DISCLAIMER

SEPTEMBER
1991

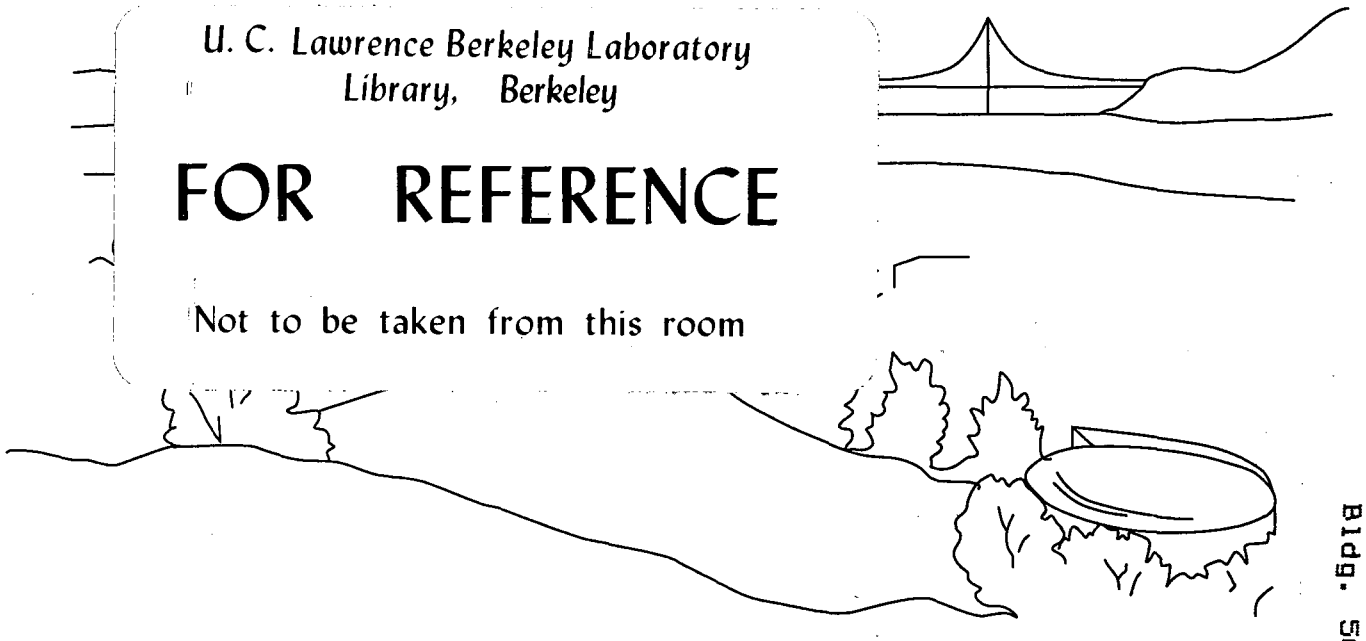
COMPUTING NEWSLETTER

SUN ANSWERBOOK

DEC ON GUI PRODUCTS

GDE AND PRIMER

VISUAL BASIC



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BERKELEY, CALIFORNIA . . . 94720

PUB-429

Newsletter Closing Date is Monday, September 16, 1991

Address all communications for the Newsletter to login nooz@ux1.lbl.gov or put in Maggie Morley's Drop Box in the Workstation Group File Server

Editor: Maggie Morley

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PUB 429 9/91 2150

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ICSD TRAINING SCHEDULE

September - October 1991

CLASSES: COMPUTING SERVICES & CNR

The following courses are offered by Computing Services and CNR. To enroll in the DEC GUI course, the AVS course, the UNIX classes or the Electronic Mail Survey class, please contact Rita McLean, x5872. To enroll in the Phone System class, contact Linda Smith, x4440. You **do** need a current UNIX or VMS/CSA login.

Electronic Mail Survey	Sept. 17	10 AM to Noon	50B-1237
UNIX Introduction Pt. I	Sept. 17	9 AM to Noon	50B-1232
UNIX Vi Editor	Sept. 18	9 AM to Noon	50B-1232
DEC GUI (Graphical User Interface) Products	Sept. 18	2 to 5 PM	50B-4205
UNIX Introduction Pt. II	Sept. 19	9 AM to Noon	50B-1232
UNIX Introduction to Text Editing	Sept. 20	9 to 10:30 AM	50B-1232
Application Visualization System (AVS)	Sept. 20	8:30 AM - 5 PM	50B-1237
ICS: ITE4 & Voice Mail	Sept. 25	9 to 10:30 AM	50B-1237
ICS: ITE12, ITE24 & Voice Mail	Sept. 25	1:30 to 3 PM	50B-1237
ICS: ITE4 & Voice Mail	Oct. 23	9 to 10:30 AM	50B-1237
ICS: ITE12, ITE24 & Voice Mail	Oct. 23	1:30 to 3 PM	50B-1237

WORKSTATION CLASSES

The following courses are offered by the Workstation Group. There is no charge for these classes. To enroll, obtain your supervisor's approval and then contact Carole Casaretto, x7693.
(Those classes with asterisks (*) in front of them are already full.)

IBM-PC: Bldg. 50B, Rm. 1237

Introduction to PC-DOS		Oct. 14, 15, 16, & 17 2:30 - 4 PM
Introduction to *Windows* for the IBM/PC	*	Sept. 10 & 12 9 - 10:30 AM
		Oct. 22 & 24 9 - 10:30 AM

Macintosh: Bldg. 50B, Rm. 1229

Basic Macintosh		Sept 4 12 - 1 PM no sign-up req.
Beginning *Microsoft Word*	*	Sept. 9, 11, & 13 10 - 12 Noon
		Oct. 14, 16, & 18 10 - 12 Noon

(Macintosh Classes Continued)

Beg. *Excel* Spreadsheet	*	Sept. 16, 18, & 20 9 - 11 AM
		Oct. 28, 30, & Nov 1 9 - 11 AM
Introduction to *PowerPoint*		Sept. 17 & 19 1 - 2:30 PM
Introduction to *FileMaker*	*	Sept. 24 & 26 10 - Noon
		Oct. 29 & 31 10 - 12 Noon
		Nov. 12 & 14 10 - 12 Noon

The Workstation Group also offers **noon time class** (no sign-up required) on the following subject:

Basic Macintosh Class 9/4 50B/1229

See Workstation Scene Newsletter Articles for more details on this workshop.

UNIX NEWS

SUN SYSTEM SOFTWARE ANSWERBOOK — ONLINE SUN DOCUMENTATION

Darrell Davis

The Sun System Software AnswerBook, an OpenWindows-based document retrieval system, has been installed on node cs. The AnswerBook is comprised of online manuals that closely match the printed Sun base documentation set.

You can access the AnswerBook through two windows:

- *Navigator* - provides several searching modes to locate specific information.
- *Viewer* - a PostScript-based viewer for displaying documents found using Navigator. You can read pages sequentially or follow hypertext links within a book or between books.

The Navigator has three modes for locating information in the online manuals:

- *Contents mode* allows you to browse the table of contents of any online manual, opening books, sections, etc. at will.
- *Search mode* searches through the text and titles of all online manuals to match the terms you specify.
- *Bookmarks mode* allows you to mark and annotate pages displayed in the Viewer.

The Navigator also provides printing of any part of an online manual on a PostScript laser printer.

In order to use the AnswerBook, you must have the cs directory **/home/cs/AnswerBook** nfs-mounted on the machine you use and you must be running Sun's OpenWindows. Contact me at **DSDavis@lbl.gov** for more information on mounting this directory.

To invoke AnswerBook:
First, you must define the following environment variables in the appropriate login file.

✔ C shell users, place the following in your .login file:

```
setenv ABHOME      /home/cs/AnswerBook
setenv BOOKINFO    $ABHOME/bookinfo
setenv HELPPATH    $ABHOME/help
setenv FONTPATH    $ABHOME/lib/fonts
```

Add the above variables to your current environment by typing the following at theprompt:

% source .login

✔ Bourne shell users, place the following in .profile:

```
ABHOME=/home/cs/AnswerBook; export ABHOME
BOOKINFO=$ABHOME/bookinfo; export BOOKINFO
HELPPATH=$ABHOME/help; export HELPPATH
FONTPATH=$ABHOME/lib/fonts; export FONTPATH
```

Add the above variables to your current environment by typing the following at the prompt:

$ . .profile

Next, invoke AnswerBook with the following command (don't forget, you must be running OpenWindows!):

$ABHOME/bin/answerbook

I think you will find AnswerBook a user-friendly and convenient interface to the Sun documentation. And you can feel good about moving one more step towards a "paperless office"!

Forward comments or questions to me at x5740 or

	UNIX or
Software Tools Mail:	**DSDavis@lbl.gov**
VMS Mail:	**lbl::DSDavis**

UNIX USERS' GROUP MEETING

Maggie Morley

LBL employees are invited to the regular UNIX Users Group meeting, (for all local users of UNIX or UNIX workstations) in September.

TIME:	1 to 3 PM Thursday, Sept. 26, 1991
PLACE:	Bldg. 50A, Rm. 5132 (Director's Conference Room)

Forum topics, following an initial group "check-in" session, might include

- Planning Long-term needs
- Evaluating Support Priorities
- Maximizing Usage
- Reviewing Costs

Forward comments and questions to Craig Eades at x6569 or

	UNIX or
Software Tools Mail:	**CAEades@lbl.gov**
VMS Mail:	**lbl::CAEades**

FROM THE MAIN LIBRARY

PREPRINTS BY E-MAIL

Carol Backhus

The LBL Library has a list of newly-displayed High Energy Physics preprints, either a daily or cumulative weekly list, which is available via E-mail to anyone who requests the service.

Each day the Library receives copies of the preprints from institutions all over the world. Several times a week, the library staff adds the bibliographic information from the new preprints to a SPIRES database at SLAC, and then displays the preprints in the Building 50 Library. The preprints remain on display for one week and then circulate to anyone who has signed up to receive them.

By using your own SLAC account or by using QSPIRES, you may access HEP (the SLAC/DESY High Energy Physics Database) to determine whether LBL has the preprint you are seeking. In the September, 1990 issue of this newsletter, Betty Armstrong wrote an article about accessing particle physics databases using QSPIRES[1]. Her information is still valid, but to determine if the LBL Library has a copy of a particular preprint you must tell QSPIRES that you want your response in a format which includes the LBL holdings.

Using the bsend command on CSA3:

bsend qspires@slacvm find rn cern-ppe-91-60 <return>
(response)
bsend qspires@slacvm output (type using lbl <return>

Using E-mail:

find rn cern-ppe-91-60 (output using lbl <return>

Either way, you will receive a response from QSPIRES and if the library has a copy of the report, the message "Available in the LBL Library" will appear at the end of the record.

Richard Robinson in the Bldg. 50 Library (x5621) can always help users locate the preprints they need. If the paper isn't available locally, we can easily obtain it from SLAC.

Forward comments and questions to me at x6307 or

UNIX or Software Tools Mail:	**CDBackhus@lbl.gov**
VMS Mail:	**lbl::CDBackhus**

[1] Available on Workstation Server 1 ("Monthly Newsletter" Folder).

GRAPHICS NEWS

FUTURES AND X WINDOWS

Nancy Johnston

The Graphics Group plans to hold a series of monthly seminars on various windowing environments and associated products based on X11. Our objectives:
(1) to provide an overview of what is being offered in the industry;
(2) to give an idea of upcoming products; and
(3) to track the direction various vendors/products are taking.

Hopefully, these seminars will help all of us make judgments about which window system to use (for example, Motif vs. OpenWindows), which toolkit to use, which graphic user interface builder to the toolkit to use, etc.

DEC

First in the series will be on September 18, from 2 to 5 PM in Bldg. 50B, Rm. 4205 (the Conference Room). Representatives from DEC will be here to discuss DECWindows, OSF/Motif, VUIT (their Graphical User Interface (GUI) builder), and other GUI products. Besides offering these products on the DEC platforms, they will will show how to work with them on a Sun workstation.

SUN

Representatives from Sun are scheduled to present the October seminar.

Other talks will be scheduled in succeeding months.

