneous Mumblings

In this, my first article on the TEF-SIG, I want to address the purpose and immediate goals of the SIG. I see as our aim to coordinate the development and distribution of software tools in the areas of text editing and formatting which are in conformance with the philosophy of the Software Tools Group. In this pursuit, there are two immediate steps we must take. First, we must provide tools in our area as an interim measure. This is being done by distributing an editor and formatter in the first Tools distribution tape. Secondly, and vastly more important, we must develop TEF standards, and tools which adhere to them. In this area I see a few questions arising:

* How rigidly should the TEF tools standard adhere to the versions in the original K/P book?

  I feel that the important concept is the philosophy of the Software Tools Group, not any particular method of communicating that philosophy (such as the original set of tools that appeared in the book). Hence I feel that it would be a mistake for the group to be constrained by what has gone before. If we are to design a standard, and an implementation of that standard, I think it behooves us to design the tool in the best manner, using knowledge and experience which is state of the art.

* Since other work in the area of developing TEF standards is being done (i.e. ANS X3J6), to what extend should our group

concern itself with the development of such standards?

Neither should we abandon our own efforts at developing a standard, nor should we ignore work by others. I think we should continue to investigate work that is being done anywhere, by anyone, with the aim of developing a Tools standard for an editor and formatter; be they the same as any existing (or proposed) standard, or our own hybrid. The important point is that the decisions be made knowledgeably.

To this end I am in communication with the Chairman of the ANS X3J6 group and would appreciate learning about other TEF systems which exist or have been designed. (Please send me any documentation or papers you may have.)

I am very interested in your ideas and comments, and hope to report in the next issue what form our participation in other standardization efforts will take, and how we ourselves should proceed.

Report submitted by:

George Pajari
Clarendon Datex Ltd.
73 Water Street, 4th Floor
Vancouver, BC
CANADA V6B 1A1
(604) 688-1515

--- SOURCE CODE MAINTENANCE TOOL ---

Many groups and installations have expressed a need for some sort of tool to help in the maintenance of source code. The PWB/Unix tool 'SCCS' is an example of such a tool. SCCS keeps track of changes made to a file, including their dates and sources, and is capable of producing versions of the file based on the changes. Such a tool would be of significant value in maintaining and distributing the software tools. Anyone interested in helping to develop a public-domain package similar to SCCS, written in ratfor, might like to contact:

Debbie Scherrer
Computer Science and Applied Mathematics Department
Lawrence Berkeley Laboratory
Berkeley, CA 94720
415-486-5881
FTS 451-5881
Scherrer@LBL-Unix

-- RATFOR TO OTHER LANGUAGES? --

There has been considerable interest in translating ratfor to other languages besides fortran. This would make the tools available on systems that did not support fortran, and could also increase their efficiency by translating them to well-optimized languages available on their host machine.

C. R. Snow of the University of Newcastle upon Tyne has already written an automatic translator to translate ratfor to BCPL, which was then converted to O-code. This produced remarkably efficient utilites in both memory requirements and execution speed. And, preliminary investigations at LBL indicate that a 50% reduction in object code size and a 30% improvement in cpu load are obtainable on VAX/VMS by translating ratfor to BLISS.

Many of the tools have already been hand-translated to other languages. There is an ALGOL version of roff running at Stanford and several groups have attempted conversion to Basic. (No reports as to their success or failure yet...)

PASCAL

Charles Howerton has already hand-converted many of the tools into UCSD Pascal. He is willing to share his code, plus help in future developments in Pascal. Another group in California is considering hand-translating the tools into Pascal to run under CP/M. Anyone else interested in Pascal versions of the tools might like to contact both of the following people:

Charles P. Howerton
6740 Youngfield Court
Arvada, CO 80004
303-425-5221

or

Joseph Sharp
1776 Guinda Street
Palo Alto, CA 94303
415-493-4000 x4145

(Incidentally, Charles also has written the primitives for an LSI-11, which he is willing to share.)

