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off line

niversity of Illinois at Urbana-Champaign

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Computing Services Office

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*CSOB is the CSO Office Building, located at 101 South Gregory, Urbana.

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Note: Certain CSO Sites are on a separate channel of LocalNet than the rest of the campus. These are designated below as **A Sites** and include the following CSO Sites: ME, EE, COMM, LH, and AGRIC. All other LocalNet access areas are designated as **B Sites**.

VMD	CALL 4400	(full-screen mode - A Sites)
	CALL 4500	(full-screen mode - B Sites)
VME	CALL 4600	(A Sites)
	CALL 4700	(B Sites)
uxa (Pyramid 90x)	CALL 66DD	(A Sites)
	CALL 66AA	(B Sites)
uxe (Pyramid 90x)	CALL 12FA	(A Sites)
	CALL 12EE	(B Sites)
uxf (Sequent)	CALL 66CC	(A Sites)
	CALL 66BB	(B Sites)
uxg (Gould)	CALL 1000	(B Sites only)
uxh (Convex)	CALL 1850	(A Sites)
	CALL 1800	(B Sites
LCS (Library)	CALL 6400	

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Articles, suggestions, comments and/or subscription requests may be sent to: Lynn Bilger, Off-Line Editor, 150 Digital Computer Lab, University of Illinois, 1304 W. Springfield, Urbana, IL 61801 (telephone: (217) 333-6236; email: bilger@uxe.cso.uiuc.edu).

SURVEY OF INTEREST IN IMSL SUBROUTINE LIBRARY

In the last issue we asked those of you interested in obtaining a site-license for the IMSL Subroutine Library for your PC or workstation to please fill out a survey form and return to us. Application for a site license depends on the amount of interest in this product. We are including a copy of the IMSL survey form at the end of this issue for those of you who may have misplaced or missed the previous form. If you are interested in this product, please fill out the form and return it to us as soon as possible.

S STATISTICAL PACKAGE ON UNIX SYSTEMS

Have you ever wondered what statistical package is available on machines running the UNIX operating system? At the University of Illinois, we have S – An Interactive Environment for Data Analysis and Graphics. S is installed on both uxe (the Pyramid) and uxh (the Convex).

S provides the user with interactive computation, graphical displays on a wide variety of graphics devices, and data management. Large jobs can be run in batch mode. A MACRO facility enables users to tailor procedures to their individual needs and tastes. The excitement does not end here, however. An outstanding feature of S is that it permits users to write their own statistical routines for analytic procedures not currently available in S. Users can write interface routines that call subroutines in any of the existing Fortran libraries (e.g. IMSL) or even subroutines written in C. Thus, users can develop their own libraries of new procedures, extending the system to new methods and new application areas.

Would you like to learn more about S? Register for short course U73, Introduction to S. The course meets from 7-9 pm April 11 and 13, and costs $15.

Note: Register for CSO short courses at the CSO Distribution Office, 1208 W. Springfield, Urbana from 8 am - 12 noon and 1 pm - 5 pm. You may register by mail. To request a registration form, call 244-7724 during the above hours.

CORNELL NATIONAL SUPERCOMPUTER FACILITY REU/UFE ANNOUNCEMENT

The Cornell National Supercomputer Facility (CNSF) at Cornell University in Ithaca, New York is pleased to announce the second year of its combined research program for undergraduates and faculty. This program, funded by the National Science Foundation, combines the objectives of the NSF Research Experiences for Undergraduates (REU) and Undergraduate Faculty Enhancement (UFE) programs. We're especially pleased to offer stipends of up to $2,000 to undergraduates who are accepted (in addition to room, board, and travel allowance). This stipend affords us the opportunity to seek and train the computational leaders of tomorrow.

One faculty advisor and one to two students must apply as a team to the REU/UFE. There is no limit to the number of teams that may apply from one institution. Approximately 15 teams will be accepted. The program provides superior undergraduate students with supercomputer skills through involvement in research, while also providing support and training to faculty advisors.

A four-week short course for undergraduates, beginning June 5, 1989, at Cornell, will inaugurate the program. Faculty advisors will be present June 19-23 and, optionally, June 26-30, receiving separate intensive training in supercomputer concepts. All the supercomputing facilities of the CNSF will be available to the research teams. Following the course, students will be expected to continue work on their research projects at their home institutions under direction of the faculty advisors, using the CNSF. The projects should be completed by May of 1990, and progress will be monitored by midterm and final reports. CNSF staff will be available throughout the project for consulting support.

The Program

The combined Research Experiences for Undergraduates/Undergraduate Faculty Enhancement (REU/UFE) program allows undergraduates to develop supercomputing skills through involvement in research, while also providing support and training to their faculty advisors. The undergraduates will learn computing methodologies with particular emphasis on the concepts of parallel processing and vectorization. The faculty members will learn about new techniques and developments in supercomputing and participate in discussions on supercomputing in the undergraduate curriculum. Undergraduates participate for all four weeks; faculty, for the third and (optionally) fourth weeks.

Typical students will have completed the junior year of study, but qualified students from any class will be considered. Students must have completed coursework in linear algebra, and coursework or experience in FORTRAN. Special consideration will be given to applicants from four-year colleges with limited research facilities, and to the participation of women, minority and disabled persons.

The home institution must provide academic credit to participating students and network access to the CNSF or funding for dial-up access.

The Cornell National Supercomputer Facility

The CNSF's current configuration features two IBM 3090 multiprocessor supercomputers with 12 vector facilities supported by the VM/XA operating system. Each application can use up to a gigabyte of virtual memory. The FORTRAN compilers support both vector and parallel processing. In addition, users of the CNSF have access to extensive graphics facilities (including specialized animation equipment), some of which are accessible through dial-ups and networks.

Stipends and Logistical Details

A stipend of up to $2,000 for the four-week course will be provided to undergraduates who qualify. Faculty advisors will receive a stipend of $250/week. A travel allowance will also be provided to each student. Room and board will be included for both students and faculty advisors at Cornell University housing and dining facilities. Extensive recreational and intellectual activities at Cornell and in the community will also be available.

How to Apply

For application materials, contact Susan Martin, REU/UFE Program Coordinator, Cornell National Supercomputer Facility, Campus Road and Central Avenue, Ithaca, NY 14853-8301, or telephone (607) 255-3985. The application and all letters of recommendation must be postmarked no later than Monday, March 20, 1989. Applicants should receive notification of the final selection by April 10, 1989. This program is sponsored by the NSF and is dependent on approval of funding by that agency.

For more information, you may also contact our local liaison for Cornell, Beth Engelbrecht-Wiggans, e-mail engwig@vmd.cso.uiuc.edu (333-8627).

WHAT'S NEW IN THE MRC?

Bi-Shen Chuang and Mark Zinzow
Microcomputer Resource Center

As microcomputers become an important educational tool, more and more University faculty, staff, and students are considering purchasing microcomputers for personal use. Over the past few years, the University has signed agreements with several major computer companies that enable you to purchase microcomputers at favorable prices. But before making any buying decisions, you should come to the CSO Microcomputer Resource Center. Our consulting services, magazines, and reference publications will guide you to the right decision. You are also invited to select free or shareware programs, evaluate commercial software you requested, and try various types of hardware. In addition, you can inquire about site licensing information and ask other microcomputer-related questions.

The MRC staff has been making every effort to acquire more hardware and software, as well as magazines and reference publications. The following lists will give you an idea of the resources and new software we have.

Magazines and Reference Publications

The following list is also available on uxe in a file called **magazine.mrc** in **/micro/mrc** and will be updated regularly as we receive more magazines.

MAGAZINES

A PLUS
ACTIVE WINDOWS
AI EXPERT
AMAZING COMPUTING
APDALOG
BUSS
BYTE
CADENCE
CALL A.P.P.L.E.
CD-ROM REVIEW
CIRCUIT CELLAR INK
COMPUTER GRAPHICS WORLD
COMPUTER LANGUAGE
COMPUTER SHOPPER
COMPUTER UPDATE
COMPUTERWORLD
CONNECT
THE CONNECTION
DATA BASED ADVISOR
DATAMATION
DIGITAL NEWS
DIGITAL REVIEW
DR. DOBB'S JOURNAL OF SOFTWARE TOOLS
EP&P (ELECTRONIC PUBLISHING & PRINTING)
FEDERAL COMPUTER WEEK
IBM UPDATE
IBM SYSTEMS JOURNAL
VISIONS (Zenith Data Systems' News Magazine on a video tape)
INFO WORLD
INFORMATION WEEK
LOTUS
MACAZINE
MACINTOSH BUSINESS REVIEW
MACINTOSH USER'S GROUP NEWSLETTER
MACTUTOR
MACUSER
MACWEEK
MACWORLD
MICRO/SYSTEMS JOURNAL
MICROSOFT SYSTEMS JOURNAL
NETWORK WORLD
NIBBLE MAC
ONLINE TODAY
PC COMPUTING
PC MAGAZINE
PC PUBLISHING
PC REPORT
PC RESOURCE
PC TECH JOURNAL
PC WEEK
PC WORLD
PUBLISH
SEXTANT
SHAREWARE
UNIX REVIEW

REFERENCE PUBLICATIONS

DATA SOURCES (Twice a year)
Ziff-Davis Publishing Company, 1985 -

Provides software, hardware, data communications/telecommunications product information, company profiles, and pricing information. Contains three volumes. (This is the most comprehensive directory we have.)

DATAPRO REPORTS ON MICROCOMPUTERS (Monthly)
McGraw-Hill Information Services Company, Feb. 1987 -

Consists of three loose-leaf volumes of reports, with monthly updates. Presents facts and evaluations of microcomputer systems, peripherals, and software products. A newsletter covers the latest announcements and developments within the microcomputer industry.

MACGUIDE MAGAZINE (Monthly, quarterly prior to 1989)
MacGuide Magazine, Inc., Winter, 1988 -

Provides reviews and listings of more than 3,000 Macintosh products, plus company information and book reviews. Also includes feature articles, columns, and a question-and-answer section.

THE MACINTOSH BUYER'S GUIDE (Quarterly)
Redgate Communications Corporation, Winter, 1984 -

Contains over 3,000 listings with descriptions, prices, and facts on hardware, software, and peripheral products for the Macintosh users, plus company information. Also includes feature articles, reviews, interviews, and case histories.

MICROCOMPUTER INDEX (Quarterly with annual cumulative index)
Learned Information, Inc., Feb. 1986 -

A subject index with abstracts of articles drawn from 75 microcomputing journals. Publications covered contain articles of many types, including software and hardware reviews, product announcements, company news items, and book reviews. The index section is subdivided by author, company, subject, and product.

PC DIGEST (Monthly)
NSTL, Inc., March 1987 -

Provides ratings and evaluations of PC systems and peripheral devices, featuring performance, specifications, compatibility, and price comparisons.

SOFTWARE DIGEST MACINTOSH RATINGS REPORT (Bi-Monthly)
NSTL, Inc., Jan. 1988 -

Provides Macintosh software evaluations and rating reports. Software categories tested include file management, spreadsheets, accounting, desktop publishing, and desktop presentation. A monthly report covers new developments in the software market.

SOFTWARE DIGEST RATINGS REPORT (Monthly)
NSTL, Inc., Feb. 1986 -

A companion to the Macintosh Ratings Report, this digest is a comparative report of IBM PC software products. Major software categories tested include word processing, project management,

backup systems, desktop publishing, desktop organizer, database, local area network, spreadsheets, accounting, communications, and graphics. It also has a monthly report featuring news in the market.

Our reference publications and magazines are useful for selecting hardware and software products. You can search for software and hardware review articles by using our Microcomputer Index, which indexes and abstracts articles from 75 magazines, including most of the magazines available in the MRC.

If you are interested in on-line searching for bibliographic references, you can use InfoTrac I (located in the Undergraduate Library and Commerce Library) or InfoTrac II, Academic Index (in the Reference Library). These are magazine indexes stored on CD-ROM, and since they are updated monthly, they provide more current information. Each provides indexing to articles drawn from hundreds of magazines in various subject areas, including approximately 10 major microcomputer magazines such as *PC Magazine, Byte*, and *PC Tech Journal*. (Please note the limited coverage of microcomputer publications.) They are easy to use – just enter the subject or name you want to search, and press the search enter key. Using this system, you can quickly search, retrieve, and print the references you need. The InfoTrac System is available at no charge.

For more comprehensive on-line searching of microcomputer literature and software products, we suggest you go to the Engineering Library, which offers offer a variety of bibliographic and full-text databases available through commercial database vendors, BRS Information Technologies, and DIALOG Information Services. The following on-line databases are particularly useful:

BRS

BUSINESS SOFTWARE DATABASE
COMPUTER DATABASE
INSPEC
NEWSEARCH
ONLINE MICROCOMPUTER SOFTWARE GUIDE AND DIRECTORY

DIALOG

BUSINESS SOFTWARE DATABASE
COMPUTER DATABASE
INSPEC
MCGRAW-HILL PUBLICATIONS ONLINE
MICROCOMPUTER INDEX
MICROCOMPUTER SOFTWARE & HARDWARE GUIDE
NEWSEARCH
SUPERTECH
TRADE AND INDUSTRY ASAP

Search costs range from $20 - $150, depending on the connect time and number of references printed. Some of these databases have print counterparts; please check with the Engineering Library for information and database descriptions, or to make an appointment to do a search.

In addition to our Microcomputer Index, we are looking into the possibility of subscribing to a CD-ROM index of our own to simplify your search process.

New Software

Software companies such as Ashton-Tate, Monogram Software, Inc., and Publishing Technologies, Inc. have graciously provided the MRC with some evaluation copies of their commercial software packages. As usual, we encourage you to fill out a suggestion form to let us know your specific interests so that we may acquire software for you. (In the following list, products are for the IBM PC and compatibles if not specified. An asterisk indicates that the package may be checked out.)

Title	Publisher	Application
*BUSINESS SENSE 1.01 (MAC)	MONOGRAM SOFTWARE, INC.	ACCOUNTING
dBASE IV 1.0	ASHTON-TATE	RELATIONAL DBMS
dBASE MAC (MAC)	ASHTON-TATE	RELATIONAL DBMS
*DOLLARS AND SENSE 3.1	MONOGRAM SOFTWARE, INC.	FINANCIAL MANAGEMENT
*DOLLARS AND SENSE 4.1C (MAC)	MONOGRAM SOFTWARE, INC.	FINANCIAL MANAGEMENT
FULL IMPACT 1.0 (MAC)	ASHTON-TATE	SPREADSHEET
FULLWRITE PROFESSIONAL (MAC) (Pre-release version)	ANN ARBOR SOFTWORKS, INC.	WORD PROCESSING
FULLWRITE PROFESSIONAL (MAC)	ASHTON-TATE	WORD PROCESSING
IBM OPERATING SYSTEM/2 STANDARD EDITION VERSION 1.1 (on 5.25" diskettes only)	IBM CORP.	OPERATING SYSTEM
*IBM PERSONAL COMPUTER XENIX OPERATING SYSTEM	IBM CORP.	OPERATING SYSTEM
*IBM PERSONAL COMPUTER XENIX SOFTWARE DEVELOP. SYS.	IBM CORP.	SOFTWARE DEVELOPMENT
*PUBTECH FILE ORGANIZER 2.03	PUBLISHING TECHNOLOGIES, INC.	FILE ORGANIZER/ EDITOR
VIDEOWORKS II (MAC)	MACROMIND INC.	ANIMATION
PARADOX 2.0	BORLAND INTERNATIONAL	RELATIONAL DBMS
QUATTRO	BORLAND INTERNATIONAL	SPREADSHEET
REFLEX: THE ANALYST 1.1	BORLAND INTERNATIONAL	DATABASE MANAGER
SPRINT	BORLAND INTERNATIONAL	WORD PROCESSOR
TURBO ASSEMBLER 1.0	BORLAND INTERNATIONAL	ASSEMBLER
TURBO C 2.0	BORLAND INTERNATIONAL	LANGUAGE
TURBO DEBUGGER 1.0	BORLAND INTERNATIONAL	DEBUGGER
TURBO PASCAL 5.0	BORLAND INTERNATIONAL	LANGUAGE
PC TOOLS DELUXE (MAC)	CENTRAL POINT SFT., INC.	HARD DISK BACK-UP/ DISK MANAGEMENT/ DATA RECOVERY

Title	Publisher	Application
FILEMAKER II (MAC)	CLARIS	DATA BASE PUBLISHING
MACDRAW II (MAC)	CLARIS	GRAPHICS
MACPAINT 2.0 (MAC)	CLARIS	GRAPHICS
MACPROJECT II (MAC)	CLARIS	PROJECT MANAGEMENT
MACWRITE 5.0	CLARIS	WORD PROCESSOR
*PC-MATLAB	MATH WORKS, INC.	MATRIX COMPUTATION
MACLIGHTNING 2.0 (MAC)	TARGET SOFTWARE, INC.	SPELLING/GRAMMAR CHECKER
LUCID 3-D	P.C. SUPPORT GROUP, INC.	SPREADSHEET
MERGEWRITE (MAC)	SOFTWARE DISCOVERIES, INC.	MAIL MERGE PROG. FOR MACWRITE
PROCEDURE CONSULTANT	TEXAS INSTRUMENTS	ARTIF. INTELLIGENCE
/*RESIDENT_C*/2.0	ESSENTIAL SOFTWARE, INC.	C LIBRARY FOR TSR PROGRAMMING

HYPERCARD 1.2.2

Two HYPERCARD 1.2.2 update disks are available.

SABER 1.1

This software is not to be sold for profit. If you find it useful, please send $10, along with your comments to:

Dale A. Feiste
11056 Galaxy Dr.
Maryland Heights, MO 63043

SABER evaluates nth order determinants containing elements of Nth degree RATIONAL FUNCTIONS (including N=0).

WORDPERFECT LIBRARY SHELL

From WordPerfect Corporation -- the shell is a menu interface for WordPerfect Library programs that allows you to switch from one program to another, transfer data between programs, and track the memory use in your computer.

*THE SMALLTALK-80 PROG. SYS. 2.3 (MAC & SUN-3 Workstation)

From Parcplace Systems, Inc. -- an object-oriented language package. This is **only the documentation**; the package is site-licensed and may be purchased at the CSO Accounting Office (1208 W. Springfield, Urbana). The package is free to students and for instructional use. There is a charge to other users: $20.00 for Macintosh, $75.00 for Sun-3.

GAMES

More games for the Atari ST include: Championship Baseball, GBA Championship Basketball, Indiana Jones and the Temple of Doom, Leatherneck, Wanderer, and an art and film director.

The MRC also has a great deal of new public domain and shareware software. MS-Kermit 2.32 for the IBM PC and compatibles came out in late December and is available through the MRC as well

as from VMD by modem, LocalNet, or UIUCnet. PC-Write version 3.02 was also released in December, just a few weeks after 3.01, and this is also available in the MRC or from uxe. We also expect to have an updated CD-ROM from PC-SIG by the time this article reaches print. This CD-ROM will have hundreds of new programs; see the PC-SIG magazine *SHAREWARE* for descriptions. Several applications that run under Microsoft Windows are available, such as a communications package with extensive terminal emulation and file transfer protocols, a file browser for quickly examining text files, and a fireworks-style screen blanker similar to the Macintosh program PYRO, but with nice color. There is also a nice MS-DOS application for this as well, but it is not a TSR (Terminate and Stay Resident routine) like most screen savers.

DGTERM is one of several useful communications TSRs; it will do VT102 emulation and background X- and Y-modem file transfers. Also available is a new recipe database, a cookbook, many graphics images and display programs, new virus information, a nifty program for keeping the AT CMOS clock accurate (ATNUDG2), several programs for fast and easy disk duplication (EZCL1 and DISKDUP2), and many others. Stop by the MRC and ask about the Public Domain Software and Utilities Special Interest Group of the IBM PC Users' Group at UIUC. This group has an e-mail mailing list featuring regular announcements of new software; it holds regular meetings to discuss new software, sources thereof, and viruses and other computer security problems. The MRC has lists of software available from the following sources: PC-SIG; BBS's, such as EXEC PC, PC Magazine; Public Brand Software; file servers from all over the country, such as CCUC and Simtel20; uxe archives of newsgroups, such as comp.binaries.ibm.pc. We already have a large in-house collection of software from these sources.

WISC-WARE

The tenth distribution of Wisc-Ware software contains updates for three previously distributed packages and thirty four new packages. Package #44 (Solver-Q) has been withdrawn from distribution.

Updates:

Package 69. Texas Census Data System from University of Texas, Austin

Package 78. LNS from University of Wisconsin, Madison

Package 90. U.S. History from Johnson Community College

New Packages:

(An asterisk (*) indicates that the package requires Microsoft Windows Presentation Manager 2.03.)

91. Policy/Goal Percentaging 1.0 University of Illinois
A decision-aiding program designed to process a set of (1) goals to be achieved, (2) alternatives for achieving the goals, and (3) relations between goals and alternatives in order to choose the best alternative or combination for maximizing benefits minus costs.

92. Comma Sense 1.0 Mesa State College
A punctuation tutorial which reviews the major comma rules that confuse most writers.

93. Popshow 1.0 University of Washington
Popshow is a collection of programs used as aids in teaching demography or for self-instruction.

94. A Psychologist's Toolbox 1.0 University of Texas-Austin
This toolbox contains a variety of examples of programs for running experiments of the sort that psychologists conduct.

95. Explorations in Cognitive Psychology 1.0* Univ. of Texas-Austin
This program provides an introduction to five basic experiments in cognitive psychology.

97. Relax 1.0* University of Washington
Relax demonstrates the relaxation method solution of the potential distribution on a square sheet.

98. Waves 1.0* University of Washington
Waves simulates the motion and addition of up to four sinusoidal waves.

99. Acid/Base Simulation 1.0* Cornell University
This is an interactive display of the pathways of respiratory and metabolic acid-base disturbances and of the responses of a patient, by correction or compensation to these disturbances.

100. Pertab 1.0* University of Texas-Austin
Periodic Table of the Elements is a utility that allows the user to display various properties of the elements in both qualitative and quantitative modes.

101. Cafe 1.0* University of Wisconsin-Madison
Cafe is a software environment for preparing Boolean equations and converting them to tables or equations that describe their 2-level realization.

102. Lot 1.0* University of Texas-Austin
A program designed to compute lot sizes and/or order time given the forecasted demand, ordering cost, holding cost, and if applicable, volume discount prices and quantities.

104. MRImager 1.0* Columbia University
A Magnetic Resonance Image Display Tool that allows the user to view scientific and medical images in grey scale or color.

105. Millikan 1.0* Columbia University
This program simulates the Millikan Oil Drop Experiment and allows the student to investigate the theories involved.

106. WIMP 1.0* University of Washington
A Windows Image Manipulation package that provides tools to perform most standard image processing and enhancement operations.

107. QMVARY 1.0* University of Illinois
A computer program for Quantum Mechanical variational calculations.

108. Netsys 1.0* University of Southern California
A microcomputer based system for creating and solving generalized network models.

112. An Introduction to Writing Johnson County Community College
This package consists of two units of twenty questions each focusing on the introduction of writing.

113. Number Systems Conversions 1.0 Johnson County Community College
A package of twelve programs for learning the number systems commonly used in digital electronics.

114. MCS-Windows 1.0* University of Wisconsin-Madison
Microprogrammed Computer Simulator consists of an editor for writing and changing microprograms and a simulator that rapidly executes those programs.

115. Russian Conjugation and Declension: Nouns 1.0* Univ. of Minnesota
This program is designed for the beginning Russian students to become familiar with all aspects of noun declension.

116. DDD WIN 1.0* University of Minnesota
A perspective display program. It reads a point/polygon file describing various objects and makes three-dimensional drawings either on the screen or on the printer.

117. EP 0.02* University of Minnesota
This Engineering Plot System is designed for use in analyzing and plotting typical engineering data.

118. MAKEHELP 1.1* University of Minnesota
This On-line Help facility is a set of two programs which allow you to easily add on-line help to a Microsoft Windows program.

119. SANDIE 5.1* University of Wisconsin-Madison
SANDIE is an interactive tool for statistical analysis of data for industrial engineering.

120. WSALT1 1.0* University of Wisconsin-Madison
WSALTI (Windows-Systematic Analysis of Language Transcripts) is designed to explore and analyze language production skills in children and adults.

121. Handicapped Access Utility 1.0* Univ. of Wisconsin-Madison
This program provides interface features that allow people with physical impairments to use window applications.

122. Designer's Toolkit 3-D 1.0* University of Washington
This is a utility for creating accurate perspective wireframe images of design concepts for the purpose of visualization or as underlays for product rendering.

123. DPID 1.0* University of Texas-Austin
DPID is a Digital Proportional Integral Derivative controller which can be connected to a feedback control system.

124. EDC-Windows 1.0* University of Wisconsin-Madison
EDC is (1) an editor for preparing programs and data for the elementary digital computer, and (2) a high performance simulator for that computer.

125. MILIM-Windows 1.0* University of Minnesota
A Hebrew vocabulary drill program.

126. 4BarFun 1.0* University of Minnesota
4BarFun is an interactive tool for defining and analyzing four-bar mechanisms.

128. Future/Windows 1.0* University of Texas-Austin
This program is designed to compute a time series forecast given a history of at least two periods of data.

130. WinView 2.0* University of Texas-Austin
A visual editor that allows the user to edit and view digital audio files that run under Microsoft Windows.

131. Learning Cardiac Ausculation 1.0* University of Minnesota
This program is designed for medical students, residents, and nursing students allowing them to learn a broad range of cardiac abnormalities through an understanding of both cardiac ausculation and physiology.

RELEASE OF DOS SYSTAT VERSION 4.0 AVAILABLE FOR LICENSING

Anup Roy
CSO Statistical Consultant

A new release of DOS Systat, Version 4.0, for IBM PC and PS/2 (or compatibles) is now available for licensing. New users may obtain a copy by signing an end-user license agreement and arranging for a payment of $100.00 for the initial royalty/first year licensing/diskette and copying fees, and $20.00 for the Systat Version 4 documentation. (Please note that users are legally required to purchase the documentation in order to qualify for software licensing.)

Payments may be made via a University Stores/Service voucher or requisition with a valid 11-digit account number, or by personal check made out to the University of Illinois. All of this may be accomplished at the CSO Accounting Office, 1208 W. Springfield, Urbana (333-7752). The annual renewal fee, per copy of Systat, is going to be approximately $65.00.

Currently licensed users of DOS Systat Version 3 have the option to upgrade to Version 4. They will have to trade in their original diskettes for the newly prepared disks (for free). They will also need to sign a new end-user license agreement, and purchase the new documentation for $20.00. (Users who decide to upgrade to the new release will have to erase their old copy of DOS Systat from their hard disks and completely reinstall the new version from scratch; moreover, they are legally required to erase all copies of DOS Systat Version 3 before using Version 4.) It also is strongly recommended that such users renew their package for another year by simultaneously making a payment of the renewal fee of $65.00 (University voucher or personal check).

A word of caution to MAC enthusiasts — MAC Systat Version 4.0 will NOT be available from Systat, Inc., until late 1989. So, please help squash any rumors about a new release for the MAC being available.

A detailed article describing features of this new release will appear in the next issue of *Off-Line*. If you have any general questions about DOS Systat Version 4, please contact the CSO Statistical Consultants, Room 85 Commerce West (333-2170). More specific questions may be directed to Anup Roy at 244-1201, or via e-mail to anuproy@vmd.cso.uiuc.edu.

RELEASE OF SYGRAPH VERSION 1.0 ADDED TO CAMPUS SITE LICENSE FOR DOS SYSTAT

Anup Roy
CSO Statistical Consultant

Sygraph Version 1.0 (also known as DOS Systat Graphics), a complementary product to DOS Systat Version 4, was recently added to the University's campus site license with Systat, Inc., Evanston, Illinois. The disks have just come in as of this writing, and are about to go out for mass duplication. However, all Sygraph documentation has been back ordered by the vendor, and there is no definitive word on when it will be available. Since the site license mandates an end-user purchase the documentation in order to qualify for software licensing, we have no firm word on when Sygraph will be available for actual end-user licensing and use. (CSO will announce the actual date for end-user licensing as soon as the documentation arrives.)

Sygraph is a stand-alone product, even though it is generally meant to be used in tandem with DOS Systat Version 4. Each copy of Sygraph will cost $35.00 for the initial royalty/first year licensing/diskette and copying fees, and $20.00 for the documentation. It is expected that the per-copy annual renewal fee for Sygraph will be approximately $15.00.

An article describing features of this product will appear in the next issue of *Off-Line*. If you have general questions about Sygraph, please contact the CSO Statistical Consultant, 85 Commerce West (333-2170). More specific question may be addressed to Anup Roy at 244-1201, or via e-mail to anuproy@vmd.cso.uiuc.edu.

SITE LICENSE FOR 1988 BMDP PC FOR IBM PC, PS/2 OR COMPATIBLES

Anup Roy
CSO Statistical Consultant

The Statistical Services Group at CSO has set up site-licensing arrangements (for UIUC faculty and staff) for the 1988 release of the complex BMDP PC package — one of the most comprehensive statistical software packages available for a microcomputer environment. Users will have to sign an end-user agreement with the University, and they will have to pay an initial royalty/licensing/diskette and copying fee, and documentation fee (for each copy licensed).

If you are interested in licensing BMDP PC and you have not previously notified Anup Roy — UIUC BMDP Coordinator — of your interest, please do so immediately. You may peruse the article that appeared in the September-October 1988 issue of *Off-Line* to help you decide if this package might be of use to you. If you decide that you are interested in licensing this package, please fill out the survey form from that issue of *Off-Line*, and return it to Anup Roy, 150 DCL, Campus MC-256. You may also send an e-mail message to anuproy@vmd.cso.uiuc.edu indicating your interest; please include in your message all of the information called for in the survey form.

A complete version of the 1988 release of BMDP PC (all 42 programs plus the High-Resolution Plot Enhancer option) is sold to an individual for approximately $2,500.00. However, under the limited 50-user site-licensing arrangement set up between BMDP Statistical Software, Inc., Los angeles, California and the University of Illinois at Urbana-Champaign, the total cost per copy licensed will be significantly less.

The package can be made available in one of three separate media: 5 1/4" DS/DD 360KB disks (102 disks); 5 1/4" HD AT 1.2MB disks (44 disks); or 3 1/2" HD 1.44MB disks (44 disks). The cost per copy is expected to be a **one-time** fee of $400.00 for either the 5 1/4" HD or 5 1/4" DS/DD medium. The cost will rise to approximately $500.00 for the 3 1/2" HD format.

Owing to the volume of copying involved for the 360KB disks, and the prohibitive expense of the high density 3 1/2" disks, it is our strong inclination to make the product available only in the 5 1/4" HD format. If you are certain that you would like to license this product, but know that you cannot do so if it is available only on the 5 1/4" HD disks, please contact Anup Roy immediately at 244-1201 or via e-mail to anuproy@vmd.cso.uiuc.edu, to register your problem or disagreement with this suggested policy.

A detailed article describing features of this product, along with further updates on the site-licensing arrangements, will appear in the next issue of *Off-Line*.

REDEFINING KEYS WITH MAC KERMIT

Jeffrey Cortez
Microcomputer Consultant

When Mac Kermit .9(36) came out, the ability to upload and download files from the mainframes was made available to all Macintosh owners. Unfortunately, that particular version of Mac Kermit did not come with VM keymapping or UNIX keymapping files. Many users attempted to create their own settings files with little success because nowhere in the Mac Kermit documentation were codes for the various special keys of the mainframes to be found. Finally, users will be happy to know these problems have been addressed. *(Editor's note: A newer version of Mac Kermit is now available. See the following article by Mark Zinzow for more information.)*

I have created keymapping files for the VM mainframes and the UNIX mainframes that are available from the CSO Microcomputer Hotline Consultants in 94 Commerce West. Also, for those of you who would like to customize the keymapping yourself, I am including in this article the numerous codes that are used by the mainframes.

Defining Keys

Mac Kermit allows for easy on-line editing of the keyboard layout. This is accomplished through the 'Set Key Macros...' option under the 'Settings' menu. Before experimenting with creating key macros, it is wise to create a backup of the keyboard settings file that is being edited. To begin editing keys, select the 'Set Key Macros...' option.

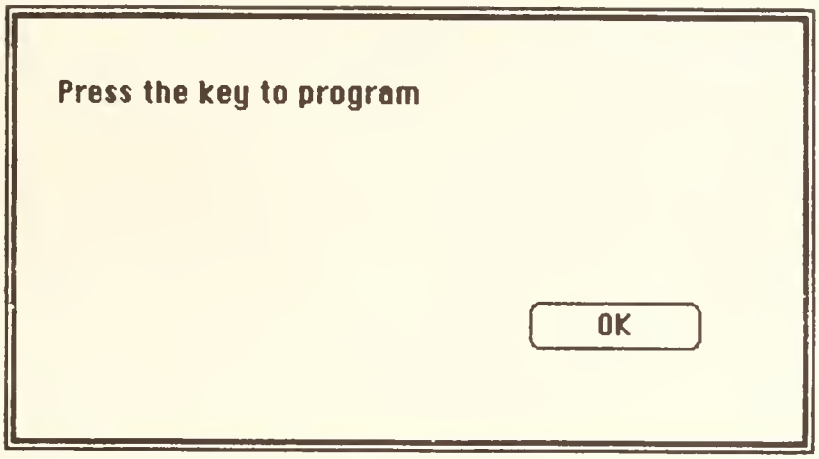


Figure 1.