If you have any questions or suggestions for topics please contact me at x5093 or

UNIXor	
Software Tools Mail:	**NEJohnston@lbl.gov**
VMS Mail:	**lbl::NEJohnston**

GENERAL NEWS

IBM RISC SYSTEM/6000 FOR SALE

Craig Eades

Computing Services is offering for sale an IBM RISC System/6000. Included in the package:

- an IBM RISC System/6000 Model 320
  - a 24-bit 3D Graphics Processor
  - a 320 MByte Disk Drive
- a CD-ROM Drive
- a 16-inch Color Monitor

The Model 320 is rated at 9.2 Mflops; its system clock speed is 20 MHz.

Price for the package is $7,500.

If you are interested, contact me at x6569 or

UNIX or Software Tools Mail:	**CAEades@lbl.gov**
VMS Mail:	**lbl::CAEades**

HUMAN GENOME CENTER NEWS

Marge Hutchinson
Manfred Zorn

NEW SOFTWARE

Two new software packages, GDE and PRIMER, have been installed recently by the Genome Computing Group for use by any interested researcher. GDE (Genetic Data Environment), is a set of sequence analysis programs. PRIMER is a program to select pairs of PCR primers. These programs can be accessed on the UX5 or the gregor computers or their client workstations—or we may be able to export it to other Sun systems on the network if requested. To use any of the software, be sure to initialize first by executing the command *source ~sequence/startup* either in your .login or on a command line.

Both of these packages are available free. However, no part of either can be incorporated into any commercial software without permission of the authors; credit should be given to the authors if results are used in publications. See the documentation for each package for details of whom to credit.

GDE

GDE (Genetic Data Environment), as the name implies, is an analysis environment, not just a set of programs. GDE was developed at the University of Illinois and by Steven Smith of Harvard University. It runs under the X Windows environment on a Sun workstation but can be accessed from any computer running X Windows—for example, a Macintosh running MacX. (MacX is available from the Workstation Group, x6858.) The goal of the developers was to provide a common, easy-to-use environment that could be expanded readily by adding new analysis programs as they were developed.

This first version of GDE seems to have successfully demonstrated these design goals. The interface is similar to that of a Macintosh or other modern interface, in that it incorporates pull down menus, displays sequences one under the other to allow easy comparison, allows cut-and-paste operations and uses color effectively (to show sequence similarities or distinguish the DNA bases, for example). The set of functions incorporated into this first version include:

Some EuGene functions for searching GenBank and extracting sequences from it:

- ***search genbank*** —search GenBank indices for locus name, author, human gene map symbols, keywords (KEYWORD line of GenBank)
- ***quickscan*** —Search EuGene's fast inverted index of all meaningful words in the non-sequence information in GenBank (& (and) and | (or) can be used to combine keywords into more complex queries).
- ***load genbank entry*** —given the locus name, extract the sequence from GenBank

Sequence comparison functions:

- ***clustal alignment*** —Multiple sequence alignment by Des Higgins.
- ***consensus*** —determine a consensus sequence of a set of sequences
- ***find all*** —highlight selected sequences for a given substring.
- ***variable positions*** —highlight variable positions or conserved positions in a set of sequences.
- ***DeSoete- tree*** —calculate a phylogenetic tree via method of DeSoete.
- ***distance matrix*** —calculate a distance metric for each pair of sequences.
- ***blast D/RNA*** —use blast to search for similar sequences in GenBank.

Functions to manipulate DNA sequences:

- ***reverse*** —reverse the order of the bases.
- ***complement*** —complement the bases.
- ***translate*** —translate to the amino acid sequence for one of the reading frames.

Functions to compare a sequence with a proposed helix template:

- ***show helix*** —highlight portions of a sequences corresponding to a proposed helical structure
- ***draw secondary structure*** —Draw proposed secondary structure.

Additionally, there are miscellaneous functions to read or write files (with sequences in the commonly-used formats), edit files, extract sequences from one window into another, cut/copy/paste, et al.

This is an early version of this software, so some functions are missing or primitive. A major limitation is that only very minimal input and analysis functions are available for amino acid sequences.

The user's manual can be found in the directory

/home/hgc/data1/local/docs

A text file, **GDE.txt**, can be printed on any printer or

displayed on your terminal. **GDE.ps**, a PostScript version of the same file, can be sent to a PostScript printer.

To run **gde** you must be running X windows. Ask us for help if you don't know how.

Gde was developed using the **olwm** window manager and works best with that window manager. Most of us here at LBL use **twm**, a different window manager. **Gde** will run with **twm** but, when using **twm**, you will often have to pull up *destroy window* from the background menu and click on a window to remove some of the windows that gde creates.

> You can change to olwm if you wish by stopping twm (one of the exit functions in your background menus) and typing
>
> olwm -f &
>
> Don't try to run two window managers at the same time. Always exit one before starting another.
>
> The main difference you might notice is that different actions are required to move and resize windows. Under olwm, a window can be destroyed by holding the right mouse button down on the triangle in the top left of the window and selecting quit.

One other change may have to be made to your environment to run **gde**. In your path (which is set in .cshrc) /usr/bin must come after the "xview" path variable. Call us for help if you're not sure.

To try out **gde**, we suggest you first copy to your file space the demo directory

(/home/hgc/data1/local/src/ProNasis/GDE/gde/demo)

(It is provided with the software)
Change your working directory to your demo directory (with cd). Set the DISPLAY variable for your workstation (e.g., **setenv DISPLAY gregor:0.0**). Then the command

gde tRNAs

will bring up the program with some demonstration sequences already displayed. Use the left mouse button to select sequences and the right mouse button to pull down menus. Type

dnanews gde

for more information.

We are considering using **gde** as an interface to the software we develop here, so please let us know how you like it.

PRIMER

PRIMER is a program for selecting pairs of PCR primers to amplify specific regions of sequenced DNA. It was provided by Stephen E. Lincoln, Mark J. Daly, and Eric S. Lander at the MIT Center for Genome Research and the Whitehead Institute for Biomedical Research in Cambridge, Massachusetts.

To run PRIMER, just type

primer

and specify a file name (start with one of the sample files provided). You may specify reaction conditions (e.g., annealing temperature, salt concentration) and primer characteristics (e.g., optimal length, GC content), or you may accept default values. The program will discard primer candidates if they are similar to repeat sequence or if they are self complementary. Once all candidate primers are determined, it will use the user-specified conditions to determine the optimal sequences.

PRIMER requires three input files with file extensions .seq, .cri, .rep:
-the.seq file contains one or more sequences for which it will find primers;
-the.cri file contains the criterion to use for the selection;
-the.rep file contains repeat sequences to search for.

Samples of all these files are included in

/home/hgc/data1/local/src/ProNasis/primer

The provided criterion file, "standard.cri", can be copied to your directory and modified via an interactive dialog. The sequence and repeat files should be created or modified with an editor. The files sample.seq and sample.rep can be copied to your directory and used as a starting point.

The user manual, "primer.asci", is in the directory

/home/hgc/data1/local/docs

PRIMER is free when used for non-commercial purposes but may not be used to design oligos for any commercial purpose whatsoever without written permission of the authors. See the last page of the manual for licensing information.

PIR DATABANK

Here we continue our discussion of the sequence databanks at LBL with a discussion of PIR, the Protein Information Resource database of amino acid sequences.

PIR is produced by the National Biomedical Research Foundation, in collaboration with the International Protein Information Database in Japan and The Martinsried Institute for Protein Sequences in Germany. Currently, PIR Release 29.0 contains 31,895 amino acid sequences containing 9,091,049 residues. We install a new release quarterly.

PIR comes in three sections:

Section 1: Sequences that are completely annotated and classified.

Section 2: Sequences that are new and have not been thoroughly reviewed. They may not have been merged with identical or similar entries.

Section 3: Sequences that are not verified. For this set, only the sequences and references have been checked and verified.

The databank contains, in addition to the sequence and reference information, additional information such as biological host information, genetic data, superfamily information, keywords, and special features.

- The genetic data includes information such as gene name, map position, start codons, and intron locations.
- The superfamily information classifies the proteins into functional domains as, for example, cytochrome c or ferredoxin. A list of superfamilies for each database entry can be found in the file **prindex.lis**.
- The special feature data includes, if known, active site, binding or cleavage sites, inhibitory sites or modified sites. It also includes residues connected by disulfide or thioester bonds or cross links. It may also include sequence region information such as regions of separate evolutionary origin, regions evolved by duplication or regions corresponding to mature proteins or peptides.

Also distributed with the database is a compilation of genetic codes (file **gcd.lis**) as well as the taxonomy used in classifying the data (file **taxonomy.lis**).

PIR has one advantage over the other protein databases at LBL: all of our software can access it. Either **blast** or **fasta** can be used to search for sequences similar to a test sequence. Sequences can be extracted with either EuGene's **retrieve**, UCSFBCL's **pdayhoff**, or **extractp** from the fasta distribution. Also, EuGene can be used to search the indices for keywords, journal, author, etc., but only sequences of the first type (completely annotated and classified) are guaranteed to be in the indices. EuGene's **quickscan** can be used to search for any word or combination of words found anywhere in the annotation section of any entry.

The database and associated indices are located in the directory

/home/hgc/data4/DataBases/PIR

To see the release notes of the latest distribution, type

dnanews protein

More information about the data contained in an entry can be found by reading the information in the file

. /home/hgc/data1/local/docs/PIR.doc.

GENOME SOFTWARE

The following tables show all of our software organized by function and software package. All of the software is available once you have executed the startup command

source ~sequence/startup

Since some of the program names in UCSFBCL conflict with those in EuGene, we have a separate startup file for UCSFBCL,

source ~sequence/startup_ucsf

All software, other than EuGene and the EuGene functions in **gde**, will work with that startup.

To locate information about a program, start by getting the LBL Computer Center Newsletter describing the package. **EuGene** and **SAM** were described in the December 1989 newsletter, **blast** and **prosite** in April, 1991, the UCSF package in May, **fasta** and related programs in June.

To get online documentation, dnanews is usually the place to start. Type

dnanews ***programname***

to get information about databanks and instructions for executing programs here at LBL. We don't have a dnanews article for all of our software yet but we expect to create an entry for each major software package shortly. Type

dnanews ***topics***

to see which topics are available.

On UNIX systems the man pages are the usual type of online documentation but not every software developer creates a man page. For those that do, type

man ***programname***

to display the documentation on your terminal. To output to a printer you will have to locate the file. Most of our man pages are in **/usr/man/manl** (that last character is the letter l, not a one). Just type

itroff -Pprinter -man /usr/man/manl/*programname.l*

(again, the letter l, not the number 1)
where **printer** is the name of your printer and ***programname*** is the name of the program you want to print.

Many of our program packages come with user manuals or other online documentation. These you can locate in the directory **/home/hgc/data1/local/docs**. If the filename ends in "ps" (indicating PostScript) the file must be printed on a LaserWriter printer or other printer that accepts PostScript. If the filename ends in "txt", or "asci", or "doc", etc, it may be sent to any printer. Just cd to the **/home/hgc/data1/local/docs** directory and execute the command:

lpr -p -Pprinter ***filename***

where the -p will add a page heading and number to every page, **printer** is again your printer name and **filename** is the name of the file you wish to print.

A copy of the newsletter articles and user manuals is in a white binder in Bldg. 74, Rm. 323, next to the Sun workstation and another copy is in the Donner library on the front counter. You can also retrieve newsletter articles from Appleshare on WKSG Server 1 (the Monthly Newsletter folder).