AND HOW 'BOUT C

Anyone interested in translating the tools into C, either mechanically or otherwise, should contact:

Dr. Philip Scherrer
Solar-Terrestrial Physics Group
Institute for Plasma Research
Stanford University
Stanford, CA 94305
415-497-1505

--- EDUCATIONAL SPECIAL INTEREST GROUP ---

At the Boulder meeting, some interest was expressed in developing an educational special interest group, to discuss the problems of introducing ratfor and the tools concepts to fortran programmers who find it difficult or threatening to learn new languages and concepts. Although several people expressed an interest in this group, I have only one name to contact. Perhaps you could all reach each other through:

Cindy Smith
303-757-6970

-- T-SHIRTS --

T-shirts bearing the lovely software tools logo of rat number 4 composing software at his terminal are again available for $6.50 apiece (the actual cost of printing and mailing). If you are interested, specify size (S, M, L, X-L) and color choices (beige, white, orange, red, yellow, gold, light blue) and send a check to:

Debbie Scherrer
Computer Science and Applied Mathematics Department
Lawrence Berkeley Laboratory
University of California
Berkeley, CA 94720

Supply is limited so, to avoid random decisions, please specify several color choices.

-- INFORMATION --

If you would like information about the software tools users group, or would like to add your name to the mailing list, please contact:

Gene Autrey-Hunley
SRI International
333 Ravenswood Avenue
Menlo Park, CA 94025
415-326-6200 x4285

-- NEXT NEWSLETTER --

Articles for the next issue of the Software Tools Communications (which may be published in conjunction with the USENIX newsletter) should be sent to:

Neil Groundwater
Analytic Disciplines, Inc.
8320 Old Courthouse Road, Suite 300
Vienna, VA 22180
703-893-6140
NPG@SDAC-Unix

or

Gary Trujillo
Teledyn Geotech
P. O. Box 334
Alexandria, VA 22303
703-836-3882
GST@SDAC-Unix

-- MINUTES FROM BOULDER MEETING --

The Software Tools Users Group had its second general meeting in Boulder, Colorado, on Tuesday, January 29, 1980.

Like the meeting last June, the Boulder session was held on the day preceeding the USENIX Conference. The Tools session was attended by 250 people representing a variety of computer systems around the United States, Canada, and other countries.

The minutes attached to this newsletter were produced by Martin Tuori, Gregory Hill, and Ian Johnstone, all of the USENIX group. We would like to thank the group for producing such excellent notes and allowing us to publish them.

PUB-348 1200/4-80

THE BOULDER SOFTWARE TOOLS AND USENIX MEETINGS IN SUMMARY

SOFTWARE TOOLS and USENIX Meetings
Boulder, Colorado
January 28 -- February 2, 1980

This report is a summary of two winter meetings held in Boulder. It is based on notes and memories of the attendees listed below, and as such reflects our personal biases and knowledge. Extensive detail has been deliberately avoided, in the hope of keeping these notes down to a reasonable size.

In general, there is a rapid growth in the size of both these users groups; there were 450 attendees at the USENIX meeting, which is the largest attendance yet. For the Software tools group this is apparent in sheer numbers, as well as in the formation of SIG's to deal with issues in specific subject matter areas and geographic regions. There is a strong cooperative attitude within this community, which will soon result in two new software distributions, and an informal UNIX network for mail and news. We have also noted a trend towards more formal reporting of technical information. The next USENIX meeting will publish a proceedings, and individuals are encouraged to send in short articles for publication in the newsletters. It is important that reviews of bug fixes, performance considerations, and available software be produced periodically, to help fill the growing gap between experienced hacks and new users.

We cannot guarantee that what is reported here was actually said. If you want to be SURE, or need more information, check with the speaker in question. Our apologies to anyone who has been misquoted.

Our thanks to the many persons who made informative presentations at the meetings. Further thanks to David Sherman, whose notes and macros from last June's conference made easy the production of these notes.