A window, similar to Figure 1, will appear. BE CAREFUL! Whichever key you press next will be the key that will be edited. So, if you accidentally press a key that you do not want to edit, select the CANCEL option. After you have pressed a key, a new window will appear. In this window will be the current setting of the key. Note: unless you have previously defined the key, the window will be empty. You can now define the key. Any text or control codes can be entered at this time. Text should be entered in the form in which it needs to appear, and control codes should be entered with a backslash (\) and then the octal representation of the code. By selecting the HELP option, the help window, shown in Figure 2, will be displayed.

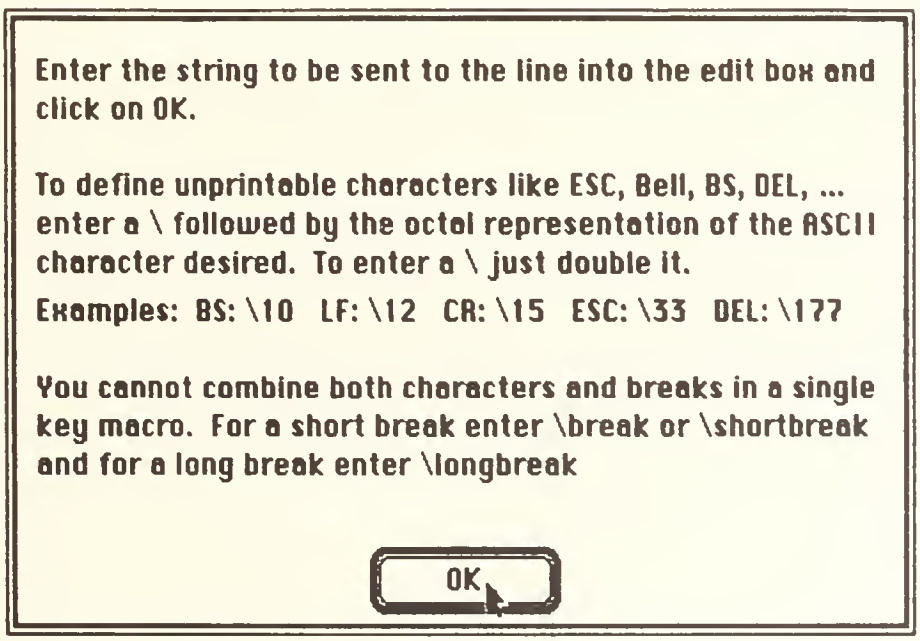


Figure 2.

NOTE: Although the codes contained in the HELP option are the correct codes for Macintosh emulation, they may not be the same as those required on the mainframes. Refer to section 'Mainframe Control Codes' for the codes required for the VM mainframes and the UNIX mainframes.

After entering the sequence of codes or text, press RETURN or click on the OK option. The key is now defined until new settings are loaded or the program is exited. To save the settings for future use, select the 'Save Settings' option under the menu FILE. To use the settings at a later time, just double click on the settings icon or open the settings file once in Mac Kermit with the 'Load Settings' option under the menu FILE.

WARNING: Once a key has been defined as a macro it will not function except as a macro, so do not define keys which are normally used for other functions; i.e., a, b, c, d, and so on.

Special Keys

As the more experienced users of Macintoshes already know, a number of keys have special meaning within programs. These keys include the function keys, which are accessed by pressing shift-control and 1 thru 0 at the same time, and the menu key equivalents, which are accessed by control combined with a letter. These special keys in Mac Kermit are allowed to either serve their normal functions or to be defined as macros. To select whether to make these keys active or not, choose under SETTINGS whether to make the functions and/or the menu keys active. With these keys active, the macros, which use these keys, are made inactive.

NOTE: When using UNIX mainframes, it is best to make the menu keys inactive since UNIX uses control characters like control-C and control-D for many of its own uses.

Mainframe Control Codes

Although Mac Kermit automatically performs VT-100 emulation, the special codes and functions that are unique to each mainframe or type of mainframe are not implemented. It is mainly for this purpose that the key macros option was designed. Recently I have created keyboard settings of VM mainframes and UNIX mainframes, which are being distributed by the CSO Microcomputer Consultants in 94 Commerce West. For those users who do not feel like coming in and receiving an update, or who would like to create their own custom keyboards, I have created the following list of popular control codes for the VM mainframes to help in customizing a keyboard layout. For the UNIX mainframes, use the same control codes for the cursor keys and use \010 for the delete key. Remember that with Mac Kermit the control codes need to be in octal, so if you use any other control codes make sure to convert them to octal before entering. NOTE: I have used the term ESC whenever control \033 is needed.

VM Mainframes

ASCII codes	VM function	ASCII codes	VM function
ESC 1	PF1	ESC i	PF20
ESC 2	PF2	ESC o	PF21
ESC 3	PF3	ESC p	PF22
ESC 4	PF4	ESC [	PF23
ESC 5	PF5	ESC]	PF24
ESC 6	PF6	ESC ,	PA1
ESC 7	PF7	ESC .	PA2
ESC 8	PF8	ESC 01	PA3
ESC 9	PF9	ESC 0A	Cursor Up
ESC 0	PF10	ESC 0B	Cursor Down
ESC –	PF11	ESC 0C	Cursor Right
ESC =	PF12	ESC 0D	Cursor Left
ESC q	PF13	ESC \011	Back Tab
ESC w	PF14	ESC 0D\177	DELETE
ESC e	PF15	ESC 0D	BACKSPACE
ESC r	PF16	ESC\011\033\177	Line Delete
ESC t	PF17	\010	HOME
ESC y	PF18	ESC 0M	CLEAR
ESC u	PF19	ESC 0n	INSERT

SOME NOTES REGARDING MAC KERMIT KEY REDEFINITION

Mark S. Zinzow
CSO PC Group & Kermit Coordinator

The current Apple Macintosh Kermit version is 0.9(40), released 5/26/88. Mac Kermit documentation does not cover IBM mainframes, but many support files are available in addition to those distributed by the Microconsulting Hotline. Control codes used by IBM mainframes vary with the operating system in use, and with the protocol converter through which the non-IBM terminal (or computer) is connected. On this campus we are very fortunate to have some excellent documentation, locally written by Dan Theriault, about our configuration of the IBM 7171 protocol converter. On VMD and VME the command

HELP 7171

will display a menu of the available help files, which may be printed with the WRITEUP command. The command

HELP 7171 FUNCTION

is particulary informative, and

HELP ADV7171 VT100

is especially useful to PC users.

It is also useful to note that on Macintosh's with a numeric keypad, the keypad may be used for the function keys, and that the keypad ENTER is the IBM clear screen key by default, simply by virtue of the DEC VT100 emulation.

For some time CSO has been distributing Daniel Pommert's key redefinition files in the MRC with MacKermit versions 0.9(38-40). Columbia University distributes the file CKMKER.SET, which contains five additional key settings for use with IBM 7171 protocol converters. This file is available on the VMD Kermit disk; LINKTO KERMIT will access this for users logged onto VMD, CD PUBLIC.424 will access it for ftp file transfer for other users.

IBM PC GRAPHICS STANDARDS

Mark Stout
Microcomputer Consultant

When IBM released the Personal System/2 line in 1987, personal computing entered a new age of advanced capabilities and confusion. Since then, PC users have been assaulted with acronyms such as MCA, VGA, OS/2, MCGA, and SAA. Two of these acronyms are new IBM graphics standards. A basic understanding of graphics standards, new and old, is helpful for using IBM PC software to its fullest.

Before discussing specific standards, one must be familiar with the various aspects of graphics hardware. Prior to the PS/2 line, graphics hardware was usually included on an expansion card, known as a display adapter. This hardware determines the capabilities of each standard, such as resolution and color palette. An image displayed on a monitor is composed of many tiny elements known as pixels. More pixels translates into higher resolution, measured in horizontal pixels by vertical pixels. When displaying text, the number of pixels in a single character determines the character box size. Each standard can also display a certain number of colors at one time, for a given resolution. These simultaneously displayed colors are chosen from a larger palette of hues the hardware is capable of displaying.

The Monochrome Display Adapter, or MDA, was the original display adapter offered for use with the IBM PC. It is capable of displaying monochrome text only, but provides an excellent resolution of 720 by 350 pixels.

The Hercules Graphics Card (HGL) surpassed the MDA with its ability to output graphics, while maintaining a resolution of 720 by 348. All software written for the MDA could also be displayed on the HGC. This is the only non-IBM graphics standard to have gained widespread acceptance by software developers.

IBM's answer to PC users who required color and/or graphics output was the Color/Graphics Adapter. Not only could the CGA display graphics, but could also display text in 16 colors. Like the MDA, the CGA is based on the 8540 Graphics Controller, and is compatible with software written for the MDA. Unfortunately, the CGA compromises resolution for its colorful output, with a maximum resolution of only 640 by 200.

After the release of the CGA, IBM still had not satisfied demand for a display adapter capable of high resolution, color text and graphics. Many applications such as CAD and business presentation software demanded a more advanced standard. The IBM Enhanced Graphics Adapter met this need. Based on a multichip 8540 simulator, the EGA is capable of emulating the CGA for software compatibility. In addition to this backward compatibility, the EGA can display text and graphics in 16 colors (from a palette of 64 colors) with a resolution of 640 by 350. With a character box of 14 by 8 pixels, the EGA rivals the text clarity of the MDA. Even software written for the CGA benefits from this superiority, as alphanumeric characters expand to fill a 14 by 8 box.

When designing the PS/2 line, IBM took a different approach in the implementation of graphics display hardware. Many PC users wanted a friendlier, more integrated system as evidenced by the popularity of the Macintosh. Instead of inconveniencing users with the task of selecting and installing a separate display adapter, IBM includes circuitry for the two new standards on the PS/2 system-boards. Another important innovation was the move to analog monitors. Previous standards transmitted images from the display adapter to the monitor in digital form. Separate inputs for red, blue, and green signals were either on or off. This limits the number of hues that a graphics standard is able to display to a given number of binary permutations. Analog monitors can receive signals in a continuous spectrum of levels. The MCGA and VGA described below supply analog signals to their monitors, employing a Digital-to-Analog Converter, or DAC. Because of their analog nature, both new standards support an enormous color palette (262,144 colors).

The Modified Color/Graphics Adapter is included with the PS/2 Models 25 and 30. Fully compatible with the original CGA, the MCGA also features enhanced modes. For instance, the MCGA text mode supports resolution of 640 by 400 in 16 colors. Graphics also benefit from a resolution of 640 by 480 with two colors, or 320 by 200 with 256 colors. As with the EGA, text-based software written for the CGA benefits, with characters expanding to fill a 16 by 8 box. Graphics written for the CGA appear sharper, thanks to double-scanning of the CGA's 200 vertical line modes; for every pixel indicated by the CGA software, two vertical pixels are displayed on the monitor.

Currently, the Video Graphics Array is IBM's most advanced graphics standard. The VGA is named for the VLSI chip, containing a logic gate array, which serves as the heart of this standard. Integral to PS/2 models 30/286, 50, 60, 70, and 80, the VGA is capable of emulating all past IBM standards, but more importantly, defines a new benchmark for video performance. For instance, 80 column, text is displayed with a resolution of 720 by 400, finally surpassing the clarity of the MDA. Even with this resolution, users benefit from characters displayed in 16 colors or, if viewed on a monochrome analog monitor, 16 shades of gray. In windowing environments, the beauty of the VGA's 640 by 480 graphics resolution is apparent. Fortunately, software written for earlier standards takes advantage of these capabilities. Alphanumeric characters expand to fill a 16 by 9 box, while CGA graphics sharpen due to double-scanning.

When selecting a monitor type while configuring software, it is important to keep your equipment's emulation capabilities in mind. Suppose you are installing Lotus 123, rel. 2.0 on an IBM PS/2 equipped with VGA. Since this version does not offer VGA as a monitor type in the Install program, you should choose the most advanced graphics driver that Lotus does offer, as the VGA can emulate all past IBM standards. In this case, EGA would be the right choice.

If you use IBM microcomputers in the various campus labs, it may be helpful to know which graphics standards are available at each site:

Everitt Lab:	MDA, CGA and EGA
Illini Union:	monochrome MCGA

Undergraduate Library:	MCGA
Residence Halls:	MCGA, VGA at P.A.R.
Orange Snack Bar:	MCGA and CGA

The following table summarizes the maximum capabilities of each standard discussed.

Graphics Standards Capabilities

	Mode	*Resolution*	*Character Box Size*	*Lines & Columns*	*Displayable Colors*	*Color Palette*
MDA	Text	720 X 350	14 X 9	25 X 80	Monochrome	N/A
HGC	Text & Graphics	720 X 348	14 X 9	25 X 80	Monochrome	N/A
CGA	Text	640 X 200	8 X 8	25 X 80	16	16
	Medium Res. Graphics	320 X 200	8 X 8	25 X 40	4	16
	High Res. Graphics	640 X 200	8 X 8	25 X 80	2	16
EGA	Text & Graphics	640 X 350	14 X 8	25 X 80	16	64
MCGA	Text	640 X 400	16 X 8	25 X 80	16 colors or 16 gray shades	262,144
	Medium Res. Graphics	320 X 200	8 X 8	25 X 40	256 colors or 64 gray shades	262,144
	High Res. Graphics	640 X 480	16 X 8	30 X 80	2	262,144
VGA	Text	720 X 400	16 X 9	25 X 80	16 colors or 16 gray shades	262,144
	Medium Res. Graphics	320 X 200	8 X 8	25 X 40	256 colors or 64 gray shades	262,144
	High Res. Graphics	640 X 480	16 X 8	30 X 80	16 colors or 16 gray shades	262,144

CONVEX FORTRAN VERSION 5.0

Stan Kerr
CSO Systems Consultant

The Fortran compiler **fc** on the Convex system has been upgraded to version 5.0. This article explains the changes and new features of version 5.0.

Executable binaries created under the previous release will continue to run, and libraries created from the previous release are still usable under the new release.

Most of the material for this article has been taken from the Convex Release Notice for Convex Fortran Version 5.0, with the permission of Convex Computer Corporation.

This release provides functionality to do automatic parallelization, as well as traditional vectorization. The compiler provides several features to maximize the performance of programs that have been automatically parallelized.

- Variable Strip Mining
- –ep command line option
- C$DIR PSTRIP
- C$DIR VSTRIP

The compiler also supports directives that allow you to select loops or code sections to be parallelized, rather than leave that choice to the compiler.

- C$DIR FORCE_VECTOR and C$DIR FORCE_PARALLEL
- C$DIR BEGIN_TASKS, C$DIR NEXT_TASK, and C$DIR END_TASKS
- C$DIR SYNCH_PARALLEL

In order to allow recursion in Fortran and to make it possible to call subroutines in parallel loops, this release of the compiler can generate reentrant code.

- Reentrant subroutines
- Reentrant runtime libraries

This release also provides support for instructions from the next generation of CONVEX hardware:

- Vector converts
- Intrinsic instructions
- Operations under mask

Finally, this release provides a new form of compiler diagnostic output. It also provides additional VMS Fortran compatibility features.

Automatic Parallelization

The CONVEX C2 architecture provides a complete instruction set for executing multiple instruction streams that originate from a single application program. Such instruction streams can be operating on different sections of the same array, or on different data entirely.

This release of Fortran detects the opportunity for executing loops with independent iterations in parallel and automatically generates the necessary instructions, when the –O3 level of optimization is specified. Parallel vector code is generated where appropriate. Loops are interchanged to get the best vector loop innermost and the best parallel loop outermost. Loops can be parallelized even if contained loops are not vectorized.

Variable Strip Mining

The compiler currently always strip mines to fill the 128-element vector registers. Typically, the strip-mine loop (the outer loop resulting from strip-mining) is then parallelizable, but it is possible that it contains too few iterations to be worth parallelizing. For example, for a loop of only 128 iterations, the strip-mine loop will contain only one iteration. Variable vector strip-mining chooses a strip-mine length based on the cost characteristics of the tradeoff between better parallelization and operating on longer vectors. If the 128-iteration loop is very short, (a(i)=0, for example), then it is probably better to strip-mine with vector length 32 and parallelize the resulting 4-iteration strip-mine loop.

Parallel strip-mining replaces a parallelizable loop by two loops with the outer loop (the parallel strip-mine loop) advancing the initial value of the inner loop's induction variable by the parallel strip-mine length. Parallelization of a parallel strip-mine loop is typically preferable to direct parallelization of the parallelizable loop, because it increases the amount of code executed between synchronization points, reducing synchronization costs. Variable vector strip-mining chooses the parallel stripmine length based on the trip count of the loop and the amount of code contained in the loop body.

Variable strip-mining is performed only at –O3.

–ep Option

Normally, at –O3, the compiler will parallelize a loop only when it expects to get near full efficiency. The –ep option gives you a way of specifying the expected number of processors for a program. With –ep, the compiler will parallelize a loop whenever doing so appears to decrease turnaround time assuming the given expected number of processors. This option should be used with caution since it may lead to inefficient use of the CPUs, impacting other users of the system adversely, and decreasing throughput.

Strip Mine Directives

The CSDIR PSTRIP(n) directive informs the compiler that the parallel loop associated with this directive should be strip-mined with length n. The specified value should be a positive integer. Using this directive can reduce the overhead required to synchronize processors working together on the loop by increasing to n the number of iterations each processor picks up as it gets its next unit of work. This directive must not be used with vector loops.

Normally, you would allow the compiler to choose the appropriate parallel strip-mine length. This directive is only meaningful at –O3.

The C$DIR VSTRIP(n) directive informs the compiler that the vector loop associated with this directive should be stripmined with length n. The specified value should be a positive integer less than or equal to 128. This directive allows you to reduce strip-mine length to create more iterations of the strip-mine loop so that it can be effectively parallelized.

Normally, you would allow the compiler to choose the appropriate vector strip-mine length. This directive is only meaningful at –O3.

User Selected Parallelization

Force Directives

Sometimes you know something the compiler can't deduce, which enables you to make a better choice of loops to vectorize or parallelize. The directives described in this section make this possible. Also, the compiler will never automatically parallelize a loop that has a subroutine call in it, since it cannot perform dependency analysis across subroutine boundaries to determine whether this is safe. If you know that each invocation of the subroutine works on a different section of the arrays processed than the other invocations, you can put a directive on that loop to cause it to run in parallel.

The C$DIR FORCE_PARALLEL directive causes the compiler to:

- Ignore any dependencies between iterations that it may have found
- Parallelize the loop

The C$DIR FORCE_VECTOR directive cause the compiler to:

- Ignore any dependencies between iterations that it may have found
- Vectorize the loop

If both directives are specified for a single loop, then the loop is vectorized and the strip mine loop is parallelized. Thus, the four ways of executing a loop are:

SCALAR — serial
VECTOR — vector, but not parallel
PARALLEL — parallel, but not vector
PARALLEL,VECTOR — parallel outer strip, vector inner strip

WARNING! — FORCE_VECTOR and FORCE_PARALLEL do not prevent loop interchange (and thus may not cause loops in a nest of loops to be vectorized or parallelized as the user might have expected. To ensure that loop interchange does not nullify the effect of these directives, put SCALAR directives on all the loops that shouldn't be interchanged to innermost (for vectorization) or outermost (for parallelization).

WARNING! — You can put either FORCE_VECTOR or FORCE_PARALLEL directives on a loop and not get the desired code transformation if the compiler is unable to generate code for the loop as suggested. Scalar recurrences are usually the problem.

WARNING! — You can put a FORCE_VECTOR directive on a loop that was fully vectorized with –O2 and get wrong answers, because the FORCE_VECTOR directive tells the compiler to ignore dependencies. When you use –O2, the compiler is sometimes able to generate correct code even in the presence of dependencies by such strategies as statement re-ordering and partial vectorization.

Tasking Directives

Some applications have sections of serial code that can be performed independently. A typical example would be three sections of code, each of which is initializing a different array. Since they do not refer to the same memory locations, they can be executed by independent instruction streams. This release of the compiler does not automatically recognize non-loop based parallelism of this sort.

The BEGIN_TASKS directive introduces a sequence of independent tasks separated by the NEXT_TASK directive and terminated by an END_TASKS directive, e.g.,

```
C$DIR BEGIN_TASKS
STMT1
C$DIR NEXT_TASK
STMT2
C$DIR NEXT_TASK
STMT3
C$DIR END_TASKS
```

The compiler parallelizes such programs by constructing a parallel loop around them, which works like the following:

```
        C$DIR FORCE_PARALLEL
        DO 100 I=1,3
          GOTO(10,20,30),I
10        STMT1
          GOTO 100
20        STMT2
          GOTO 100
30        STMT3
100     CONTINUE
```

The Fortran-77 restrictions on block structured constructs apply to this construct. There is currently a limit of 255 tasks which can be specified between BEGIN_TASKS and END_TASKS directives.

C$DIR SYNCH_PARALLEL

Loops that have dependencies between iterations, but which can nevertheless be pipelined to decrease turnaround are often called DOACROSS loops. Such loops can be run in parallel by inserting synchronization points between iterations to satisfy the dependencies.

The SYNCH_PARALLEL directive informs the compiler (at –O3) that the following loop should be performed in parallel even though it requires synchronization that in the compiler's opinion achieves substantially less than full efficiency. One reason to do this might be to speed up a benchmark where all that matters is turn-around time and parallelization with synchronization works better than masked vector operations and/or partial vectorization. For example, the following loop probably runs faster, given four heads, than it would if partially vectorized and the recurrence placed in a scalar, nonparallel loop:

```
c$dir synch_parallel
do i=1,32
   if(a(i).lt.0)then
      a(i)=a(i-1)+b(i)
      d(i)=e(i)*f(i)
   endif
enddo
```

Reentrancy

Reentrant Subroutines

The –re option causes the compiler to generate reentrant code for the purposes of parallel or recursive invocation of subprograms (which is now allowed).

With –re, local variables are placed, by default, in automatic (fp-relative) storage. This ensures each invocation of a subroutine has its own copy of a local variable unless you specifically declares otherwise. Common variables and SAVEd or initialized variables are always shared among invocations.

Also, partially compiled I/O packets are placed in the .tdata segment, compiler generated temporaries that would have been placed in .bss are placed in .tbss.

Reentrant subprograms contain two versions of every parallel loop. One version is serial and is executed when the subprogram is invoked directly or indirectly from a parallelized loop. The other version is parallel and is executed in all other cases. The state of parallelization can be determined by examining the mth$dontfork flag, which must be set on entry to a parallelized loop and cleared on exit.

Reentrant Runtime Libraries

The following libraries have been made reentrant:

- System Utilities Library (libU77.a)
- Intrinsic Library (libF77.a)
- Math Library (part of libc.a)
- Fortran I/O library (libI77.a,libI66.a)

Reentrant I/O does not imply that "writes within writes" will work. For example, you should not try to write from a function invoked from an I/O list.

Other Features

Multiple Architecture Support

This release of the compiler supports both C1 and C2 class machines. CSO's Convex system is class C2. The following additional instruction support is provided for C2 class machines. These instructions are generated automatically if the compiler runs on a C2 class machine and you don't specify otherwise.

You can specify the target machine architecture using the flag –tm. If –tm C1 is used, the new instructions described above will not be generated. If –tm C2 is used, the new instructions described below are generated as appropriate, even if the compiler is running on a C1 class machine. If the flag is not used, instructions are generated for the class of machine the compiler is running on.

Vector Converts

Vector convert instructions are generated instead of calls to vector math library functions.

Intrinsic Instructions

The compiler generates intrinsic instructions for the following hardware intrinsics:

- single and double precision scalar and vector square root
- single and double precision scalar sine, cosine, arctangent
- single and double precision scalar natural logarithm and exponent

Operations under Mask

Operation under mask instructions are generated by the code generator for C2 to reduce the number of mask.t and mask.f instructions generated.

Compiler Diagnostic Output

The new compiler diagnostic output is controlled by the command line option –or x, where x is one of none, loop, array, all. The old vectorization summaries have been removed. The command line option –nv is now obsolete and is ignored.

The loop table consists of two parts. The first part is always printed, the second is only printed if there is relevant information to be shown. The first part consists of the following columns:

- Line Num. — source line of the beginning of the loop
- Iter. Var. — name of the iteration variable controlling the loop, or *NONE*
- Reordering Transformation — Scalar, nn% VECTOR, FULL VECTOR, PARALLEL, PARA/VECTOR, Dist, Inter

- Optimizing/Special Transformation — Reduction, Synch, Unroll, Pattern
- Mode — if this column has entries, it refers to multiple execution modes controlled by dynamic selection: S(scalar), V(vector), P(parallel), Z(parallel-outer-vector-inner).

The second part consists of the following columns:

- Line Num. — source line of the beginning of the loop
- Iter. Var. — name of the iteration variable controlling the loop, or *NONE*
- Analysis — why a transformation or optimization couldn't be performed, or additional information on what was done

The array table consists of the following columns:

- Line Num. — source line on which the reference occurs
- Var. Name — name of the array which is referred to
- Optimization — Hoist or Sink
- Dependencies — list of array references in a recurrence, in the form name@number. If the reference could be to any memory location, it is in the form *MEM@number. If the reference is to a call argument, it is in the form *CALL*@number.

VMS Fortran Compatibility

The following features are supported in this release:

- Variable formats, which are re-evaluated each time they are used during format scanning/rescanning.
- The RECL= specifier (used in OPEN and INQUIRE) returns the number of MAX words, rather than bytes, for UNFORMATTED files, if the –vfc command line option is used.
- VMS file names are recognized by the OPEN, INQUIRE, and INCLUDE statements, if the user is in the COVUE environment.
- Fortran source file names have an extension of .FOR, if the user is in the COVUE environment.
- Logical names for files are FOR0nn.DAT, if the –vfc option is used.
- The logical FOR0nn file is associated with unit number nn.
- Arguments may be omitted in a CALL statement. Only those argument types which can be omitted in VMS Fortran can be omitted in CONVEX Fortran.

DISK SPACE ON UNIX

Bob Gerard
CSO Systems Consultant

If you're a UNIX user, you've probably found yourself running short on disk space at one time or another. As you know, many of us share the same disk space on UNIX machines. It's your responsibility to make sure you aren't being a "disk hog." If you think you are taking up a lot of disk space, there are several things you can do to "un-hog" yourself.

The first thing you can do as a responsible UNIX citizen is to check your disk usage often. One of the easiest ways to do this is with the **du** command. If you type **du**, the machine will respond with the total number of blocks of disk space you are using. Using the **–a** option will generate a separate entry for each file. The **–a** option works recursively on directories, so it will first show entries for all the files in the directory, and then the grand total for the directory itself. To see the total space used by everyone on your disk, you can use the command

```
df $home
```

from your home directory. Then you can compare your disk usage (from the **du** command) to the total disk usage (from the **df** command) to see how much of the total disk space you are using. If you find that you're using an excessive amount of the total disk space, or that the percentage of full disk space is getting near 100%, you should try to free up some disk space.

Now, if you've checked your disk usage and found it somewhat piggish, you should take a look at your files. There are probably some you can delete without causing yourself too much trouble. Get rid of these and free up some disk space. There also may be files that you want to keep, but that you won't be using for a long time. A good alternative is to store these on tape. UNIX provides a tape archiving facility called **tar** that lets you archive files on tape. Check the man page on **tar** for further details.

What about those big files that you only use from time to time? You can't just delete them, and it's not worth it to put them on tape. But, you need to free up some disk space. One solution is to reduce the amount of disk space these files occupy. You can do this with the **compress** command.

The **compress** command uses a coding algorithm to replace a given file with its encoded version. You can think of it as "freeze drying" your file. It will check your file for common strings, and replace those strings with a simple code word. In this manner, **compress** can reduce the size of your file as much as 50% to 60%. And that translates into a lot of freed-up disk space.

Of course, when you have freeze-dried food, you have to add water to restore it to normal. Similarly, with compressed files, you must use the **uncompress** command to make your file readable again.

Let's look at an example. Suppose you have a file named **ralph** that you would like to compress. You could simply issue the command

```
compress ralph
```

and the file would be reduced. When you check the directory, you'll see **ralph.Z** listed. **Compress** adds the .Z suffix to compressed files to remind you that they are, in fact, in compressed form. Now, if you wanted to use **ralph** again, you would have to use the command

uncompress ralph

to expand it back to normal. There's no need to add the .Z suffix; **uncompress** does it for you.

Compress has a few options which you will find useful. The –v option will allow you to view the percentage of reduction for the file. In our example, if you had used

compress –v ralph

you would have received a message like

ralph: Compression:38.8% -- replaced with ralph.Z

to let you know that the file had shrunk 38.8%.

The **–f** option comes in handy when you want to reduce entire directories. It will force **compress** to reduce the files, even if some of them do not actually shrink. For example, if you had a directory called **mywork**, you could compress all the files in it by using

compress –f mywork/*

All the files (specified by /* in the above command) in the directory **mywork** will be reduced. If some of them are already reduced, the **–f** option allows **compress** to rewrite them without prompting you for an OK.

What if you just want to look at a file that you have compressed? The **zcat** command performs the same way as the standard **cat** command, only it works with compressed files. When you use **zcat**, the actual file remains in its compressed format. That way, you can examine a compressed file without disturbing it.

As always, you can get more information on **compress**, **uncompress**, and **zcat** by typing

man compress

the next time you log into UNIX. You'll soon be saving disk space with "freeze-dried files."

Whether you're removing, archiving, or compressing files, the UNIX community will appreciate your effort to free up some precious disk space. And, they won't call you a "disk hog," either.

IBM INFORMATION NETWORK

Vicky Dingler
CSO Statistical Consultant

CSO has obtained a license for the IBM Information Network (IN) facility that allows high-speed access to several national data bases. In the past, data exchange has been done at 300, 1200 or 2400 baud through modems. Now, IN allows data access at 14,400 baud. Therefore, connect-time charges to these data bases are reduced radically. Long distance telephone calls are eliminated because a local call to VMD will connect you to IN, which in turn will connect you to the desired data base.

Anyone who has access to VMD through UIUCnet, Sytek, or a modem can access this vast amount of data with no new equipment on their part. In fact, a VMD signon is not necessary. VMD is used only as a pathway to IN.

IN has access to various well-known nation-wide data bases, such as Dow Jones News/Retrieval and Agridata Resources, Inc. One data base that is currently available is the American Airlines Commercial and Easy Sabre System. This data base provides access to airline travel information and reservation systems for 650 airlines. It provides information on flight, hotel, and automobile rental availability. The fee for this data base service is a $100.00 one-time fee per userid and a $3.60/hour connect-time fee. If you are interested in acquiring this data base service, please contact Vicky Dingler at 333-4668.

There are several other data bases available through Information Network. A list and short description of the data bases available follows. Each data base has its own pricing structure and fee basis. Information on each of the data bases can be obtained by contacting Vicky Dingler at 333-4668.

An Incomplete List of Databases Available Taken from IBM Information Network Materials

Agridata Resources, Inc. -- commodity market prices, agriculture news, market advice, market analysis and reviews, crop and livestock reports, weather and agriculture education.

BRS Information Technologies -- publications and extracts in medicine, health, pharmacology, biosciences, education, business, finance, social sciences, and humanities.

Dialog Information Services, Inc. -- complete text of journals and newsletters, business and financial data directories.

Dow Jones News/Retrieval -- interactive news and financial service for current market reports, research on competing companies.

STN International -- Scientific and technical databases for chemistry, biology, energy, engineering, patents, construction materials, textiles, math, physics, petroleum, biotechnology, polymers and plastics. STN is a non-profit service, sponsored jointly by Chemical Abstracts Service, FIZ Karlsruhe, and Japan Information Center of Science and Technology.

Western Union (Easylink) -- message sending services: telexes, electronic messages, Mailgram messages, telegrams, cablegrams, priority letters, courier-delivered Overnight Express documents and fax messages.

Westlaw -- legal research service with access to full texts of federal, state and specialized legal libraries.

SPSSX TRENDS ON VMD

Joan Mills
CSO Statistical Consultant

The procedure TRENDS has been activated in SPSSX Release 3.0 on IBM CMS VMD. SPSSX TRENDS is a comprehensive set of procedures for analyzing and forecasting time series.

TRENDS provides:

- Convenient plotting facilities for time series
- A state-of-the-art ARIMA modeling procedure
- Exponential smoothing
- Enhanced regression facilities, including weighted least squares, two-stage least squares, and regression with first-order autocorrelated errors
- Seasonal adjustments using X11ARIMA
- Spectral analysis
- A host of utilities to simplify the task of analyzing and forecasting with time series data.

SPSSX TRENDS is documented in the manual *SPSSX TRENDS*, available at the CSO Distribution Center (1208 W. Springfield, Urbana). Copies are available for your inspection at the CSO Statistical Consulting Office (85 Commerce West) and in the Undergraduate Library Closed Reserves (lower level).