Further information
For more information on Human Genome Software and Databases please contact Marge Hutchinson, x4727, or Manfred Zorn, x5041 or

VMS Mail:	**lbl::MSHutchinson**
UNIX or Software Tools Mail:	**MSHutchinson@csam.lbl.gov**
VMS Mail:	**lbl::MDZorn**
UNIX or Software Tools Mail:	**MDZorn@.lbl.gov**

GENOME SOFTWARE AVAILABLE AT LBL

CONVERT SEQUENCES

Function	EuGene/Sam	UCSFBCL	GDE	Other
Locate patterns in a sequence	pattern, patmismatch simple, complex		find-all	prosite
Search for keywords in GenBank or PIR databanks	quickscan, index multiscan	genbank, pdayhoff	quickscan, search-genbank	
Retrieve sequence by locus name from GenBank or PIR databanks	retrieve	genbank, pdayhoff	load-genbank entry	extractp
Compare a sequence against a sequence databank	fasta, search		blast	blastn, blastp, blastx blast3, fasta, lfasta, mailfasta
Compare two or more sequences	lawrence, monte altschul, doolittle	ddmatrix, genalign malign, sg_align	clustal-alignment variable-positions distance-matrix	lfasta, plfasta, bestscor, rdf2, rdf2g, align, relate, pamscore, pima
Find consensus sequence			consensus	
Make phylogenetic tree	doolittle		DeSoete-tree-fit	
Determine PCR primer sequences				primer

COMBINE OR CUT SEQUENCES

Function	EuGene/Sam	UCSFBCL	GDE	Other
Cut into subfragments at cutting sites	cut			
Prepare ends for ligation	fillin, trim			
Ligate sequences	ligate			
Build sequences from subsequences by detecting overlap	merge (SAM) join (SAM)	fraglink		

GENOME SOFTWARE AVAILABLE AT LBL (Continued)

CONVERT SEQUENCES

Function	EuGene/Sam	UCSFBCL	GDE	Other
Amino acid code translation		pro1to3, pro3to1, alpha		
Reverse complement	revcomp	revcomp	reverse & complement	
DNA sequence to amino acid	translation, orf2pep	simtrans, segtran pextran	translate	
Amino acid sequence to DNA	revtran, oligo	revtran		
Randomize a sequence	jumble	random		
Reformat sequence in a file on display	format, import, export	format	read-foreign-format, save-foreign-format	

DETERMINE SEQUENCE COMPOSITION

Function	EuGene/Sam	UCSFBCL	GDE	Other
Amino acid charge/hydrophobicity or hydopathy plot	kyte-doolittle, hopp_woods, eisenberg	protochem		grease, tgrease
Nucleotide composition	composition	ncount		
Amino acid composition	composition	pcount		
Restriction map of DNA	map	resmap		
Find stop codons		stops		
Predict coding regions, open reading frames	predict, orf2pep, translation, readframes(SAM)			gm, gmwin, gm1win

GENOME SOFTWARE AVAILABLE AT LBL (Continued)

FIND STRUCTURAL FEATURES

Function	EuGene/Sam	UCSFBCL	GDE	Other
Predict protein secondary structure (helix, sheets, etc.)	garnier_robson conform, eisenberg	fasman		garnier
Locate haripins in a nucleotide sequence	hairpins	hairpins		
Find reverse-complement fragment pairs		qdyads, qdfilter		
Find all repeats		repeats, vurepeats, qrepeats, qfilter		
Simulate RNA folding		rnafold, zfold		
Draw structure from helix template			Draw-secondary-structure	
Show deviance from proposed structure			highlight-helix	

DATABASES AVAILABLE AT LBL'S HUMAN GENOME CENTER.

Database	Source	Release	Date	Entries		Description
GenBank	LANL/IG	68	June 91	65,868,799	bases	DNA sequences
GenPept	IG	64.3	Jan. 91	7,721,019	residues	Amino acid sequences translated from GenBank 63
PIR	PIR	29	June 91	9,091,049	residues	Protein sequences
SwissProt	A. Bairoch	18	May 91	6,524,504	residues	Protein sequences
Prosite	A. Bairoch	6.1	Feb. 91	433	patterns	Dictionary of sequence motifs
REbase	R. Roberts	9108	Aug. 91	1938	enzymes	Type 2 restriction enzymes with recognition sequence, supplier, and references
Enzyme	A Bairoch	4	Feb. 91	3074	enzymes	All characterized enzymes: EC number, catalytic activity, co-factors, diseases
SeqAnalRef	A. Bairoch	13.5	Dec. 90	1447	references	References to sequence analysis literature
LiMB	LANL	2	June 90	98	databases	Listing of molecular biology databases

LANL—Los Alamos National Laboratory, Los Alamos, NM;
IG—IntelliGenetics, Mountain View, CA;
PIR—Protein Information Resource, National Biomedical Research Foundation, Washington, DC;
Amos Bairoch, Univ. Geneva, Geneva, CH;
Richard J. Roberts, Cold Spring Harbor Laboratory, Cold Spring Harbor, LI.

NEWS OF PHYSICS LIBRARIES

Werner Koellner

● GENERAL INFORMATION

Object libraries, source files, and other files and procedures thought to be useful are being maintained at varying levels. Various CERN "libraries" make up the major part of this collection. In general, the newest releases or pre-releases are offered as default versions for general use. Please let me know if some package, which may be of substantial interest, is not available.

● CERN LIBRARY PROBLEM HANDLING

Users are encouraged to report problems or questions regarding CERN libraries, by writing to one of the following discussion lists, or to me (WOKoellner@lbl.gov):

LPAW@CERNVM.BITNET .....(about PAW)

LGEANT@CERNVM.BITNET .....(about GEANT)

HEPLIB@CERNVM.BITNET .....
.....(about CERN Library codes)

You may also subscribe to any of these discussion lists by sending an electronic mail message containing the single line

SUBSCRIBE <list> **<your full name>**

(list being one of the above) to

LISTSERV@cernvm.cern.ch

Copies of the various discussion mails are available in CERN$INFORM:

LGEANT.LOGyymm,
LPAW.LOGyymm,
LGEANTyymmdd*.NOTE,
LPAWyymmdd*.NOTE, and
HEPLIByymmdd*.NOTE.

Your problem may be among these discussed.

● CERN LIBRARY USER LISTS

Users who wish to be alerted whenever I rebuild the default GEANT or PAW Libraries or update other CERN Libraries may register by sending me a request.

● WHAT'S AVAILABLE

Some or all of the following packages are available on supported platforms. Specific information may be displayed online by typing

HELP <*package name*>

(on CSA) or via available man entries (on Sun or STARDENT), or by typing

HELP @PHYSICS_UTILITIES

(on CSA) and choosing the desired subtopic. Additional information, particularly regarding CERN packages, may be found in the **CERN$INFORM** directory area.

CERN LIBRARIES:

CMZ	Code Maintenance
COJETS	pbar-p Monte Carlo
DZEDIT	Zebra Bank Doc./Display System
GARFIELD	Drift Chamber Simulation
GEANT	Detector Design
EURODEC/JET	pbar-p Monte Carlo
GENLIB	General Library
GRAFLIB	Graphics Interface Package
HBOOK	Histogram Package (in PACKLIB)
HERWIG	hadron Monte Carlo
HPLOT	Plotting Package (in GRAFLIB)
ISAJET	pbar-p Monte Carlo
JETSET	Lund Monte Carlo
KERNLIB	General Library
LUCIFER	Lund Monte Carlo
MINUIT	Fitting (in PACKLIB)
PACKLIB	General Library
PATCHY	Code Maintenance
PAWLIB	Physics Analysis
PDFLIB	Parton Density Functions
TWISTER	Lund Monte Carlo
ZEBRA	I/O & Memory Mgt. (in PACKLIB)

FILE TRANSFER:

ZFTP	Transfer between Sun, VAX, IBM
TELNETG	HIGZ Graphics on remote hosts

OTHER PACKAGES:

CALCULATOR	Fancy HP Calculator
DISPLAY(5)	HBOOK/HPLOT Histogr. Manipulation
FOR_STRUCT	Source Code Structuring
EGS	e+e- Monte Carlo
JY411	CAMAC Drivers
MORTRAN	FORTRAN Preprocessing
PROBE	Examine Object Libraries
SWING	Directory Management
TOPDRAWER	Plot Processing
UGS	Unified Graphics Package

ON UX5 and STARDENT

• NEWS

DZEDIT, a new ZEBRA Bank Documentation and Display System, has been installed. See **man dzedit**; for a user manual see Ed Sheena (x5176).

New versions of the ZEBRA manuals "FZ" and "DIA" have been received. Please see Ed Sheena (x5176) for a copy.

The effort to support GEANT (and PAW), with X11 graphics on STARDENT is still in progress.

• LAST MONTH

✔ GEANT and CSPACK Manuals in LaTeX format
✔ Parton Density Function Library (see **man pdflib**)
✔ PATCHY, etc., installed (see **man patchy**)
✔ ZEBRA File Transfer Utility, ZFTP (see **man zftp**)

• GENERAL INFORMATION

More detailed information about the maintenance status of all libraries can be found in the CSA section.

Selected CERN Libraries are available on UX5 and on the STARDENT computer, and may be copied to Sun SPARCStations.

Currently, the following man entries serve to give details about status and use of available packages:

man cernlib
man dzedit
man geant
man herwig
man isajet
man jetset
man minuit
man patchy
man paw
man pdflib and
man zftp

The path to the CERN library area on UX5 and STARDENT begins with

/home/ux5/ux5c/phyd/cern

All files that are common to both UX5 and STARDENT are downstream from subdirectory "sun" while those unique for STARDENT are downstream from subdirectory "stardent". I suggest that you set the environment variable CERN_ROOT:

setenv CERN_ROOT /home/ux5/ux5c/phyd/cern

Then you find all files in

$CERN_ROOT/sun/*.

Versions of files that are different for the STARDENT are in

$CERN_ROOT/stardent/*.

In linking with any library, just specify

-l<library>

where **<library>** is one of the strings listed under "LIBRARY" below.

On Sun machines, ATC-GKS and X11 are the supported graphics interfaces for CERN programs with graphics. Information about linking with these graphics packages can be gleaned from

man paw or
man geant.

The following libraries are available in

$(CERN_ROOT)/sun/lib.

Most of these are also available in

$(CERN_ROOT)/stardent/lib.

LIBRARY	PACKAGES
dzdoc	dzdoc (for dzedit)
geantlib	geane, geang, geanh, geant, geanx
genlib	gen
graflib	hplot5, higz, gkspack
herwig	webber LUND Monte Carlo
isajet	p-p, pbar-p Monte Carlo
jetset73	LUND Monte Carlo (Jetset73 + Pythia55)
kernlib	kerngen, kernnum
minuit	minuit
packlib	cspack, epio, ffread, hbook4, iopack, kapack,kuip, minuit, zbook, zebra, zcedex
pdflib	pdf
pawlib	paw, comis, sigma

ON CSA

• NEWS

DZEDIT, a new ZEBRA Bank Documentation and Display System, has been installed for both GKS or X11 graphics. For a user manual see Ed Sheena (x5176).

New versions of the ZEBRA manuals "FZ" and "DIA" have been received. Please see Ed Sheena (x5176) for a copy.

Recently installed:

CSPACK Version 1.19/05 ....(in CERN$PACK_LIB)
COMIS Version 1.11/04 ....(in CERN$PAW_LIB)
FFREAD Version 3.10/02 ....(in CERN$PACK_LIB)
HBOOK4 Version 4.12 ....(in CERN$PACK_LIB)
HERWIG Version 5.03 ....(in CERN$HERWIG_LIB
HIGZ Version 1.12/16 ....(in CERN$GRAF_LIB)
HPLOT5 Version 5.10/13 ....(in CERN$GRAF_LIB)
KERNBIT Version 1.06/06 ....(in CERN$KERN_LIB)
KERNFOR Version 4.30 ....(in CERN$KERN_LIB)
KERNNUM Version 3.06/01 ....(in CERN$KERN_LIB)
KUIP Version 1.66/06 ....(in CERN$PACK_LIB)
MINUIT Version 2.05/01 ....(in CERN$PACK_LIB)
PAW Version 1.11/04 ....(in CERN$PAW_LIB)
SIGMA Version 1.06 ....(in CERN$PAW_LIB)
UMON Version 1.01/01 ....(in CERN$KERN_LIB)
ZBOOK Version 2.23/01 ....(in CERN$PACK_LIB)
ZEBPACK Version 1.00/04 ....(in CERN$GRAF_LIB)
ZEBRA Version 3.67 ....(in CERN$PACK_LIB)

• LAST MONTH

✔ Library release CNL201 or newer
✔ GEANT and CSPACK Manuals in LaTeX format
✔ Parton Density Function Library
✔ PAW in "no-graphics" mode
✔ PATCHY, etc., installed
✔ ZEBRA File Transfer Utility, ZFTP

• GENERAL INFORMATION

On the CSA Cluster and on LAN workstations, if the required disks are mounted you can access the Physics Utilities, including the CERN Library, the PAW (Physics Analysis Workstation) Library, and the various Physics Utilities HELP Libraries by executing the DCL command

```
@Physics$Manager:Setup_Phys
```

We recommend that you include this line in your Login.Com file.