February 5, 1980

Martin Tuori
Defence and Civil Institute of Environmental Medicine
(DCIEM)
Downsview, Canada M3M 3B9
(416) 633-4240 Ext 204

Gregory Hill
University of Toronto Computer Services, SF105
University of Toronto
Toronto, Canada M5S 1A1
(416) 978-8853

Ian Johnstone formerly University of New South Wales
Bell Laboratories
600 Mountain Ave
Rm 7E-306
Murray Hill NJ 07974
(201) 582-5767

Page 11

Table of Contents

32	A Moderate Office DB Management System	David Tilbrook
33	Key'ed I/O Mechanism for UNIX	Bob Lummis
34	An Enhanced Spelling Checker	David James
35	Image Processing	Bob Gray
36	3D Image Processing for Biology	Noel Kroff
37	Status of UNIX V7	Dennis Ritchie
38	West Coast Users Group	John Bass
39	Interactive Image Processing	Rex Tracy
40	Interactive Graphics in Pharmacology	Tom Ferrin
41	Speaking Terminal for Blind Programmers	Ronald A. Morford
42	Summary of Tuesday Software Tools Meeting	Debbie Scherrer
43	TTY Handling	Dan Franklin
44	Putting up UNIX when you don't know much	Robert A. Morris
45	STDPLT: A Device-Independent Plotting Package	John Nickolls
46	Two LSI Layout Tools	Robert Mathews
47	SCANARGS: A Command-line Argument Scanner	Gary Newman
48	Black Holes in UNIX Filesystems	Joe Yao
49	Invitation to Join an Informal International UNIX Network	James Ellis
50	Disc Scheduling AND V7 on a Z8000	John Bass
51	C on the M68000	Charles Forsberg

SOFTWARE TOOLS USERS GROUP MEETING
TUESDAY MORNING
Chair: Debbie Scherrer, Lawrence Berkeley Laboratory

Speaker 1 9:00 a.m. **Opening Remarks**

Debbie Scherrer
Lawrence Berkeley Laboratory

Debbie introduced this meeting by giving a very brief history of the Software Tools development. The book 'Software Tools', by Kernighan and Plauger sparked the group; at the same time Addison and Wesley made available a tape containing the source for the tools described in the book, for the princely sum of $25. So far, about 800 tapes have been sold. This is the second meeting of the Software Tools Users Group.

Speaker 2 9:05 a.m. **Enhanced Tools**

Allen Akin
Georgia Institute of Technology

Allen described their ring network of 4 PRIME computers, running the Primos IV O.S. This configuration has been up for about 3 years, and has a user community of about 150, from secretaries to researchers. They have modified many of the tools, including a shell which supports multiple inputs and outputs, for network applications. They have written STACC (STill Another Compiler-Compiler), and with it have rewritten Ratfor, to allow extensions including recursion in internal procedures. They have been very active and have created many new and useful tools. Their package is available to PRIME users for $3000 for the first year, $1000 a year thereafter (schools less 30%). However, some of their tools are free, and have been submitted to the users group. At this time PRIME UK and PRIME Australia are distributing this package.

Speaker 3 9:30 a.m. **Heterogeneous Networking**

Joe Sventek
Lawrence Berkeley Laboratory

The problem with which LBL has been faced is to connect different machines in such a way that users could work across the network. This should include not just mail, virtual terminal access, and file transfers, but full resource sharing. User support is required at two levels: at the command level, standard utilities should be available throughout the network; at the programming level, a single set of system calls and primitives within Ratfor should be available throughout the network. This creates a virtual operating system which can be overlaid on any host in a network, in which system services (utilities and system calls) are consistent. So far this has been implemented under VMS, RSX, UNIX and TENEX.

A complete set of primitives might include:
File I/O: open, close, create, getline, putline, getchar, putchar,
prompt, remove, amove, rawmode.
Directory control: chdir, print—working—dir, opendir, closedir,
get—dir—parms, mkdir, rmdir, mvdir.
Processes: spawn, kill, suspend, resume, pstat, pwait.

Speaker 4 10:00 a.m. **Standardized Primitives**

Skip Egdorf
Consultant to
U.S. Geological Survey
National Earthquake Information Service

Skip has been using Ratfor to produce applications packages for the study and monitoring of earthquakes. Since the projects have moved to a new machine about once every two years, a strong portable base was needed. Ratfor was chosen for just that reason; but it needs stronged portablility/standardization in its system primitives. He suggested the following set:

I/O: getchar, putchar, getline, putline, readf, writef,
readb(binary), writeb, reads(string), writes.
File System: open, close, create, remove, seek, mark,
mkdir, rmdir.
Processes: getarg, spawn, suspend.
String Manipulation: pack, unpack.