A sample SPSSX TRENDS program is shown below. This program, including the data, can be found on the SPSSX Release 3.0 disk after issuing

```
LINKTO SPSSX
```

The file is called DEMOTRD SPSSX. To run SPSSX TRENDS, one adds the appropriate TRENDS commands to an SPSSX job and then runs the job as usual:

```
LINKTO SPSSX
SPSSX fn
```

where **fn** is the filename of an SPSSX program (with filetype SPSSX). Following is the sample TRENDS program.

```
TITLE DEMOTRD -- TRENDS TEST JOB
SET WIDTH 80

COMMENT  This job will run three representative TRENDS procedures,
         CASEPLOT, ACF (autocorrelation function), and WLS (weighted
         least squares).
```

```
DATA LIST /INPUT 1-4 OUTPUT 6-11(1) GROUP 13
BEGIN DATA
1008  783.2 8
1015  859.4 5
1006  838.0 6
  .
  .        other data lines
  .
1024  922.2 4
1029  761.7 9
END DATA
CASEPLOT INPUT
ACF INPUT
WLS OUTPUT WITH INPUT / SOURCE=GROUP / DELTA=1 TO 3 BY .5
FINISH
```

Note: one could combine the interactive processing potential of SPSSX with time series analysis using TRENDS. See page 18 of the *SPSSX User's Guide 3rd Edition* for information about SPSSX in interactive mode. This may be good news for those lamenting the passing of IDA (Interactive Data Analysis), which had a regression/time series emphasis. IDA was an SPSS, Inc., product recently removed from VMD.

By the time you read this article, it is expected that SPSSX Release 3.1 will be available as a future product (accessed via LINKTO SPSSX(F), also with TRENDS activated.

XEDIT SELF-TEACHING TUTORIAL INSTALLED ON VMD AND VME

Joan Alster
CSO Statistical Consultant

Self-Teach, an IBM-written tutorial for XEDIT has been installed on VMD and VME. Self-Teach will be especially helpful to people just learning to use CMS and the XEDIT editor. However, even long-time XEDIT users will find useful tidbits within the self-guided instruction. Professors whose classes use VMD or VME may want to recommend students use Self-Teach to learn basic XEDIT commands.

To access Self-Teach, issue the command:

LINKTO SLFTEACH

followed by the command:

SLFTEACH

or

SLFTEACH LESSONnn

The first form of the SLFTEACH command provides introductory information. The second form is used to access a specific lesson.

There are 15 lessons, as follows:

LESSON01	Tailoring Your Screen
LESSON02	Moving Through a File
LESSON03	Prefix Commands
LESSON04	Targets
LESSON05	General Commands I
LESSON06	General Commands II
LESSON07	General Commands III
LESSON08	Additional XEDIT Commands
LESSON09	Multiple Screens
LESSON10	Character Edit
LESSON11	Neat and Spiffy Commands
LESSON12	The XEDIT Profile
LESSON13	Introduction to Macros
LESSON14	Macros II
LESSON15	Macros III

The above information can be obtained online by issuing the command:

HELP CSO SLFTEACH

GRAPHICS EQUIPMENT FOR SALE

IS IVAS Image Viewing and Analysis Station**

The IVAS is a high-resolution color graphics processor. It has a resolution of 1024 * 1024 * 24 bits and includes a system base unit, 19" RGB color monitor, Q-BUS interface board, and Logitech 3-button mouse. The system is controlled by routines accessible through "C" and Fortran. Operations such as histogram manipulations, contrast stretching, level slicing, pseudo coloring, zoom and scroll, animation loops and graphics editing are available. The system was purchased new in November, 1986, and is in perfect condition. New: $29,491 – Asking: $9,000

Honeywell Model 3000 Color Graphics Recorder

The Honeywell is a camera system designed for producing high resolution, high contrast slides or photographs from a computer display. The system is designed to capture 1024 * 1024 color images, and includes the following three mountable cameras:

Model 3035 Konica FT-1 35MM Camera,
Model 3116 Bolex 16MM Motion Picture Camera,
Polaroid SX70 Camera

The Honeywell accepts RGB, B/W, Sync and RS-232 signals. This unit was also purchased new in November, 1986, and is in pristine condition. New: $9,824 – Asking: $4,500

Matrix Model 3000 Color Graphics Recorder

The Matrix is much like the Honeywell listed above. This system is designed for 512 * 512 color image recording. It includes a Model 3035 Konica FT-1 35MM Camera and accepts RGB, B/W, Sync and RS-232 signals. This system was acquired from another department in January, 1987, but is still in very good condition. New: $10,452 – Asking: $2,100

For more information please contact: John Kemp, Department of Atmospheric Sciences, (217) 333-6881, or e-mail kemp@uiatma.atmos.uiuc.edu.

HP LASERJETS FOR SALE

The Police Training Institute has seven HP Laserjet 500+ printers for sale. They will sell any, or all, for $1000 each. They also have two HP Laserjet 500 printers for sale at $900 each. If interested, contact Roger Adams at 244-8087.

Survey of Interest in The IMSL Subroutine Library

If you are interested in obtaining a site-license for the IMSL Subroutine Library on your PC or workstation, please complete the survey below . Please note that only machines involved in University work are eligible for a site license.

Name: _____

Campus Address: _____

Telephone: _____-_____ (Office) _____-_____ (Home)

My affiliation with the University is:

_____Faculty _____Staff _____Student Other:_____

I own an IBM PC or compatible: ___No ___Yes Model:_____

I own a Sun workstation: ___No ___Yes Model:_____

I own an Apollo workstation: ___No ___Yes Model:_____

I own a Dec Vax workstation: ___No ___Yes Model:_____

I would like to get IMSL on a site-license basis: ___No ___Yes

Number of copies my department or research group might get: _____

The amount I can afford to spend per copy of IMSL is:

___$0-$100 __$100-200 __$200-300 __$300-400 __$400-500 __$500-600

___$600-700 __$700-800 __$800-900

I will use the IMSL Library for the following:

___Research ___Class ___Both ___Other:_____

A return address appears on the back of this form.
Please fold it and return it via Campus Mail.

CAMPUS MAIL

Stan Kerr
CSO User Services
CSO - 150 DCL
1304 W. Springfield Avenue
Urbana, Illinois 61801.

OFF-LINE MAILING LIST

If you wish to be placed on our mailing list, have a change of address, or wish to be deleted, please check the appropriate box and fill in the information below. Please help us keep our mailing list up-to-date by informing us if issues are being sent to someone no longer in your department; fill in the information below and return to us so that his/her name may be removed from the list.

Please check as appropriate:

_____ Please *ADD* my name to the mailing list.

_____ Please *DELETE* my name from the mailing list.

_____ Please *CHANGE* my address (provide old address also).

If you have a campus mailing address:

Name _____

Department _____

Room & Bldg _____ M/C_____

If you do not have a campus mailing address:

Name _____

Address _____

_____

_____

City, State, Zip _____

If you are requesting a change of address, please indicate your old address:

_____

_____

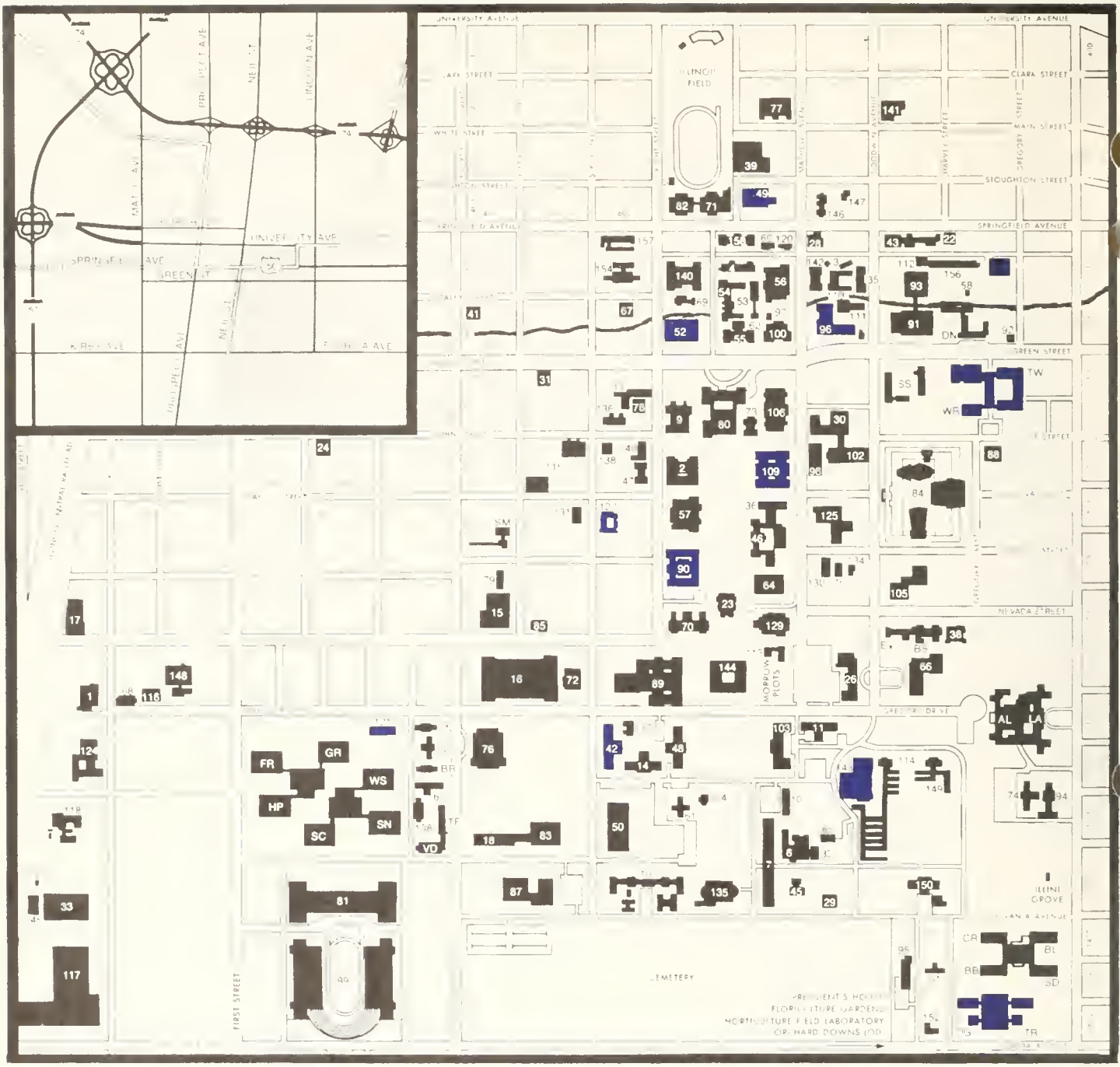
Mail to:

OFF-LINE
Computing Services Office
150 Digital Computer Laboratory (M/C 256)

University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH	
14 Digital Computer Lab 333-7685	Monday-Friday, 6 am - 12 mid. Saturday-Sunday, 8 am - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Thursday, 8 am - 12 mid. Friday-Saturday, 8 am - 10 pm Sunday, 12 noon - 10 pm
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday, 9 am - 12 noon Sunday, Closed
CHEMISTRY	
154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Sunday-Thursday, 12 noon - 12 midnight Friday, 12 noon - 5 pm Saturday, Closed
ELECTRICAL ENGINEERING	
146 Electrical Engineering 333-4936	Monday-Thursday, 8 am - 8 pm Friday, 8 am - 5 pm Saturday, 12 noon - 5 pm Sunday, Closed
ENGLISH BUILDING	
8 English Building 244-0386	Monday-Thursday, 8 am - 12 mid Friday, 8 am - 6 pm Saturday, 12 noon - 6 pm Sunday, 1 pm - 12 mid
FAR	
Florida Avenue Residence Halls 333-2695	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
ISR	
Illinois Street Residence Halls 333-0307	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Friday, 8 am - 12 mid. Saturday-Sunday, 12 noon - 12 midnight
PSYCHOLOGY	
453 Psychology 333-7815	Monday-Friday, 8 am - 5 pm Saturday-Sunday, Closed
SOCIAL SCIENCE	
202 Lincoln Hall 333-0309	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, 12 noon - 5 pm
ILLINI UNION MICROCOMPUTER SITE	
244-7935	Monday-Thursday, 8 am - 12 midnight Friday, 8 am - 10 pm Saturday, 10 am - 10 pm Sunday, 12 noon - 12 midnight
MEDIA CENTER -- UNDERGRADUATE LIBRARY	
333-2667	Monday-Thursday, 8 am - 1 am Friday, 8 am - 12 mid Saturday, 9 am - 12 mid Sunday, 12 noon - 1 am



CSO Sites (marked in blue on map)

42 Commerce West
49 Digital Computer Lab
52 Electrical Engineering
90 Lincoln Hall
96 Mechanical Engineering
109 Chemistry - Noyes Lab
121 CRH Snack Bar
122 Psychology
143 Agriculture - Turner Hall
Illinois Street Residence Halls
Florida Avenue Residence Halls
CSO Office Building
(101 South Gregory)

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off line

University of Illinois at Urbana-Champaign

Director: George Badger
Editor: Lynn Bilger

Computing Services Office

IMPORTANT TELEPHONE NUMBERS

Departmental Office	150	DCL	333-1637
CSO Support Center	123	DCL	244-1000
User Accounting Office	1208	W. Springfield	333-7752
Documentation Center	1208	W. Springfield	333-9230
Systems Consulting	1208	W. Springfield	333-6133
Statistical Consulting	85	Comm West	333-2170
Text Processing Consulting	212	CSOB*	333-7318
Micrococonsulting Hotline	91	Comm West	244-0608
Microcomputer Resource Center		Federal Room, Illini Union	244-6261
Maintenance & Repair Service	194	DCL	244-1000
Tape Service, Special Plots, Special Printers.	14	DCL	333-8640

*CSOB is the CSO Office Building, located at 101 South Gregory, Urbana.

DIAL-UP NUMBERS

Terminal Server	up to 2400	baud	333-4000
SWITCH (Sytek)	1200	baud	333-4008
	2400	baud	333-4007
LCS (Library)			333-2494

LOCALNET CALL NUMBERS

Note: Certain CSO Sites are on a separate channel of LocalNet than the rest of the campus. These are designated below as **A Sites** and include the following CSO Sites: ME, EE, COMM, LH, and AGRIC. All other LocalNet access areas are designated as **B Sites**.

VMD	CALL 4400	(A Sites)
	CALL 4500	(B Sites)
VME	CALL 4600	(A Sites)
	CALL 4700	(B Sites)
uxa (Pyramid 90x)	CALL 66DD	(A Sites)
	CALL 66AA	(B Sites)
uxe (Pyramid 90x)	CALL 12FA	(A Sites)
	CALL 12EE	(B Sites)
uxf (Sequent)	CALL 66CC	(A Sites)
	CALL 66BB	(B Sites)
ux1 (Sequent S81)	CALL 1650	(A Sites)
	CALL 1600	(B Sites)
uxh (Convex)	CALL 1850	(A Sites)
	CALL 1800	(B Sites
LCS (Library)	CALL 6400	

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OFF-LINE is published every two months by the Computing Services Office at the University of Illinois, Urbana-Champaign.

Articles, suggestions, comments and/or subscription requests may be sent to: Lynn Bilger, Off-Line Editor, 150 Digital Computer Lab, University of Illinois, 1304 W. Springfield, Urbana, IL 61801 (telephone: (217) 333-6236; email: bilger@uxe.cso.uiuc.edu).

APPLE SCANNER AT MRC

The MRC (Microcomputer Resource Center in the Illini Uinion) has just obtained a new Apple Scanner. It is capable of scanning at resolutions from 75 to 300 dots per inch, and will record up to 16 levels of gray. The scanner is supplied with two software packages: AppleScan, which can be used to scan in images to use with various graphics programs; and HyperScan, which allows easy scanning of images into HyperCard stacks.

UNIX 4.2 MANUALS DISCOUNTED

UNIX 4.2 manuals are now on special sale at the Distribution Center, 1208 W. Springfield, Urbana. CSO has quite a few of the UNIX 4.2 manuals left, and we are offering them to users for $5.00 per set (2 volume set of the Programmer's manuals = $5.00; 2 volume set of the User's manuals = $5.00). This is a real bargain since there is very little difference between the 4.2 manuals and the 4.3 manuals.

CSO INTRODUCES THE NEW SEQUENT S81

On April 3, the Computing Services Office at the University of Illinois proudly announced the arrival of its newest mainframe. The Symmetry S81, a UNIX machine from Sequent Computer Systems, Inc., is now on-line and ready for use. The Symmetry's network hostname is **ux1.cso.uiuc.edu**. This new parallel computer currently utilizes six 80386-based processors, expandable to thirty.

The **ux1** replaces the Gould machine, uxg. CSO saw a need to upgrade the flexibility and reliability of some of its existing services. The Symmetry was determined to be the most cost effective, efficient computing engine for applications such as Ingres. Users will find **ux1** quicker and much more reliable than uxg.

The new machine will run DYNIX, Sequent's implementation of the UNIX operating system. DYNIX is unique in that a single copy of the operating system is shared by all processors. Both 4.2bsd and System V applications can run simultaneously. In multiuser applications, DYNIX makes the parallel architecture completely transparent to existing software, automatically balancing work loads across the multiple processors. This will allow **ux1** to run considerably faster in real time than any of its predecessors. Parallel architecture is the most efficient and cost effective way to provide multi-user services.

ux1 will be CSO's new home for Ingres, the popular relational database package. Users of Ingres will enjoy the new speed of the package as it runs on **ux1**. For more information on Ingres, see the article in this issue, or contact Vicky Dingler (3-4668; email dingler@vmd.cso.uiuc.edu). Other applications, such as Fortran and Pascal, are available.

Logging on to **ux1** is a little different than logging on to uxg. The Localnet call number is 1600 for the public channel (B sites), and 1650 for the student channel (A sites, which include ME, EE, COMM, LH & AGRIC). If you are dialing up, you must connect through the terminal server. Call 333-4000 and enter **ux1** when prompted for the name of the machine. The terminal server supports modem speeds up to 2400 baud. If you need help dialing up, call CSO's System Consultants at 333-6133. (Also see the terminal server article in this issue for further information.)

CSO strives to provide the latest and most productive equipment to its users. We are pleased to welcome our newest addition.

CSO UPGRADES CONVEX MACHINE

The Computing Services Office continues to improve its mainframe services by upgrading the Convex C210 mainframe to a C220. The Convex, known throughout the campus as uxh, will seem much faster to its users now that the upgrade is complete.

The extra speed results from the addition of a new processor. Now the Convex has two processors, instead of just one, to handle all its work. This extra processor allows the computer to take full advantage of its ASAP, or Automatic Self-Allocating Processor design. The ASAP architecture, designed by Convex Corp., assigns each processor as it becomes free to a new piece of work. Therefore, the processors are never idle as long as there is still processing to be done. This provides users with a kind of "super-parallel" environment.

Of course, ASAP also stands for "As Soon As Possible." And that's what users will see when they run their jobs. The new system will result in a visible reduction of processing time. This, in turn, will make everyone's jobs run more smoothly and efficiently.

Another advantage of the upgrade is memory expansion. The main memory in uxh has been doubled to 256 megabytes. This extra memory contributes to the machine's new-found speed, and provides more space for everyone's work.

If you need to run large computational programs that require a lot of memory, uxh is the system to use. For more information, call CSO's Systems Consultants at 333-6133.

NEW AND REVISED CSO DOCUMENTATION

A new version of the booklet, *An Introduction: Computing Services Office*, has been published and is available free at the CSO Distribution Office, 1208 W. Springfield, Urbana. The booklet provides brief overviews of User Services, Microcomputer Support, CSO Mainframes, Networks, CSO Sites, and Software. New users will find the booklet particularly useful.

Listed below are new or revised Reference Guides and Technical Notes that have gone to the printer and that should be available at the sites shortly.

RF-0.1	Reference Guide List	Revised 2/01/89
RF-0.1a	Technical Note List	Revised 1/20/89
RF-0.2	Documentation List	Revised 2/01/89
RF-0.3	CSO Sites	Revised 2/15/89
RF-0.14	Accessing CSO Computer Systems	Revised 1/20/89
RF-0.22	Transferring Files Between Computers on the Network	Revised 1/30/89
RF-20.6	VMBATCH	Revised 1/20/89
RF-20.7	VMBATCH Class Specification	Revised 1/20/89
RF-20.14	VM/CMS Specifics for Using FTP	Revised 1/30/89
RF-23.2	SAS Under CMS	Revised 1/30/89
RF-30.8	Software Site Licenses and Educational Discounts	New 12/15/88
RF-40.1	UNIX to UNIX Networking Utilities	Revised 1/20/89
RF-41.7.2	ex Editing Commands	Revised 1/19/89
RF-41.7.3	Regular Expressions and Substitute Patterns for ex Editor	Revised 1/19/89
RF-41.7.4	ex Options	Revised 1/19/89

RF-41.8	vi/ex Quick Reference	Revised 1/19/89
RF-41.8.2	vi Editing Commands	Revised 1/19/89
TN250	Kermit for File Transfer	Revised 1/30/89

WHAT'S NEW IN THE MRC?

Bi-Shen Chuang and Mark Zinzow
Microcomputer Resource Center

The Microcomputer Resource Center provides library and information services to campus personal computer users. At the Center, you can access current microcomputing journal literature, reference works, and back issues of journals. We also offer a wide assortment of public domain, shareware, and commercial software for Amiga, Atari, Macintosh, and IBM & compatible computers. Through telecommunications, we intend to move our services closer to your home and work place. Our software holdings, magazine list, Wisc-Ware list, anti-virus software, the entire PC-SIG collection, and a great deal of public domain programs downloaded from BBS's are available on mainframe computers (VMD, uxa or uxe). Using a modem, LocalNet, or UIUCnet, you can reach our services from your desktop! In addition, the MRC provides expert referral and assistance to meet your information needs.

IBM Higher Education Software Consortium

Recently the MRC has acquired a new category of software: IBM Higher Education Consortium Software. The Consortium was established to enhance the application of IBM's software in teaching and research, and to provide feedback to IBM concerning the usability of its software in an academic environment. The University of Illinois has been enrolled as a member. Membership allows the University the right to use, at no additional cost, most of a wide range of software packages on any University-owned IBM mainframe or RT PC, so long as its use is in direct support of academic activities. The MRC is a distribution Center for the consortium software that runs on PC's and RT's. End users, if interested in ordering these programs, can obtain pricing information, order forms, and lists of available packages and documentation at the MRC. Currently we have the following packages for the IBM RT PC using the AIX operating system:

Title	*Application*
IBM AIX X-Windows *(Two sets of five disks are available, one of which may be checked out along with the installation instructions.)*	Windowing System
IBM AIX Workstation Host Interface Program 1.1	Communications
IBM AIX/RT Network File System 1.1 (Disks only)	Networking
IBM The graPHIGS Programming Interface	Graphics Programming
IBM RT PC Data Management Services	File Management
IBM RT PC AIX VS Language/Operating System Interface Library *(An application-program interface that provides access to the system calls of the AIX operating system from programs written either in RT PC VS FORTRAN or in RT PC VS Pascal.)*	
IBM RT PC VS FORTRAN	Compiler
IBM RT PC VS Pascal	Compiler
IBM RT Personal Computer AT Simulator	AT Simulator

The only software for PC's available under the consortium are those that are part of a mainframe software package. At present these are PCIP (part of the VM TCP/IP package) and PC Profs. Currently we are only planning to distribute PCIP (telnet, ftp, mail and related programs) through the MRC.

Atari ST Hardware and Software

One Stop, a local computer center featuring the Atari ST, has added a 30 megabyte hard drive, a second floppy disk drive, and a Macintosh emulator to the Atari ST they have provided us. Along with the hardware, they also provided some commercial software on the hard disk for evaluation including compilers, a desktop publisher, telecommunications, and some CAD software including Stereo CAD-3D 2.0.

Public Domain Software

At the end of January, the Center received the updated PC-SIG CD-ROM that covers disks 1 to 1240. You can find hundreds of new or updated programs for word processing, printer utilities, games, etc. For example, **PC-File:dB** now makes PC-File and dBASE files compatible with each other. At this writing, the new files are available from **uxa.cso.uiuc.edu** via anonymous ftp. By the time this article is in print, the PC-SIG disk on VMD should also be updated.

In February, we also updated nearly 80 Macintosh public domain disks, and added a few new disks. Please check the Macintosh User's Group Newsletter for disk news. Of course, our Amicus and Fred Fish collection is also growing. Two packages are of particular interest. One, Virus X 3.20 by Steve Tibbett, is an anti-virus software package effective against 16 known viruses that infect the Amiga. Another, Turbo Backup V 1.00, is a very good diskcopy program for the Amiga which we recommend our patrons use when making copies of disks on the Amiga.

Phil Katz, author of PKARC, PKPAK, and many other massively useful data compression utilities has recently released PKZIP and PKUNZIP. These programs, along with documentation, technical information, etc., are found in the self-extracting program PKZ092.EXE. Copies are available on uxe in the directory **~ftp/pc/exec-pc** and on the PC-SIG disk on VMD. Exec-PC and Simtel20 have already converted their ARC files to the new ZIP format. Over time, CSO will also be providing more and more software in this new format because of its greater efficiency and its support of subdirectories.

Public Brand Software is another company besides PC-SIG that specializes in the collection of publicly distributable software. While the MRC does not purchase or subscribe to the disks they make available, we can provide a central location for sharing them. Catalogs are available on line, as well as in the MRC. Recently, four disks were donated to the MRC; they are:

Title	*Filename*
UH12.0 Utilities for the AT *(Includes a useful program to prevent writing to 360K disks in 1.2Mb drives and another to backup your CMOS setup information to a file.)*	pbsuh120.arc
GA34.0 War Board Games	pbsga340.arc
AR15.0 Ford Simulator	pbsar150.arc
CP3.0 Copy Protection 3	pbs-cp30.arc

These disks are available on uxe in **/micro/pc/pbs** (~ftp/pc/pbs). Please see the file README in that directory for more information.

Many other new programs are also available, but are too numerous to mention here. Descriptions are routinely sent out on the PDUSIG mailing list. Anyone on campus may subscribe by sending mail to LISTSERV@UIUCVME.BITNET with the following line being the mail message:

SUB PDUSIG your name

The following is an example of the sort of announcements that go out in PDUSIG:

```
----------------------------Original message----------------------------

I put this program on uxe in ~ftp/pc/simtel20.  The following excerpt
describes it:

Info-IBMPC Digest           Sun, 12 Mar 89       Volume 89 : Issue  35

Today's Topics:
        CNFMT103 pop-up diskette formatter runs in background
            ZCOMM communications program for MSDOS updated
        . . .

Date: Tue, 28 Feb 1989  15:17 MST
From: Keith Petersen <w8sdz@WSMR-SIMTEL20.ARMY.MIL>
Subject: CNFMT103 pop-up diskette formatter runs in background

Now available from Simtel20:

pd1:<msdos.dskutl>
CNFMT103.ARC    Pop-up diskette formatter runs in background v1.3

Con>Format stands for Con(current) For(matter) and offers you the
capability of formatting diskettes "in the background" while other work is
being done on your computer.

Con>Format is a "pop-up" utility.  That is, it stays dormant until a
particular combination of keys (which you specify yourself) is depressed.
Con>Format then opens a "window" on the display and requests which drive
to format and what kind of format to write.  Once this is done, the
"window" disappears and does not reappear until formatting is complete.
In the meantime, you have full use of your computer, excluding the
diskette drives (you may use the hard disk).  Hence the term "background"
formatter.

Con>Format works with 5.25" and 3.5" diskette drive types, and provides
formatting for 180K, 360K, 720K, 1.2M and 1.44M diskettes.  The format
written is compatible with DOS versions 2.0 through 4.01 (the latest as of
this writing).

Con>Format will "hold up" a diskette access from a running program if a
diskette is in the process of being formatted.  A window "pops up" to
notify you of this occurrence.  When formatting is complete, the diskette
access is performed and program execution continues.

--Keith Petersen
Maintainer of the CP/M & MSDOS archives at wsmr-simtel20.army.mil [26.0.0.74]
DDN: w8sdz@wsmr-simtel20.army.mil
Uucp: {ames,decwrl,harvard,rutgers,ucbvax,uunet}!wsmr-simtel20.army.mil!w8sdz
```

Demo Packages

(Note: Software listed in the following sections is for the IBM PC family unless otherwise specified.)

The Center has a growing library of demonstration packages. Vendors who are not able to provide us with the full evaluation copies of their products would like you to try out their demo versions.

Title	*Publisher*	*Application*
Crystal	Intelligent Environments, Inc.	Expert System
Einstein Writer	United Software Industries	Word Processor
Friendly Finder	Proximity	Database Search Utility
Mathematica	Wolfram Research	Mathematics

(for 386-Based MS-DOS Systems; demo will run on any PC or PS/2 with a VGA.)

Commercial Software

WordPerfect for the Amiga	WordPerfect Corp.	Word Processor
Workbench 1.2 (Amiga)	Commodore	Operating System
VersaTerm-PRO 3.0 (Mac)	Synergy Software	Terminal Emulation/ Communications
Actor 1.2	Whitewater Group	Object-oriented programming language

(Please note that only documentation is available for the following packages.)

NDP C-386	MicroWay, Inc.	Compiler
NDP FORTRAN 386	MicroWay, Inc.	Compiler
NDP Windows 1.0 *(For use with NDP C-386)*	MicroWay, Inc.	Windowing Software
NDP-PLT *(Plotting package for NDP FORTRAN 386)*	MicroWay, Inc.	Graphics
NDP/FFT *(A library of one- or two-dimensional FFT and related routines)*	MicroWay, Inc.	
Halo Interface to NDP FORTRAN and NDP C	MicroWay, Inc.	

Updates

As-Easy-As 3.01 H	Trius, Inc.	Spreadsheet
MacDraw II v.1.0v4 update disk (Mac)		
Macintosh System Software Update 6.0.3 (Mac)		

Wisc-Ware

Based at the University of Wisconsin-Madison, Wisc-Ware is a consortium of colleges and universities that distributes research and instructional software for the IBM microcomputers. Our University is a member. Their quarterly distributions have made more than one hundred demonstration packages available at the MRC. The latest catalog (March, 1989 issue) provides descriptions of all currently available software programs indexed by subject, title, and package number. In addition, it includes the cost of each program and ordering information. Some of the software is in public domain, and may be freely copied by faculty, staff, and students of member institutions. Wisc-Ware software may be purchased under three different licensing options: a campus-wide site license, an individual license, and a class license. (Note not all programs are available under all three options.) A site license allows anyone on the campus to use the software under the terms of the license. An individual license is purchased by an individual and may be used only by the purchaser under the terms of the license. Individual licenses are available at reduced cost to member institution faculty. A class license provides a faculty member with the software, documentation, support from Wisc-Ware, and the right to make free copies for the use of his/her students in a given class. For more detailed information concerning the class licenses and order forms, please check the Wisc-Ware catalog at the Resource Center. (Free copies are available.)

The latest (eleventh) distribution of Wisc-Ware contains 28 new packages and 6 updates to the previously published packages.

Updates:

Package 99. Acid/Base Simulation from Cornell University

Package 120. WSALT1 from University of Wisconsin-Madison

Package 124. EDC from University of Wisconsin-Madison (None of the above updates affect the package documentation)

Package 77. Physics Demos from University of Wisconsin-Madison

Package 81. Flincor from University of Wisconsin-Madison

Package 90. U.S. History from Johnson County (These three updates include new package documentation)

New Packages:

(Note the following packages are not in public domain. An asterisk (*) indicates that the package requires Microsoft Windows.)

127. Differential Equations and Surfaces for Dos 1.0 University of Illinois
This program uses computer graphics to make complicated concepts in differential equations easier to understand. It also demonstrates three- dimensional rotations, a new parser, and the power of numerical methods. (A Microsoft Windows version of this package is available as package #88)

129. Barbara the Syllogizer 1.0 University of Illinois
This program provides exercises in syllogistic reasoning. The instructor can supply the examples that he/she wishes to use in drilling the student.

132. Picasso 0.5* Cornell University
Picasso can be used to generate microstrip masks, on an ordinary plotter. It was written in part to supplement the artwork capabilities of the microwave CAD program PUFF. (Package #58)

133. MINIMAT 1.94 University of Wisconsin-Madison
MINImal MATlab is an implementation of Clive Moller's language MatLab. It is designed for teaching elementary linear algebra to undergraduates.

134. Macroeconomic Simulations 1.0* University of Pennsylvania
A tutorial introduction to the basic concepts in Macroeconomics, including IS/LM analysis and a study of multipliers. Requires Microsoft Excel.

135. CONTROL 1.0 Yale University
CONTROL simulates the operation of a proportional controller acting to maintain the level of liquid in a tank.

136. CARP 1.1 Pennsylvania State University
Computer-assisted Regional Planning is a software concept that links the drawing editor of AutoCAD with dBASE through a series of linker programs written in BASIC. It provides a low-cost computer mapping capability within the environment of small regional planning offices in Third World countries.

138. WINSMITH 1.0* University of Minnesota
A program for interpolation and maximization of the interpolated function.

139. SMITH 2.0* University of Minnesota
SMITH performs automatic Smith Chart calculations.

140. FIELDS 2.0* University of Minnesota
FIELDS plots electrostatic fields arising from coplanar point charges.

141. WINHELP 1.0* University of Washington
An interactive information dispenser that manages an outline formatted file and provides the user with quick access to the information contained in the file.

142. SPA 2.0 Yale University
Simulated Political Arena is an interactive simulation program that gives students an understanding of various concepts fundamental to political behavior.

143. YALAB 1.5 Yale University
Yale Lab Data System is for entering, editing, and analyzing simple numeric data. It includes averaging, standard deviation, least-square fitting, and graphs.

145. Unknown Solution Experiment 1.0* University of Texas-Austin
A popular "unknown" solution experiment. There are 13 reagent bottles that can be mixed and the reactions reordered. The second part of the experiment mixes the order of the bottles and removes the labels. The student then must use the information built-up from the first part to discover the contents of the unknown reagents.