CERN libraries are updated at unpredictable times. Changes are documented in the "Program Library News" section of the CERN Computer Newsletter. Past, current, and sometimes future issues can be found in **Cern$Inform:PROGLIB.CNLxxx**. Of particular interest are news regarding the status of obsolete routines. In some cases a previous version of an object library is saved as **xxxxx.OLD**.

The recommended method to access the latest standard object libraries is to use logical names **CERN$*_LIB**. For these names and other details please see the help text in

```
Help Cern
```

On the CSA cluster, the supported graphics interfaces for CERN programs with graphics are ATC-GKS, X11, and DI3000 (on CSA2 only).

• GEANT

GEANT 3.14 was released in November 1990. The default object library is always built by using newly released PATCHY correction cradles. The unmodified library is **Cern$Library:Geant314.Olb**.
The latest GEANT changes are noted in **CERN$INFORM:GEANT_CORR.HISTORY**.

• X11 GRAPHICS

Instead of using ATC-GKS drivers for GEANT and PAW graphics displays, you can use X11 drivers, which may result in faster display tasks. You may run **PAW$LIBRARY:PAW_X11**, or may link your **GEANT.EXE** with X11 drivers. If you use **Cern$Library:Geant.Lnk** to link your Geant, the first question will let you specify X11. Note that prior to running an X11 program from a non-X11 device, e.g., from a VT240 terminal, you may need to SET DISPLAY ... Please see the LBL Computing Newsletter, Aug. 1990, Pg.4, for details.

Forward comments and questions to me at x4398, or

UNIX or Software Tools Mail: **WOKoellner@lbl.gov**
VMS Mail: **lbl::WOKoellner**

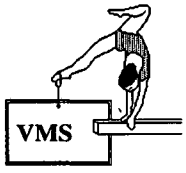
NOTES FROM TROUBLE MAIL

Maggie Morley

Following are further examples of typical exchanges from our on-line UNIX and VMS TROUBLE mail facilities.

MESSAGE

I'd like to make a duplicate copy of a 10½" tape that I have been using on CSA. The tape contains many Backup save sets. Is there one program which will just "Xerox" a tape?



RESPONSE

Our senior VMS system person here states that there is no standard "tape Xerox" program. Suggestion: back up the tape's savesets on disk (this involves "unpacking" them, as it were) and run BACKUP on the results to write them onto the new tape. Major reason for this approach: BACKUP has its own way of dealing with media errors, which are not unknown on tapes, and this method is different from the media error-handling used by VMS COPY (for example). Therefore, the new BACKUP savesets may not be exactly what you desire if you use something other than BACKUP to create them.

ADDENDUM: I have had users use "copy" tape to tape without encountering any difficulties. After all backup tapes are files-11 volumes. Some users used a DECUS program called "tape" which does a bit-to-bit copy regardless of the kind of tape it was with equal success. The two methods:

(1) INIT the new tape.
Then
(2) MOUNT/NOASSIST both tapes (the old one and the new one)
(3) COPY OLDTAPE:*.*.* NEWTAPE:*.*.*/ READ_CHECK/WRITE_CHECK

or

(2) MOUNT/FOREIGN/NOASSIST both tapes (the old one and the new one)
(3) RUN SYS_UTILITIES:TAPE (a bitcopy program)
Name the input tape
Use the COP function
Name the output tape

MESSAGE

I have an Esprit II terminal that can simulate [emulate] an adm3a. Does CSA support such a terminal? I have a lot of problems using Vi with this terminal when I log in remotely. Secondly, does CSA have a phone number by which I can call in directly. Presently, I have to login via another computer.

RESPONSE

(1) Since your terminal apparently emulates an adm3a, try running the DCL command procedure SYS_UTILITIES:adm3a_setup.com and then trying Vi on CSA.
(2) There is no direct dialin line to CSA. Try dialing into the ICS dataswitch via 486-7930 if you have a 300/1200/2400 baud modem; 486-7996 if you have a 9600 baud modem. Then follow the prompts to connect into CSA. (Answer D for directory and then CSA for your destination number.) See the HELP article ICS_Dataswitch on CSA for details.

MESSAGE

I am getting extremely slow keystroke response time on CSA2. Is there a problem?

RESPONSE

I experienced the same problem a couple of days ago when logging into CSA2 via LAT. I noticed that you were doing the same. We suspect that there might be some problems (could be temporary) with certain LAT port(s).

We'll be monitoring the situation carefully. Let us know if you see the problem again. Thanks.

Other than the specific problem pointed out above, our analysis shows that, in general, the response and performance of CSA to have improved as we expected. Users report their production jobs are running 1.8 to over 2 times faster, and using proportionately fewer cpu cycles. We also run tests six times daily that measure response and execution times. Our data show that since the upgrade, the average response times have improved for CSA1 13%, CSA2 11%, and CSA3 43%. This data is for prime time; perhaps you have collided with system malfunctions (which are fewer), or with off-hours system functions such as backups.

MESSAGE

I am having a couple of problems on my disk. First, I was trying to delete a directory; I tried the following command

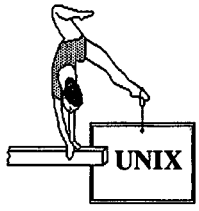
set acl/delete filename

After this command, the file still existed and I no longer had the privilege to look at it. Could you delete it or let me know how to do it?

RESPONSE

The command you used removed the ACL through which you had access to the file, so after you removed the ACL you could not access it. I have restored the ACL so that you can access the file once again. In order to delete a directory to which you have access via an ACL, you need to edit the ACL to add DELETE permission. You can do this interactively (**EDIT/ACL 'file_name'**) or you can execute the command **SET ACL/ACL=(EOS_FILES,ACC=R+W+E+D+C) 'file_name'**. (Note: this last command has been tailored to the identifier which is appropriate in this case; other ACLs would need the identifier EOS_FILES to be modified appropriately).

MESSAGE



I am looking for an X windows debugger that I can use. I found the man page on **xdbx**, but I don't seem to be able to locate the program. I also found a link called "/usr/local/X11/**xxgdb**", but it is a link to a non-existent file. Any clues as to where to find one?

RESPONSE

I installed "xxgdb" originally. It uses the **gdb** debugger. I have reinstalled the binary in /usr/local/x11r4 on UX5.

MESSAGE

I'm trying to make an "ls" type command on UNIX that lists files in a directory only if they have today's modification date. (The same as the /SIN=TODAY switch on VMS DIR command.) I've tried "**ls -l | grep -e "^date +'%h %d'^**" but it works only for days after the 9th of the month! (The date command returns leading zeros for days of the month less than 10, and the grep pipe needs to test for leading blanks in the day field). Does anyone know of a quick way to do this? Am I missing some switch in "ls"?

RESPONSE

I'd try "since", a program written by Ed Sheena, which is in "/usr/local". It seemed to work just fine when I used it.

MESSAGE

I applaud the new password software at LBL for tighter computer security. Whom do I contact to purchase the same software for our MicroVAX system?

RESPONSE

These enhanced security features are part of VMS 5.4 or later; VMS 5.4-2 is a standard release at that level.

MESSAGE

Please tell me how I can check whether or not my password is guessable. It fits the last set of rules I saw, but then again, so did my last one and you erased my .rhosts file anyway.

RESPONSE

We recommend passwords that are (1) not less than six characters, (2) not all alphabetic characters, (3) not all the same character, (4) neither words nor names nor acronyms in any language, and (5) not math or logical expressions.

A good rule of thumb to select a password is to take a random string of characters, say, "grtgdd" and put a digit or punctuation mark in the middle somewhere, say, "grt4gdd".

Examples of good choices might be:

cyt9rck
gaaz#ett
sn0w&b0l

A bad rule of thumb is to select a password the "makes sense", because hackers are very good at thinking of every cute or clever password possible.

Examples of bad choices would be:

lazeeboy
3+3=six
2b||~2b

P.S. Henceforth, we will be saving .rhosts files as .rhosts.expired in the users' home directories, instead of zapping them.

MESSAGE

I would like to mail a message to England. Their address there on JANET is: info-server@uk.ac.thattown (where info-server is the login). Any ideas what the correct routing/address would be?

RESPONSE

I'd try **info-server@thattown.ac.uk**. JANET, the Joint Academic Network in the UK, uses "backward" addressing from most other addressing. (*See "!%@:: — A Directory of Electronic Mail," by Frey and Adams ... Ed.*)

MESSAGE

We are having trouble here at SSC with psi access to anywhere. When we do a
SET HOST/X29 SLACPS (or FNALPS or LBLPS)
we get an error message. ... Can you please repair and/or let me know the status?

RESPONSE

LBL does not provide X.25 service, but ESnet does; SSC needs to get to the ESnet X.25 service through one of the remaining X.25 host sites—FNAL, BNL, MIT, SLAC, or LLNL. (I think that FNAL would be the logical choice). I can look into creating a new DLM circuit between FNAL and SSC. LBLPS is no longer available, but FNALPS (DTE# 11001201001100) and SLACPS (DTE# 11001102001000) are port selectors which are still reachable on ESnet.

MESSAGE

How do I configure UNIX Mail so that it prompts for cc: upon control-d at the end of the message?

It operates this way on UX5 and I would like to make a Sun workstation do the same.

RESPONSE

Edit /usr/lib/Mail.rc and insert **"set askcc"** after the comment line # Set defaults ....

MESSAGE

My current mail file is [MYNAME.MAIL]MAIL.MAI. How do I switch to [MYNAME.THATNAME]MAIL.MAI?

RESPONSE

Please use the command - within the MAIL utility -
SET FILE [MYNAME.THATNAME]MAIL.MAI
to start reading the mail in that file; see HELP SET FILE with the MAIL utility for details.

MESSAGE

I need to get a color screendump from a SPARCstation. I was able to get a printout on LaserWriter using the following command:
screendump -c | psraster -i | lpr -Pcsr.
I did try the same command for qp2 and tp1, but I got nothing. Is there any way I can get a color screendump?

RESPONSE

The following command will get you to the QMS color printer located in Bldg. 50B, Rm. 1215. Basically all the operations on this command flip and scale the image so you can print the whole screen from your Sun on the printer. You must have /usr/local/pbm in your path and be on UX5 or served from UX5; then type

screendump -8 | rasttopnm | pnmscale .55 | pnmrotate 90 | ppmtops | lpr -Pqp2

MESSAGE

My problem is the following. I use a program (paw) and want some graphics output. I use the lpr command to print these graphics. Every graphic is one A4 page but is also one file. ... So for every print job, I get one useful and one junk header page. That trash [wastes] a lot of paper. Is it possible to instruct lpr NOT to generate a header page?

RESPONSE

If your fellow users at that printer do not mind, try using the "-h" flag; for example, if your printer is ap25, try - from CSA -

$lpr -Pap25 -h *filename*.

MESSAGE

Does anyone have any experience of the program MAPLE? It's similar (I believe) to Mathematica [but] originates from [the University] of Waterloo in Canada. It has been compared favorably to Mathematica ...