Skip asked for comment and discussion within the users group, so that a single set of extended primitives might be developed.

---- *BREAK* ----

Speaker 5 10:45 a.m. **Naval Ocean Systems Center**

Bob Calland
Naval Ocean Systems Center

Bob described their primary use of the tools, the development of large single stand-alone programs for on-board mini's. To do this, they have developed the necessary cross-compiler, assembler, loader, etc. Their targets include a military micro, the AN/UYK-20, and the CMS2.

Speaker 6 11:15 a.m. **Portable Crystallography Software**

Jim Stewart
University of Maryland

This was one of the more entertaining talks. Jim is a chemist, whose interest in software is summarized by 'Kernighan's 3rd Principle': 'Let someone else do the hard part.' He and Robert Munn

have developed applications in crystallography, based on an improved Ratfor with a macro preprocessor -- RATMAC. Jim outlined his own evolution from hand calculation, through unit record equipment, Fortran 2, Fortran 4, to Ratfor. He sees Fortran 77 as another opportunity to rewrite all existing software -- an opportunity which he would like to decline.

Their efforts have enabled them to port their software to a large number of different systems; it is available for $100 from:

Computer Science Center
University of Maryland
College Park, Maryland 20742
attn: Dr. R. Munn

or send a letter to receive a copy of the RATMAC primer.

Speaker 7 11:45 a.m. **Maintaining TELCO Software**

Dick McLaughlin
Bell Labs

Dick described EPLANS (Engineering, Planning and Analysis Software) - a collection of programs which are used to handle the implementation and support of telephone switching networks. This represents some 30 programs, or 50,000 lines of Fortran code, which is being converted to Ratfor. This software is in use by Western Electric, Bell Canada, and independent Telephone Companies. Their experience has shown that an applications programmer faced with understanding and supporting a 9000 line Fortran program could spend 18 months, and not be able to modify the program without assistance from the authors; on the other hand, the same programmer could be up to speed within a month, working on the same program in Ratfor. Their target systems include MVS/TSO, VM/CMS, DEC System10, GCOS, UNIVAC, XEROX, and UNIX-VAX. In the future, they are looking toward EFL (Extended Fortran Language), which will allow extended data and control structures, a full compiler (not just the preprocessor), and in general a superset of Ratfor.

---- *LUNCH* ----

Speaker 8 1:30 p.m. **S -- Stats System**

Rick Becker
Bell Labs

Rick described the 'S' statistical analysis system, which he says is easy to use, powerful, extensible, and portable. He emphasized that it allows a statistician to 'come in contact' with his data, through an interpretive expression language, like APL, but using functions rather than operators:
e.g. z <-- regress(x,y)
S was developed using Ratfor, M4, YACC, STRUCT, and an interface language. (STRUCT takes Fortran and tries to turn it into Ratfor).

Rick went on to indicate the problems involved in moving S to another system: the supporting tools would need to be port'ed, there would be OS dependencies to consider, there might be conflicts with other tools, and programmers would be required to adapt. S as currently implemented requires that all its database be in main memory -- this is a problem on the 11/70, but not on the VAX. Some consideration is being given to allowing analyses to operate sequentially, where appropriate. It works

well at this time on small to medium data sets.

S is based on the GRZ Graphics Package, which is not yet available outside the Bell System. It is, however, their intention to release S at some time.

Speaker 9 2:00 p.m. **ALDS -- Statistics Package**

Jan Lewis
Battelle (Pacific Northwest Labs)

Jan described the research efforts going on at Battelle; they have a computer lab environment for testing and implementing ideas on the handling of large data sets. The work will be carried out on a VAX, with RAMTEK colour displays; the general requirements are that the ALDS system be data-directed, iterative (action at a given step depends on the results of prior phases of analysis), interactive, and graphics-intensive. They need to get up and running soon, so they expect to develop an operational system which may be discarded later. They would prefer to develop something which can be extended and modified.

The system will be extended to include Database research, using a standard file format called a self-descriptive binary, or SDB file. It is intended that ALDS will form an 'operating system' in its own right, with three main components: statistics, graphics, and database. To this end, work will be carried out to evaluate the relative merits of command versus menu-driven user interfaces. User interface tools will be developed, so that the style of user interface can be changed, without major change to the software application packages themselves.