148. WELLTEST* University of Texas-Austin
A computer-aided pressure transient analysis program for flowing or shut-in oil and natural gas wells.

150. Picture Statistics 1.0* University of Minnesota
An interactive program for instruction in statistical association indexes for cross-classification tables; it integrates descriptions, equations, step-by-step calculation procedures, assumptions and some graphics displays.

152. SOFOCL 1.0* University of Minnesota
SOFOCL presents the basic five soil forming factors effects on soil profile development, soil profile nomenclature, soil classification, and representative state location, using interactive procedures.

154. DUCT 1.0* University of Minnesota
DUCT allow the specification of a duct cross-section and displays the details of the corresponding velocity and temperature fields.

155. NUTCY 1.0* University of MInnesota
NUTCY is a Regional Nutrient Cycle Simulation program that simulates the flows of nutrients through an ecosystem, given the environmental factors that control the flow.

158. Exotic Fonts for HP LaserJet 1.0 University of Pennsylvania
This program contains downloadable fonts for the HP LaserJet and HP LaserJet Series II. It includes fonts for the following languages: Armenian, Cyrillic, Greek, Hebrew, Coptic, and international phonetics.

159. Computer Programs for Literary Analysis 2.0 Univ. of Pennsylvania
A program for developing one's skills in writing programs for textual research.

161. SOLRAD 1.1 University of Wisconsin-Madison
A solar radiation computation program that computes daily and seasonal changes in solar spectrum, and total energy available, and to compute time-dependent air temperature changes, given daily minimums and maximums.

167. MicroBEAM 1.0* University of Illinois
This program calculates displacements, rotations, sheers, and moments in a continuous beam, which may be non-uniform, subject to lateral loading.

171. Aviation Radio Communications: ATIS 1.0* University of Illinois
The Automatic Terminal Information Service provides beginning aviation students an understanding of the general structure of ATIS transmissions.

172. Microcomputer Database Exercises 1.0 University of Illinois
The exercise focuses on Colonial America. Students construct their own database from a diary which the Reverend John Fiske recorded in Chelmsford, MA in the 1650s.

176. Chemical Risk 1.0* Cornell University
This program allows the user to experiment with variables of exposure that affect cancer risk from carcinogens using radon and air pollutants as examples.

177. EPIGRAPH 1.15 University of Wisconsin-Madison
An interactive instructional program that teaches students some basic concepts in plant disease epidemiology. Students can choose from three simple epidemiological models (Exponential, Logistic, and Monomolecular) and actually simulating disease epidemics. (The Windows version of this package is package# 79.)

180. SPHERE 1.0* University of Illinois
A computer program for Windows to interactively model 3-dimensional atomic structures.

NeXT Computer

The Center's Next computer has attracted many a curious user's attention. Here you can examine the cube, the high resolution MegaPixel display, and the read/write/erasable 256 megabyte optical disk. You can also learn how to use the directory browser, and search the Digital Library. Using the Unix operating system, you can play sound of CD-quality and even record your own voice and include that sound sample in electronic mail!

We have user's manuals and product information. Our Staff members are willing to demonstrate some of the NeXT's features. In addition to ours, CSO has another four NeXT computers available for public use in 14 DCL. The MRC will be storing some pubiic domain software and indexes on the NeXT. Free accounts are available for viewing and transferring these in the MRC. (Note: these accounts are temporary and do not include backup or storage of personal files.) Once you have an account, you may access the system in the MRC at the console, or over the network. You may even log in via modem and transfer files via the new terminal server recently installed by CSO.

Magazines and Newsletters

For C programmers, the Center has subscribed to the C User's Journal, a magazine published by the C User's Group eight times a year. For Generic CADD users, Generic Software News in our vendor file is a good source for new CADD products. This newsletter is published eight times a year by Generic Software, Inc.

Free Tutorial Disk

P/G % is a decision-aiding software program in our Wisc-Ware collection. Developed by Stuart S. Nagel, department of Political Science at the University of Illinois, this package now has a tutorial disk (a book on disk - Teach Yourself Decision-Aiding Software) available for you to copy at no charge. Professor Nagel also graciously provided a hard copy of the text for your evaluation.

RELEASE OF DOS SYSTAT VERSION 4 AVAILABLE FOR LICENSING

Anup Roy
CSO Statistical Consultant

As announced in the January/February issue of *Off-Line*, the new release of DOS Systat, Version 4.0, for IBM PC and PS/2 (or compatibles) is available for licensing by UIUC faculty, staff and students.

DOS Systat Version 4 can perform the following kinds of statistical analyses: basic descriptive statistics (mean, median, standard deviation, frequency distribution counts, cumulative sums and percentiles); cross-tabulations and multiway contingency tables analysis (Pearson's and likelihood ratio chi-square tests and various measures of association, and the Mantel-Haenszel test statistic); univariate and matched-pairs t-tests; Pearson's correlations; Spearman's rho (rank-order correlations); partial correlations; basic analyses of variance; regression analyses (both simple and multiple linear regression, stepwise regression, nonlinear and logistic regression modeling); advanced features in analysis of variance (e.g., analysis of covariance, latin square designs, nested designs, analysis of contrasts, planned comparisons and post-hoc tests, split-plot designs, analysis involving unbalanced designs, and repeated measures analysis); multivariate analyses (including multivariate analysis of variance and covariance, multivariate repeated measures analyses, discriminant analysis, principal components analysis, factor analysis, canonical correlation analysis, cluster

analysis, multidimensional scaling, and log-linear model fitting of multiway contingency tables data, etc.); nonparametric statistics (e.g., Fisher's exact test, Mann-Whitney U, Kendall's tau, Kolmogorov-Smirnov and Wilcoxon tests); and time-series analyses (including features such as fast Fourier transforms, data-smoothing, filtering and tapering; and covering autocorrelation and cross-correlation analyses, spectral analysis, and ARMA/ARIMA modeling).

Systat can import and export ASCII, .DIF, Lotus 1-2-3 and .DBF files. It comes with a batch facility and a rather powerful macro facility. It contains a spreadsheet-type data editor, a tutorial and on-line help; and it allows for data verification, data transformations, sorting of cases, weighting, error trapping, conditional case selection, and rank ordering of data. Systat can handle datasets containing up to 256 variables and an unlimited number of cases (limited only by the size of the hard-disk).

New users may obtain a copy by signing an end-user license agreement and arranging for a payment of $100.00 for the initial royalty/first year licensing/diskette and copying fees, and $20.00 for the Systat Version 4 paperback documentation. (Please note that users are legally required to purchase the documentation in order to qualify for software licensing.) The annual renewal fee in subsequent years, per copy of DOS Systat licensed, is expected to be approximately $65.00.

Payments may be made via a University Stores/Service voucher or requisition with a valid 11-digit account number, or by personal check made out to the University of Illinois. All of this may be accomplished at the CSO Accounting Office, 1208 W. Springfield, Urbana (333-7752).

Currently licensed users of DOS Systat Version 3 have the option to upgrade to Version 4. They will have to trade in their original diskettes for the newly prepared disks (for free). They will also need to sign a new end-user license agreement, and purchase the new documentation for $20.00. (Users who decide to upgrade to the new release will have to erase their old copy of DOS Systat from their hard disks and completely reinstall the new version from scratch; moreover, they are legally required to erase all copies of DOS Systat Version 3 before using Version 4.) It is also strongly recommended that such users renew their package for another year by simultaneously making a payment of the renewal fee of $65.00 (University voucher or personal check).

DOS Systat Version 4.0 comes on nine 5.25" DS/DD 360 kB disks as follows: Disk# 1 (Data and Install); Disk# 2 (MacPc and Macro); Disk# 3 (Edit and Factor); Disk# 4 (Cluster and Corr); Disk# 5 (Nonlin and Ssort); Disk #6 (Npar and Series); Disk# 7 (Stats and Tables); Disk# 8 (Graph and MDS); and finally Disk# 9 (MGLH).

DOS Systat Version 4 on the IBM PC and PS/2's (and compatibles) requires DOS Version 2.0 (or a later version) on a machine that can read standard 5 1/4" diskettes. It requires 640k RAM of memory, and two double-sided floppy disk drives or preferably a hard disk. Systat operates with or without the 8087/80287/80387 math coprocessor. Systat currently doesn't have expanded/extended memory support.

For further information, contact Anup Roy at 244-1201 (email anuproy@vmd.cos.uiuc.edu).

RELEASE OF SYGRAPH VERSION 1.0 AVAILABLE FOR LICENSING

Anup Roy
CSO Statistical Consultant

Sygraph Version 1.0 (also known as DOS Systat Graphics), a complementary product to DOS Systat Version 4, was recently added to the University's campus site license with SYSTAT, Inc., Evanston, Illinois. Sygraph was made available for licensing by UIUC faculty/staff and students on March 6, 1989.

Sygraph is a high-resolution statistical and scientific graphics package that can be used for interactive, exploratory, and presentation graphics. Sygraph is very comprehensive, featuring a wide variety of standard two- and three-dimensional graphs, as well as routines not readily available in other graphics packages. Sygraph can also draw maps and complex contour plots. Sygraph allows you to have almost complete control over a plot. You can rotate, redimension, rescale and overlay plots. You can print and plot graphs in color. You can also resize fonts and displays to produce camera-ready graphics. Sygraph uses intelligent default scaling, positioning, and plotting routines. Plotting scales and cut-points are chosen automatically via sophisticated statistical analyses of the data being plotted.

Sygraph provides device drivers for a very wide variety of peripherals, including all the most widely used plotters, dot-matrix printers, film recorders, laser printers, and graphics cards (CGA, EGA, VGA, Hercules, etc.; however, one doesn't absolutely need a graphics card).

Sygraph can display data results in any of the following forms: basic bar and line graphs; box and whisker plots; pie charts; category plots (viz., graphs of continuous variables against categorical ones — e.g., dot plots, star plots, etc.); histograms, frequency polygons, and other density displays of a variable; two-dimensional x-y and three-dimensional x-y-z plots of continuous variables (e.g., scatterplots, function plots, polar graphs, and line graphs, etc.); error bars; probability plots for a variety of probability distributions; quantile plots for empirical distributions; two-dimensional stem-and-leaf diagrams, scatterplot matrices or casement plots, and overlay plots; geographical mapping and other types of maps; control charts; log and semi-log charts; Pareto charts; drawing a variety of graphical symbols for displaying multivariate data, such as multidimensional Chernoff faces, profiles, Fourier blobs, and stars; drawing tools for editing/annotating graphs and writing text on one's graphs in various fonts.

In addition to standard graphics, Sygraph can produce sophisticated scientific and statistical graphs. These state-of-the-art graphics capabilities separate Sygraph from other commercially available graphics packages. For instance, one can use Sygraph to plot three variables in two dimensions with triangular coordinate plots. One can also contour with triangular coordinates, allowing one to examine four-dimensional data in two dimensions. Sygraph can draw contours for functions or for regularly or irregularly spaced points. Sygraph can also be used to draw such advanced graphs as Gaussian bivariate ellipsoids, Gaussian confidence intervals on bivariate centroids, Andrews' Fourier plots, Voroni tesselations, time-series plots, parallel coordinate plots, quantile plots, probability plots on any of six different distributions, and many others. Sygraph can produce maps as well. The standard package includes a boundary map of the continental U.S. with borders having a resolution of several miles. City, county, state and international map files, available from a variety of other sources, can be used with Sygraph.

Sygraph is a stand-alone product, even though it is generally meant to be used in tandem with DOS Systat Version 4. Each copy of Sygraph will cost $35 for the initial royalty/first year licensing/diskette and copying fees, and $20 for the documentation. It is expected that the per-copy annual renewal fee for Sygraph will be approximately $15. Currently licensed DOS Version 3 Systat users MUST license this product separately by making a total payment of $ 55.00 just like any new user of DOS Systat.

Payments may be made via a University Stores/Service voucher or requisition with a valid 11-digit account number, or by personal check made out to the University of Illinois. All of this may be accomplished at the CSO Accounting Office, 1208 W. Springfield, Urbana (333-7752).

Sygraph Version 1.0 consists of 8 disks in 5.25" DS/DD 360 kB format, as follows: Program disk# 1 (Sygraph); Program disk# 2 (US.Map, US.Sys and Fonts); Program disk #3 (Edit); and Drivers disks numbered 1 through 5.

Sygraph Version 1.0 on the IBM PC and PS/2 (and compatibles) requires DOS Version 2.0 (or a later version) on a machine that can read standard 5 1/4" diskettes. It requires 640k RAM of memory, and two double-sided floppy disk drives or preferably a hard disk. Sygraph operates with or without the 8087/80287/80387 math coprocessor. Sygraph currently doesn't have expanded/extended memory support.

SITE LICENSE FOR 1988 BMDP PC

Anup Roy
CSO Statistcial Consultant

As announced in the January/February issue of *Off-Line*, CSO has made site-licensing arrangements (for UIUC faculty and staff) for the 1988 release of the complete BMDP PC package.

Users will have to sign an end-user agreement with the University, and they will have to pay an initial royalty/licensing/diskette-copying fee, plus a documentation fee (for each copy licensed). The complete package includes all 42 BMDP programs plus the High-Resolution Plot Enhancer option. The package can be made available in one of three separate media: 5 1/4" DS/DD 360KB disks (102 disks); 5 1/4" HD AT 1.2MB disks (44 disks); or 3 1/2" HD 1.44 MB disks (44 disks). The cost per copy is expected to be a **one-time** fee of $400.00 for either the 5 1/4" HD or the 5 1/4" DS/DD medium, or $500.00 for the 3 1/2" HD medium. These prices include the cost of the documentation. Note that there is no renewal fee involved with licensing BMDP PC.

Owing to the volume of copying involved for the 360KB disks and the prohibitive expense of the high-density 3 1/2" disks, it is our strong inclination to make the product available only in the 5 1/4" HD medium. If you are certain that you would like to license this product, but know that you cannot do so if it is only available on the 5 1/4" HD disks, please contact Anup Roy immediately at 244-1201 or via e-mail to anuproy@vmd.cso.uiuc.edu, to register your problem or disagreement with this policy.

BMDP PC requires: an IBM XT, AT (or compatible) or PS/2, or any 80386 machine running PC-DOS or MS-DOS, with at least a 5 megabyte hard disk (a 20-30 megabyte hard disk is strongly recommended); a floppy disk drive that can read 5 1/4" DS/DD diskettes, 5 1/4" high density (HD) AT diskettes, or 3 1/2" diskettes; an 80287/80387 floating-point math coprocessor; at least 640KB RAM of memory; PC-DOS 2.1 (or MS-DOS), or a later version; a graphics monitor (optional); a graphics card for use with the Plot Enhancer option — CGA, EGA, VGA, or Hercules (optional); and a graphics printer or plotter for hard copies of plot displays (optional). Only your most frequently used programs need to be installed on your hard disk. BMDP PC programs can be executed in either batch or interactive mode. The programs are well-tested, reliable, flexible, and convenient to use.

An article was published in the September/October issue of *Off-Line* describing this package in some detail. We are republishing most of that article here for users who may have missed the previous issue and who need to know more about BMDP PC before deciding whether or not to purchase it.

BMDP PC is a comprehensive statistical analysis package marketed by BMDP Statistical Software, Inc., Los Angeles, CA, for the IBM AT, XT and compatibles, PS/2 systems, or any 80386 machine running PC-DOS or MS-DOS. It is a large collection of separate data analysis programs (modules) that can be used independently of one another. The various programs share a common data entry method and control language, and the data created by one program can be used in another program.

A complete version of the 1988 release of BMDP PC includes 42 programs, including a full-screen data manager called DATAMAN. DATAMAN provides a full-screen editor/display manager, and allows the user to match-merge/concatenate datasets and work with hierarchical files. Data from popular spreadsheet packages, such as Lotus 1-2-3, and database management packages, such as dBase III, can be loaded into the system with very little difficulty.

Designed with the professional statistician in mind, BMDP PC covers a broad range of statistical techniques, including several that are rarely found in other microcomputer statistical packages. A list of the available programs in BMDP PC is provided at the end of this article.

The maximum number of allowable cases and variables varies from program to program. On the IBM PCs the number of words of dynamic storage (M) is fixed at 16,000 and cannot be increased. The algorithms/formulae to determine the maximum number of variables, cases and groups for a particular application are presented in the *BMDP Statistical Software Manual*, 1988 Edition, Appendix A. All PC versions of 1988 BMDP programs have the same features as mainframe BMDP, with the following exceptions: (1) problem size on the PC cannot be increased; (2) user-supplied Fortran subroutines cannot be incorporated in a program run on the PC.

The 1988 version of BMDP PC includes a host of new features, ranging from greater control over the format of data listings to newly introduced options for case weights and frequency weights. Case weights are needed in a variety of instances, for example, when error variances are not constant. Frequency weights save time by eliminating the need to reinput data numerous times for cases that may have identical values. Another new feature is the ability to stack variables, which allows the user to combine the levels of two or more categorical variables to create a new variable with codes for all combinations of levels. Other substantail enhancements include no copy protection (hence no need for a key diskette), a master help menu of online help, a full-screen text editor, and flexible capabilities for creating and modifying high-resolution graphic plot displays as incorporated into 25 of the programs.

To help you decide whether this package would be suitable for your needs, we present a brief summary of some points to be considered and a listing of the available programs.

- **Statistical Features.** BMDP PC provides all the common statistical tools — thus it offers a fairly complete set of statistical procedures to meet one's needs.

- **Hard-disk Space.** Each BMDP PC program is independent. Thus, although the entire package would fill up almost all of a 30 megabyte hard disk, users can conserve space by keeping only their favorite programs on the hard disk, with the rest of the programs kept on floppies. The BMDP system files require about 300 KB of hard disk space, and each program/module takes approximately 750KB to 1 megabyte of disk space.

- **Data Handling.** Since BMDP PC reads ASCII files, users can analyze data input with either a word processing or spreadsheet package. Data can also be input and edited with the BMDP PC line editor or the newly introduced full-screen editor. BMDP PC includes a powerful data manager program for merging files and preparing datasets for statistical analysis. There is a new PORT command to create portable ASCII BMDP SAVE files that can be transferred across operating systems.

- **Accuracy and Mainframe Compatibility.** The 1988 PC release of BMDP is almost identical to the 1988 mainframe BMDP. This lessens the probability of introducing new bugs, a problem with some other microcomputer versions of mainframe statistical packages. Moreover, this ensures that if you are knowledgeable about BMDP on the mainframe, you will already know how to use the PC version.

Programs Available

An asterisk (*) indicates a newly introduced program in the 1988 release.

DESCRIBE (1D)	Simple Data Description. Provides commonly used descriptive statistics for all cases or for groups of cases (subpopulations). One can list and sort data, list data with invalid entries, and print out selected variables in any order.
DETAIL (2D)	Detailed Data Description. Computes a variety of descriptive statistics and plots a histogram for each variable. One uses 2D for data screening to identify outliers, study distributional shape, and obtain an initial description of one's sample.
TTEST (3D)	T-Tests. One can choose from three different t-tests: (1) TWOGROUP which provides two-sample t-tests; (2) MATCHED which requests matched or paired-comparisons t-tests; or (3) ONEGROUP which provides one-sample t-tests. Output from all three choices includes histograms and descriptive statistics.
COLFREQ (4D)	Character Frequencies:Numeric and Nonnumeric. Counts the frequency of each character (number, letter, or symbol) in single column fields. The data can be listed as read or after replacing certain characters by specified symbols (e.g., numbers by blanks) for easy detection of unwanted symbols or letters. When data are aligned in fixed columns one should use 4D for preliminary screening to verify kinds of data present, to count frequencies of single column data, and to find gross errors. All data are read in A1 format. 4D does not accept BMDP File input.
HISTO (5D)	Histograms & Univariate Plots. Prints histograms and plots. One can print plots for all groups in one plot or for each group individually. One can control the size and scale of plots, the cutpoints for histogram intervals, the names of intervals, and the number of observations represented by each plot symbol. The 5D histograms are more detailed than those of other programs, such as 2D.
PLOT (6D)	Bivariate (Scatter) Plots. Produces scatterplots of one variable against another and calculates the line of best fit. One can classify cases into groups, use symbols to indicate group membership, plot each group separately or in the same frame, and specify the plot size and range of plotted values.
ANOVA1 (7D)	One- & Two-Way ANOVA With Data Screening. Displays and analyzes data in subgroups. One may use 7D for data screening or analysis of variance procedures.

MISSCORR (8D)

Correlations With Options For Incomplete Data.
Provides four methods for computing covariances and correlations when observations are missing: (1) ALLVALUE: mean of each variable computed using all data present for that variable; deviations for means used to compute variance and covariance; (2) COVPAIR: covariance computed using only cases with acceptable values for both variables. Variances computed using all acceptable values of each variable; (3) CORPAIR: variances and covariances computed using only cases with acceptable values for both variables; and (4) COMPLETE: computations made using only complete cases.

MULTGRP (9D)

Multiway Description of Groups.
Produces "miniplots" of cell means and computes descriptive statistics for data classified into cells by one or more grouping variables. One may use 9D to create miniplots of: cell means from factorial designs with two or more factors; means from repeated measures designs; means of two or more variables at the same time.

The program is a useful screening device for assessing the homogeneity of subgroups, and a useful support for examining trends and interactions among cell means in an analysis of variance.

FREQ (4F)

Two-Way & Multiway Frequency Tables.
One may use 4F to form, analyze, and save frequency tables that are two-way, multiway, or cross sections of a multiway table. 4F can tabulate data read as cases or recorded as cell frequencies. One can also use 4F to generate a log-linear model of the relationships among two or more categorical variables.

LIFE (1L)

Life Tables & Survival Functions Analysis.
Provides two methods, the actuarial life table and product-limit method, for estimating the survival (time-to-response) distribution of patients observed over varying periods of time. Reports survival curves for all patients or subsets of patients. Tests the equality of curves between groups. One can arrange input data as a life table, survival time, or dates defining the relevent event for individual patients.

SURVIVAL (2L)

Survival Analysis with Covariates - Cox Models.
Analyzes survival data for which other measured variables influence the time-to-response. Analysis is based on Cox proportional hazards regression model. The model presumes that hazard rates may be modeled as a log-linear function of the covariates.

Quantifies the relationship between survival time and a set of explanatory variables. Estimates a set of regression coefficients giving the relative effect of each covariate on the hazard function. One may test for the significance of the regression coefficients representing treatment effects. The regression coefficients are conditioned by baseline patient characteristics in the proportional hazards regression model. Through the stepwise system, one may identify subsets of variables associated with survival time. One can also stratify data cases into several groups.

CLUSTVAR (1M)

Cluster Analysis of Variables.
Provides a choice of four measures of similarity for clustering variables and three criteria for linking or combining clusters. First considers each variable a separate cluster, then joins two most similar variables into a cluster. Joins variables or clusters of variables until forming a single cluster of all variables.

CLUSTCAS (2M)	Cluster Analysis of Cases. Forms clusters of cases (observations) based on one of several distance measures. First considers each case a separate cluster, then joins cases and/or clusters of cases until all cases are combined into one cluster.
CLUSTBLK (3M)	Block Clustering. Constructs block clusters, containing a subset of cases (for a subset of the variables), for categorical data. One can use for succinct representation of data by a few large blocks with few single values that deviate from the modal values. Reorders and prints rows and columns of the data matrix in a block symbol matrix.
FACTOR (4M)	Factor Analysis. Four methods of factor extraction from a correlation or covariance matrix and several methods of rotation are provided. One's input can be observed values of the variables, a correlation or covariance matrix, factor loadings, or factor score coefficients.
CANCORR (6M)	Canonical Correlation Analysis. Computes canonical correlations for two sets of variables and Bartlett's test for the significance of remaining eigenvalues. One's input can be data, a covariance matrix, or a correlation matrix.
DISCRIM (7M)	Stepwise Discriminant Analysis. Performs a discriminant analysis between two or more groups. One can interactively specify which variables to enter or remove at each step. Evaluates the number of cases correctly classified into each group. Performs a jackknife-validation procedure to reduce bias in the evaluation.
BOOLEAN (8M)	Boolean Factor Analysis. Estimates boolean factors of dichotomous (binary) data. Boolean factor analysis differs from classical factor analysis in that the arithmetic used in the matrix multiplication is Boolean, so the scores and loadings are binary.
PREFPAIR (9M)	Linear Scores for Preference Pairs. Constructs a score for each case that is a linear combination of the variables. Weights the observed variables by their importance to the judge. One can analyze preferences from more than one judge in the same run. Correlates scores from one expert with those of another.
MISSDATA (AM)	Description & Estimation of Missing Data. Describes the pattern of missing values for multivariate data. Estimates the covariance or correlation matrix by any of three methods. Replaces missing values or values out of range using means, regression on the variable most correlated with the estimated variable, regression on a highly correlated set of variables, regression on all variables. One can describe and estimate data within a group.
CLUSTER (KM)	K-Means Clustering of Cases. Partitions a set of cases (observations) into clusters. At the completion of the run, each case belongs to the cluster whose center is closest. The Euclidean distance is used to measure the distance between each case and the center of each cluster. The data can be standardized in four ways or left in original form, making five distance measures possible.

MULTREG (1R)

Multiple Linear Regression.
Estimates a multiple linear regression equation on all the data and, if requested, on subsets or groups of data. It also tests the equality of regression lines across groups.

REGRESS (2R)

Stepwise Regression.
Computes estimates of parameters of a multiple linear regression equation in a stepwise manner. Variables can be entered or re- moved one at a time or a set at a time, or one can intervene interactively to control stepping. Forward (beginning with no predictors) and backward (beginning with all predictors) stepping are possible. One can use four criteria for stepping, and force variables into the equation.

2R offers extensive diagnostics to help check for outliers, cases with unusual influence on the model, and violations of assumptions.

NONLIND (3R)

Nonlinear Regression.
Provides least-squares estimates of the parameters of a nonlinear function. Six functions (and their derivatives) are built in. One can fit other functions to the data by specifying the function in the FUN paragraph.

One can place upper and lower limits and linear equality constraints. One can also estimate functions of the parameters and their standard errors. Maximum likelihood estimation can be obtained using iteratively reweighted least squares estimation.

PRINREG (4R)

Regression on Principal Components.
Computes regression analysis for a dependent variable on a set of principal components. The principal components enter the regression in a stepwise manner and the resulting coefficients are reported in terms of both the principal components and the original or standardized variables. Order of entry is determined by the magnitude of the correlations between the dependent variable and the components. Ridge regression is also available.

POLYREG (5R)

Polynomial Regression.
Fits a polynomial in one independent variable to the dependent variable. 5R reports polynomials of degrees one through a degree specified by one with goodness-of-fit statistics for each equation. Computation is done using orthogonal polynomials. One can specify case weights.

PARTCORR (6R)

Partial Correlation & Multivariate Regression.
Computes the partial correlations of a set of variables after removing the linear effects of a second set of variables. One can also use 6R for regression, especially if multiple dependent variables are present. The analysis can be started using data, or a covariance or correlation matrix.

ALLREG (9R)

All Possible Subsets Regression.
Estimates regression equations for best subsets of predictor variables and does extensive residual analysis. One can specify the number of subsets to be identified. Three criteria are available for subset selection: (1) Sample R-squared; (2) Adjusted R-squared; and (3) Mallows' Cp.

NONLIN (AR)

Derivative-Free Nonlinear Regression.
Estimates parameters for a wide variety of nonlinear functions by least squares using a pseudo-Gauss-Newton algorithm. One can specify the regression function for AR either by using one of six built-in functions or by stating the

function in the FUN paragraph. AR allows one to fix the value of a parameter, or impose upper and lower limits on individual parameters or on arbitrary linear combinations of the parameters. One can estimate functions of the parameters and their standard errors. Also, one may use AR to compute maximum likelihood estimates and to estimate parameters in systems of differential equations.

LOGISTIC (LR)

Stepwise Logistic Regression.
LR estimates the vector of parameters for the linear logistic model in a stepwise manner. The dependent (outcome) variable records events such as success or failure, response or no response. The independent (explanatory or covariate) variables can be categorical (e.g., sex, treatment, hospital) or continuous (e.g., age, height, blood pressure).

LR generates design variables for the categorical variables and their interactions. The design variables for each categorical variable (or interaction) are considered as a set--at each step in the stepping process, a continuous variable or one set of design variables is added to or removed from the model. A hierarchical rule (which can be negated) allows an interaction into the model only if all its lower-order interactions and main effects are in the model.

Available forms of input include data tabulated for each covariate pattern and individual records for each subject or case.

NONPARAM (3S)

Nonparametric Statistics.
Computes one or more of the following nonparametric statistics and produces associated output: Sign test; Wilcoxon-signed rank test; Kruskal-Wallis one-way ANOVA; Kendall's coefficient of concordance; Friedman two-way ANOVA; Mann-Whitney rank-sum test; Kendall and Spearman rank-correlation coefficients.

SPECTRAL (1T)

Univariate & Bivariate Spectral Analysis.
Provides graphical displays, descriptive statistics, and an analysis of a single or pair of series. 1T computes the spectral decomposition. The spectral density function is then plotted, showing the relative contribution of each frequency band to the overall variance of the time series.

BOXJENK (2T)

Box & Jenkins Time Series Analysis.
Allows building of time series and transfer function models using Box-Jenkins Autoregressive-Integrated Moving Average (ARIMA) method. One can also estimate model parameters, and perform diagnostic checking or residual analysis.

ANOVACOV (1V)

One-Way ANOVA & ANCOVA.
Performs a one-way ANOVA or ANCOVA. Tests slopes of covariates for equality (parallelism) across groups. One can specify linear contrasts across group or adjusted means. 1V provides a t-test for each such contrast.

REPEATED (2V)

ANOVA & ANCOVA with Repeated Measures.
Performs an analysis of variance or covariance for a wide variety of fixed-effects and repeated measures designs with equal or unequal cell sizes.

FIXED EFFECTS DESIGNS- Complete and incomplete factorial designs, including Latin squares, incomplete block designs, fractional factorials.

REPEATED MEASURES DESIGNS- Combinations of repeated and grouping factors allowed, but must be crossed, not nested. Each subject must have a

response for every combination of within (repeated measures) factors. Optional miniplots of cell means available.

ANOVAMIX (3V) — Generalized Mixed Model ANOVA.
Uses maximum likelihood and restricted maximum likelihood approaches to the fixed and random coefficients model. The program handles mixed models of quite arbitrary form without requiring the balance required by 2V or 8V. 3V allows one to evaluate submodels by specifying the hypotheses one want tested.

ANOVAGEN (4V) — Univariate & Multivariate ANOVA & ANCOVA, with Repeated Measures.
A general purpose program that covers equal or unequal cell sizes, and repeated measures, split-plot, and changeover designs.

ANOVARM (5V) — Unbalanced Repeated Measures Models with Structured Covariance Matrices.
Analyzes repeated measures data for a wide class of experimental designs and models, including those with covariances of a specified pattern, and incomplete data. Uses maximum likelihood or restricted maximum likelihood approaches to obtain estimates of regression and covariance parameters.

ANOVABAL (8V) — General Mixed Model ANOVA -- Equal Cell Sizes.
Performs an ANOVA for any complete design with equal cell sizes. One can analyze nested, crossed, and partially nested and crossed designs for fixed-effects, mixed (including repeated measures), and ffects models. One must indicate whether factors are nested or crossed, and whether the effects are random or fixed.

Organizing the data - 8V does not use grouping variables to identify cell membership. There is no GROUP paragraph. The structure of the analysis determines the layout of the data.

CORRAN (CA) — Correspondence Analysis.
Multivariate, exploratory data analysis program. Converts frequency table data into graphical displays in which rows and columns are depicted as points.

CA decomposes a measure of association for a frequency table (proportional to the usual chi-square statistic) in a manner similar to that of principal components analysis for continuous data. One can analyze data recorded as cases, cell frequencies with indices, or a frequency table. One can also save the frequency tables, coordinates, and coordinate scores in addition to saving a cases by variable data set.

DATAMAN (DM) — Data Manager.
This interactive data manipulation system is compatible with BMDP programs. DM reads and writes both BMDP Files and raw data (ASCII) files. It also reads files with multiple record types (nonrectangular files) and hierarchical files.

The above list provides only brief descriptions of the BMDP PC programs. If you would like a more detailed description (such as a list that includes the output from the programs), you can pick one up at the Microcomputer Resource Center in the Illini Union or at the CSO Statistical Consulting Office, 85 Commerce West.

If you are interested in licensing BMDP PC and you have not previously notified Anup Roy, the UIUC BMDP Coordinator, of your interest, please do so as soon as possible. You may reach him at 244-1201, campus mail to 150 DCL, MC/256, or email to anuproy@vmd.cso.uiuc.edu.

ANNOUNCING THE UIUCNET TERMINAL SERVER

Lynn Bilger
Off-Line Editor

The terminal server is a computer system that connects a bank of dial-in modems to the campus computer network UIUCnet. It allows you to login from a dial-in modem to any computer system that is attached to UIUCnet and that has a Telnet server. *(NOTE: This article discusses the use of the terminal server primarily with UNIX systems. Problems currently exist with using the terminal server with IBM systems. These problems are being worked on, but until they are resolved, IBM users should be aware that the terminal server may not work properly. Using the terminal server with IBM will be discussed in a future issue.)*

Before the terminal server became available, if you wanted to access a computer system via a terminal and dial-in modem, you had to dial the computer directly or dial-in to a data switch such as the Gandalf switch, which CSO continues to support. (Note: One problem with using the Gandalf switch is that only a limited number of computer systems are accessible to this switch.) Additionally, if you wanted to login to other computer systems, you had to first login to a system that had both dial-in and UIUCnet access and then use TELNET or RLOGIN programs to cross UIUCnet to the other machine.