RESPONSE

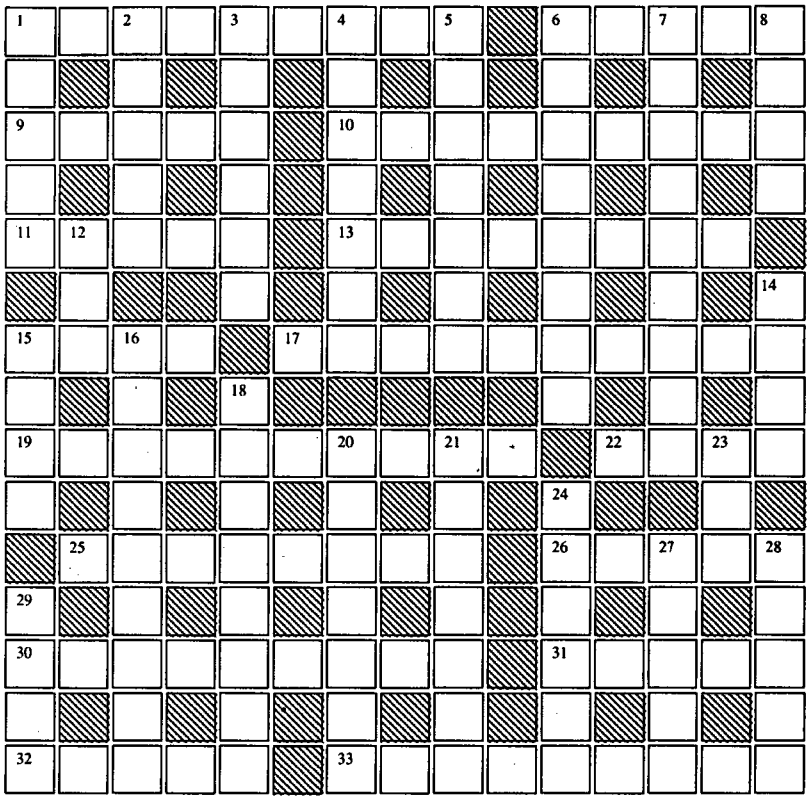
We have Maple installed on csr, a Sun UNIX machine; the software is written in C. Maple runs on UNIX and VMS systems, among others; the software is reputedly very good but not perfect.

If you want wider distribution of your comments or questions, we encourage you to send them to **trouble** *since it is seen by a wide range of people, including Divisional management. To use Trouble, enter the VMS, Software Tools, or UNIX mail system and send mail to the address*

trouble <cr>

We won't, of course, include any user's name in the exchanges.

CRYPTIC CROSSWORD



Cryptic Crossword
by Dave Stevens

Alphabetickle
(after Cox/Rathvon and others)

Clues are listed in alphabetical order of the answer, and there is at least one for each letter of the alphabet. The solver must determine where the answers are to be placed in the diagram. All answers are in the 1977 edition of Merriam Webster's New Collegiate Dictionary.

a. A Lake Mountain nest... (5)
b. ...for a premium classical cowgirl who's after silver. (4)
c. A scrap with a small alien vessel. (5)
d. Topless slip found in church recess. (4)
e. Catchers shift counter-clockwise and checks. (9)
f. Shooting from multiple directions scores fir badly. (5,4)
g. Greek letter-boy returns what is given. (5)
h. Too old to be in safekeeping,... (3)
i. ...the case is damaged in reversion. (7)
j. Adulatory but duller eleventh part of galingale. (10)
k. Carved beam left in cemetary. (9)
l. Hear, hear! A fight's near! (9)
m. Bothersome Irish rant about it, going and coming. (10)
n. Link beau to fashionable... (4)
o. ...driver of cab with Jag front end; he backs up halfway. (4)
p. Work with hands in naked confusion. (5)
q. Ship cargo with Lady Dipper. (5)
r. Intermediate part of Madame's neck. (5)
s. In nest, after raising a rumpus, we... (5)
t. ...ought to scatter tribal letters referring to a revolutionary path. (7)
u. Recommend quiet and send... (6)
v. ...(as check) to charlatan. (5)
w. Bird turns a half-angle. (3)
x. Red has lost his yen for fish. (4)
y. Is strange but true. (6)
z. Cell's origin in pathological mitosis causes lack of feeling. (8)
aa. Populous regiment mutinies in absence of leader. (7)
bb. Speculator tore his T to shreds. (8)
cc. Othello, for instance, needs no extremity from Luxor's rich tides. (9)
dd. Organ's force-state surrounds queen. (7)
ee. The conflict I head requires caution. (8)
ff. Jingoist returns oriental box with broken phone. (9)
gg. Southern neighbor upholds a half-century of woody tissue. (5)
hh. Yes, the soup dish lost its kosher certification early last night. (8)
ii. Plant always returns with a penny (copper). (5)
jj. An old fighter's nothing. (4)

Notes to Solution

a.	31.	a + Erie
b.	14.	Ag + Io
c.	27.	a + ort + a
d.	8.	(l)apse
e.	10.	back + stops
f.	7.	[scores fir]*(anag)*
g.	32.	[mu + tad]*(rev)*
h.	12.	saf(eke)eping
i.	5.	[the case]*(anag)*
j.	17.	flatter + gal(ing)ale (ref. to diagram #11)
k.	33.	grave[ray*(rev)*]d
l.	16.	hear*(homophone)* + a + bout
m.	19.	Ir + r(it)a(it*(rev)*)ve
n.	15D	jo + in
o.	15A	j + he*(rev)* + u(p)
p.	28.	naked*(anag)*
q.	9.	lad(L)e
r.	11.	Mada(me's ne)ck
s.	2.	din*(rev)* + us
t.	4.	0 + tribal*(anag)*
u.	3.	p + refer
v.	31.	qua + ck
w.	23.	[cor(ner)]*(rev)*
x.	29.	rudd(¥)
y.	24.	's + quare
z.	18.	[c + mitosis]*(anag)*
aa.	20.	(r)[egiment]*(anag)*
bb.	13.	[tore his T]*(anag)*
cc.	30.	L(uxor)'s + r(ic)h + t(ide)s
dd.	21.	vis + C(ER)A
ee.	23.	war + I + ness
ff.	1A	[E + box]*(rev)* + phone*(anag)*
gg.	1D	[Mex + L + y(ears)]*(rev)*
hh.	6D	yes + t(U)reen

THE WORKSTATION SCENE

[28.9.1]
HERE'S THE WORKSTATION GROUP

The Workstation Group is a cluster of people here at LBL helping with all kinds of microcomputer, local area network, telecommunications, spreadsheet, database, and word processing questions and problems.

Yes, ICSD's Workstation Group is ready to assist everyone in any of the above areas.

The group was formed in mid-1984, and has been promoting standardized solutions for microcomputer systems while keeping up with new hardware and software that might be useful to Laboratory personnel.

(1) We help you to evaluate the available microcomputers; we offer advice on system configuration.

(2) Each month in the Workstation Scene section of the LBL Computing Newsletter, we offer

—new items and old ones that have been popular
—software reviews and updates
—answers to users' questions, and
—timely tips.

(3) We stock many Microsoft and Claris software products and handle the distribution of their upgrades.

(4) Some WKSG members are also in other intra-ICSD sectors, so we have some familiarity with the VMS and UNIX world on the 6500s and the Sun machines.

(5) We support and distribute terminal emulation and file transfer software (*Kermit, Telnet*) that enable communications between micros and various mainframes.

(6) We offer regular training (short courses) in the Mac Training Room (Bldg. 50B, Rm. 1229) and the IBM Training Room (Bldg. 50B, Rm. 1237). In addition to regular classes, we also recommend our hotline (x6858) and offer **limited** one-on-one assistance. We let you know what-all's available—from free computer-aided training diskettes to information on the lowest cost and most comprehensive classroom training for Laboratory personnel.

(7) We operate a software evaluation library for LBL employees. Included in the library are several mathematical/statistical packages, graphics programs, and some programming languages (often enough, in our humble consideration, the best of their kind). Due to present staffing levels, we do not have the expertise to support them and we cannot assist in code generation/development; in some cases, however, we can provide the names of adept locals who can give some advice.

The Workstation Group Laboratory, home of several Workstation members as well as the *Workstation Evaluation Library* is located in Bldg. 50B, Rm. 2231. The hours are:

Mon	8 AM - NOON
	3 PM - 4:30 PM
Tues - Fri	8 AM - NOON
	1 PM - 4:30 PM

You can also reach us from ICSD's UNIX machines or the VMS cluster by sending mail to:

UNIX or Software Tools	WKSG@lbl.gov
VMS Mail.	lbl::WKSG

We're here to help; please call us at x6858.

Each WKSG member has a specialty, but feel free to call any of us with your problems.

✔ **Nancy Travis** — Nancy handles local area network configuration, installation, administration training and trouble-shooting. She has extensive knowledge in network communications, data conversion, text-formatting systems, spreadsheets, and database management systems. She teaches *Excel SpreadSheet* on the Mac and *Windows* on the PC. (x7690)

✔ **Bruce Burkhart** — The WKSG's chief paper pusher, Bruce handles the purchase and management of just about all WKSG hardware and software acquisitions. He also maintains the Software Evaluation Library, hangs out on HyperCard Corner, and pursues lots of other special projects (x7689).

✔ **Walt Fong** — Walt wears lots of hats. For starters, he's Bruce's backup—on a part-time basis when school is in session and full-time during the summer. (He's a Mechanical Engineering student at UC Berkeley). He answers the Workstation HelpLine a lot of the time, fielding IBM questions and handling *Word, Excel* and *FileMaker* problems too. He helps users with file transfers from PCs to the mainframes and with data

conversions between Mac and the PC. He teaches the PC-DOS class and TAs for several other classes, both IBM and Macintosh. (x6858)

✔ **Carole Casaretto** — Carole is the resource for *FileMaker Pro*; she teaches the class and develops/generates the course materials. If you are setting up a *FileMaker* application and have not taken her course, best give her a call to ensure that you get started out on the right foot. She can also handle your *Word* questions and is the Person to Know if you have equation and bibliography problems. Carole also generates the monthly *FileMaker* version of PhoneBook on the Apple Server (x7693).

✔ **Tom Pope** — The non-techie's techie, Tom handles general Macintosh system and utility questions as well as questions on Microsoft *Word*, and is the resident expert on Macintosh System 7. He also created and compiled the LBL HyperCard phonebook, which he updates monthly, and teaches the Workstation Group's Microsoft *Word* class (x5709).

✔ **Richard LaPierre** — WKSG's erstwhile Fearless Leader. Richard is presently matrixed out from the Engineering Division's Electronic Instrumentation Dept., and continues to orchestrate the activities of group members. He serves as primary contact with users/vendors until the Torch is Passed (x4692).

✔ **Claudia Madison**— One of the Workstation Group's linchpins, Claudia is currently on special assignment. She is, however, available for consulting in EH & S Data Systems matters (x7692).

✔ **Maggie Morley** — edits the LBL Computing Newsletter, interfaces with WKSG in producing its monthly **Workstation Scene** therein (x5529).

✔ **John Flambard** — John has been furnishing graphics expertise on Mac systems. In the Mac Training Room, he has demonstrated, in colorful language and pictures, the virtues of *PowerPoint* and *MacDraw II*. He retires next month.

✔ **Jack Zelver** — offers wholesome advice on graphics and scientific computing, project management, and IBM-PC DOS Windows (x7522).

✔ **William Jaquith** — "Jake" is the LBL electronic Postmaster. He is also the administrator for Macintosh QuickMail and the Workstation Group Mac Server. He assists users with all electronic mail systems on the Internet as well as terminal emulation and file transfers (x4388).

[28.9.2] SOFTWARE REVIEW CONTEST

...by the WKSG staff

Prestige, Publicity, Prizes

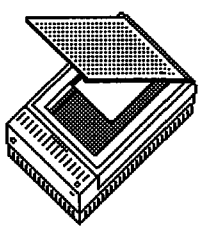
We've fallen way behind! Our stack of unreviewed Mac and DOS software grows! So here's your chance to become a published writer **and** win a prize! If you're interested, call the Workstation Lab at x6858.

Here's what you must do: if you're an LBL employee, drop by the Lab and choose from our stack of new software before September 15. Return your review by October 15 (on a floppy disk—in Microsoft *Word* or *WordPerfect* format). If your review makes the November or December Newsletter, you win a free Microsoft or Claris software package.

[28.9.3] OCR SCANNING

...by Workstation member Walt Fong

Here's good news for our OCR (Optical Character Recognition) customers!



The Microtek gray-scale scanner is now located in the Macintosh Training Room, Bldg. 50B, Rm. 1229 and can be used any time a scheduled class is not in session. OmniPage, an OCR package, has been installed on a Macintosh II, and may be used to scan in documents. Documents may be saved in a variety of formats - *Word*, *WordPerfect*, and *MacWrite* to name a few. Instructions on how to use the software and scanner are posted on the scanner. If you have any questions or problems, give the Workstation folks a call at x6858.

[28.9.4] MATERIAL SAFETY DATA SHEETS SOFTWARE UPDATES

... from WKSG member Nancy Travis

The Material Safety Data Sheet information, available through a new CD ROM server on the lab network, is updated quarterly (data must be recertified every 90 days—a legal requirement; also, CCINFO[1] is constantly

[1] MSDS information is produced by the Canadian Centre for Occupational Health and Safety **INFO**rmation Section.

adding more chemical information and improving the user interface).