This software will likely all be in the public domain, although specific target date has been chosen for completion.

Speaker 10 2:20 p.m. **Publication of Algorithms**

Webb Miller
ACM Algorithms Editor
University of California, Santa Barbara

Webb reviewed some of the history of algorithm development and reporting (1960-1980), and indicated several trends. Where Algol used to be the preferred vehicle for algorithm publishing, Fortran is now much more prevalent. The ratio of numerical to combinatorial algorithms has varied, but remains on the order of five/ten to one. The length of algorithms published has increased, so that they are now commonly in excess of 1000 lines of source.

Earlier work in the programming field has led to the standardization and development of useful software packages, including EISPACK (eigenvector software), NAG (numerical algorithms group), and IMSL (International Math and Stats Lib). Webb then suggested that these same program development philosophies are applicable to non-numeric software, and that Software Tools users SHOULD publish their algorithms, both for the sake of the community, and for their own accreditation. Suitable journals include Communications of the ACM, Transactions on Mathematical Software, and TOPLAS.

He went on to describe TOOLPACK, a prototype environment for the development, testing, analysis, and verification of mathematical software. It includes a Fortran-intelligent editor, but still needs a structurer to convert from C into Ratfor, EFL, SFtran3, Fortran 77 (any or all). For a "TOOLPACK

Prospectus", write:

Dr. Wayne Cowell
Applied Mathematics Division
Bldg. 221
Argonne National Labs
Argonne, Illinois 60439
(312) 972-7164

---- BREAK ----

Speaker 11 3:00 p.m. **NEW Basic Software Tools Tape**

Debbie Scherrer
Lawrence Berkeley Laboratory

Debbie indicated that they have been involved in a teleconference group, trying to establish a new standard collection of tools. There has been strong participation from LBL, Georgia Inst. of Technology, University of Arizona, and others. The result should be a three part tape, to be distributed by the U.of A. sometime in the next 6 months. For a piece of software to be included, it must satisfy the following:

- acceptable to the users group and/or the teleconference group
- adequately documented
- should be written using the basic primitives, or use well-documented local primitives
- be runnable under the Addison-Wesley Ratfor package
- be runnable at GIT, LBL, and UofA with few/no changes. (other volunteer sites are welcome)

PART1: the contents of the Addison-Wesley tape, and other portable, generally useful tools, including Ratfor and Macro preprocessors, editors, text handlers.
PART2: additional tools, including alternate versions of tools in part 1, a shell command interpreter, mail, screen editors, tape archiver, virtual Libraries of primitives will be included to provide support for as many Computer+Operating System combinations as possible, maybe 30 or 40.
PART 3: Member lists.

In the future, good tools will be added to the tape, and moved up from PART2 to PART1. We'll be looking for Graphics, SCCS, make, and other goodies.

Speaker 12 3:30 p.m. **Special Interest Groups**

Four informal SIGS have been formed; persons interested were invited to split off into separate areas to discuss plans and organizational details. Brief reports were solicited from these groups, as follows:

Text Processing SIG
All text tools will be included on the tape, the best in PART1, the rest in PART2.

Networking SIG
A questionaire will be distributed to members, asking for info on topologies and problems. The goal of

the SIG is a common command language, consistent across heterogeneous networks.

Primitives SIG
This SIG will attempt to layer the present superset of primitives which have been suggested. It is acknowledged that selecting a clean, yet complete set is as yet a black art, about which we need to learn much more.

RATFOR SIG
A committee was formed to select a chairperson, and evaluate the 3 Ratfor Preprocessors which have been offered. One will be selected for PART1 of the new tools tape; the others will presumably be included in PART2.

SOFTWARE TOOLS USERS GROUP NEWSLETTER
Neil Groundwater volunteered to handle the newsletter for the time being.

Neil Groundwater
Analytic Disciplines Inc.
8320 Old Courthouse Road
Vienna, VA 22180
(703) 893-6140

Cassinelli
Lawrence Berkeley Laboratory
1 Cyclotron Road
Berkeley, CA 94720

50B/3209