The terminal server is a computer system that has both dial-ins and network access. It ONLY provides the user with TELNET and RLOGIN functionality across the network. Because it is a computer system, it does provide more functionality than direct dial-ins to a host or a data switch but, at the same time, it is more complex.

One major difference that you will see is character buffering. When you dial-in directly to a computer, or go through the Gandalf switch, there is very little hardware to buffer output from the computer. If you interrupt the output of a program, the stream of characters usually stops quickly. With the terminal server a different interface is used on the host computer. The host, terminal server, modem on the terminal server, and potentially the modem on your pc, can all buffer characters. If you start a program that streams output and then interrupt it, it may take a while for the output to stop. You may want to get in the habit of using 'page at a time' options such as the 'more' facility in UNIX.

An Example Showing How to Use the Terminal Server

The following is an example of using the terminal server to connect to a CSO system. System prompts/messages appear in Roman type, commands that the user must enter exactly as shown are in **bold type**, and commands that are optional or must be replaced by the user's own response are in ***bold italics***. Comments (on the right) are in *Roman italics*.

atdt3334000	*Dial the terminal server and wait for system to respond.*
CONNECT	*Message from your modem that is has connected to the modem on the terminal server. Wait a few seconds while the server sets up your line.*
"CSO and Student Fee Dial-up to UIUCnet service. This server is restricted to a subset of UIUCnet for security reasons."	*Message of the Day from the terminal server.*

mossberg>	*Terminal server's name is mossberg. This is the EXEC command prompt.*
mossberg> ***ter dow***	*For 'terminal down.' Configure terminal server to allow serial protocol file transfers like Kermit.*
mossberg> ***uxh***	*Enter the name of the host to which you want to be connected (e.g., uxh).*
UTX/32 (uxh.cso.uiuc.edu)	*Login prompt from uxh.*
login:	
(At this point you login and do your work as normal with two exceptions. All characters are passed between your terminal and the computer system without interpretation except CTRL-^ and the software flow control characters CTRL-S/CTRL-Q. If you type CTRL-^x (control uparrow x), you escape back to EXEC mode in the terminal server. You can reconnect to your login session by typing 'resume', or entering an EXEC command.)	
logout	*End your session.*
[Connection to uxh closed by foreign host]	*End of session message from terminal server.*
mossberg> **exit**	*Type 'exit', 'quit', or 'hangup' to hangup from terminal server.*

Command Interpreter

The terminal server command interpreter is called the EXEC. This software interprets and executes the commands you type.

Commands may be in upper or lower case, and may be abbreviated to the least number of characters that is still unique.

CTRL-H, the DELETE key, or the BACKSPACE key will cause the terminal server to erase one character while in EXEC mode. CTRL-U will cause the current line command line to be erased and ignored. CTRL-C will abort the current command. Press the RETURN key to end a command line.

The sequence CTRL-^x (control uparrow x) escapes from a Telnet session back to the command interpreter EXEC. You may type an EXEC command, switch between sessions, or return to your original session by just entering a RETURN.

Type a question mark (?) to get a list of available commands. The explanation of some of the commands produces more than one screen of output. At the bottom of each screen the server pauses and produces the message, '---More---'. Enter a space to get the next screen, or anything else to terminate the list and return to the EXEC.

Following is a list of commands that can be used with the terminal server.

telnet hostname
or
hostname
or
rlogin hostname

telnet and **rlogin** will both connect to remote hosts; however, **rlogin** operates differently than **telnet.** Check the documentation on your remote system for the differences between the two. If the hostname is in the cso.uiuc.edu domain, you may use just the name of the CSO machine (e.g., VMD, uxh, etc.); if it is not in the cso.uiuc.edu domain, then you need to specify the full domain name (e.g., m.cs.uiuc.edu).

where

The **where** command lists information about all sessions that you currently have open. An asterisk indicates the current session.

help

The **help** command displays a list of user commands and a short description of each.

systat [all]

The **systat** command lists information about active lines; the **all** option specifies all lines in the terminal server.

resume [connection # or connection name]
or
number
or
RETURN key

resume a previous connection by number (connection #) or by name of host (connection name). If you have connected to several hosts and omit the number or name on **resume**, you will be connected to the last host accessed. You may omit the **resume** part and just enter the number. If you press the **RETURN key**, you will be connected to the last host accessed (indicated by an asterisk in a **where** command).

disconnect [connection # or connection name]

Disconnect the specified **connection** (number or name), or by default, the current connection. **You should use this command only if you are unable to log out from the host normally.**

show [options]

The **show** command has several useful options. These are listed below:

?	shows a list of all show options
hosts	Displays a list of hosts currently in the terminal server's address cache. If a connection requests a hostname that is not in the current cache, the terminal server must look up the address in one of the UIUCnet domain name servers.
sessions	Shows your current sessions.

terminal Shows your terminal configuration.

users Shows a list of users currently using the terminal server.

terminal [option]

? Shows syntax and options for the **terminal** command.

download PC file transfer programs sometimes require data-transparent connections between the personal computer and the host. This means that it needs to be able to send any of the 256 possible 8-bit values without the terminal server or modems interferring. Since this often is not possible in the real world, most file transfer programs will "work around" a few characters which will not pass through the network. The terminal server by default will not pass three characters: CTRL-S, CTRL-Q and CTRL-^(or CTRL-6 depending on your terminal). The first two are used as flow control between the modem and the server. The third is used to get the attention of the command interpreter on the server. Telnet also sometimes interferes with line feed or return unless you set it to transparent mode. The terminal server EXEC command:

term download

will change the command character to 'break' and set telnet-transparent. Your software of choice must still avoid the use of CTRL-S and CTRL-Q unless it is using them for flow control. We MAY be able to change the mode of operation of the terminal server in the near future to eliminate this "feature." Persons planning to transfer files using a serial protocol file transfer package, such as Kermit or Zmodem, should be sure to use this command (see previous example).

terminal-type option

Lets you define your terminal type, where **option** is the 'name' of your terminal. For example, if you enter

term term vt100

the server will tell the host system (when the connection is made) that you are using a terminal-type of vt100. The server assumes the terminal-type 'unknown' unless you have specified a type.. An alternative is to have your login startup file recognize 'unknown' terminal type and substitute your terminal type.

exit
or
quit
or
hangup

Any of these commands can be used to hangup from the terminal server. If you have any outstanding sessions to host computers, they will be dropped.

name

The **name** command allows you to assign a name to a session. Thereafter, the name will show up in status commands and can be used instead of the session number when resuming a session, etc.

Modem Configuration

The terminal server is connected to a bank of Multitech 224ER modems. These modems support 300, 1200 and 2400 baud connections, as well as Autoreliable mode (MNP-4) and Data Compression mode (MNP-5). Because of these new functions, as well as the difference in transfer rates between phone lines and UIUCnet, both the terminal server and the modem must understand and use flow control. The server and modem are configured to use software flow control with the characters CTRL-S and CTRL-Q. Your own modem need not understand flow control unless you configure it to use MNP-4 (Autoreliable) or MNP-5 (Data Compression) modes. If you have a modem that supports these modes, this is the suggested setup:

&E1	set MNP Autoreliable mode
&E5	set modem initiated flow control
&E6	set Xon/Xoff passed through (default)
&E8	set Eng/Ack pacing off (default)
&E11	set Normal Mode flow control on
&E13	set Pacing on (default)
&E15	set Data Compression enabled

WARNING: If you turn on Autoreliable or Data Compression mode, then your modem transmits a sequence of characters to the other modem as soon as it connects. If the modem on the other end does not understand these modes, you may have trouble connecting. If this happens, set your modem back to the factory defaults (these modes off) and try again.

To make the modem remember the settings, type

at&w0

Remember that these settings are for a Multitech mt224ER. If you use a different brand of modem, your modem's syntax and switch settings may differ. Contact the CSO Hotline at 244-1000 for assistance. They will have someone get in touch with you.

USING TELENT TO CONNECT TO OTHER NETWORK MACHINES

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Off-Line Editor

Users frequently want to activate a session on another network-linked machine without logging out of the session on the machine they are currently using. The Telnet program provides this capability. Telnet will connect to any machine on the network (regardless of the machine's operating system) provided that machine is capable of creating a Telnet session.

Since anyone using Telnet must know the network hostname of the machine with which they wish to communicate, the first section of this article will discuss network hostnames. The ensuing sections will discuss using Telnet from VM/CMS machines and from UNIX machines.

Network Hostnames

The network community views the network as a hierarchical grouping of machines based on organizational criteria. This hierarchy provides the basis for the naming scheme used on most networks. At the bottom of this structure are the machines themselves. At the top are the categories of institutions, such as education, commercial, and government. These groupings are usually referred to as domains.

The full network hostname, also known as the fully qualified domain name, specifies each of the domains to which a machine belongs, from the most specific to the most general. On this campus, the domains are listed in the following order: (1) the machine-name (e.g., uxe, vmd, etc.), (2) the department-name where the machine is located (e.g., cso, csrd, csl, etc.), (3) the institution-name (uiuc), and (4) the institutional-category-domain (edu). Each domain is separated from the next by a period, as shown in the following syntax example:

machine-name.department-name.institution-name.institutional-category-domain

For example, the full network hostname (fully qualified domain name) for CSO's Convex would be:

uxh.cso.uiuc.edu

If you do not know the network hostname of the machine you wish to access, you should contact the administrators of the machine and ask them for its fully qualified domain name. (On our UNIX systems, the command **hostname** will provide this information. Most systems also include the correct name in the headers of mail messages.)

Connecting via Telnet from CSO VM/CMS Machines

As stated previously, a user may use Telnet from CSO's VM/CMS machines to connect to any other machine on the network without ending his or her current CMS session. With most hosts, VM/CMS can only provide a line-oriented session (most hosts cannot work with the 3270 type terminals connected to VM/CMS machines). The notable exceptions to this are other VM/CMS machines. With other VM/CMS machines, Telnet provides a full-screen session.

To begin using Telnet, you first must link to the minidisk containing the network software (TCPIP). This is done via the LINKTO command:

LINKTO TCPIP

The actual Telnet session is then begun with the command:

TELNET hostname

where **hostname** is the network hostname of the machine to which you wish to connect (as described above).

VM/CMS will clear the screen and display information about special PF key definitions. The MORE... indicator will also appear at the bottom of the screen meaning that you must press the CLEAR key to continue. If Telnet successfully completes the connection to the remote host, you will see the login prompt of that host. You login and then proceed to do whatever you wish — transfer files, edit files, run programs, etc., on the remote host.

If you are communicating with another VM/CMS machine, your terminal session will look like you are directly connected to the remote host. In other words, you will be able to use the full-screen utilities, such as Xedit, the PF keys, etc. just as you would on the originating machine.

If you are connecting to a remote host other than a VM/CMS machine (e.g., a UNIX machine), you will not be able to use these full-screen capabilties. Many remote hosts require specification of a terminal type. If you do not know what to specify, you should contact the machine's administrator to obtain this information. For CSO UNIX systems, you specify a terminal type of **unknown** to this prompt.

As with VM/CMS, when you fill one page with information, VM/CMS will write MORE... or HOLDING at the bottom right corner of the screen. This indicates that you must press the CLEAR key to view the next page of information.

When you have finished your session on the remote host, you log off as you normally would. This exits the remote host and you will receive the message

Session ended. <ENTER> to return to CMS.

Pressing ENTER will return you to your original VM/CMS session.

Connecting via Telnet from CSO UNIX Machines

On CSO's UNIX machines, you initiate Telnet by issuing the command:

telnet hostname

where **hostname** is the network hostname of the host to which you wish to be connected (see network hostnames section above). For example, if you are on the Convex (uxh) and wish to use Telnet to connect to uxe, you would enter

telnet uxe.cso.uiuc.edu

If Telnet successfully completes the connection, you will receive the login prompt on the remote host. From this point, you login and continue your session as if you were directly connected to that machine. Telnet provides no terminal emulation, so if your host inquires what type of terminal you are using, you must enter your terminal type. Exiting Telnet is very simple. When you log off the remote host, Telnet automatically exits and returns you to the UNIX prompt on your original machine.

If you are connecting to a VM/CMS system (e.g., VMD), Telnet provides only line-mode connection. Since VM/CMS is rather difficult to use in line-mode, UNIX users may wish to use the **tn3270** facility instead of Telnet. You do this simply by entering

tn3270 remote-vmcms-address

where **remote-vmcms-address** is the network hostname of the VM/CMS machine. You are now connected with full-screen capabilities enabled. However, since IBM 3270 terminals have several keys that other terminals do not have, you must learn the appropriate keys to press on your terminal to provide the functions of these special keys. A table of more popular terminal and key translations is presented below (in the table, KP means keypad and ^ means CTRL).

Key Translations from 3270 to ASCII Terminals

3270-type Terminal	*adm3a*	*vt100*	*ibm3101*	*term-type 'unknown'*
Enter	<return>	<return>	<return>	<return>
Clear	^z	KP-ENTER	CLEAR key	^z
Newline	^n	^? (DEL)	^n	^n or HOME
Tab	^i (tab)	^i	^i	^i
Backtab	^b	^b	^b	^b
Cursor Left	^h(left arrow)	left-arrow	left-arrow	^h
Cursor Right	^l(rght arrow)	right-arrow	right-arrow	^l
Cursor Up	^k(up arrow)	up-arrow	up-arrow	^k
Cursor Down	^j(down arrow)	down-arrow	down-arrow	^j or LINE FEED
Home	^@	<keypad>-.		
Delete	^d	^d	DEL key	^d or RUB
Insert	Esc-<space>	^<space>	^<space>	Esc-Space
Pf1 to Pf9	Esc-1 to Esc-9	KP-1 to KP-9	Esc-1 to Esc-9	Esc-1 to Esc-9
Pf10	Esc-0	KP-PF1 KP-0	Esc-0	Esc-0
Pf11	Esc—	KP-PF1 KP-1	Esc—	Esc—
Pf12	Esc-=	KP-PF1 KP-2	Esc-=	Esc-=
PA1	^p-1	^p-1	^p-1	^p-1
PA2	^p-2	^p-2	^p-2	^p-2
Reset	^g	^g	^v	^r
Escape to tn3270	^c	^c	^c	^c

Exiting **tn3270** is simple: **tn3270** exits when you logoff of the remote VM/CMS system. Nothing else needs to be done. More information may be found on **tn3270** in the UNIX man pages by entering the following command:

man tn3270

UNIX to UNIX Networking Utilties

Many UNIX users prefer to use the UNIX networking utilities instead of Telnet when connecting to another UNIX machine. These utilities can be used, however, only when both machines are running the UNIX operating system, and only if you have valid accounts on both machines.

You can then connect to any remote UNIX machine by simply entering the **rlogin** command:

rlogin remote-host

where **remote-host** is the network hostname of the machine with which you wish to communicate. Each host has a file */etc/host.equiv* which contains a list of *rhost's* with which it shares account names. When you login as the same user on an equivalent host (on which you have a valid account), you do not need to give a password. Your remote terminal type is the same as your local terminal type. When you log off the remote host, you will automatically exit the **rlogin** facility.

A user may set up a private equivalence list in a file called .rhosts in his login directory. Each line of the .rhost file must give the full domain name (see above) of the authorized machine, followed by a space, followed by the authorized login ID on that machine. **WARNING: Always make your .rhosts file private and for security reasons, NEVER add your password or an off-campus address to this file. Use the chmod command to make this file (or any of your files) private:**

chmod 600 filename

where the 600 specifies that only the owner has read/write permission for the specified file. If you use a .rhost file, do not forget to do this! (See the man pages for more information about chmod.)

There are other features of the UNIX utilities which you may find useful (e.g., rcp, rsh). See CSO's Reference Guide RF-40.1 or the UNIX 'man' pages for further details.

TRANSFERRING FILES BETWEEN MACHINES USING FTP

Lynn Bilger
Off-Line Editor

The File Transfer Protocol (**ftp**) allows users to share files with other users or transfer files between networked machines both on and off the campus. As with most networking facilities, you will need to know the network hostname of the machine with which you wish to communicate (see the section about network hostnames in the previous article). Also, if you plan to use ftp to transfer files, you must have a valid account on the remote machine. In some cases you may use the **anonymous** login, described below.

Using ftp from a UNIX Machine

When using ftp from a UNIX machine, you initiate ftp by entering the command:

ftp remote-host

where **remote-host** is the network hostname of the machine with which you want to be connected. If the connection is successful, you will be prompted for your signon ID and password on the remote machine. After correctly identifying yourself to the remote host, you will receive the prompt, **ftp>**. You may then transfer files using the **get** or **put** commands.

The response from an ftp command from UNIX is different, depending on whether you are going to another UNIX system or to a VM/CMS system, for example. Perhaps the easiest way of explaining this is by showing an example of each.

Example of an ftp response — UNIX to UNIX (e.g., uxe to uxh):

```
ftp uxh.cso.uiuc.edu
220 uxh.cso.uiuc.edu FTP server (Version 4.1 Tue Feb 2 12:30:23 CST 1988) ready.
Name (xuh.cso.uiuc.edu:smith): smith
331 Password required for smith.
Password: <your password>
230 User smith logged in.
ftp>
```

Example of an ftp response — UNIX to VM/CMS (e.g., uxe to VMD):

```
ftp vmd.cso.uiuc.edu
220 FTPSERVE at VMD.CSO.UIUC.EDU, 14:51:01 CDT WEDNESDAY 04/05/89
220 Connection will close if idle for more than 15 minutes.
Name (vmd.cso.uiuc.edu:smith): smith
331 Send password, please
Password: <your password>
230 smith logged in; no working directory defined
ftp> cd smith.191
ftp> quote acct <diskpassword>
ftp>
```

Specifying a Minidisk when Connected to a VM/CMS Machine

After completing your login ID and password information on a VM/CMS machine, you must indicate the minidisk you wish to use. To specify the minidisk, you must indicate the logon ID that owns the disk and the disk address. You must also have the read password to the disk if you plan to only retrieve files, or the write password to the disk if you plan to send files. The command

command: **cd logon-id.disk-address**

links to the disk that **logon-id** has at the address **disk-address**. At this point you may get an error message, which you can safely ignore. After issuing the above command, you must send the password to use the disk:

command: **quote acct password**

where **password** is either the read or write password. For example:

```
command: cd johnny.191
command: quote acct rpw
```

would link you to johnny's 191 disk with read permission (rpw is the read password in this example).

Using ftp from a VM/CMS Machine

To begin using ftp on a CSO VM/CMS machine, you first must link the minidisk containing the network software. This is done via the LINKTO command:

LINKTO TCPIP

You then proceed by entering the ftp command:

ftp remote-host

where **remote-host** is the network hostname of the machine with which you want to communicate. If the connection is successful, you will see some system messages and then be requested for your login ID with the prompt

USER (identify tourself to the host):

After entering your login ID, you will be requested for your password. If you have correctly entered both your login ID and your password, you will receive the ftp prompt:

command:

Notice that the ftp prompt on VM/CMS is **command:**, whereas the ftp prompt on UNIX systems is **ftp>**.

The put and get Commands

To transfer a file from the remote host to your local machine (also referred to as retrieving a file), you use the **get** command. The syntax of the command is:

get remote-file-name local-file-name

where **remote-file-name** indicates the name of the file on the remote host and **local-file-name** is the name you wish to give the file on your local host. If **local-file-name** is omitted, the local name will be assigned based on the remote name. Remember that when transferring files to or from VM/CMS machines, ftp requires that both the filename and the filetype be specified, with a period separating them (e.g., myprog.fortran).

For example, if the local host is a UNIX machine and you have used ftp to connect to a VM/CMS machine and you wish to retrive a file called myfile fortran from CMS and call it hisprog on UNIX, you would enter:

```
ftp> get myfile.fortran hisprog
```

If you wish to retrive a group of files, you use the **mget** command. The syntax is:

mget remote-file-names

where **remote-file-names** is a list of the file names on the remote host. The names given may contain wild-card characters if the remote host supports them. When you use the **mget** command, ftp will prompt you on each of the matching files to see if you really want to retrieve that file. If the answer is yes, simply press the return key; if the answer is no, enter **n** (for no) and press return.

To copy or send a file from your local machine to the remote machine, use the **put** command. To send multiple files, use the **mput** command. The **put** and **mput** commands work the same way as the **get** and **mget** commands, except in reverse. (A handy tip for users of the mput command: Type HT at the 'More' prompt and you will not have to clear the screen every two or three files.)

Using the Login ID of Anonymous

Many remote hosts have files available for transfer that are of interest to the general public (e.g., PCSIG on VMD or pc/virus on uxe). Since login IDs cannot be given to everyone wishing to retrieve these files via ftp, many hosts have a special login ID used exclusively for accessing these public files. This is the login ID **anonymous**.

The process of using the **anonymous** ID follows the same lines as above. When prompted for name (or USER) simply enter **anonymous**. When ftp requests a password, you may enter anything but it is usually requested that you enter your login ID on your local host in response. Note that you must enter something — pressing the return key will not suffice! You then use ftp in the usual way.

On-line help about **ftp** may be obtained on VM/CMS by entering

HELP FTP MENU

after you have issued the LINKTO TCPIP command, or on UNIX by entering

man ftp

Persons who have personal computers connected to the network, may use any of several ftp-type software packages available. These packages basically work in the same way as ftp on the mainframes. Documentation is provided with the software detailing how to use the particular package. If you are not connected to a network, Kermit is the method most commonly used to transfer files.

INGRES INSTALLED ON UX1

Vicky Dingler

INGRES (Relational Technologies, Inc.) is a relational data base management system that has been installed on CSO's newest acquisition, ux1. ux1 is a Sequent running the UNIX operating System.

INGRES is extensive data base software that can meet the needs of various data base users. It is menu driven and relatively easy to use. Applications can be written by programmers to customize data entry screens and reports.

Demonstration versions are installed on PCs at two sites on campus. The sites are the Microcomputer Resource Center in the Federal Room (basement) of the Illini Union and CSO South, 70 Commerce West. If you would like a copy of the demonstration diskettes, please bring two double-sided, high-density diskettes to the Microcomputer Resource Center. The demo takes 1.75 MB on your hard disk.

As explained in the September-October 1988 issue of *Off-line*, INGRES was chosen as the primary DBMS supported by CSO for many reasons. It follows the relational model and supports ANSI standard SQL; it is able to transport tables to PCs from the Unix mainframe and back again; and it is supported by various networks: DECNET, TCP/IP, SNA and ASYNC.

INGRES has several tools for managing your data bases. The first tool is the menu system, which is a series of frames with associated submenus. The main menu is the first frame seen after INGRES is invoked. The main menu has a list of functions each of which has its own menu.

Commands	Description
QUERY	RUN simple, saved QUERY to retrieve, modify or append data
REPORT	RUN default of saved REPORT
GRAPH	RUN saved GRAPH
QBF	Use QUERY-BY-FORMS to develop and test query definitions
RBF	Use REPORT-BY-FORMS to design or modify reports
GBF	Use GRAPH-BY-FORMS to design, modify or test graphs
ABF	Use APPLICATIONS-BY-FORMS to design and test applications
TABLES	CREATE, MANIPULATE or LOOKUP tables in the database
VIFRED	EDIT forms using the VISUAL FORMS EDITOR
QUEL	ENTER interactive QUEL statements
SQL	ENTER interactive SQL statements
SREPORT	SAVE REPORT-WRITER reports in the database

Go History CommandMode DBswitch Shell Help Quit

The QUERY menu item will perform a query on pre-existing tables which can modify the table and/or append more data to the table. The REPORT menu item will run the default INGRES report generator on a table, or it will run a pre-defined report generator (defined in the RBF facility). The Graphics facility is not available with this version of INGRES. QBF is the forms-driven interface to INGRES. It is invoked when using the QUERY option. QBF establishes control of table names, variable ranges, entry form fields and

JoinDefs specifications. ABF is the means by which applications are created, defined and tested. ABF is a full-scaled applications developer with an source code and object code managers. ABF is intended for sophisticated users.

The TABLES option will display current tables known to INGRES for your userid. It also gives one the opportunity to destroy or examine any table listed. It will also allow you to create a new table. VIFRED is the means by which forms are created and edited. These forms are then integrated into ABF. QUEL is a query language that is not a part of this version of INGRES. SQL is the query language supported. The SQL option will display a blank screen on which SQL statements can be written and executed. SREPORT will save the RBF statements used to genterate a customized report in a table for later use.

Documentation is available at the CSO Distribution Office at 1208 W. Springfield, 333-7752. The documentation available is as follows:

Terminal User's Guide	$10.00
Menu User's Guide	$10.00
Query-By-Forms User's Guide (QBF)	$15.00
Visual-Forms-Editor User's Guide (VIFRED)	$15.00
Report-By-Forms User's Guide (RBF)	$15.00
Report Writer Reference Manual	$15.00
INGRES Binder	$10.00
SQL Reference Manual	$30.00
SQL Self-Instruction Guide	$20.00
Applications-By-Forms User's Guide (ABF) - SQL	$40.00

If you are interested in using INGRES on ux1, please contact Vicky Dingler, 333-4668. A userid and access to INGRES will be established.

NEW RENTAL DISK FACILITY (RDF) AVAILABLE ON VMD

Joan Mills

A new Rental Disk Facility (RDF) is now available on VMD. This facility will replace the current FSF rental facility. FSF has been popular with users requiring additional disk space for short periods of time; however, FSF has limitations which have restricted its use to certain types of situations. In response to the need for a more flexible rental disk facility, CSO's VM system programmer Phil Howard has developed and written RDF.

RDF uses the RENT exec to request that an extra minidisk for storage of user files be assigned as a permanent disk for a short time period. When a minidisk is rented, all other facilities of the system treat this disk as a permanent disk. Some of the benefits of renting a disk through RDF are:

- It is automatically linked at logon.
- Passwords may be assigned to this minidisk.
- Batch jobs may be linked to it.

- Other authorized users may link to it.
- Network access by ftp is possible.

Rental Disk Policies

1. The default rental period for a disk is three (3) days. The MAXIMUM rental period is seven (7) days.
2. The default rental disk size is 5 cylinders (3000 kilobytes). The MAXIMUM disk size is 100 cylinders (60,000 bytes).
3. You are allowed to have at most one rental disk at any time.
4. A rental disk may not be renewed. Files which need to be saved beyond the rental period may be archived using VMARCHIVE.
5. A rental disk is charged at the same rate as a regular disk; disk rates are in the COST help file (HELP CSO COST). Usage is charged at the appropriate rate by the number of minutes the disk has been rented. At this writing, disk is charged at .7394 Service Units per cylinder per week, which comes to .7394/7 = .1056 SU per day, or .0044 SU per cylinder per hour, or .00007 SU per cylinder per minute. A 10-cylinder (6 megabyte) disk therefore costs 1.056 SU per day to rent, or about $.62.
6. Restores of rental disks: if a rental disk expires before the renter is finished with the data, CSO will not ordinarily restore the disk – special permission is required from the head Systems Consultant or the Manager of User Services to restore a disk, and only one restore may be requested. It is the user's responsibility to make a backup of the disk if that seems prudent. CSO consultants can help the renter learn how to back up the data.

Renting a Disk – RENT DISK Command

When you have completed your logon sequence, the RENT exec is available to you and you may use it to request the rental of a minidisk. To rent a disk using all the default parameters, simply enter the command:

```
RENT DISK
```

which will give you a disk of size 3000 kilobytes (5 cylinders), with label RENTAL, at address 4CC, for a time of three days, with a blocksize of 4096 bytes. You may change any of these defaults by using options on the RENT command. The options are given below. The shortest abbreviation for an option is shown in upper case letters.

Size **nnnnK**	allows you to specify the size in kilobytes of the space you request. The current maximum is 60,000 kilobytes (about 100 cylinders of disk space).
Label **label**	allows you to change the default label of RENTAL to a name of your own choice. The label can contain up to 6 characters.
Address **cuu**	allows you to specify the virtual address for the minidisk. You may use any available address – issue Q DISK to see which addresses are already used by other disks. (Note: The mode letter assigned to the disk will be the first available mode, in alphabetical order.)

DAys n	allows you to specify the rental period in days. The current maximum is seven days. Zero (0) days is allowed; it means the remainder of the current day only. All disk rentals expire in the early morning after **n** full days.
Blocksize mmmm	Allows you to specify the blocksize, in bytes. The current options are 512, 1024, 2048, and 4096.

For example, to rent a disk changing all of the defaults, you could enter:

```
RENT DISK S 5000K L FLOWER A 4CD DA 7 B 1024
```

Using the Rented Disk – RENT USE Command

As described above, when you issue a RENT DISK command, the rental disk is assigned to you and accessed at the next available mode letter. In future logon sessions, to use your rental disk you must first access it with the command:

RENT USE

if your rental disk is at the default address 4CC; or,

RENT USE Address cuu

if your rental disk is at another address, **cuu**.

The disk is then accessed for you at the next available mode letter (e.g., B). If you want it at a mode other than the one assigned by RENT USE (e.g., K instead of B), you could enter:

ACCess cuu K

where **cuu** is the virtual address of the rental disk.

The disk is attached to your session in read/write mode by default. If you want to access the disk in read-only mode, use the following commands (instead of RENT USE):

LINK userid 4CC 4CC RR
ACCess 4CC m

where **userid** is the logon id of the renter, and **m** is the mode letter.

If you wish to detach the disk before you log off, enter the command:

RELease m (DET

Assigning or Changing a Password for a Rental Disk

You may wish to assign (or change) a password on a rental disk. If the disk is to be accessed from another userid, from VMBATCH, or from a UNIX system (see ftp section below), a password must be assigned to the disk. If your rental disk is at address 4CC, for example, use VMSECURE as follows:

```
LINKTO VMSECURE
VMSECURE MAInt MInidisk 4CC
```

After issuing these commands, continue by entering appropriate passwords when prompted. (The null response is '=' to skip inappropriate passwords in VMSECURE.) A disk with read/write passwords may be used by other users, including VMBATCH. Another user would access your disk in write mode by issuing the commands:

```
LINK userid 4CC 4CC WR writepassword
ACCess 4CC m
```

or, in read-only mode, by issuing the commands

```
LINK userid 4CC 4CC RR readpassword
ACCess 4CC m
```

Returning the Rented Disk – RENT RETURN Command

If you wish to return the disk before the rental period is over, enter the command

```
RENT RETURN
```

if your rental disk is at the default address 4CC; or enter:

```
RENT RETURN Address cuu
```

if your rental disk is at another address, **cuu**. (NOTE: RENT DISK, RENT USE and RENT RETURN may each contain the Address option.)

Usage Notes

1. The default loan period is three days; no special account is taken of weekends, holidays, or other non-working days.
2. All rentals are formatted with a 4K (4096 byte) blocksize by default. You may rent with a different blocksize, or reformat later if you like.
3. Disk size is specified in kilobytes. 600 kilobytes equals one cylinder of disk space on VMD.
4. Since only one user may access a disk in write mode at any one time, if you are logged on and another user, including a batch machine, is to write on your disk, you must release and detach the disk (see the example above). (Even if you have not issued a RENT USE command, you must issue a DETach 4CC.)

5. A disk cannot be accessed in read-only mode until files with other than mode zero (0) are placed on it.
6. A disk may be rented by any user with a valid VMD account. Hard money is not needed.
7. There may be a delay when processing a request for a large rental disk. Please be patient. If rental space is not available, a message will be displayed to that effect. You then may try again later.

Special Help for ftp Users

ftp is a file transfer program that allows files to be transferred between computers on the Internet, including between CSO computers. For example, ftp can be used to transfer files between VMD (where the RENT facility exists) and the Convex (a CSO UNIX system). Thus, using ftp one can make the data on a rented disk available to users of UNIX. The UNIX users may be restricted to only reading data from the disk or they may be allowed to write files to the disk, depending on the passwords you give to the rented disk.

All UNIX accesses to a rented disk are password protected, in the same manner as accesses by other VMD users are password protected. To allow access from UNIX, give your rented disk a read password and, if desired, a write password. (See the earlier example in this article showing how to use VMSECURE to give passwords to your rented disk.)

A user logged in to the Convex would enter the following commands to access your rented disk (remember that UNIX is case sensitive, so type lower case as shown.) In the example, system prompts are in roman type, user responses which must be entered exactly as shown are in **bold type**, user responses that vary from user to user are in ***bold italics***, and comments are in *roman italics*.

1> **ftp vmd.cso.uiuc.edu**	*Invoke the ftp program.*
Name (...): **anonymous**	*Give dummy VMD userid.*
Password (...): **<cr>**	*Press the enter key (carriage return).*
ftp> **cd *userid.4cc***	*Change directory; replace **userid.4cc** with the VMD userid renting the disk and the address at which it was rented (ignore the error message that is then displayed).*
ftp> **quote acct *diskpassword***	*Replace **diskpassword** with the password the VMD user gave the disk. Specify the disk's read password for read access; the write password for write access.*
ftp> **dir**	*Optional. This lists the files on the rented disk.*
ftp> **get *fn.ft*** *or* **put *fn.ext***	*Copy file **fn ft** from VMD to UNIX,* *or* *copy file **fn.ext** from UNIX to VMD. (Note the use of the dot (.) between fn and ft in specifying the VMD file.)*
ftp> **quit**	*Terminate the ftp program.*
2>	

When linking to the rented disk in write mode, make sure the disk is not already linked on VMD.