Users who access the data on the LBL network via the CSA3 gateway may not notice when the data sheets and software are updated. PC users, however, who access the data directly over the bridged ethernet will notice immediately when the new CDs are installed because the old software will no longer work. If you try to access the new CD roms with the old software, you will get an error saying that the wrong CDs are in the drive.

You can get a copy of the update software by bringing a disk to the Workstation Lab, or you can install it directly from the network as follows:

Login as normal (or as guest:50) to the 3+ network and link a logical drive to the Workstation server. (The following example assumes that the logical link is D:).

C:> 3f link D: \\wksg1:icsd\ccinfo <return>
C:> D: <return>
D:> CCSETUP OPTION 1 D: C: C: <return>

(Note: that last command MUST be ALL CAPS).
The above example assumes the software is installed on C:, (the hard drive), and the logical drive is D:. To install onto a floppy drive—**a:** for example—type

D:> CCSETUP OPTION 1 D: A: A: <return>

[28.9.5] VISUAL BASIC

... A software review
from Administration's Russ Montello

✔ *Visual Basic*, from Microsoft Corp. LBL cost: $79.60

If you have been interested in learning to program in an Object Oriented Programming ("OOP") Language, using a PC and Microsoft *Windows*, there is now a relatively painless approach. Microsoft's new *Visual Basic*, ("VB"), provides many of the features of a complete programmer's tool kit without most of the complexity of Microsoft's Software Developer Kit—and you don't have to use C or C++ ! VB runs as a *Windows* application and allows you to develop *Windows* programs using the supplied objects and short segments of Basic code. VB interprets your code as you are developing the program but also supplies a compiler to speed up the program's execution and allow for easy distribution. The compiled program can then be run as a *Windows* application on other computers. You must distribute the *Visual Basic* DDL library, which is legal, with your program.

So what is it like to program in *Visual Basic*? You start by designing your form and adding predefined objects. An object is added by selecting it, dropping it on the form, and then sizing it appropriately. All of these operations work as if you are performing these tasks in a typical draw program. Many of the objects that you are familiar with in *Windows* 3.0—including scroll bars, list boxes, radio boxes, push buttons, and text boxes—are available. Next you provide each object with the desired attributes. The attributes are chosen from a drop-down list box. The name of the object, its label, border style, colors, and fonts are examples of attributes. The object's appearance is essentially controlled by attributes.

" ... with Visual Basic, you program Windows applications ... It's a terrific programming environment, not just a programming language."

...Jean-Louis Gassée
MacWeek 08.20.91

The final step is to control how the object reacts to events: for example, what should the program do when a particular object is selected and you press a particular key, mouse button, or other relevant event? The Basic code for each object is written by selecting the object which opens a new window. The window has a drop-down list box which allows you to pick a particular event from a list of all events related to a particular object: e.g., what should be done if a push button is selected and clicked with the mouse. Since each object-event pair is a separate subroutine, the code is well structured, short, and easy to write and later read.

You can write very sophisticated programs with menus, dialog boxes, and multiple forms. Multiple windows within VB allow you to design the forms, code actions based on events, debug and trap errors, and execute the program. The program is so easy to use that it serves as an excellent prototyping tool. While it is not as powerful as Microsoft's C and C++ environments nor as fast, it is an excellent means of learning about some of the benefits of programming in an OOP language and to develop some useful utilities for your own use.

Visual Basic does have some shortcomings—you cannot design your own objects, short of programming in C with the Software Developers' Kit, and object inheritance is not supported. These deficiencies distract professional programmers from using the environment as a full OOP platform (Note: purists would not classify VB as OOP-compliant because of these deficiencies). On the other hand, several vendors—including Microsoft—are releasing construction kits which extend the objects and facilities available to VB programmers.

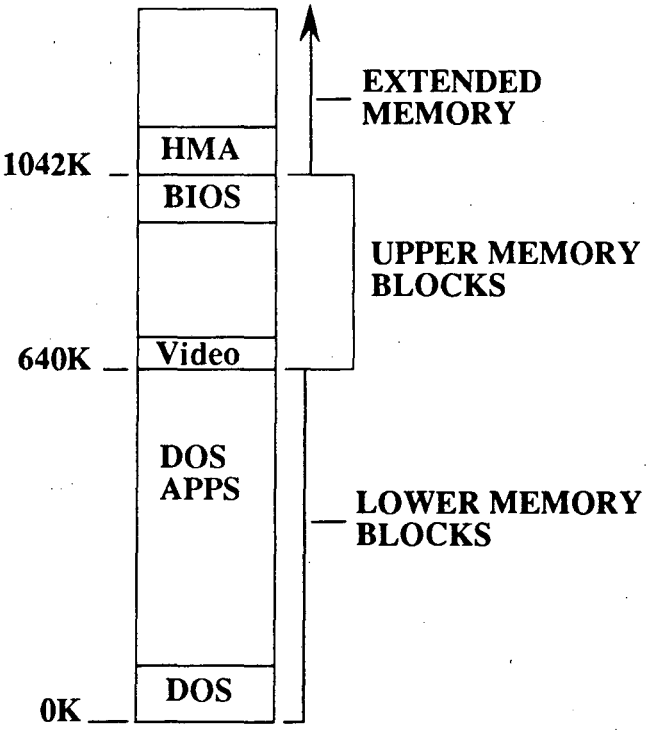
Visual Basic comes with three sample programs. The included tutorials and sample programs allow you to begin writing useful programs very quickly. (In my own case, I have modified the clock program to add menus, memory registers, an optional paper tape, and support of both keyboard entry and mouse operation). VB is available at the WKSG Lab (Bldg. 50B, Rm. 2231, x6858).

[28.9.6] MEMORY MANAGEMENT IN DOS 5.0

... Bruce D. Boss

This article is reprinted from the August 1991 issue of Sacra Blue, the monthly newsletter of the Sacramento PC Users Group

If you are a PC user who loves to improve the DOS environment with memory managers, TSRs and device drivers, you will love DOS 5.0. Unfortunately, the best memory management features of DOS 5.0 are available only on i286 and later CPUs. Let's begin this discussion with a review of memory structure in the DOS world.

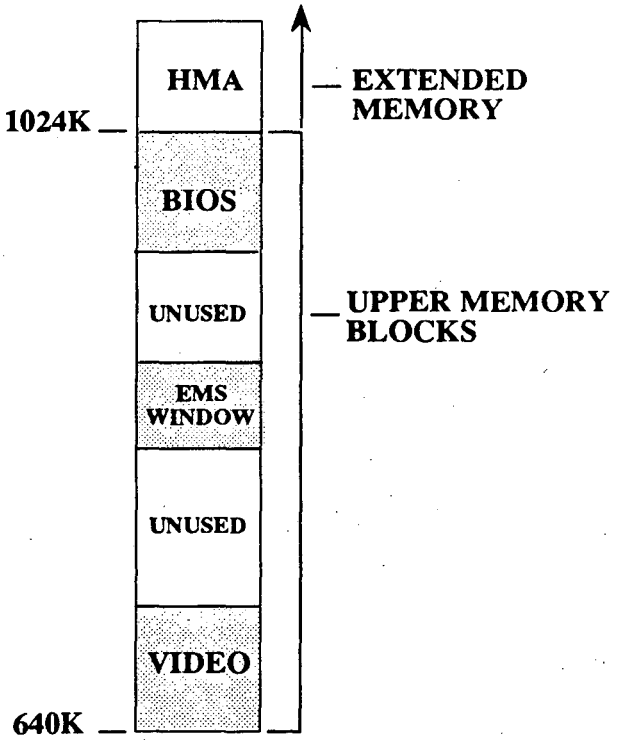


Lower Memory Blocks

The Lower Memory Blocks contain the conventional memory area from OK to 640K that is used by DOS and by normal DOS applications. In all versions of DOS, an area at the bottom of conventional memory is set aside for DOS itself. The rest of the 640K is available for DOS applications, except small areas set aside for the Environment (bookkeeping area), buffers, and device drivers. You need special memory software to run an application outside this area. For example, Lotus 1-2-3 3.1, Desqview (from Quarterdeck), and Windows 3.0 are programs that conform to the DPMI (DOS Protected Mode Interface) to run applications in memory beyond 640K. Moreover, there is no 640K barrier for the OS/2 or Unix operating systems, since the barrier only exists because of DOS's limitations.

Upper Memory Blocks

Between 640K and 1Meg (really 1024K), there is a 360K area called the Upper Memory Blocks (UMBs), where addresses are set aside for use by your video card's memory (the first 128K above 640K, more or less) and by the ROM BIOS (usually the uppermost 64K in the 360K area). Let me remind new users that the BIOS (software in ROM) controls your computer before any operating system is loaded (Booted), and remains available to act as an interface between the hardware and the operating system. When you purchase a computer with 1MByte of RAM, you get 640K of conventional memory, and 360K of Extended memory loaded above 1024K. The UMB area isn't normally filled with your extra 360K of memory, but is simply a 360K space of addresses used by the BIOS and by the video board. The unused addresses usually don't have any memory assigned at all.



When IBM designed the original PC and Microsoft modified DOS for the new platform, the UMBs were supposed to be set aside for system hardware use. Innovative software companies soon recognized that there were unused memory addresses in the UMBs. This gave birth to the Expanded Memory specification (EMS), now in version LIM 4.0. The unassigned addresses in these Upper Memory Blocks were exploited by defining

an EMS Window in the UMBs where blocks of memory are moved in and out as needed just as if they were being moved by a revolving door. The memory being swapped in and out of the EMS Window (by readdressing or remapping) can be stolen from the normal Extended Memory on i386 and later machines or may be special RAM on an Expanded Memory add-in board. Software such as Lotus 1-2-3 2.0 was designed to access this EMS Window because DOS itself has access to the UMBs. Lotus uses the EMS Window to load spreadsheets that are too large for the conventional 640K area.

On i386 and later machines, the process of remapping Extended Memory into the UMBs is controlled by a device driver such as EMM386.SYS (in DOS 5.0) or by the more versatile QEMM386.SYS (from Quarterdeck) and 386MAX (from Qualitas). These memory managers can assign (remap) Extended Memory to fill all the unused areas in the UMBs while also setting up a special area for the EMS Window. DOS 5.0's access to the UMBs is facilitated by adding the following statement to the CONFIG.SYS file:

DOS=UMB

Follow this with the statement:

DEVICE=EMM386.SYS RAM

This statement fills the UMBs with RAM and opens an EMS Window. The corresponding commands for QEMM386.5YS and 386MAX have been discussed in previous columns along with the use of respective "Optimizing" utilities to load automatically (Loadhigh) device drivers, TSRs, and buffers into the areas in the UMB newly filled with memory. DOS 5.0 is able to "Loadhigh" into these UMB areas, but the process is not automated, so some experimenting is required.

High Memory Area

If you have followed the above discussion, we can now introduce the HMA (High Memory Area)—that is, the 64K (almost) just above 1024K. It is the first block of Extended Memory, but it is very special because DOS can access this block. The memory structure in IBM compatible PCs allows DOS to see into the HMA because the HMA block slightly overlaps into DOS's 1024K memory space. The DOS 5.0 device driver that controls the HMA is called HIMEM.SYS, and this same driver controls access to all the Extended Memory space through a set of agreed-upon rules called the XMS (Extended Memory Specification). The user loads this device driver at the top of the CONFIG.SYS file with the statement:

DEVICE _ HIMEM.SYS

Earlier, I said that the third-party memory managers QEMM386.SYS and 386MAX were very versatile. By this I mean that they supply simultaneous, interchangeable support for (Are you ready for this?) EMS, XMS, HMA, DPMI (and the older VCPI), and Loadhigh. The Loadhigh process is very important because it moves the TSRs, device drivers, and buffers into the UMBs, thus freeing up conventional memory. This Loadhigh "trick" is essential for many users, but DOS 5.0 adds a new "trick." Now, uniquely with the new DOS 5.0, even more conventional memory can be made available for applications when you add the following DOS statement to your CONFIG.SYS on i286 and later systems:

DOS=HIGH

This statement causes DOS to load most of itself into the HMA, leaving behind a kernel of only about 13K at the bottom of the conventional memory area. This leaves about 66K more conventional memory for applications than is available in DOS 4.01. This is a big advantage if you need more memory for DOS and Windows applications. For the maximum improvement, you must also learn to use the new Loadhigh features of DOS 5.0 or purchase either QEMM386 or 386MAX to automate the process.