CSO Reference Guide 40.2 contains additional relevant information about using ftp from UNIX. For questions or further information about renting disks, please check with the CSO Systems Consultants at 1208 W. Springfield, Urbana (333-6133), or the CSO Statistical Consultants at 85 Commerce West (333-2170).

NEW RELEASE OF SCRIPT (TEXT FORMATTER) INSTALLED ON VMD

Beth Engelbrecht-Wiggans
CSO Systems Consultant

We are currently running SCRIPT Release 3.0; Release 3.2 will become the default on May 22. In the meantime, to gain access and use the new release you must issue the following commands:

```
LINKTO SCRIPT FONTS (F
SCRIPT . filename filetype (<options>
```

The (f on the LINKTO command requests the future version (Release 3.2) of SCRIPT. The . (period) on the SCRIPT command is very important. This tells the machine to use the future version of SCRIPT on disk, not the default version.

After May 22, the regular LINKTO command will get the 3.2 version, and you will not need to use the . on the SCRIPT command. To access Release 3.0 of SCRIPT after May 22 you will have to issue the commands:

```
LINKTO SCRIPT FONTS (P
SCRIPT . filename filetype (<options>
```

where (P requests the past version of SCRIPT. The . (period) tells the machine to use the past version of SCRIPT on disk.

Changes from 3.0 to 3.2

There are several new features in Release 3.2:

- Release 3.2 has SCRIPT and GML commands for making tables.
- SCRIPT can create a PostScript file as output, which you can print on a PostScript printer (e.g., attached to the departmental network).
- You can include segments of PostScript in your SCRIPT file but this file must be SCRIPTed for a PostScript printer (i.e., SCRIPT does not interpret PostScript commands).
- The Office Document Feature (ODF) of SCRIPT provides a bridge between a microcomputer (PC) word processing package and the mainframe printers.
- You can create bar codes using GML tags.

The following sections introduce the new features. The most space will be devoted to tables. The other features will be discussed briefly. For more assistance on using SCRIPT, drop by the Systems Consulting Office (1208 W. Springfield, Urbana) when I am in or send me email (ENGW1G@UIUCVMD).

Tables

The new GML table macros have the same flavor as the figure macros. You can have a list of tables, table references, headers, footers, captions and descriptions. To take advantage of all the options you will want to get a copy of the *GML Starter Set User's Guide*, which is available at the CSO Distribution Office, 1208 West Springfield, Urbana.

When you create a table, you use three basic elements:

Cell A cell is rectangular and is usually separated from other cells by horizontal and vertical rules.

Row A row is a horizontal, rectangular collection of one or more cells. The cells that make up a row may have different widths and depths.

Table A table is a collection of one or more rows. The rows that make up a table may contain different cell arrangements.

The following is an example of a table with two rows; each row uses the same cell arrangement of three cells per row:

This is the first cell in the first row of this table.	This is the second cell in the first row of this table.	This is the third cell.
This is the first cell in the second row of this table.	This is the second cell in the second row of this table	This is the third cell in the second row.

The attributes on the table tags provide flexibility in specifying different characteristics of the table. For example, you can specify the highlight level to be used in a cell and the vertical alignment of the contents of the cell. You can specify a particular row, called a **header**, to appear at the top of every column on every page on which the table appears. Likewise, you can specify a particular row, called a **footer**, to appear at the bottom of every column on every page on which the table appears.

Defining the Table

Before you can create a table, you need to define its **attributes** using the RDEF tag. These attributes do the following:

- Provide a name for the row definition: ID (this is the only required attribute)
- Specify the number, arrangement, and size of the cells in the row: CWIDTHS and ARRANGE
- Specify the characteristics of the cells in the row: HP, ALIGN, CONCAT, VALIGN, ROTATE, and MINDEPTH

For this last set of attributes, more than one value can be specified. The first value specified applies to the first cell, the second value to the second cell, and so on. If fewer values are specified than the number of cells, the remaining cells use the last value specified. If a greater number of values are specified than the number of cells, the extra values are ignored. If multiple values are given, the entire string of values must be enclosed in single quotation marks. This technique is shown in the examples below.

Building the Table

Once you define the rows in your table, use the TABLE tag to start the table. Use the ROW tag and the C tag to begin the rows and cells of your table. Use the ETABLE tag to end your table. The table attributes do the following:

- Provide a default row definition for the table: REFID (this is the only required attribute)
- Specify placement on the page: COLUMN, PAGE, ROTATE
- Specify width of the table: WIDTH
- Specify if the table is allowed to be on more than one page: SPLIT
- Provide a name for the table: ID

Sample Tables

The following are a number of sample tables illustrating various attributes of the table tags. Examples of tables with different row definitions, text highlighting, text alignments, and cell rotations are shown. The input text is also given.

Year	Passenger Cars	Trucks and Buses	*Total*
1900	4,192		4,192
1905	24,250	750	25,000
1910	181,00	6,000	187,000
1915	895,930	74,000	969,930
1920	1,905,560	321,789	2,227,349

Table 1. U.S. Automobile Production:: The above table shows the nuber of automobiles produced in the United States from the years 1900 through 1920.

```
:rdef id=row1 align='left center center right'
      valign=bot cwidths='.5i * * *' hp='2 2 2 3'.
:rdef id=row2 align='left right right right' cwidths='.5i * * *'
:table refid=row1 id=tabl1 column split=no width='3i'.
:row refid=row1.
:c.Year:c.Passenger Cars:c.Trucks and Buses:c.Total
:row refid=row2.
:c.1900:c.4,192:c 4.4,192
:row refid=row2.
:c.1905:c.24,250:c.750:c.25,000
:row refid=row2
:c.1910:c.181,00:c.6,000:c.187,000
:row refid=row2.
:c.1915:c.895,930:c.74,000:c.969,930
```

```
:row refid=row2.
:c.1920:c.1,905,560:c.321,789:c.2,227,349
:tcap.U.S. Automobile Production:
:tdesc.The above table shows the number of automobiles produced
in the United States from the years 1900 through 1920.
:etable
```

flag	Deleware
	Connecticut
	Maine
	Maryland
	Massachusetts
	New Hampshire
	New Jersey
New York	
North Carolina	
Pennsylvania	
Rhode Island	
Vermont	
Virginia	

```
:rdef id=row1 align='center right' valign='center top'
     cwidths='* *' arrange='1 2' arrange='1 3' arrange='1 4'
                   arrange='1 5' arrange='1 6' arrange='1 7'
                   arrange='1 8' arrange='9 9' arrange='10 10'
                  arrange='11 11' arrange='12 12 / 13 13 / 14 14'.
:table refid=row1 id=tabl3 width=5i
:row
:c.flag
:c.Deleware:c.Connecticut:c.Maine:c.Maryland
:c.Massachusetts:c.New Hampshire:c.New Jersey
:c.New York:c.North Carolina:c.Pennsylvania:c.Rhode Island
:c.Vermont:c.Virginia
:etable
```

<table>
<tr><td>This whole table is actually one row with a very complicated cell arrangement. The arrange option on the :rdef macro is used to define how the cells appear in the row.</td><td colspan="2">This is cell number 2.</td><td rowspan="2">Each horizontal line in the table defines a new column that needs to be specified on the cwidths option.</td></tr>
<tr><td colspan="2">The arrange option is used to indicate which of the columns are to be used for each cell.</td><td>This is the smallest cell.</td></tr>
<tr><td colspan="4">This is cell number 6. To make it the full length of the row, I typed a 6 for each of the column widths (see the :rdef command).</td></tr>
</table>

```
:rdef id=row1 cwidths='2i 1i 1i 2i'
                  arrange='1 2 2 3'
                  arrange='4 4 5 3'
                  arrange='6 6 6 6'
                   valign='center bottom center top bottom top'
                    align='left   center right  justify center center'
:table refid=row1 id=tabl5
:row
:c.This whole table is actually one row with a very complicated
cell arrangement.  The arrange option on the &gml.rdef macro is used
to define how the cells appear in the row.
:c.This is cell number 2.
:c.Each horizontal line in the table defines a new column that
needs to be specified on the cwidths option.
:c.
The arrange option is used to indicate which of the
columns are to be used for each cell.
:c.This is the smallest cell.
:c.This is cell number 6.  To make it the full length of the
row, I typed a 6 for each of the column widths (see
the &gml.rdef command).
:etable
```

PostScript

To have your SCRIPT output formatted for a PostScript printer, you need only specify the device on the SCRIPT command to be a PostScript printer. The resulting file, which will be in ASCII and thus unreadable via xedit, can be downloaded to your home system. For example, to SCRIPT LETTER HOME for a PostScript printer that uses 8 1/2 by 11 paper you would use the following commands:

```
LINKTO SCRIPT FONTS (F
SCRIPT . LETTER HOME (DEV(PSA)
```

To embed a bit of PostScript (stored in the ASCII file BIT POST) in your SCRIPT file you need to issue the following commands within your SCRIPT file:

```
.DD BIT BIT POST A
.PO BIT WIDTH 6i DEPTH 2i
```

The **.dd** command defines the file to SCRIPT, and the **.po** tells SCRIPT that you are including a PostScript file. The width and depth attributes tell SCRIPT how much room to leave for the PostScript file. The resulting SCRIPT file must be SCRIPTed for a PostScript device, as SCRIPT does not interpret the PostScript (it just sends it along to the printer).

The Office Document Feature (ODF)

The Office Document Feature (ODF) allows you to have your micro-based text printed out on the mainframe printers. The process takes several steps;

1. You must convert your document to RFTDCA format (The CSO Micro Consulting Office has a utility which can do this conversion for most word processing packages)
2. Upload the RFTDCA file
3. Use the ODF conversion routine
4. SCRIPT the resulting file
5. Print the file.

The main frame commands you would need are given below:

```
LINKTO SCRIPT FONTS (F
RFT2D sample RFT A (OUTFILE (sample SCRIPT A)
SCRIPT . sample (DEV(38PPNS90))
NPLOT sample LIST38PP (DEST 3800 TYPE SCRIPT
```

Note: I have not used this feature. A local user has tested it and is happy with the results. I plan on doing some testing, so that I will be able to answer your questions.

Bar Codes

Two new GML tags have been added to SCRIPT in a separate profile. These new tags provide an easy way for you to create bar codes that you can print separately, or combine with the text of a document. This section gives two examples of using bar codes. For more information consult the *Bar Code User's Guide* at the Systems Consulting Office (1208 West Springfield).

The **:BARDEF** tag allows you to establish the characteristics of the bar code you want to create — in other words, to define the bar code. These characteristics include the type of bar code you want, the height of the bar code, and so on.

The **:BARCODE** tag allows you to generate a bar code by referencing a previously defined bar code definition. In other words, the :BARCODE and :BARDEF tags work together — you cannot generate a bar code by using just a :BARCODE tag. The :BARCODE tag has its own attributes that allow you to modify

how the bar code is processed. At the end of the tag (after the period), you specify the data to be encoded in the bar-space pattern.

To use the bar code tags you must embed the bar code profile. Add the following line to your SCRIPT input file before you use the bar code tags.

.im dsmbprof

The following are examples of bar codes.


```
:bardef type=codabar id=cb1.
:barcode refid=cb1.A-97-00-29-D
```


```
:bardef type=upca id=ua hri=cbottom.
:barcode refid=ua print='30889-1234-12'.30889123412
```

NEW SAS FACILITIES

Vicky Dingler
CSO Statistical Consultant

The **Jackreg** procedure is newly available in CMS/SAS on VMD. It uses the Jackknife method, described by Mosteller and Tukey (1977), to estimate robust regression coefficients. Jackreg produces the estimates by the principle of least squares, which are the best linear unbiased estimates. For more information please refer to the *SUGI Supplemental Library User's Guide, Version 5 Edition.*

Jackreg can be tested using the example program on the SAS disk called STATS (probably the D disk in your minidisk configuration). This example program, called JACKREG, can be located using the FILEList command at the CMS ready message:

FILEL JACKREG SAS *

To run the example program, you can copy it to your A disk from the SAS disk and then run the program from the A disk. Or, if you prefer, you can just run the program from the SAS disk without copying it to your A disk. To run the program, use the SAS command at the CMS ready message:

SAS JACKREG

Two files will be produced. The first will be called JACKREG LISTING A, and the second will be called JACKREG SASLOG A.

Another facility that has been made available is a CMS/SAS **Reliability macro**. It calculates several useful statistics, including Cronbach's Alpha, and is easy to use. A program on SAS's D disk called RELIAB SAS is available for use by anyone interested in running reliability with SAS.

The Reliablility program in SPSS-X is far more extensive and has several options not available in the Reliability macro. The Reliability macro is offered as a convenience to SAS users who do not need the more extensive features of SPSSX Reliability.

SAS/ASSIST is a component of SAS Version 6.03 for the PC. It can be copied free at the Microcomputer Resource Center in the Federal Room of the Illini Union.

SAS/ASSIST is designed to give easy access to the other components of SAS PC. It is a menu-driven facility that prompts the user for data and procedures to run data steps. It is distributed on 6 diskettes, including the Installation Disk. (All disks are in 360K format.) The software takes 1.5MB of disk space on the hard disk and requires at least 1MB of expanded memory (LIM EMS 3.0 or later). Documentation is available through an on-line help facility and tutorial. The TUTORIAL option is available on the main menu after invoking SAS/ASSIST.

If you have any questions, please call the CSO Statistical Consultants in 85 Commerce West at 333-2170.

CALENDAR GENERATION UTILITY ON VMD

Beth Engelbrecht-Wiggans
CSO Systems Consultant

A 'calendar exec', now available on VMD, allows you to create a personalized calendar. You can produce either a small calendar, which has all twelve months on one page, or a large calendar, which has one month per page. The large calendar may have up to eight 15-character messages printed in any date. There are several more options for the large calendar; for example, you may specify that julian dates be printed, and/or you may specify which months out of the year you would like to have created. For either calendar you may specify the year from the range 1582 to 9999. Both calendars are formatted with carriage control for 132 column output, and appear best when printed on the IBM 3800 laser printer.

If you wish to have messages printed on your calendar, you need to create a message input file containing one message per line. The default name for this file is CALENDAR INPUT, but you can use another name. The exec that you use to create the calendar will ask you for the name of your input file. Each line in the file has the following format:

```
MMM DD XXXXXXXXXXXXXXX
```

where columns 1 through 3 contain a 3-letter abbreviation for the month (e.g., APR), columns 5 and 6 contain the day (e.g., 15), and columns 8 through 22 contain the 15-character message to be printed on that date. Multiple messages for a given date will be printed in the order that they appear in the input file. Most days allow up to 8 messages; however, some days at the end of a month may allow only 3 messages due to a 'split box' on the calendar.

The file $ERROR FILE will contain a list of the messages that were not able to be included in the large calendar. A line in the input file beginning with 3 astrisks in place of the month appreviation will be listed in the error file as a comment line. A line in the input file beginning with only a single astrisk will be ignored (comment line).

Two files, CAL1989 DATA and CAL1990 DATA, exist on the public disk. These files contain the University holiday schedule and Academic Calendar for the years 1989 and 1990, respectively. You can add these lines to your own message input file. Note however that the University does not announce it's holiday schedule very far in advance, so often the schedules listed are our best guess as to what the schedules will be.

To invoke the calendar exec type:

CALENDAR

The calendar exec will prompt you for what type of calendar you want produced.

The following is an example of how to use the calendar exec (computer prompts are in Roman type, examples of answers to prompts, which you must supply, are in ***bold italics***):

```
R;
calendar
For what year do you want a calendar? The default is 1989
    (press return, indicating you accept the default)
What month do you wish to start with? The default is JANUARY
June
What month do you wish to end with? The default is DECEMBER
    (press return, indicating you accept the default)
Do you want short calendar? (respond Y or N)
n
Do you want long calendar? (respond Y or N)
y
Do you want julian dates on large calendar? (respond Y or N)
n
What is the name of your message file? The default is CALENDAR INPUT.
Specify NONE if you do not wish to use a message file.
none

Calendar is in file CALENDAR 1989. Use the following command to print
     NPRINT CALENDAR 1989 (DEST 3800 CC EJ

R;
```

On-line help may be obtained by typing **HELP CSO CALENDAR**.

PLSORT TO REPLACE SYNCSORT ON VMD

Vicky Dingler
CSO Statistical Consultant

PLSORT, from Phase Linear Systems Incorporated, has been installed as an alternative sorting routine to SYNCSORT under CMS. It will replace SYNCSORT as the default sorting routine on **July 1, 1989**. It has been tested with all of the products that use SYNCSORT, and has been found to be as efficient as SYNCSORT. To access the PLSORT routines, enter the command:

LINKTO PLSORT

PLSORT has similar syntax to SYNCSORT. It can process fixed or variable length, blocked or unblocked records. Input or output can be from CMS disk or tape. The control file is required to be a fixed length file of 80 columns. An extensive on-line help facility is available when linked to the PLSORT disk. The help menu can be accessed by entering the command:

HELP PLSORT MENU

PLSORT manuals are available for inspection in the CSO Systems Consulting Office at 1208 W. Springfield, and in the CSO Statistical Consulting Office at 85 Commerce West.

Once linked to PLSORT, SAS, SPSS, SPSSX, and Fortran will use PLSORT without making any modifications to the program files. Large data sets (100,000 observations or more) are sorted more efficiently with PLSORT than with SYNCSORT. When using SAS with PLSORT, a message may appear on the screen that states "SYNCSORT TXTLIB NOT FOUND." This is due to the fact that until July 1st, SYNCSORT will be the default sorting routine for SAS. This message in no way reflects an error in the program, or a possible error in the results of the sort.

If there are any questions, please refer them to the consultants in either of the consulting offices. The CSO Systems Consulting Office number is 333-6133. The CSO Statistical Consulting Office number is 333-2170.

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READER FEEDBACK

In our attempt to keep improving *Off-Line*, and answer your needs and interests, we will be adding this page to each issue. We sincerely hope that many of our readers will take the time to give us this "Feedback". Please fill out, fold in half, and return to address on back. Your reply may be anonymous, or you may add your name and department. Thank you for your comments/suggestions.

1. Please give us comments about articles in this issue. Mention the article by name and be as specific as possible in your comments. For example, did you find the articles informative, of a reasonable length, etc.?

2. What topics would you like to see covered in future issues?

3. What sections would you like to see expanded or added? For example, a question-answer column or articles about other department's computing activities?

4. Additional comments or suggestions:

5. Would you be interested in contributing articles, questions, etc. to *Off-Line*?

Send to:

OFF-LINE
Computing Services Office
150 Digital Computer Laboratory (M/C 256)

University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

OFF-LINE MAILING LIST

If you wish to be placed on our mailing list, have a change of address, or wish to be deleted, please check the appropriate box and fill in the information below. Please help us keep our mailing list up-to-date by informing us if issues are being sent to someone no longer in your department; fill in the information below and return to us so that his/her name may be removed from the list.

Please check as appropriate:

_____ Please *ADD* my name to the mailing list.

_____ Please *DELETE* my name from the mailing list.

_____ Please *CHANGE* my address (provide old address also).

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Department _____

Room & Bldg _____ M/C_____

If you do not have a campus mailing address:

Name _____

Address _____

_____

_____

City, State, Zip _____

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_____

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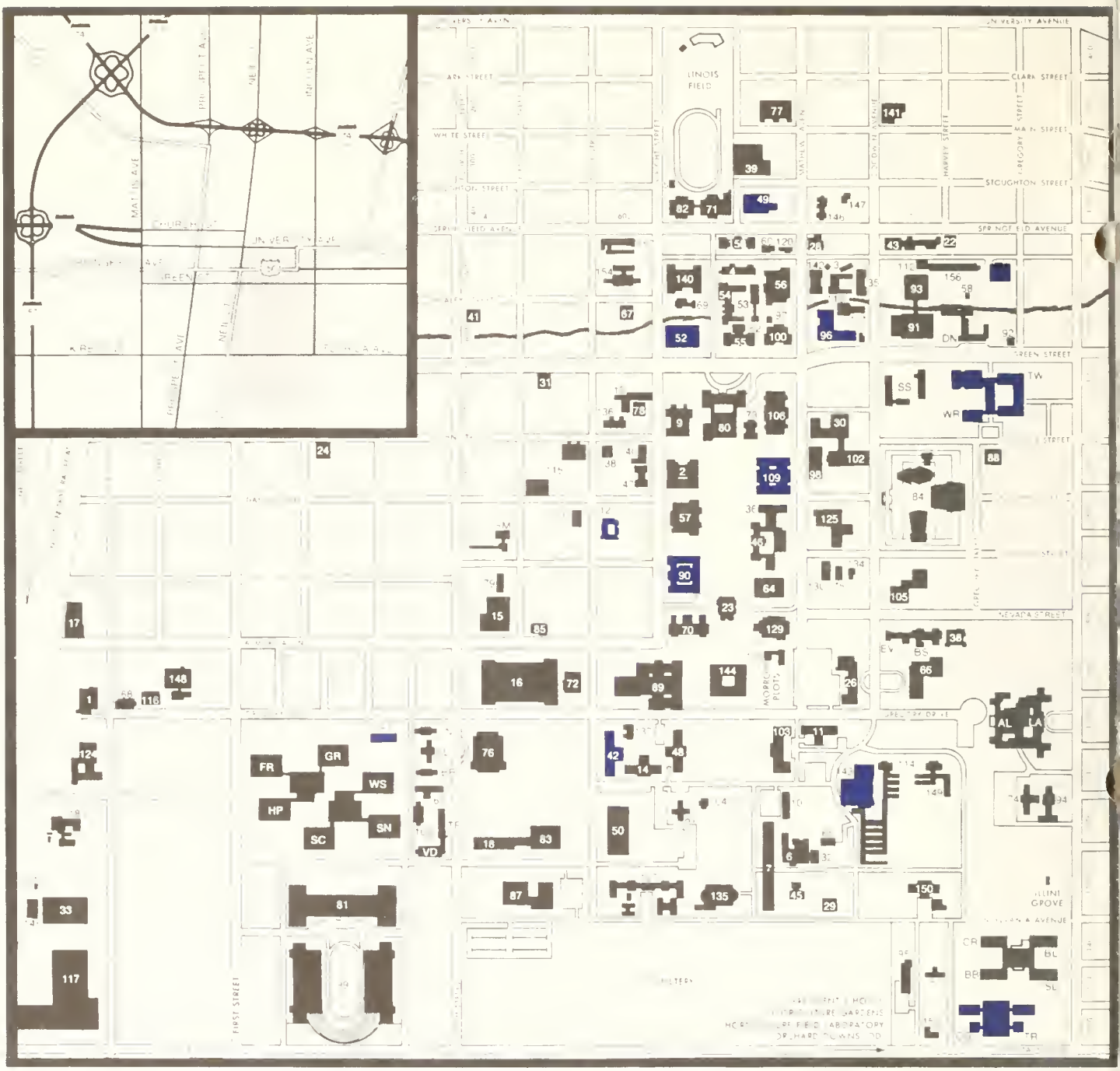
150 Digital Computer Laboratory (M/C 256)

University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH	
14 Digital Computer Lab 333-7685	Monday-Friday, 6 am - 12 mid. Saturday-Sunday, 8 am - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Thursday, 8 am - 12 mid. Friday-Saturday, 8 am - 10 pm Sunday, 12 noon - 10 pm
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday, 9 am - 12 noon Sunday, Closed
CHEMISTRY	
154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Sunday-Thursday, 12 noon - 12 midnight Friday, 12 noon - 5 pm Saturday, Closed
ELECTRICAL ENGINEERING	
146 Electrical Engineering 333-4936	Monday-Thursday, 8 am - 8 pm Friday, 8 am - 5 pm Saturday, 12 noon - 5 pm Sunday, Closed
ENGLISH BUILDING	
8 English Building 244-0386	Monday-Thursday, 8 am - 12 mid Friday, 8 am - 6 pm Saturday, 12 noon - 6 pm Sunday, 1 pm - 12 mid
FAR	
Florida Avenue Residence Halls 333-2695	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
ISR	
Illinois Street Residence Halls 333-0307	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Friday, 8 am - 12 mid. Saturday-Sunday, 12 noon - 12 midnight
PSYCHOLOGY	
453 Psychology 333-7815	Monday-Friday, 8 am - 5 pm Saturday-Sunday, Closed
SOCIAL SCIENCE	
202 Lincoln Hall 333-0309	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, 12 noon - 5 pm
ILLINI UNION MICROCOMPUTER SITE	
244-7935	Monday-Thursday, 8 am - 12 midnight Friday, 8 am - 10 pm Saturday, 10 am - 10 pm Sunday, 12 noon - 12 midnight
MEDIA CENTER -- UNDERGRADUATE LIBRARY	
333-2667	Monday-Thursday, 8 am - 1 am Friday, 8 am - 12 mid Saturday, 9 am - 12 mid Sunday, 12 noon - 1 am



CSO Sites (marked in blue on map)

42 Commerce West
49 Digital Computer Lab
52 Electrical Engineering
90 Lincoln Hall
96 Mechanical Engineering
109 Chemistry - Noyes Lab
121 CRH Snack Bar
122 Psychology
143 Agriculture - Turner Hall
Illinois Street Residence Halls
Florida Avenue Residence Halls
CSO Office Building
(101 South Gregory)

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off line

University of Illinois at Urbana-Champaign

Director: George Badger
Editor: Lynn Bilger

Computing Services Office

IMPORTANT TELEPHONE NUMBERS

Departmental Office	150	DCL	333-1637
CSO Support Center	123	DCL	244-1000
User Accounting Office	1208	W. Springfield	333-7752
Documentation Center	1208	W. Springfield	333-9230
Systems Consulting	1208	W. Springfield	333-6133
Statistical Consulting	85	Comm West	333-2170
Text Processing Consulting	212	CSOB*	333-7318
Micrococonsulting Hotline	91	Comm West	244-0608
Microcomputer Resource Center		Federal Room, Illini Union	244-6261
Maintenance & Repair Service	194	DCL	244-1000
Tape Service, Special Plots, Special Printers.	14	DCL	333-8640

*CSOB is the CSO Office Building, located at 101 South Gregory, Urbana.

DIAL-UP NUMBERS

Terminal Server	up to 2400	baud	333-4000
SWITCH (Sytek)	1200	baud	333-4008
	2400	baud	333-4007
LCS (Library)			333-2494

LOCALNET CALL NUMBERS

Note: Certain CSO Sites are on a separate channel of LocalNet than the rest of the campus. These are designated below as **A Sites** and include the following CSO Sites: ME, EE, COMM, LH, and AGRIC. All other LocalNet access areas are designated as **B Sites**.

VMD	CALL 4400	(A Sites)
	CALL 4500	(B Sites)
VME	CALL 4600	(A Sites)
	CALL 4700	(B Sites)
uxa (Pyramid 90x)	CALL 66DD	(A Sites)
	CALL 66AA	(B Sites)
uxe (Pyramid 90x)	CALL 12FA	(A Sites)
	CALL 12EE	(B Sites)
uxf (Sequent)	CALL 66CC	(A Sites)
	CALL 66BB	(B Sites)
ux1 (Sequent S81)	CALL 1650	(A Sites)
	CALL 1600	(B Sites)
uxh (Convex)	CALL 1850	(A Sites)
	CALL 1800	(B Sites
LCS (Library)	CALL 6400	

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VIRUSCAN version 0.4V30 can identify 28 major virus strains and numerous sub-varieties for each strain. The 28 viruses include the twelve most common viruses which account for over 90% of all reported PC infections. These common viruses include:

- Pakistani Brain
- Jerusalem
- Alameda
- Cascade (1701/1704)
- Ping Pong
- Stoned
- Lehigh
- Den Zuk
- Datacrime (1280/1168)
- Fu Manchu
- Vienna (DOS 62)
- April First

In addition to these common viruses, VIRUSCAN can identify the 3066 virus (Traceback), The Icelandic virus, the Pentagon Virus, the 405 virus, and other viruses that have been detected in Europe, but as yet have not caused widespread problems in the U.S.

NEWS BRIEFS FROM EDUCOM

The following announcements, which we feel may be of interest to some of our users, are reprints of announcements that appeared in the April/May issue of the Software Initiative Newsletter, published by EDUCOM.

COMPSYCH: A Computer Resource for Psychologists

The April 18, 1989 issue of the *Bitnet Psychology Newsletter* (BITNET: EPSYNET@UHUPVM1), announced COMPSYCH, a new computer resource for psychologists. COMPSYCH, operated by Margaret Anderson and Peter Hornby at the State University of New York College at Plattsburgh, answers the need for up-to-date information about psychology software for instruction, research, and practice. The system provides four major services: (1) a catalog of descriptive information about available software, (2) a directory of software users, (3) a message system for sharing information among users, and (4) an announcement service for conferences, job openings, and other information. COMPSYCH is accessible via modem, electronic mail or by hardcopy request. There is no charge to users or to software developers or publishers. For a more complete description of the system, contact COMPSYCH, Department of Psychology, State University College, Plattsburgh, NY 12901; or via BITNET: COMPSYCH@SNYPLABA.

Statistical Mapping Software

Three sets of statistical mapping software have been released by the National Collegiate Software Clearing House. These packages allow instructors to generate customized outline maps for classroom instruction, reference, work maps, and other purposes. For information write NCSC, Duke University Press, 6697 College Station, Durham, NC 17708; (919) 737-3067. To place orders or request a free catalog, call (919) 684-6837.

1989 Directory of Computer Assisted Research in Musicology

The 1989 Directory of Computer Assisted Research in Musicology is scheduled for release in the fall of 1989. The Directory contains samples of computer music printing, a list of current academic applications, topical review articles, news about facilities, publications, organizations, and addresses. For information, contact Center for Computer Assisted Research in the Humanities, 525 Middlefield Road, Suite 120, Menlo Park, CA 94025. (Source: HUMBUL database on humanities.)

Text Archive

The Text Archive is a repository for machine-readable texts supported by Oxford University Computing Services. Several hundred texts in many different languages are maintained, and copies of many of them are available at modest charges for academic use only. The Text Archive also maintains a database of information about texts held at other centers around the world. For information send electronic mail to ARCHIVE@UK.AC.OX.VAX (on JANET) (editor's note: ARCHIVE%UK.AC.OX.VAX@UKACRL may work better from UIUC) or postal mail to Oxford University Computing Service, 12 Banbury Road, Oxford OX2 6NN, UK. (Source: HUMBUL database on humanities.)

Electronic Shakespeare

Oxford Electronic Publishing has just released the Electronic Shakespeare, for the IBM PC. The diskettes contain the full text of the recently published Oxford University Press edition of Shakespeare's plays. Libraries can take out a site license, which makes the software available to an unlimited number of computers or a local area network within their institution. (Source: HUMBUL database on humanities.) *(Editor's note: No address was provided in the above announcement for Oxford Electronic Publishing. Electronic Shakespeare is available on the NeXT computer, several of which are at the MRC. Persons interested in seeing what this package is may view it at the MRC.)*

If you are on BITNET, you can subscribe to HUMBUL by sending a mail message to:

LISTSERV@UKACRL

containing the single line:

SUB HUMBUL your name

EDUCOM'89

EDUCOM'89 will be hosted by the University of Michigan at Ann Arbor, October 16-19, 1989. EDUCOM celebrates its 25th anniversary with the conference theme "Lessons from the Past, Strategies for the Future — Information Technology in Higher Education from 1964 to 2014." Conference tracks are organized around information technology's impact on issues in higher education, its role in our institutions, its applications to our environment, and progress and future prospects of information technology. For more information, send e-mail to EDUCOM89@um.cc.umich.edu or via BITNET to CONF89@EDUCOM.

THE 1989 SUPERCOMPUTING COMPETITION CALL FOR PAPERS

IBM invites you to submit your accomplishments. They seek to honor those individuals whose imagination has elevated the state-of-the-art in analysis and modeling. Included are those who have contributed to creating new leading-edge uses of large-scale computers, innovative applications or algorithms and advances in numerically intensive computing.

The best papers on innovative uses of the IBM 3090 will be chosen in the following four divisions: physical sciences and mathematics; engineering; life and health sciences; social sciences, humanities and the fine arts. Each division will receive a first, second and third prize of $25,000, $15,000 and $10,000, respectively. In addition, a "Proceedings" of selected papers will be published.

Universities that provide substantial support to first prize papers will receive a $10,000 award as well.

Contestants must register an abstract of their paper, according to specifications, by October 2, 1989. Those who have properly registered their abstracts will then be invited to forward their papers by January 15, 1990.

To select the winners, IBM will retain a panel of independent authorities in each division. Winners will be announced by March 1, 1990.

For more information, contact your IBM marketing representative (locally, call (217)351-2300), or call (914)686-6318.

ISAAC: AN ELECTRONIC BULLETIN BOARD FOR ACADEMICS

This article is a reprint of the Membership Brochure for ISAAC.

ISAAC, the Information System for Advanced Computing, provides information about IBM-compatible software and hardware for higher education instruction and research. The system was developed and is being maintained at the University of Washington. Since ISAAC is funded by IBM as a service to faculty, students and staff, there is no fee for membership. Toll-free phone numbers are provided for PC and modem access from the United States and Canada. ISAAC is also accessible through the BITNET and Internet electronic networks. Members of participating professional societies, as well as students, staff and faculty at institutions of higher education are eligible to join. (Editor's note: an application form has been included at the end of this issue. If you are interested in joining ISAAC, fill out the form and return it to the University of Washington.)