[28.9.7] NEW TELNET VERSIONS

. . . from WKSG member Nancy Travis

PC Version 2.3.01

After a long life as a beta release, Telnet 2.3.01 is now available. This version represents a long period of bug fixes. A copy of the documentation (about 200 pages!) is available in the Workstation Group Lab for duplication.

You can get a copy of Telnet v2.3.01 for the PC several ways:

- from the Internet via TCP/IP: NCSA's Zaphod **(IP # 141.142.20.50)**
- from 3Com local area networks, link to: **\\wksg1:icsd\telnet**
- or bring a floppy disk to the Workstation Group.

Mac Version 2.4.01

The latest version of Telnet for the Macintosh is 2.4.01 (MacTCP is now at Version 1.0.2). For System 7 users, Telnet won't work unless MacTCP is in the system folder and not in the control panels folder. The trick here is to make an alias for MacTCP, place it in the control panels folder, and Telnet will work smoothly.

On some machines under System 7.0, Telnet does not seem to be able to find the **config.tel** file if it is in the System folder. Moving **config.tel** to the same folder as the Telnet application solves that problem.

The following is extracted from the 2.4.01 release notes.

"In this release, keyboard mapping problems have been fixed, so Telnet works fine with Hypercard. Also fixed is the font problem, so that fonts such as Monaco 10 are displayed properly.

- Domain name lookup is now done through the MacTCP resolver, so that Telnet is now able to run perfectly with any number of other TCP products
- Line-mode is supported on supercomputer systems that allow this added functionality
- Tektronix 4105 emulation is supported, which allows color TEK images to be displayed
- Telnet automatically numbers windows upon opening to distinguish multiple connections to the same machine
- Windows can be automatically staggered enough to show the menu bar when a session is opened
- The Open-connection dialog box allows copy/pasting when choosing a session to open

This release also contains many bug fixes, including:

- Telnet no longer crashes after ftp-ing more than 64 files
- The cursor doesn't get randomly trashed after some ftp sessions
* Telnet works correctly on the Mac Portable
- The numeric keypad is fixed to support vt100 emulation
- The menus are now highlighted correctly
- Memory management has been completely overhauled, which prevents Telnet from crashing randomly like in previous versions
- Negotiations have also been completely overhauled. This fixes numerous bugs on VMS systems, Convex, Cray, and sun systems."

You can get a copy of Telnet v2.4.01 for the Macintosh from the Workstation server (it's in the **Communications** folder) or bring a floppy disk to the WKSG lab.

If there are any bugs/comments that need to be reported, you can mail Telnet comments to:

mactelnet@ncsa.uiuc.edu

[28.9.8]

ACRONYMS MADE MANIFEST

. . . WKSG member Maggie Morley finds a helpful lexicon

So you say you've got this "traditional background" and you're a toiler in the Fields of Technology. So you say you're drowning in this broth of computer-related terms and acronyms and you're expected to know what things like AZERTY, LU-LU, and XENIX mean. So you say you just can't keep up; new terms come along too fast.

I recommend the "Dictionary of Computing" , a guide to more than 12,000 terms used in information processing, telecommunications and office systems—including personal computers, workstations, and local area networks. (It also includes definitions developed by International Organization for Standardization and the Computer and Business Equipment Manufacturers Association.) While it is an IBM product, it really does offer industry-wide coverage. While new terminology will continue to come along at a pace, this reference is revised and updated regularly. Of course, the ultimate lexicon—an on-line resource that is constantly being updated—is not yet readily available to us. Until it is, this reference—cost: $10.75—offers some relief.

(For information, write to: IBM Corp., Customer & Service Information, Dept. E56, Bldg. 901-2, Box 390, Poughkeepsie, NY 12602).

[28.9.9]

MACDRAW PRO

A Parting Shot[2] from WKSG colleague John Flambard

Claris finally did it right! (or is that 'write'?). After years of struggling with *MacDraw*, through all those versions, Claris has put together a really useful application. With *MacDraw Pro*, some long-needed refinements have been added.

PALETTES

The big news with this upgrade is the three new palettes: pattern, gradient, and color. These palettes are tear-offs and can be placed anywhere on your screen. They are fully editable.

Now to the new palettes.

• **Pattern palette:** This retains most of the patterns from *MacDraw II* but presents them in a slightly different way. The style bar is still there but it contains only a few standard dot and line patterns. If you want to use some patterns that are on the Pattern palette, you only have to drag the pattern into the style bar and it's there. Put the palette away and use the style bar for all patterns. Very convenient.

• **Gradient palette:** This is new. Gradient Palettes are editable and color can be added to a copy of them for outstanding color effects. You don't want to use them all the time as they slow down the redraw, but adding them to a nearly finished drawing can enhance the drawing greatly.

• **Color palette:** You have a choice of 4 Pantone and 16 other palettes for an unlimited supply of colors. Again, you can tear these palettes off and drag them to anywhere on your screen. Pick the most used colors and drag them into the style bar where they are available to you for that drawing. If you want to retain those colors, save them and use them for all your drawings. I found the Claris colors, Presentation colors, and *FileMaker Pro* colors the most pleasing.

SCALING:

Claris has finally added a scaling feature. You can scale down to 0.01% of original size and scale up to Who

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[2] Graphics Guru Flambard is retiring next month. Aloha, John!

Knows How many hundreds of times (I tried 10,000% without difficulty).

TOOLS
Two new tools have been added to the tool menu:

• **Bezigon tool:** This tool draws Bezier curves. Click your anchor points and drag (like *Illustrator, Freehand* and *Canvas*). Very flexible. You can modify the curves as you draw with **Reshape**. Closed bezigons can be filled with textures and color.

• **Eyedropper tool:** With this tool, you can pick up color or texture from an existing object and drop it into a new object. It matches the texture/color, relieving you of the necessity of having to scroll through palettes to find the correct ones. This is especially helpful when working with subtle color changes.

TEXT
At last Claris recognizes the need for flexibility in writing text.
✔ A text ruler has been added.
✔ You can select a word, line or paragraph just by multiple clicking.
✔ Selecting type size is the same but now you can select the units to display type in by using the **Paragraph** command.
✔ Lines, mm, cm, inches or points are all available for vertical spacing. Set your type with 2 pt spacing, as other applications allow you to do. Adjustments to spacing can be done through clicking in **tighten** or **loosen** boxes in the text ruler.

SUPERSCRIPTS AND **SUBSCRIPTS!**
Yeah, let's hear it for Claris. Supers and subs and small caps are there for selecting. The only thing Claris forgot is the sizing of the supers and subs. You still have to do that manually.
Text still rotates, but to edit rotated text you just click on the words, rotating it back to horizontal, make the corrections, and click off. The text rotates back to its position.

PRESENTATION LAYOUTS
And finally, a real grabber. You can do Presentation layouts in *MacDraw Pro*! It provides a **Master** sheet and a simple click on the layer arrows advances you to the next slide. Change the Master at any time or create a new one. Print handouts or send to color printers for viewgraphs or 35 mm slides. This is where the gradients come in handy. At long last we have an inexpensive competitor to MS *PowerPoint*. I feel *MacDraw Pro* is better than *PowerPoint* and almost as good as Aldus *Persuasion*.

HARDWARE REQUIREMENTS
You can use anything from a Plus to the Mac II family, with 1 MByte RAM (2 MBytes recommended) for black and white. If you intend to use color, you will need an SE30 or Mac II family computer with 2 MBytes RAM (4 MBytes recommended) and a color monitor and video card.

This is a very powerful drawing program that's easy to use and not expensive ($90). It's certainly a good choice for a one-application office. Try it!

[28.9.10] VIDEOPAINT FOR THE MAC

. . . from our high school Summer Student Ken LaBar

✔ ***VideoPaint*** by Olduvai, $279
VideoPaint is a great program and it's good value for the features it provides. It lets you draw high-quality graphics with the standard assortment of tools and an outstanding color palette. There are some very well-thought-out special effects that are easy to use.

FEATURES

Special tools
• **Frame**: selects part of document to be shown in the widow
• **PixelBrush**: makes any selection a brush
• **PolyBrush**: makes a polygon-shaped brush
• **Waterdrop**: smooths where applied even one pixel at a time

3D Tools
• **Rectangle**: gives a selection a different perspective
• **Perspective Plane**: makes a "floor" or "ceiling" with the same concept as the rectangle
• **Circle**: mapping is done by polar coordinates
• **Cylinder**: like putting a label on a bottle
• **Cone**: similar to cylinder but image progressively gets smaller until it reaches a point at the top of the cone
• **Sphere**: maps by x=latitude and y=longitude

Note: all the 3D tools can be be edited by these menus
...**texture**: defines texture of the object with the selection in the document, the pixelbrush, the selected color, or the outline
...**aspect**: defines appearance of the mapped image in either standard, metal, plastic, or overly bright
...**frequency**: determines how many times the selected items are repeated on the object

Distortion
- there are eighteen different dynamic distortion features for distorting images
- colors are instantly distorted on the fly from the palette
- a series of colors can be changed to another color or to another series of colors through a simple command
- there are thirteen filters that can be applied
- filters can also be built from within the program

Masking
- masks by color, multiple colors, or selection
- mask can be inverted
- mask can be turned on and off as needed

Shading
- shading can be done in any combination of colors to create a shadow or a rainbow style effect
- shading can either be directional, concentric circles, directional step, or concentric echo
- shade in two styles: dithered or separated
- three different functions control how the colors alternate
- one drawback is that shading editor is not a floating window and it is a bother to bring it up

Stencil and Incrust
- a stencil is a work area in back of the document which can be used to create images to be pasted or to "test edit" the document
- all capabilities available to the document are available to the stencil
- incrusting is when the contents of the stencil are transferred to the document. This can be done either with the paint bucket, any of the brushes, or any of the geometric shapes
- incrusting can be limited by any of the selection tools, by using a mask, or by selecting the specific colors of the document that you want incrusted
- you can import *MacPaint*, *PIC*, *TIFF*, and *LZWRead* files as stencils.

Requirements
- a Macintosh II series computer
- an 8-bit video card
- a color monitor

I think that Olduvai should make a few subtle changes—for instance, a floating shade window and the ability to have more than one document open at a time.

With its command of colors, VP is a competitive graphics program. It is well thought out and offers easy access to controls; it's also very easy to learn.

[28.9.11] "SYSTEM 7 REVEALED"

. . . WKSG member Tom Pope finds some Good Reading

"System 7 Revealed" is the newest in the Macintosh Inside Out series by Addison-Wesley, covering System 7 from a programmer's perspective and giving a much-needed technical view of the new operating system. The other books on System 7 which have come out in recent weeks have focused on explaining the system to the novice user and have not delved into the nuts and bolts at all. Author Anthony Meadow, president of the MacApp Developers Association and an active Mac programmer, gives us the first of what is sure to be an avalanche of System 7 programming reference tools.

This book is certainly a lot easier to digest than Inside Macintosh. Much of it will be over the head of the average user, (in fact most of it is over mine), but for those out there who are anxious to look at the system from a less sheltered point of view, this is the book. $22.95

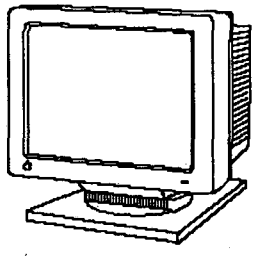
[28.9.12] MAC COLOR MONITORS

...by Workstation member Bruce Burkhart

LOW COST 8-BIT, 16-INCH DISPLAY SYSTEMS

Setting some guidelines

Research into the world of large screen color monitor systems could easily fill a bookshelf, provide enough material for a 2-semester course at UC, or fuel a Ph.D. degree at Stanford. So, for obvious reasons this article *will not* include lots of engineering data, exhaustive tests & comparisons, or a staff review of objective and subjective tests. Our goal here is to focus on a *micro*-selection of color systems for the Macintosh; each system with matched 16-inch monitors and 8-bit boards from the same company.



Affordability
If you have a bit of year-end money and you're considering an upgrade from a 13-inch to a luxurious 16-inch state-of-the-art color monitor, you'll be happy to know that it may be more affordable than you think. With the monitor market moving quickly to 19-inch & 21-inch 24-bit systems, 16-inch monitor 8-bit systems are now more reasonably priced. The quantum jump to 19-inch or 21-inch color systems involves more than just price; there are other important considerations. (But we're getting ahead of ourselves; let's cover these larger color systems next time).

The 16-inch Monitor
By every measurement to date, the 16-inch Sony Trinitron monitor has consistently been the monitor of choice. It's a bright razor-sharp monitor, with pure vivid colors, and good contrast. Other manufacturers of 16-inch monitors produce high-quality products, but the Sony has a definite edge in overall quality. This quality comes at a price; the Sony costs somewhat more than other brands. The 16-inch monitor is slightly larger than a horizontal 8 ½ × 11-inch page. Better yet, it provides somewhere between 50 to 70 per cent greater workspace than does a 12- or 13-inch monitor.

First Choice
Most critics agree that Sony's **E-Machines ColorPage T16** gets the highest marks in both objective and subjective tests; certainly it's my first choice. Driven by an 8-bit Futura SX card, this 16-inch Sony Trinitron monitor's resolution is 832 × 624, at 72 dpi (LBL, $2100). We have a T16 system in the Workstation Lab; stop by and check it out.

Other choices, ranked somewhat lower and priced somewhat higher:
- MegaGraphics MegaScreen 2008/16 Model 2024 16 (about $2700)
- The highly-rated SuperMac Trinitron system w/ Spectrum 8 card (about $2600)
- PCPC II 16-inch model (in the $2400 range).

The Color Pivot from Radius doesn't fit perfectly into the 16-inch category. However, it is a 15-inch portrait monitor (price is about $1900). When used with a Pivot-II interface, it becomes an 8-bit, 82 dpi color monitor.

Although, my top choice is the E-Machines ColorPage T16 color system, all of the other color systems are very high-quality systems and any other choice would be an equally good one.

What's 8-bit color?
With an 8-bit color card, monitors can work with a palette of 256 colors or gray shades. An Apple 13-inch color monitor with a basic Apple 4•8 (8-bit) video card produces 256 colors. An upgrade to the 8•24 card produces 24-bit color palette (16+ million colors). Most all monitors can display these millions of colors; what matters is the card you use. And this card is the significant element in the price of large color display systems.

Will 8-bit color do?
Or do you need 24-bit color? If you spend more than half your time with word processing, spreadsheets, or other normal office applications, 8-bit color will do for now. Software applications like *Word*, *WordPerfect* and *Excel* are just getting into color. And with most of the user base in 8-bit color mode, 8-bit color makes sense, particularly price-wise. If you're into high-level graphic arts or do multimedia work most of the time, or if you need high-quality color presentations on a regular basis, you should start with—or upgrade to—24-bit color. It will be expensive.

The Pixel and Resolution
Displays are measured in dpi (dots, or pixels, per inch). A monitor with a resolution of 72 dpi is said to be ideal for text editing and spreadsheet work; the characters and numbers are easy to see. The dpi of a monitor is calculated by dividing the number of pixels (measured horizontally) by the horizontal size of the active display area. For example, the T16 displays 832 pixels in 11 ¾ inches to get 71.7 dpi (or 72 dpi). A popular monitor choice amongst word processors is the Sigma LaserView, with 60 dpi, making the characters slightly larger.

Now for some possible negatives. It seems the monitor industry likes 72 dpi, but wants denser dpi's for various other reasons (better resolution for photographs, displaying a larger page area, 2-pages, etc.). Remember (as a rule): dpi higher than 72 means smaller, reduced text; dpi lower than 72 means larger text. Again, if more than half of your daily tasks involve text-editing, I *don't* recommend a dpi level much over 72 dpi; that goes for mono monitors too. The Apple 21-inch mono monitor (and others) with 77 dpi levels or higher *are not* ideal for word processing (but great for big spreadsheets and page layouts). It's reported the new Apple 21-inch color monitor has 79 dpi. The 21-inch monitors hold 2 full pages of text; however, the text has a high pixel density. This high dpi and a larger dot pitch size causes a perceptible loss of quality in text representation on 21-inch screens.

Acceleration
Do I have to worry about slowing down my Mac going to a 8-bit, 16-inch color monitor? Probably not. Macs with 68030 processors can deal nicely with 8-bit color. Slow-downs in screen refresh or redraw times are hardly noticeable—or at least bearable—with most 8-bit color graphics applications. Video cards with built-in acceleration speed up the screen redraw, i.e., accelerators move big chunks of video data very quickly; this is critical if you deal with 24-bit color images (they are much much bigger!). Some color system manufacturers have a separate card for acceleration.

Material for this article was referenced from "Color Monitors Put to the Test", MacWorld, July 90; "Color Gear", Buyers Guide, MacUser, May 91; assorted datasheets from various vendors, manufacturer's representatives, and product brochures.

[28.9.13] HYPERCARD CORNER

. . . by HyperFan Bruce Burkhart

System 7 and HyperCard 2.1
This version of HyperCard from Claris is a 7.0-smart upgrade with many new features that are System 7 specific. Fortunately, most of the new features in HyperCard 2.1 are available under System 6.0.5 and 6.0.7, as well as System 7. A note of caution however, if you try to use any of the System 7-specific features under System 6.0.5 or 6.0.7: HyperCard 2.1 will produce an appropriate error dialog box. But not to worry: chances are you won't be working with System-7 alias filenames or AppleEvents in HyperCard very soon.

FEATURES FOR EVERYONE
Before we run out to get this new upgrade, let's take a quick look at some of the new features for System 6.0.5, 6.0.7 and System 7 users. (And my apologies for the terse outline that follows: Claris has not released documentation on Version 2.1 at this Newsletter deadline date).

- **Power Keys:** Some new ones that will let you choose fonts while using the **Paint** text tool. Nothing to knock your socks off here.
- **Non-comma delimited lists:** Normally, when you define items in a list they must be separated by a comma; not any more. Just set the new command **itemDelimiter** to space or null. Nothing exciting here either.
- **Enhancements to the read and write commands:** These commands are used to manipulate external data files, and now can read more than 16K of data at a time. The **write** command will also let you append data to an existing data file. A helpful improvement.
- **Enhancement to copy and paste:** Did you ever copy some text into a field and wince when the text pasted in didn't have the same format as the other text in the field. Wince no more; in Version 2.1, just press (shift) as you paste text into a field, that text will assume that field's default formatting. Very useful.
- **Others:** The remaining features for all users include:
  - ✔ better window handling
  - ✔ an improved **dial** command
  - ✔ a Message Watcher addition
  - ✔ an **owner** property
  - ✔ more debugging tools.

NEW FEATURES FOR SYSTEM 7
Previously mentioned were **alias filenames** and **AppleEvents.**

- ✔ An **alias** is a filename that may appear in any folder but actually refers to a single copy of a specific file. Alias filenames are a bit confusing at first, but the concept becomes clear when you begin using them in System 7.
- ✔ **AppleEvents** is a inter-process communication feature in System 7 that allows System-7-friendly applications to control each others basic system commands, properties and messages.

Alias filenames: Version 2.1 has enhanced the **go, open, read,** and **picture** commands so you can use them to work with stacks, data files, and graphics that have alias filenames.

The AppleEvent: In HyperCard 2.1 there is a new message called **AppleEvent.** It provides System 7-friendly applications like HyperCard with the ability to trade information and commands. This type of exchange is done with updated version of the **send** command and a new command called **request.** At this Newsletter submission deadline date, there is no documentation available from Claris on any of the new features in Version 2.1.

Of course you have to identify System 7-friendly applications before you can talk to them; you'll find them with the command **answer program.** This command produces a dialog box that shows the names of all System 7-friendly applications running on your Mac, as well as

other Macs on your network.

AN UPGRADE TO HYPERCARD 2.1

Those of you who have purchased a HyperCard 2.0 Upgrade Kit or Developer's Kit, can get a free disk upgrade to Version 2.1. If you still have an old version (1.2.x or earlier) get either of the upgrade kits, and the disk upgrade to Version 2.1.

- **HyperCard 2.0 Upgrade Kit:** 6 floppy disks, 2 manuals, $49.
- **HyperCard 2.0 Developer's Kit:** 6 floppy disks, 4 manuals and a guide, $69.

Either Claris upgrade path will get you started with HyperCard 2.0. Remember, old 1.2.x version stacks must be upgraded to run under Version 2.0. In addition, Apple System Software Version 6.0.5 (or higher) must be used with HyperCard 2.0. **And** your system must have 2 MBytes of RAM memory. **And** you must have an internal or external Hard Disk.

HYPERCARD 2.2 IS JUST AROUND THE CORNER

Few details are known as yet.

HYPERCARD 2.0 VIDEO TRAINING!

In addition to a full series of audio training tapes for HyperCard 2.0, the WKSG Evaluation Library now has a set of HyperCard 2.0 Video Training tapes. The series includes an Introduction tape, and two Scripting tapes. Although you really can't work along with the instructor in the tape, the concepts come across very well. Short viewing periods are necessary; during those breaks, try the lessons just viewed.

To learn taped material by a computer effectively, you need a portable VCR player/monitor unit. One such device is available (rental fee is $10/day) from the LBL Photo Lab (call x5731).

The HyperCard 2.1 material in this article has referenced an article published in Inside HyperCard, a monthly Newsletter of The Cobb Group. The MacAcademy Video Training Series in the WKSG Evaluation Library is produced by Florida Marketing International, Incorporated.

Next month: *New HyperCard products at '91 MacExpo/ Boston.*

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CENTRAL ELECTRONIC MAIL FACILITY

First Initial-Middle Initial-Last Name is the standard recipient format in lab-wide mailing address

Examples: VMS.....lbl::JASmith
UNIX.....JASmith@lbl.gov
Software Tools.....JASmith@lbl.gov

NETWORK CONTACT INFORMATION			
LBLnet New Installations & Trouble Calls			
Ted Sopher (TGSopher)	4559, 5354	50B -	2266
DECnet Administration			
William Jaquith (WDJaquith)	6966	50F -	146
IBM PC & Mac Network Administration			
William Jaquith (WDJaquith)	4388	50B -	2231C
Nancy Travis (NJTravis)	7690	50B -	2231B
Distributed Printing/Kinetics FastPath administration and requests			
Bob Rendler (RERendler)	5629	50F -	129
AppleTalk & Kinetics FastPath Support	5354	50F -	2215

LBLnet troubles	*trouble@lbl.gov*
LBLnet comments or non-critical trouble reports	*lblnet@lbl.gov*
Internet administration	*ip-request@lbl.gov*
LBL Postmaster for Lab-wide mail	*postmaster@lbl.gov*
Network Advisory Group (NAG)	*nag@csam.lbl.gov*

Internet Names:	CSA1	128.3.254.196
	CSA2	128.3.254.197
	CSA3	128.3.254.198

ICS

ICS Access Names

[VAX 65xx's (Generic)	CSA]
VAX 6510 (VMS)	CSA1
VAX 6510 (VMS)	CSA2
VAX 6510 (VMS	CSA3
SUN-3/280 (UNIX 1)	UX1
SUN-3/180 (UNIX 3)	UX3
SUN-4/490 (UNIX 5)	UX5
SUN-3/180 (ISD)	ISD

DIAL-UP ACCESS NUMBERS FOR ICS

Incoming Baud Rate	Connect Baud Rate	Number
3/12/2400 BPS	3/12/2400 BPS	486-7930
3/12/2400 BPS	9600 BPS	486-7900
9600 BPS	9600 BPS	486-7996

LOCAL TYMNET ACCESS NUMBERS FOR ICS

	1200 BPS	2400 BPS
Oakland	430-2900	633-1896
Walnut Creek/Concord	935-0370	935-1507
San Francisco	974-1300	543-0691
Santa Clara	408-432-3430	932-8618
Palo Alto	415-366-1092	361-8701
San Jose	408-432-3430	432-8618
Fremont	490-7366	490-7366
Davis	916-758-3551	
Burlingame	415-588-3043	
Vallejo	707-644-1192	
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