ISAAC offers two basic services: a bulletin board and numerous databases. The bulletin board provides a forum for discussions among ISAAC users at more than 1000 colleges and universities. Participants use the bulletin board to share information about a wide variety of issues in instructional computing. The databases contain listings of software packages suitable for instruction or research, descriptions of projects which have used IBM products, general information about the use of computers in higher education, and a guide to additional sources of information such as journals, associations, directories and databases.

ISAAC is menu-based, so you don't have to remember any commands. If you are an infrequent or first-time user, you can use a prompted search to retrieve information from ISAAC's databases. When you choose the prompted path, you are guided through the process of setting up your search and composing a search string. Experienced searchers can choose the fast path to locate their information quickly, and on-line help is always available.

What You'll Find on ISAAC

As we've mentioned, ISAAC has two parts: a bulletin board and numerous databases. The bulletin board is a place for users to ask questions, make announcements or leave messages for one another. The databases contain a wide range of information which can be retrieved by means of user-defined searches.

The Bulletin Board

ISAAC's bulletin board is divided into forums. Each forum is devoted to a particular topic: an academic discipline, technical questions, announcements, questions for ISAAC, information from IBM, etc. Other discussions are sponsored by independent organizations such as the Association for Institutional Research and the League for Innovation in Community Colleges. These groups use the bulletin board to share information with the general public and/or to help their members keep in touch with one another.

The Databases

ISAAC's databases — compiled and maintained by independent groups around the U.S. — are grouped into four categories: sources of information, academic software packages, general information, and abstracts of projects.

Sources of information -- contains Softinfo, a database of sources of information about IBM-compatible software for both PCs and mainframe computers. Softinfo was designed for the academic community and covers a broad range of subject fields and professions. Each of the listed sources describes, reviews, evaluates, and/or recommends software. The sources include professional organizations, networks, state departments of education, journals, newsletters, magazines, directories and databases.

Academic software packages -- lists IBM-compatible software packages that are available from various distributors. This category already contains hundreds of packages and it will continue to grow month by month. The present list of distributors includes Wise-Ware, ICEC-Ware, CONDUIT, the National Collegiate Software Clearinghouse, COMPress, and OCLC, the Online Computer Library Center database.

General information -- contains entries that were originally listed on ISAAC's bulletin board but are of long-term interest or value to ISAAC users.

Abstracts of projects -- contains descriptions of projects which involved the innovative use of IBM and compatible hardware and software as aids to research and instruction at the higher education level. Each abstract contains a brief description of the project, contact information for the principal investigator, descriptions of the hardware and software used, and information regarding any original software that may have been developed. Sources of projects include joint IBM university activities, as well as the community college's CCIISS database.

Special Features

ISAAC can add and copy entries. To add an entry, you may either use the on-line text editor or you may transfer an existing file from your own computer via modem, BITNET, or Internet. To copy entries from the bulletin board or database, you'll save the entry on ISAAC and transfer it back to your own computer via modem, or you'll use ISAAC's Send-to-BITNET feature to have it sent to your BITNET address. Internet users use File Transfer Protocol (FTP) to transfer files.

IBM is facilitating a program whereby professional societies will evaluate software in their respective fields. These reviews will be available on ISAAC in the future. The software packages themselves will be available through TASL, the Academic Software Library. At present, the participating societies are the American Society for Engineering Education, The Center for Applied Linguistics (representing the Linguistic Society of America and the Society of English as a Second Language), and the Modern Language Association. Additional societies may be added to the program.

Connecting to ISAAC

Via modem -- When you connect to ISAAC by modem, you will interact with the system just as you would interact with a program that was running on your PC. If you choose modem access, we'll send you the communication and terminal emulation software that you'll need. ISAAC has toll-free numbers which operate in the United States, Puerto Rico and Canada. Prospective users who don't have modems or who live outside the toll-free calling area should consider trying BITNET or Internet access.

Via BITNET -- BITNET access is only available to those users who have existing accounts on the BITNET electronic mail system. BITNET access is very different from PC access. Instead of interacting with ISAAC directly, you will send interactive messages to a server machine which will respond by sending files to your on-line readerlist or mail box. To use BITNET access, your BITNET account must be capable of sending interactive messages to other BITNET addresses; the ability to send MAIL is not sufficient. (Editor's note: BITNET accounts at UIUC are interactive.) Because BITNET links some foreign universities, ISAAC is accessible to foreign users too.

Via Internet -- Internet access is available to users whose computers are connected to the Internet network (which includes ARPAnet). Internet access is interactive and menu-based, like pc/modem access.

WHAT'S NEW IN THE MRC?

Bi-Shen Chuang & Mark Zinzow
Microcomputer Resource Center

Since January, 1987, the CSO Microcomputer Resource Center has been set up to help campus PC users select and purchase microcomputer hardware and software. Because the markets for microcomputers and software are particularly fast-paced, with new models and packages being introduced at every turn, the decision to purchase has never been easy. The Resource Center staff members are constantly trying to expand our collections so that you can find a system or program that will best help you in your work or study.

Hardware

At present, the MRC has the following desktop microcomputers and portables available for your evaluation. (Please note these machines are used mainly for evaluating the Center's software, copying public domain disks, and downloading files from networks. We do not encourage you to do word processing work at the Center. Although the MRC has facilities for diskette media conversion - transferring data from 5.25" diskettes to 3.50" diskettes, and vice versa - this is not offered as a regular service.)

IBM Systems

IBM PC
IBM XT
IBM AT
IBM Personal System/2 Model 50
IBM Personal System/2 Model 50Z

Macintosh Systems

Macintosh 512K
Macintosh Plus (A Thunder Scanner is connected to it.)
Macintosh SE
Macintosh IIx (An Apple Scanner is connected to it.)

Others

Amiga 500
NeXT Computer
(A new arrival to the MRC, but on temporary loan from AT&T. It comes with a 16 MHz Intel 80386 microprocessor, a 40 MB hard disk, a 5.25" 1.2 MB floppy diskette drive, an EGA monitor, and a 101-key keyboard. User's guide and AT&T MS-DOS 3.3 manual are also available.)

Portables

IBM PC Convertible
Zenith Data Systems Z-181

Scanners and Related Software

The MRC's Mac II has just had a memory upgrade to 5 megabytes. This will allow us to more fully demonstrate many software packages with high memory requirements, such as FullWrite Professional, Lightspeed C 3.0, and AppleScan. In conjunction with this, the MRC has received a copy of Omnipage Version 1.1. Omnipage is a text-recognition package that works with our Apple scanner to scan in text documents and convert the images into ASCII text which may be imported into any word processor for editing. This allows one to scan in newspaper articles, magazines, books, even typewritten documents.

Networking

Stand-alone PCs are useful, but they are not doing everything they could be doing unless they can communicate with the rest of the world. Our PCs are networked so that you can share files with other users, send electronic mail, and transfer files between other networked machines both on and off the campus. Our PCs have NCSA Telnet, tn3270 Telnet, PC-NFS, and CMU Telnet installed, allowing you to connect to the campus computer network UIUCnet. Because of these networking facilities, you can use ftp (file transfer protocol) or anonymous ftp to send files or download public domain software from various remote machines, login to another machine on the network while your current session is active, use the VM/CMS machines in a full-screen environment, etc. Just recently, we have developed a sharenet program that provides fast and easy downloading of the PC-SIG disks from uxa.cso.uiuc.edu in either archived or unarchived format. Sharenet is available on several of our PCs and the IBM PS/2 Model 30's in the Micro Lab also located in the basement of the Illini Union. In addition, we have built a TOPS network, with a mix of PC and Macintosh computers. One of our IBM ATs is connected to the Macintosh Plus, making PC/Mac file transfers possible.

New Commercial Software

Title	*Publisher*	*Application*
Claris CAD (MAC)	Claris Corp.	Design & Drafting
Golden Graphics System	Golden Software, Inc.	Graphics
Lotus Magellan 1.0	Lotus Development Corp.	Utility
MathCAD 1.1	Mathsoft, Inc.	
(Displays, calculates, and prints formulas. Also works with text and graphs.)		
Spellswell 1.3 (MAC)	Working Software, Inc.	Spelling Checker
Funk & Wagnall's Standard Desk Dictionary	Inductel, Inc.	Dictionary
Grammatik III	Reference Software, Inc.	Grammar/style Checker
Think's Lightspeed Pascal(MAC)	Symantec Corp.	Compiler
Wingz (MAC)	Informix Software, Inc.	Spreadsheet
ImageStudio (MAC)	Letraset USA	Image Processing
SlideWrite Plus	Advanced Graphics Software, Inc.	Presentation Graphics
AZTEC C for Amiga 3.6A	Manx Software Systems	Compiler
Pizazz Plus	Application Technologies	Screen Print & Capture
Keynotes Ass. Press Stylebook	Digital Learning Sys.	Grammar/style/
(Have received both 3.5" and 5.25" formats for PC)		spelling/word usage
MicroTest III (MAC)	Chariot Software Group	Test Generation
MicroGrade (MAC)	Chariot Software Group	Grade-keeping

Updates

FullWrite Professional 1.1 (MAC) *(Includes 3 updated disks.)*	Ashton-Tate	Word Processor

Demo Kits

ChemDraw (MAC)	Cambridge Scientific Computing, Inc.	Desktop Publishing
IZE	Persoft, Inc.	Text Retrieval
Microsoft Excel for Windows	Microsoft Corp.	Spreadsheet
Working Model		

We also have user manuals and demo disks of test preparation for GRE, LSAT, and MCAT in our Interactive Learning Systems, Inc. vendor file. Demonstration disks from Ashton-Tate, including dBASE IV, dBASE MAC, Draw Applause, Framework III, Full Impact Sampler, Graphics Master, and RapidFile, are also available for evaluation and/or copying.

Public Domain and ShareWare Software

OK Word Processor 4.0

Described by Australian Computing as an advanced foreign-language word processor and mathematical-formula formatter without any serious competition, the Australian OK Word Processor 4.0 comes with the UNIVERS font: about 1200 scientific and graphics symbols, italics, and European language characters. Extra fonts such as Music and Scripts (old and stylized English fonts) are available, plus Asian language characters are being developed. In addition to handling scientific and foreign language documents, OK is a general purpose office word processor with built-in telecommunication facilities for electronic mail and telex. The MRC has received the shareware version of OK Word Processor 4.0 for the IBM PCs - one OK Editor 4.0 disk. (The standard OK package is $395, including OK Editor, OK Writer, UNIVERS font, and printed manuals.) We also have a self-running demo disk for you to test OK's capabilities. Price lists, educational discount and site licensing information, review articles, and sample printouts of UNIVERS characters are also available.

The BMUG public domain software disk and PD-ROM

We would like to bring to the attention of all MAC users that the MRC has recently obtained its membership of the BMUG (Berkeley Macintosh Users Group). This group offers the BMUG Newsletter, published twice a year, with over 300 pages of interesting review articles, tutorials, recommendations, without any advertising. The MRC copy of the BMUG Newsletter and a disk of public domain software, including games, a terminal program (miniterm 2.9.6a), and a utility folder including nVir Assassin have arrived. Also, the BMUG PD-ROM, which holds 300 megabytes of publicly distributable software and articles from the BMUG Newsletter, is available at the Hypermedia Lab (204 Lincoln Hall), and the Computer Lab in Room 10 in the College of Education. We hope this information will appeal to every MAC owner!

New Newsletters and Magazines

Amiga World	IDG Communications/Peterborough, Inc.	Monthly
BMUG Newsletter	BMUG, Inc.	Semi-annually
WordPerfect The Magazine	WordPerfect Publishing Corp.	Monthly

The WordPerfect Update Center

The MRC has WordPerfect for Apple, Macintosh, IBM, and Amiga for patron evaluation. In addition, we offer site licensing information, personal purchase order forms, WordPerfect tutorial workbooks, and WordPerfect updates. Recently, the MRC has become the campus WordPerfect Support Center. WordPerfect update products, such as printer disks, bug fixes, etc. are stored in /micro/wp on the NeXT computer. We hope to provide you with the most complete information on this popular word processor. Registered WordPerfect owners may come to the MRC or request an account on MRCNEXT for UIUCnet access.

Wisc-Ware

Wisc-Ware has software for Arts and Humanities, Business, Computer Science, Graphics, Image Processing, Health Science, Mathematics, Statistics, Social Sciences, and many other academic areas. The MRC has received the latest (twelfth) distribution of Wisc-Ware, which contains 36 new packages, and 6 updates for previously published packages. For information on ordering software, please see "How to Order Software from Wisc-Ware" at the front of the Wisc-Ware catalog.

Updates:

We have received updates for the following packages: **#107 QMVARY**, **#130 WinView**, and **#131 Cardiac Auscultation**. None of these updates affect the package documentation. Updates for the packages **#81 Flincor**, **#83 CIRC**, and **#129 Barbara** include new documentation.

New Packages: (An asterisk indicates that the package requires Microsoft Windows 2.03.)

103. AHB - Abnormal Human Biology clinical Tutorials 1.0* Columbia University
These 12 programs help train medical students in the use of clinical techniques in diagnosis.

147. Subprogram Librarian 1.0* University of Texas-Austin
This package provides easy access to a library of building block subprograms from which programs can be created.

153. Feasibility Study 1.0* University of Minnesota
An integrated package of tutorials and a word processor. This software helps students collaboratively design and document the stages/products of a feasibility study: planning, proposal, progress report, and a final report.

160. Let's Learn Arabic 1.0 University of Pennsylvania
These diskettes include programs to be used with the soon-to-be published textbook *Let's Learn Arabic*. They include: (1) a program for teaching Arabic script, (2) vocabulary review programs, and (3) simple drill and practice programs.

164. TransAN 1.0* Cornell University
A Transportation Network Analysis program. TransAN is a central element in urban transportation planning and in traffic engineering. It is designed to teach the concepts and methods for predicting traffic flows in urban street network.

168. Historical Case Studies: Superpower Rivalries 2.0* University of Illinois
This program allows the user to systematically examine 6 major theories of superpower rivalries, and to see how well any one of these theories helps explain the chronology of events in some 21 different case studies.

169. PAL Editor 2.0 University of Illinois
The Palette Editor allows users to modify the 256 colors available in the Dr. HALO paint program.

178. Grass Roots Politics 0.9* University of Washington
This learning game takes place in a neighborhood in a medium sized city. The learner becomes a principal actor in a process of interaction/negotiation through which street lights may be obtained from the local government.

179. Discovery Algebra: Exponents 1.0 University of Washington
This is a collection of self-paced, interactive lessons in algebra, intended for beginning college students.

183. Logiclab 2.4 University of Wisconsin-Madison
This package consists of 4 programs designed as a supplement to an undergraduate course in mathematical logic.

184. QUANWIN 1.0* University of Pennsylvania
Graphics simulations of simple 1-D quantum mechanics problems that can support sophomore/junior level theory courses.

186. Lenses 1.0* University of Washington
Lenses uses Snell's law to trace rays through a multi-element optical system.

188. Market 1.0* University of Southern California
Model of a segmented (housing) market (in a spreadsheet) with random investments, local averaging in space as a surrogate for market, and status as well as price variables to characterize each location.

189. Physiological Simulation Program 1.0* University of Southern California
This program provides interactive software that can be used in a variety of physiological simulations applicable for biomedical teaching and research.

192. C & C Author 2.0* University of Maryland
Conflict & Cooperation Author is a social game construction kit. The user can interactively specify an infinite number of social game scenarios, representing virtually any political, business, or social situations. Other people can then participate in the simulations that the user has created.

193. C & C Player 2.0* University of Maryland
C & C Player is a social game simulation presentation system. Using C&C player, the user can specify an infinite number of social game scenarios, representing virtually any political, business, or social situations.

194. VOTE Author 1.0* University of Maryland
VOTE Author is a voting game construction kit. The user can interactively specify an infinite number of voting scenarios, representing a wide range of political, business, or social situations.

195. VOTE Player 1.0* University of Maryland
VOTE Player is a system for simulating situations involving voting. The user can participate in interactive simulations of a wide range of political, business, or social scenarios.

196. Single Beam 2.0* University of Maryland
This program simulates a simple single beam, visible-range absorption spectrometer used to measure the transmission or absorbency of colored samples.

197. Logistic 2.0* University of Maryland
This program allows students to systematically explore multiple factors that influence the evolution of population size.

198. SepVar 2.0* University of Maryland
The "Separated Variables" program allows the study of elementary differential equations.

199. Optics Workbench 2.0* University of Maryland
This lens optics workbench and ray tracing system allows placement of convex and concave lenses on a simulated optics bench with the movement of lens, modification of focal lengths, and widths of the lenses.

200. Weave CAD 2.0* University of Maryland
Weave CAD is a tool for creating weave designs. It allows definition of a weave design via definition of any of a weave plan's three major components: warp-weft of weave, peg-plan, or draft plan.

202. TRUSS 1.0* UCLA
Trusses, both plane and space, are useful and popular architectural elements. This program allows the graphical specification of a structural truss and provides numerical analysis of the results.

203. Robot Joint Configuration Evaluator 1.0* University of Southern California
This program is for use in class instruction or conducting research in robotics. It is specially designed to demonstrate arm kinematics, redundancy resolution and dual arm cooperative task execution.

204. Ready-Set-Retire! 1.0* Cornell University
This program provides a rough estimate of the annual savings needed to maintain your current level of living in retirement. It takes into account estimated Social Security and pension income as well as savings and assets already earmarked for retirement.

205. VDWIN 1.0* UCLA
This interactive graphics program allows the user to experiment with the way that charges in temperature affect the gas-liquid equilibria of various non-ideal gasses.

206. COULOMB 1.0* UCLA
This interactive graphics program allows the user to experiment with the way that a test charge reacts when placed in the field of a nucleus.

210. JAIRFOIL 2.0* California Institute of Technology
This program illustrates some of the features of inviscid 2 -dimensional flow past basic shapes, using the methods of conformal mappings.

211. Planets 1.0* University of California-Berkeley
Planets consist of two principal programs: XYZ and EPH. XYZ computes and displays the positions of planets in space relative to the Sun, and EPH gives the positions of planets seen from the Earth, or another planet, in celestial coordinates.

212. Moleculab 1.0* University of Southern California
Molecular graphics for chemistry, 3-D rotation in real time for molecules < 18 atoms.

217. Parasol II 1.0* University of California-Berkeley
Parasol II simulates a solution of sets of nonlinear differential and difference equations, and plots graphs from tabular simulation results.

218. ES1W 1.0* University of California-Berkeley
An ElectroStatic 1 dimensional code for the Microsoft Windows operating environment. The code simulates a periodic plasma whose characteristics, including particles and electrostatic fields, are specified by the user at run time using an input deck.

219. UCB HG72 1.0* University of California-Berkeley
This is the Microsoft Windows version of Package #57, a diet analysis system.

220. MEXVGA 1.0 California Institute of Technology

A TSR program that allows the user to explore in a visual way the memory on an IBM PC, and to modify it with care.

221. Multiway 1.1 University of Wisconsin-Madison
Multiway is a microcomputer program for unbalanced multifactor analysis of variance.

The MRC has been receiving requests from off-campus users about how they can get Wisc-Ware. They may get a free catalog and an information packet by writing to: Wisc-Ware, Academic Computing Center, University of Wisconsin, 1210 West Dayton Street, Madison, WI 53706; or by calling (800)543-3201 (inside Wisconsin call (608) 262-8167); or via BITNET WISCWARE@WISCMACC.

OzTeX for the Macintosh

The MRC has recently obtained a copy of OzTeX, a public domain version of TeX for the Macintosh. The package we have includes:

- OzTeX program
- Complete set of TFM files for the computer modern font set
- TFM files for selected Adobe fonts
- LaTeX and AmSTeX input files
- IniTeX (allows for user-created input files)
- DVI screen previewer
- PostScript driver
- Source code in Modula-2

The package does not include an integrated text editor — you can use your favorite text editor or word processor. Also, please note that OzTeX currently supports ONLY PostScript-compatible printers. The OzTeX package consists of 12 disks (800k), and will require about 7 megabytes of hard disk space. It should run on any Macintosh system from the Mac Plus on up to the IIx.

If you would like to obtain a copy, please feel free to stop in at the Micro MRC any time Monday through Friday 10-6. If you have Internet access, you may obtain OzTeX by anonymous ftp from:

Name: tank.uchicago.edu
Address: 128.135.4.27

in **pub/sources/OzTeX.** The files have been preprocessed with Stuffit-1.5.1 in the **/pub/sources/OzTeX/binaries** directory and further processed with Binhex in the other directories. You will need at least version 1.5.1 of Stuffit, as the Stuffed files contain folders (available from the MRC or from the info-mac archive, at **sumex-aim.stanford.edu** (or 36.44.0.6)).

Diskette Corrective Service

IBM has informed us that there is an unusual set of circumstances that could cause certain models of the IBM RT System to give an inaccurate floating point arithmetic result. Although the probability of its occurrence is extremely remote, IBM has provided the MRC with a corrective service package that will prevent the occurrence of this situation on the following RT models: IBM 6150, Models 125, 135, B25 and B35, and IBM 6151, Models 115 and 130. Users who have one of these models should make a copy of the package at the MRC and install it on their system as soon as possible.

The package has been designed for users of IBM AIX and IBM VRM operating systems (Versions 2.1.2 and 2.2.1). A similar package is also available for users of the IBM Academic Operating System (AOS) 4.3. If you are using an operating system on your RT that is not IBM AIX, IBM VRM, or IBM AOS 4.3, please call 1-800-444-8600 for further assistance.

Survey of Interest in Purchasing VirALARM Software for the PC

The MRC has received a demonstration copy of VirALARM, a state-of-the-art anti-viral software product from Integrity Technologies, Inc. We would like our users to visit the MRC and look over this package.

Integrity Technologies states that VirALARM "provides assurance, with a high degree of confidence that unauthorized changes to information are detected...combines with computer security to protect normal access to a system and its applications, and protects against integrity threats. VirALARM is based on mathematical models developed over the past 7 years...engineered to be failsafe, impossible to forge."

Integrity Technologies, Inc. has offered the University a special deal for licensing and copying this product. The MRC is conducting a survey to determine if there is enough interest in this package to warrant going ahead with licensing. If you are interested or believe we should get the package, send e-mail to markz@vmd.cso.uiuc.edu, or via campus mail to Mark Zinzow, 150 DCL, MC-256 (or leave a message at the MRC). If there is not enough interest, we will not pursue a site license. Since the special offer from Integrity Technologies is available only for a specified period of time, we request that persons interested, please return the form as quickly as possible.

SAS PC UPDATE

Vicky Dingler
CSO Statistical Consultant

SAS Version 6.03 has several update disk sets available. The first set contains additional procedures for SAS/STAT. There are revised modules for PROC GLM and PROC LIFEREG, as well as five new

procedures for the PC product. They are CORRESP, LIFETEST, PRINQUAL, PROBIT and TRANSREG. The SAS/STAT update set consists of nine disks and requires 3 MB on the hard disk. The diskettes cost $10.00 and are available at the CSO Distribution Office at 1208 W. Springfield.

The second set contains the new Usage notes and zap disks. This set consists of five 360KB disks. The third set contains additional device drivers for SAS/Graph. It consists of two 360KB disks. These sets can be copied free at the Microcomputer Resource Center in the basement of the Illini Union. Installation documentation is available with the disks.

Persons renewing their SAS/PC license will need a stores voucher or personal check to renew the SAS/PC products of interest and also pay for the SAS/STAT update if desired. Renewal prices are as follows: SAS/Base $23.00, SAS/STAT $15.00, SAS/IML $17.00, SAS/FSP $15.00 and SAS/GRAPH $20.00. If the new SAS/STAT disks are desired, the SAS/STAT price becomes $25.00.

SAS/RTERM Version 2 became available on July 1st. It is an enhanced Version of RTERM 1.27 and supports EGA graphics. The diskettes cost $5.00 and are available at the CSO Distribution Office at 1208 W. Springfield.

Persons renewing their SAS/RTERM license will need a stores voucher or personal check to renew the SAS/RTERM product The license fee for RTERM is $11.00. If the new version is desired, the total price is $16.00 for RTERM Version 2.

RUNNING SPSSGRAF ON VMD USING YOUR IBM PC AS A TERMINAL

Joan Mills
CSO Statistical Consultant

SPSSGRAF is an SPSS, Inc., interactive graphics program on the IBM VMD/CMS machine. It can be used to do a variety of pie, bar and line charts, scatterplots and maps. For more information about SPSSGRAF features, see the manual *SPSS Graphics*, revised edition, at the Undergraduate Library Closed Reserves or at the CSO South Statistical Consulting Office, 85 Commerce West. An on-line introduction is available via the commands:

```
LINKTO SPSSGRAF
HELP CSO SPSSGRAF
```

SPSSGRAF can be run from an IBM full-screen terminal (including an IBM graphics terminal) and other terminals operating in line mode (simulators and emulators interfere with the process). Since SPSSGRAF also needs working program function keys (PF keys on a terminal; F keys on a PC), the number of usable non-IBM terminals is limited.

This article describes using an IBM PC or compatible, running Kermit, as a terminal to run SPSSGRAF. The PC can also be an output device for the plot — unlike an ordinary IBM 3178 full-screen terminal which can only prepare output for some other device to plot (like the Zeta plotter or the 3800 printer). Handouts, available at 85 Commerce West, explain that the Tektronix 4105 (as well as the IBM 3279, etc.) can be used both as a terminal to display an SPSSGRAF output and as an input device because it displays graphs and, even in line mode, has its own PF keys.

The IBM PC may use a LocalNet connection, just like the Tektronix 4105. An addition to the latest release of Kermit (Version 2.32/A) makes it possible to create functioning F keys. Also, if you are using a PC with a modem (telephone connection), the latest version of Kermit and the terminal server (introduced in the March/April/May issue of *Off-Line*), you may use SPSSGRAF to produce a plot on your screen or to send it elsewhere. LocalNet line mode access (CALL 4100) has been dropped due to the age of some of the equipment, but software linemode with CALL 4500 is available, and the modem/terminal server access is a welcome addition to the set of possibilities.

Two examples of running SPSSGRAF with Kermit and a PC follow. One example uses LocalNet and the other example shows the use of a modem and the terminal server. Both examples are in linemode.

Example 1. This example illustrates the steps to follow if running SPSSGRAF with a PC using Kermit and LocalNet.

(First verify the PC is on a LocalNet port.)	
KERMIT	*Invoke Kermit on the PC*
VM	*Initialize Kermit for VMD*
SPSS	*Initialize F keys for SPSSGRAF. (Note: SPSSX on VMD should be run in full-screen mode — F key initialization not required.)*
C	*Prepare to connect to VMD*
<ENTER><ENTER>	*Press ENTER to see the # prompt.*
CALL 4500	*Initiate access to VMD.*
VT100	*Specify terminal type. (Alternatively, may specify KERMIT.)*
CTRL-HOME	*Clear screen of logo.*
LOGON userid password PROFILE or ENTER key	*Log in to VMD as usual.*
LINKTO SPSSGRAF	*Link SPSS graphics program.*
LINKTO LINEMODE (T	*Link the linemode program. (If there are problems with this command, see a CSO consultant.)*
CTRL-P CTRL-O	*Get LocalNet prompt.*
ECHO ON	*Tell LocalNet to echo what you type.*
<ENTER><ENTER>	*Return to session.*

LINEMODE ON PROMPT . INL HDUPLEX	*Enter line mode (ignore double printing).*
SPSSGRAF	*Invoke interactive SPSSGRAF program. Note: If you are a new user, have the SPSS Graphics manual or the printed HELP file nearby.*
3	*Specify terminal type VT100 to SPSSGRAF (even if you specified Kermit earlier).*

A Main Menu is presented. Proceed with a run or a test as described in the SPSSGRAF help file. Use the appropriate F keys on your PC as required to advance through the menus. Press ENTER after using an F key. To terminate the SPSSGRAF session, return to the Main menu (may use **&MAIN** followed by ENTER) and terminate (use **&QUIT** followed by ENTER). When you log off, terminate from Kermit with **CTRL-],CTRL-C** and then **QUIT**. If, instead of logging off, you wish to resume a normal full-screen session enter:

LINEMODE OFF
CTRL-P CTRL-O
ECHO OFF
<ENTER><ENTER>
CTRL-] C
VM
C

See the Notes section at the end of the next example for more details about interacting with Kermit graphics.

Example 2. This example illustrates the steps to be followed if running SPSSGRAF with a PC using Kermit, a telephone/modem and the terminal server.

(Have the modem set up for your PC.)	
KERMIT	*Invoke Kermit on your PC.*
12	*Or 24 to set the baud rate appropriate to your modem.*
SPSS	*Initialize F keys for SPSSGRAF.*
C	*Prepare to connect to VMD (via modem).*
ATDT34000	*Enter command to dial telephone. Note: if off-campus, use ATDT3334000.*
(Wait for message of the day and 'mossberg' prompt.)	
VMD	*Specify that you want to connect to VMD.*
(Wait for connection.)	
LOGON userid	
password	
PROFILE or ENTER key	*Usual logon sequence*

LINKTO SPSSGRAF	*Link SPSS graphics program.*
SPSSGRAF	*Invoke interactive SPSSGRAF program. Note: have documentation handy if you are a new user.*
3	*Specify terminal type VT100 to SPSSGRAF for input.*

Proceed with a run using the F keys as needed (press ENTER key after each F key). Terminate from the main menu with **&QUIT** followed by ENTER. When you log off, terminate from the terminal server with **QUIT** and terminate from Kermit with **CTRL-]** C or **ALT-X** then **QUIT**.

Notes on Running SPSSGRAF Using Kermit

Note the following when using SPSSGRAF with Kermit:

- To display your graph on the PC screen, use Kermit's graphic terminal potential. Select the output terminal type of 4010 or 4014; in SPSSGRAF these are device numbers 43 and 44, respectively. Image will be in black and white.
- Toggle to graphic terminal mode for Kermit (rather than VT100 mode) just before or just after entering the draw command by using **alt -** if necessary. (The mode of the terminal is displayed at the bottom of the screen.) The screen will be blank unless the graph has already begun to be drawn.
- The graph may be incomplete or slightly imperfect. This is a function of the Kermit graphics driver and does not necessarily indicate defects in your program.
- To clear the graph from the screen, use **alt –** to toggle back to VT100 mode and press ENTER to refresh the screen. Graphic mode leaves the cursor out of place — DO NOT type there, refresh the screen first.
- You may refresh the screen at any time during an SPSSGRAF session by typing &REFRESH on the command line.

IBM HIGHER EDUCATION SOFTWARE CONSORTIUM

AIX Personal System/2 Additions

IBM announces a further expansion of the Higher Education Software Consortium (HESC), introduced last year to promote the use of IBM's midrange and advanced function workstation software for instruction and research in higher education. (HESC was announced in the MRC article in the March/April/May issue of *Off-Line*.)

Effective immediately, AIX™ licensed programs for the IBM Personal System/2® (PS/2®) are available as part of HESC Software Group I-B, Selected AIX System Workstation Platform Programs. This action is pursuant to the statement in the Notice to IBM Customers 388-185, dated December 6, 1988, that "it is IBM's intent to broaden the base for the Consortium's AIX offerings as appropriate products become available for inclusion."

The following list identifies all licensed programs that have been added to coverage under the HESC.

Licensed Programs Added to HESC Coverage

Additions to Group I-B, Selected AIX System Workstation Platform Programs

Program Number	*Program Name*
5601-202	AIX PS/2 X.25
5709-029	X-Windows for IBM DOS*
5709-030	AIX Access for DOS Users*
5713-AEP	AIX PS/2 Application Development Toolkit
5713-AEQ	AIX PS/2 Operating System**
5713-AER	AIX PS/2 Workstation Host Interface Program
5713-AET	AIX PS/2 INmail/INed/INnet/FTP****
5713-AEW	AIX PS/2 TCP/IP (includes tn3270)
5713-AEX	AIX PS/2 X-Windows
5713-AEY	AIX PS/2 DOS Merge*
5713-AEZ	AIX PS/2 VS PASCAL
5713-AFA	AIX PS/2 VS FORTRAN
5713-AFC	AIX PS/2 C Language
5713-AFD	AIX PS/2 Text Formatting System
5713-AFE	AIX PS/2 Usability Services
5713-AFG	AIX PS/2 Network File System****
5713-AFH	AIX PS/2 Operating System Extensions
5713-AFJ	AIX PS/2 Distributed Services
5713-AFK	AIX PS/2 Transparent Computing Facility***

* For each copy of this licensed program ordered under the terms of the HESC Agreement, there is a one-time charge of $30.

** For each copy of this licensed program ordered under the terms of the HESC Agreement, there is a one-time charge of $200.

*** For each copy of this licensed program ordered under the terms of the HESC Agreement, there is a one-time charge of $50.

**** INmail, INed and INnet are trademarks of INTERACTIVE Systems Corporation; Network File System is the trademark of Sun Microsystems, Inc.

Terms and Conditions

One-Time Charge for Selected Programs

A limited number of licensed programs are subject to a one-time charge for each copy ordered by eligible HESC members. Such charges are already in place for nine RT (TM) System programs in Group I-B. With this announcement, the following programs will also be subject to the one-time charge:

Program Number	*Program Name*	*Group Number*	*One-Time Charge*
5709-029	X-Windows for IBM DOS	I-B	$ 30.00
5709-030	AIX Access for DOS Users	I-B	30.00
5713-AEQ	AIX PS/2 Operating System	I-B	200.00
5713-AEY	AIX PS/2 DOS Merge	I-B	30.00
5713-AFK	AIX PS/2 Transparent Computing Facility	I-B	50.00

Revision of HESC Membership Agreement

With the addition of the AIX PS/2 software, the terms and conditions of the HESC Membership Agreement have been revised to include the Additional License Option of the IBM Program License Agreement. This revision applies to all Consortium software for which the Additional License Option is available, on both the PS/2 and the RT System, and is effective immediately.

Usage Requirements

Each program ordered under terms of the HESC Agreement must be used for academic instruction and/or academic research. In the case of Groups I-A, I-B, I-C, and I-D, at least 80% of each program's use must be for such purposes. For programs in Groups II-A, II-B, and III, 100% of each program's use must be for academic instruction and/or research.

Academic research activities must meet the criteria set forth in the Educational Allowance Amendment (Z125-3083). Consortium programs may not be used to perform services for a fee.

Apart from the items listed above, there are no other changes to the HESC fee structure, nor to the terms and conditions of HESC eligibility and membership.

For more information, write to:

IBM Corporation
Attn: Louis G. Polverari
ACIS Administration Support Center
472 Wheelers Farms Road
Milford, CT 06460

Microsoft Word 4.0 For the Macintosh

Edmund DeWan

Microsoft has recently released Word 4.0 for the Macintosh. Word 4.0 has numerous new features that make it a viable competitor in the desktop publishing market. This article lists the salient features which make this claim possible.

Key Features

- Outline View, Galley View, Print Preview, and Page View. In Page View, the text is displayed on the screen as it will appear printed, along with boundary markers and other useful visual aids. Text can be edited in Page View.
- Table formatting, an enhancement of side-by-side paragraph formatting, allows the user to do lists, tables, forms, and basic numerical sorting and calculations.
- Customizable menus and keyboard assignments, plus a Commands menu, a quick index to all the Word commands, and brief help on each.
- Absolute positioning of graphics or blocks of text; flow text around graphics, tables, or paragraphs.
- Full-color support of the Macintosh II.
- Three complementary programs, SuperPaint from Silicon beach Software, Word Finder thesaurus from Microlytics, and AutoMac III macro program from Genesis Software.

Editing

- Spelling corrector with 130,000 words, plus user-defined dictionary.
- Word Finder 220,000-word thesaurus.
- Search and Replace commands.
- Find character and paragraph formats.
- AutoMac III macros record then play back sequences of keystrokes and mouse clicks.
- Glossaries (text libraries).
- Word, character, line, and paragraph count.

Layout & Formatting[1]

- Scale and crop graphics.
- Draw vertical lines using the ruler. | | | | | |
- Change the number of columns on different parts of a single page.
- Assign headers to odd or even pages, or all pages.
- Give paragraph borders different styles.
- Gutter margins for facing pages.
- Tab options: left
  center
  right
  dec.imal
- ® $\int\sqrt{\frac{Mathematical}{\text{Formulae}}}$ ©
- "smart" 'quotes'.
- Manual c h a r a c t e r spacing (kerning).
- Adjustable line spacing (half-point leading).
- Half-point adjustable spacing before and after paragraphs.
- Automatic hyphenation.
- Embedded PostScript for special effects.

[1] *Automatic placement and numbering of footnotes.*

Long Document Support

- Automatic or batch repagination.
- Improved outlining – move entire sections of text by dragging a heading in the outline.
- Redlining – paragraph marking and ~~strikethrough~~ for tracking changes.
- Indexes and tables of contents created without special codes.
- File chaining for storing long documents in multiple files, preserving page numbering, index, and table of contents across all files.
- Extended memory support.
- Automatic page numbering.

Learning

- Context-sensitive help for any command.
- Short menus for beginners or basic editing tasks.
- Full menus for access to all Word commands.
- Full tutorial with lessons and sample documents.

Interface

- On-screen "hot spots" for directly pulling up relevant dialog boxes.
- Keyboard shortcuts.
- Print Preview for viewing up to two full pages at once, and adjusting page breaks, margins, and the location of headers, footers, and graphics.
- Split screen for editing different parts of the same document. Adjustable and moveable multiple windows.
- Widow line control.

Integration with Other Applications

- QuickSwitch automatically updates data from other applications.
- Send and receive Microsoft Mail messages from within Word.
- Share files with other word processing programs in either the Macintosh or PC environment with bi-directional support for DCA, RTF, WordPerfect for the PC, Microsoft Word for the PC, MacWrite, Microsoft Works, and ASCII formats.
- Share Word documents and style sheets with Aldus PageMaker.
- Full support for AppleShare file server.

System Configuration

- Macintosh 512K Enhanced, Macintosh Plus, SE, II, IIcx, IIx, etc.
- System 3.2 or higher; Finder 5.3 or higher.
- Two 800K disk drives, or one 800K disk drive and a hard disk.

Printers

- Works with any Macintosh-compatible printer, including Apple ImageWriter, ImageWriter II, ImageWriter LQ, ImageWriter Wide Carriage, Apple LaserWriter, LaserWriter Plus, IISC, IINT, IINTX, and other PostScript-compatible printers. Also supports most daisywheel serial interface printers, including Diablo, the Brother HR series, and NEC Spinwriter.

Demo Disk

- A demonstration disk for Word 4.0 is available at the CSO Microcomputer Resource Center, located in the North Basement of the Illini Union. Their hours are 10am to 6pm, Monday through Friday, telephone 244-6261. (Bring your own disk onto which to copy the demonstration software.)

INGRES AVAILABLE ON UX1

Vicky Dingler
CSO Statistical Consultant

INGRES (Relational Technologies, Inc.) is a relational data base management system that has been installed on ux1. ux1 is a Sequent running the UNIX operating System with INGRES being the primary application.

INGRES is extensive data base software that can meet the needs of various data base users. It is menu driven and relatively easy to use. Applications can be written by programmers to customize data entry screens and reports. Please refer to the March/April/May 1989 issue of *Off-Line* for more details.

Demonstration versions are installed on PCs at two sites on campus. The sites are the Microcomputer Resource Center in the Federal Room of the Illini Union, and room 70 Commerce West. If you would like a copy of the demonstration diskettes, please bring two double-sided, high-density diskettes to the Microcomputer Resource Center in the Federal Room of the Illini Union. The demo takes 1.75 MB on your hard disk.

If you are interested in using INGRES on ux1, please contact Vicky Dingler, 333-4668. A userid and access to INGRES will be established.

CHANGES IN NPRINT AND NPLOT

Beth Engelbrecht-Wiggans
CSO Systems Consultant

There are new versions of NPRINT and NPLOT on VMD. These versions let you access the 3812 printer at Lincoln Hall. The 3812 printer looks like a desk top copier and can print the same types of files at the same quality (or slightly nicer) than the 3800 (although MUCH slower). The 3812 has it's own characteristics and consequently the NPRINT or NPLOT command options for using it are different.

The 3812 prints at 240 dots per inch (same as the 3800), but it uses cut sheets of paper, instead of tractor feed paper. It is a slow printer, with a maximum rate of 5 pages per minute (plot jobs take much longer than prints). It is useful for the final draft of short documents. The 3812 allows you to print from edge to edge unlike the 3800 which requires a half inch border around the page. The following paragraphs discuss general printing, and how to take advantage of the unique features of the 3812.

NPRINT to 3812

To send your printout to the 3812 printer you need to specify DEST LH3812 on the NPRINT command. For example to print the file LETTER HOME to the 3812 you would use the following command.

```
NPRINT LETTER HOME (DEST LH3812
```

By default your file will print across the short dimension of the page (like this is printed), instead of along the long dimension like the default for the 3800. You can change the page rotation, lines per page, margins and the fonts used in printing. There are no page definitions defined for the 3812 like there are for the 3800. The next section describes how you can create your own page definitions.

NPRINT — Changing the Page Format

Additional options on NPRINT allow you to vary the number of lines per inch, the top margin, left margin, page length and the page rotation. By default you will get 6.5 lines per inch, a top and left margin of half an inch, page length of 10 1/2 inches and the file will be printed 'down' (like this page is printed) which the 3812 calls North orientation. The defaults give you approximately equal top and bottom margins 64 lines per page (only 63 on the first page) and approximately 90 characters per line (with a half inch border). The 3812 will allow you to print edge to edge, so you could get 110 characters per line by changing the left margin to 0.

To specify new margins you use the TMAR, LMAR or PLEN options followed by the amount in inches you want the margin or page length. The total page length is 11 inches which must be divided up into 3 areas: top margin, page length and bottom margin. The bottom margin is equal to 11 - TMAR - PLEN. The total page width is 8.5 inches. The 3812 allows you to specify left margin (LMAR), the right margin is what ever is left over after your line has finished printing. Thus you control the right margin by the font and the left margin, both of which you can specify.

The number of lines per inch (LPI) can also be varied. This option does not change the font, thus it is possible to overlap the text lines if you specify a large number of lines per inch and a large font. Very small changes in the requested lines per inch (less than a few tenths of an inch) will not affect the resultant lines per inch, as there are only 240 dots per inch for printing.

The direction of printing can be changed using the ORIENT option. N (for north, the default) means the printing will be as this page is printed (i.e., lines perpendicular to the long edge of the page). The possible directions are N (north), E (east), W (west), and S (south). South is functionally equivalent to North and West is equivalent to East which prints parallel to the long edge of the page. To print a listing file you might use the following NPRINT command.

```
NPRINT MY LISTING (DEST LH3812 EJ ORIENT E
```

To print a wide file (94 characters per line) you might use the following NPRINT command. This will give you a 0.3 inch top, bottom and left margin, all 94 characters will print leaving an approximate 0.3 inch right margin.

```
NPRINT MY FILE (DEST LH3812 EJ TMAR 0.3 LMAR 0.3 PLEN 10.7
```

NPRINT — Changing Fonts

The 3800 and 3812 allow you to use Table Reference Characters (TRC) in your file to direct the printer to change fonts. Just as a carriage control characters (CC) are optional, if present occurring in column 1, the TRC is also optional, but if present, would immediately follow the carriage control in column 2. The combination of carriage control and table reference characters allow you to change the font with in a line. (This would be done by over printing (+ in col 1) with a different font. This technique is less than useful for proportionally spaced fonts.)

TRCs range from 0 to 3, to select fonts 0-3 respectively, with an invalid TRC or a blank being considered equal to 0. If you have placed TRC's in your file you will need to add three (3) additional options to your NPRINT command; (1) CC to specify that there are carriage control characters, (2) TRC to specify that there are table reference characters and (3), CHARS followed by a list of up to four (4) fonts to specify the fonts

you want used. The following example shows what your NPRINT command might look like if you had TRC characters in your file. e.g.,

```
NPRINT fn ft fm (DEST LH3812 EJ CC TRC CHARS 'font0 font1 font2 font3'
```

Note: Each line of your file will have a TRC character in column 2; the characters are interpreted by the system only when the output file is submitted to the 3800 or 3812 with the TRC and CHARS options. If the output were printed without the TRC option, or if it were printed on another printer, the TRC characters would simply be printed along with the rest of the text.

Using the above example, if your text had a 3 in column 2 that line would use the 4&supt.&suph. font (font3) listed in the CHARS option of the NPRINT command. If an invalid font was specified in column 2, the first font (font0) would be used for printing.

Very few applications will create an output file with TRC characters already in them. The TRC option is useful for modifying existing listing files or tables so that they have font changes in them.

NPRINT — Fonts

The 3812 has many fonts available to it. It can print all of the fonts available on the 3800 plus some. The default font is prestige elite (font 86). The following tables show the uniformly spaced fonts and some mixed pitch fonts that are available via the CHARS or FONT option on the NPRINT command. They are organized by font size (either point size or pitch), to make selection a bit easier.

10 point (10 pitch) fonts

Font name	*Description*	*Font name*	*Description*
C0D0GT10	Gothic Text	**11**	Courier
C0D0GB10	Gothic Text Bold	**26**	Courier Italic
C0D0ST10	Serif Text	**25**	Courier Bold
C0D0SI10	Serif Text Italic	**27**	Courier Extended
5	Orator	**28**	Overstrike Courier (short line)
45	Orator Presentor	**C0S0CI10**	Courier Overstruck (long line)
7	Orator Bold	**15**	Bookface
C0S0PR10	Prestige	**12**	Pica
C0D0RT10	Roman Text	**C0S0AE10**	APL
6	APL/3270		

Mixed Pitch fonts

Font name	*Description*	*Font name*	*Description*
160	Essay	**C0S0DOTR**	Book
173	Essay Light	**C0S0BRTR**	Book Bold
162	Essay Italic	**C0S0BITR**	Book Italic Bold
163	Essay Bold	**176**	Boldface
C0S0EOTR	Essay Overstruck	**177**	Boldface Italic
C0D0GP12	Gothic Proportional 9-point	**175**	Document

9 Point (12 pitch) Fonts

Font name	*Description*	*Font name*	*Description*
66	Gothic	**87**	Letter Gothic
68	Gothic Italic	**110**	Letter Gothic Bold
69	Gothic Bold	**C0S0SR12**	Script
70	Serif	**107**	Courier
71	Serif Italic	**86**	Prestige Elite
72	Serif Bold	**97**	Prestige Elite Italic
C0D0SO12	Serif Overstruck	**96**	Prestige Elite Bold

Smaller Fonts

Font name	*Description*	*Font name*	*Description*
C0S0D224	Gothic (pitch 13.3)	**C0S0D226**	Gothic Bold (pitch 13.3)
C0S0D227	Gothic Italic (pitch 13.3)	**C0D0GT15**	Gothic (pitch 15)
C0D0GC15	Gothic Semicondensed 7-point	**C0D0GT20**	Gothic (pitch 20)
C0D0ST15	Serif	**C0D0GT24**	Gothic (pitch 24)

In addition to the aforementioned fonts all the Sonoran fonts shown in Technical note TN-301 are available. These fonts are proportionaly spaced which means that the amount of space taken for each character is different (porportional to the size of the character). The font names for the Sonoran fonts have the following form:

C0abc5x0

	where	a is either A for Sans Serif or T for Serif
		b is either 0 for normal or 1 for italic
		c is either 5 for medium or 7 for bold
		x is the character size, abreviations shown below

6 - point size 6
7 - point size 7
8 - point size 8
9 - point size 9
0 - point size 10
A - point size 11
B - point size 12
D - point size 14
F - point size 16
H - point size 18
J - point size 20
N - point size 24
T - point size 30
Z - point size 36

Examples:

```
C0T055B0 - Sonoran Serif Medium size 12
C0T07560 - Sonoran Serif Bold size 6
C0A055Z0 - Sonoran Sans Serif Medium size 36
C0A175A0 - Sonoral Sans Serif Italic Bold size 11
```

NPLOT to 3812

The NPLOT command has 3 additional options, TMAR, LMAR and ORIENT. These options are the same as those discussed above under *NPRINT — changing the page format.*

At this point only SCRIPT and GDDM output can be printed via NPLOT. In the future we hope to have the ability to translate and print ZETA plot files to the 3812.

NPLOT — SCRIPT

SCRIPT output has a file name of LIST38**nn** where **nn** is either PP or 20. LIST38PP files are the result of specifying device 38PPNS90 and LIST3820 files are created when using the device 3820A on the SCRIPT command. The device 3820A is preferable when scripting to the 3812 for two reasons.

1. The file need not be re-rotated for printing.
2. The 3812 will allow you to print to the edge of the page and the device 3820A will allow you to have SCRIPT format to the edge of the page.

The following are examples of scripting and printing to the 3812.

```
SCRIPT MY SCRIPT   (DEV(38PPNS90
NPLOT  MY LIST38PP (ORIENT E DEST LH3812

SCRIPT MY SCRIPT   (DEV(3820A
NPLOT  MY LIST3820 (DEST LH3812
```

Note: To print your LIST38PP file you must use the option ORIENT E (or W if you prefer). The '90' on the device type indicates that the output should be rotated 90 degrees from 'normal'. This works just fine for the 3800 which by default prints parallel to the long side of the page. Since the 3812 by default prints perpendicular the the long side, the script file must be rerotated before printing.

NPLOT — GDDM

The Graphical Data Display Manager (GDDM) is a set of graphics routines that let you plot from any language or assembler, as well as REXX. The output from GDDM has a filetype of ADMGDF. The ADMGDF file must be converted into a 'PSEG' file for plotting, by using Graphical Display and Querying Facility (GDQF). There are two types of PSEG files that can be plotted on the 3812, PSEG38PP and PSEG3820. The following shows the steps necessary to get your GDDM file plotted.

linkto gddm fortvs gddmfort global txtlib vsf2fort ilx0trace vsf2link cmslib admplib admnlib admrlib load gddmfort (start emggpcvt my admgdf a (3820 (xpage(6) ypage(6) metric(no) nplot my pseg3820 (dest lh3812

The EMGGPCVT exec converts the file MY ADMGDF to MY PSET3820 with a 6 inch by 6 inch version of the graphic contained in MY ADMGDF. The option 'metric(no)' specified that inches are to be the unit of measure.

TELEVIDEO TERMINALS FOR SALE

The Police Training Institute has 7 Televideo Terminals, Model 970 (purchased in 1983), available for anyone interested. Call John Horton, 333-7830.

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City: _____ State: _____ Zip: _____

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READER FEEDBACK

In our attempt to keep improving ***Off-Line***, and answer your needs and interests, we will be adding this page to each issue. We sincerely hope that many of our readers will take the time to give us this "Feedback". Please fill out, fold in half, and return to address on back. Your reply may be anonymous, or you may add your name and department. Thank you for your comments/suggestions.

1. Please give us comments about articles in this issue. Mention the article by name and be as specific as possible in your comments. For example, did you find the articles informative, of a reasonable length, etc.?

2. What topics would you like to see covered in future issues?

3. What sections would you like to see expanded or added? For example, a question-answer column or articles about other department's computing activities?

4. Additional comments or suggestions:

5. Would you be interested in contributing articles, questions, etc. to *Off-Line*?

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OFF-LINE MAILING LIST

If you wish to be placed on our mailing list, have a change of address, or wish to be deleted, please check the appropriate box and fill in the information below. Please help us keep our mailing list up-to-date by informing us if issues are being sent to someone no longer in your department; fill in the information below and return to us so that his/her name may be removed from the list.

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Department _____

Room & Bldg _____ M/C_____

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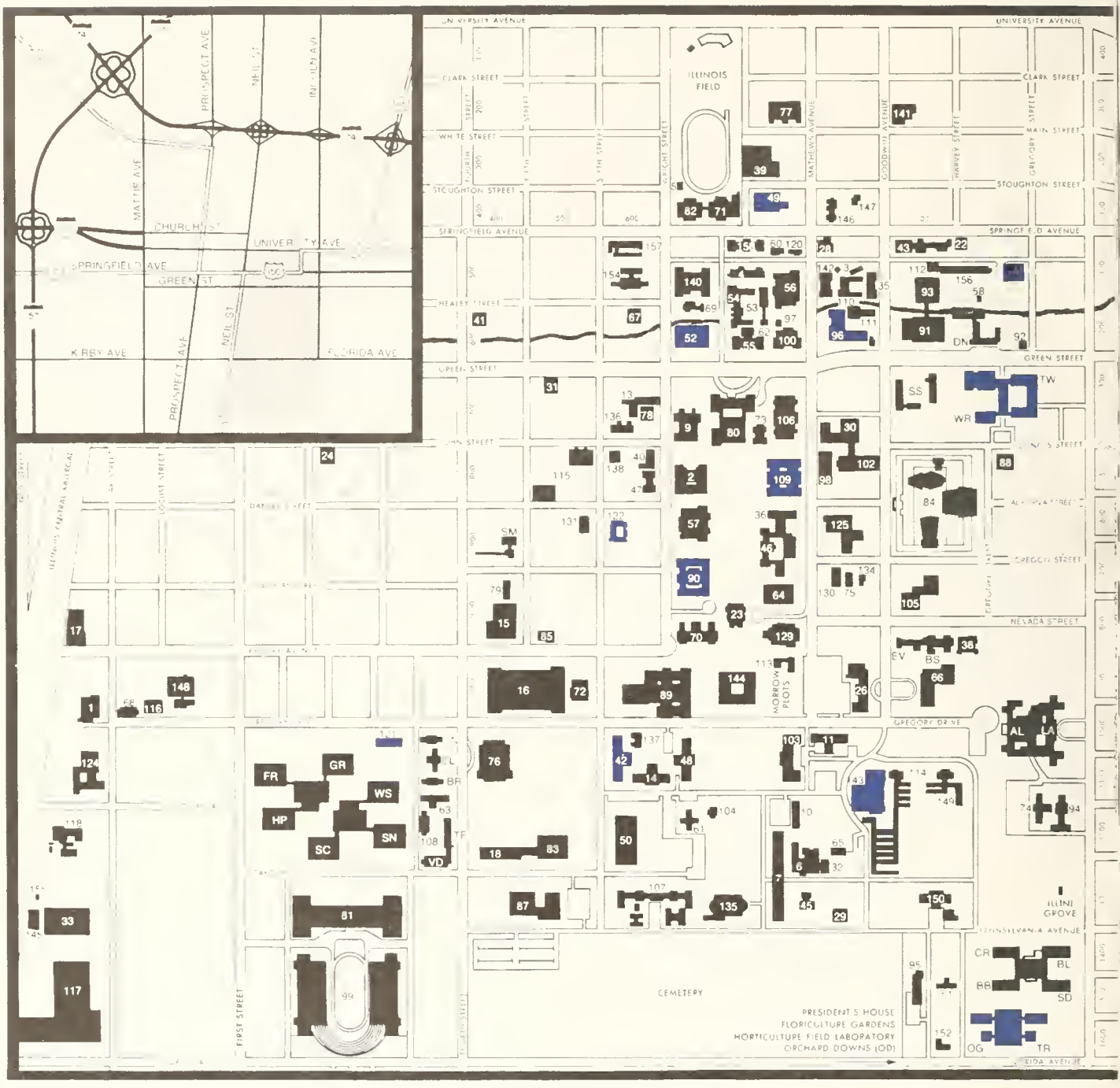
CSO SITES

CSO NORTH	
14 Digital Computer Lab 333-7685	Monday-Friday, 6 am - 12 mid. Saturday-Sunday, 8 am - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Thursday, 8 am - 12 mid. Friday-Saturday, 8 am - 10 pm Sunday, 12 noon - 10 pm
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday, 9 am - 12 noon Sunday, Closed
CHEMISTRY	
154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Sunday-Thursday, 12 noon - 12 midnight Friday, 12 noon - 5 pm Saturday, Closed
ELECTRICAL ENGINEERING	
146 Electrical Engineering 333-4936	Monday-Thursday, 8 am - 8 pm Friday, 8 am - 5 pm Saturday, 12 noon - 5 pm Sunday, Closed
ENGLISH BUILDING	
8 English Building 244-0386	Monday-Thursday, 8 am - 12 mid Friday, 8 am - 6 pm Saturday, 12 noon - 6 pm Sunday, 1 pm - 12 mid
FAR	
Florida Avenue Residence Halls 333-2695	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
ISR	
Illinois Street Residence Halls 333-0307	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Friday, 8 am - 12 mid. Saturday-Sunday, 12 noon - 12 midnight
PSYCHOLOGY	
453 Psychology 333-7815	Monday-Friday, 8 am - 5 pm Saturday-Sunday, Closed
SOCIAL SCIENCE	
202 Lincoln Hall 333-0309	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, 12 noon - 5 pm
ILLINI UNION MICROCOMPUTER SITE	
244-7935	Monday-Thursday, 8 am - 12 midnight Friday, 8 am - 10 pm Saturday, 10 am - 10 pm Sunday, 12 noon - 12 midnight
MEDIA CENTER -- UNDERGRADUATE LIBRARY	
333-2667	Monday-Thursday, 8 am - 1 am Friday, 8 am - 12 mid Saturday, 9 am - 12 mid Sunday, 12 noon - 1 am



CSO Sites (marked in blue on map)

42 Commerce West
49 Digital Computer Lab
52 Electrical Engineering
90 Lincoln Hall
96 Mechanical Engineering
109 Chemistry - Noyes Lab
121 CRH Snack Bar
122 Psychology
143 Agriculture - Turner Hall
Illinois Street Residence Halls
Florida Avenue Residence Halls
CSO Office Building
(101 South Gregory)

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off line

iversity of Illinois at Urbana-Champaign

ector: George Badger
itor: Lynn Bilger

nputing Services Office

IMPORTANT TELEPHONE NUMBERS

Departmental Office	150	DCL	333-1637
CSO Support Center	123	DCL	244-1000
User Accounting Office	1208	W. Springfield	333-7752
Documentation Center	1208	W. Springfield	333-9230
Systems Consulting	1208	W. Springfield	333-6133
Statistical Consulting	85	Comm West	333-2170
Text Processing Consulting	212	CSOB*	333-7318
Micrococonsulting Hotline	91	Comm West	244-0608
Microcomputer Resource Center		Federal Room, Illini Union	244-6261
Maintenance & Repair Service	194	DCL	244-1000
Tape Service, Special Plots, Special Printers.	14	DCL	333-8640

*CSOB is the CSO Office Building, located at 101 South Gregory, Urbana.

DIAL-UP NUMBERS

Terminal Server	up to 2400	baud	333-4000
SWITCH (Sytek)	1200	baud	333-4008
	2400	baud	333-4007
LCS (Library)			333-2494

LOCALNET CALL NUMBERS

Note: Certain CSO Sites are on a separate channel of LocalNet than the rest of the campus. These are designated below as **A Sites** and include the following CSO Sites: ME, EE, COMM, LH, and AGRIC. All other LocalNet access areas are designated as **B Sites**.

VMD	CALL 4400	(A Sites)
	CALL 4500	(B Sites)
VME	CALL 4600	(A Sites)
	CALL 4700	(B Sites)
uxa (Pyramid 90x)	CALL 66DD	(A Sites)
	CALL 66AA	(B Sites)
uxe (Pyramid 90x)	CALL 12FA	(A Sites)
	CALL 12EE	(B Sites)
uxf (Sequent)	CALL 66CC	(A Sites)
	CALL 66BB	(B Sites)
ux1 (Sequent S81)	CALL 1650	(A Sites)
	CALL 1600	(B Sites)
uxh (Convex)	CALL 1850	(A Sites)
	CALL 1800	(B Sites
LCS (Library)	CALL 6400	

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OFF-LINE is published every two months by the Computing Services Office at the University of Illinois, Urbana-Champaign.

Articles, suggestions, comments and/or subscription requests may be sent to: Lynn Bilger, Off-Line Editor, 150 Digital Computer Lab, University of Illinois, 1304 W. Springfield, Urbana, IL 61801 (telephone: (217) 333-6236; email: bilger@uxe.cso.uiuc.edu).

NEW CSO FRESHMAN PROJECT AND CHIEF

CSO is offering a new service this year on a trial basis. We have provided all incoming freshman with a free account on the UNIX system, **uxa**, in the English building. They can use this free account to send and receive e-mail, read UNIX notesfiles or their own newly-created notesfile called **freshmen**, use ph (the on-line staff/student phone directory), or look at **chief**.

chief, a newly-created bulletin board, is an acronym for Campus Help, Information, Entertainment, Facts. It is menu-driven and easy to use. Our version of **chief** is based on a program called AIM at the University of Maryland. After seeing AIM, we asked the University of Maryland if we could base our program on their version and they were kind enough to not only say yes, but to also send us the code (which saved our programmers many hours of work). We thank them again for their generosity and assistance!

We have been adding new information daily and expect to continue to add information throughout the year, as it becomes available.

Anyone on campus who can access CSO's mainframes (via LocalNet or dial-up, for example) can look at **chief**. Access the uxa computer as you would any other CSO mainframe (using CALL on LocalNet, dialing in from a modem, etc.). When you get the signon prompt, simply enter **chief**, then enter a carriage return in response to the password prompt. This immediately puts you into the **chief** program. Commands for moving back and forth through the menus are displayed at the bottom of the screen. There is currently a bug in the program — many times, when a person has logged in as chief, the screens of information scroll two to three times before stopping. We apologize for this situation and hope to correct it in the near future.

We would like to take this opportunity to thank several students who work for CSO for their help with this project. Paul Gibbs spent many hours interpreting the code we received from Maryland and set up the files for running chief. Shad Thomas and Danielle Conlin helped enter the initial information into chief. Joe Schuler and Sam Duray were especially helpful in "stuffing" the envelopes that went out to all the freshmen. Many thanks to all of you!

Any organization or department that would like to have information or special events posted in **chief**, should call Lynn Bilger at 333-6236, send their information via campus mail to 150 DCL (MC/256) or via e-mail to bilger@uxe.cso.uiuc.edu. We are still in the process of contacting organizations/departments, but this is a monumental task and we would appreciate help and/or information from anyone we have not yet contacted.

CSO is very excited about this project and we hope it will be prove to be a benefit to the University.

IMSL SOFTWARE COPYRIGHTS

IMSL, Inc. has become concerned that some users of its software do not properly understand the copyright protections for its software. They recently sent a letter to their customers, which we have reproduced below. We commend it to your attention and urge that you respect IMSL's right to its software in all your dealings with it.

"IMSL, Inc. is a developer and distributor of high quality mathematical and statistical software libraries which are widely used in industry, government and educational institutions throughout the world. The purpose of this letter is to correct any misunderstanding that may exist within the academic community regarding the proprietary nature of IMSL's software products.

"It has come to our attention that some members of the academic community believe that IMSL's software may be lawfully distributed on university computer networks. IMSL has not authorized such use, and we consider such use to be a violation of the IMSL Software License as well as a violation of the U. S. Copyright Act of 1976, Public Law No. 94-553.

"There is no 'public domain' IMSL software version. However, IMSL does make its software available to degree-granting institutions at substantial discounts. Additional computer systems and multiple software copies may be made available to our licensees under special licensing arrangements, upon payment of the applicable fees."

Computing Services Office offers the IMSL subroutine libraries on its primary IBM system (VMD), and on the Convex system (uxh). In addition several other departments have purchased the libraries for their own internal use, and some individuals have purchased copies for microcomputers. CSO does not make the source code of IMSL freely available to users; if a researcher needs a copy of an IMSL routine for purposes of transporting an existing program to another system, it has been our practise to supply the source code, with the understanding that the code is not to be used outside the program for which it is intended. The number of such requests has not been numerous, and we do not believe that users of our central systems have abused this courtesy.

IMSL source code is clearly marked as belonging to the IMSL Libraries and as being copyrighted; if you are given code which contains these indications, we ask that you not extract these routines and use them for other programs. Their presence within the code may be quite legitimate, but taking them outside the code would be improper and illegal.

CSO VIDEO TRANSPORT SERVICE

CSO now has the equipment to transport a video signal across the Broadband Cable between almost any two locations on the campus. Nearly every campus building is served by the Broadband, and the equipment is now available to take your composite video signal from a tv camera, a vcr or even some personal computers and deliver it to your tv set, vcr or computer monitor down the hall or across campus in another building. If this sounds like a service that would help you, contact CSO for details about the technical limits and rental fees for this new service.

Stan Henson
phone: 244-1254
email: shenson@uxe
campus mail: 131N DCL

TEX INSTALLED ON UX1

The technical text processor TEX, version 2.9, has been installed on ux1 for public use. There are several executables which have been installed. Among these are **tex** and **latex**. Since the **undump** utility is unavailable on ux1 at present, the format files cannot be preloaded, and so **tex** and **latex** are simply shell scripts which call **virtex** with appropriate arguments to load in the **plain.fmt** or **lplain.fmt** format files, respectively. If you wish to load in your own format file at startup, you may use the command:

virtex '&filename'

All the auxiliary TEX files such as fonts and macros are in the directory /usr/local/lib/tex82. Not all of the fonts are installed yet, but should be available soon. Once you run **tex** or **latex**, your output will be in the form of a **.dvi** file which must be converted to PostScript before it can be printed. To do this, use the command:

dvips < file.dvi > file.ps

This will create the PostScript file **file.ps** which can then be printed to the Apple LaserWriter in Room 14 DCL using the **lpr -Pps file.ps**.

Further information about TEX can be found in **man tex**.

CHANGING PASSWORDS

Once again we would like to emphasize the importance of protecting your computer account by changing your password often. Although we have not had major problems with unauthorized persons accessing others' accounts, it has happened. So, go with the old adage: "Better safe than sorry!"

When you select a password, it can consist of any combination of alphabetical and/or numerical characters. Special characters can be used, but you must be careful to not use any special characters reserved by the system you are using. If you do not know which special characters these are, it is better to just avoid using any of them.

Your password should be unique and difficult for anyone else to figure out, and it should never be written down (especially where others may see it).

DO NOT base your password on personal information such as the name of your girlfriend or boyfriend, your dog's name, your phone number, your high school, home town, and so forth. DO NOT use the name of a project you are working on (or anything related to that project), or a course or major. Essentially, you should not use names of any kind.

One good technique for choosing a password is to make up an easy-to-remember nonsense sentence like "John's goat plays frisbee every morning." Then use the initial letters to make up the password — in this case, JGPFEM. As you can see, it would be hard for someone else to figure this out — just make sure you pick a sentence that YOU can remember!

To change your password on IBM CMS, enter the **PASSWORD** command and follow the prompts. To change your password on one of the UNIX systems, enter the **passwd** command and follow the prompts.

PLATO/NOVANET ON UIUC CAMPUS COMPUTER NETWORK

Available for UIUC 1989 Fall Semester
Free to UIUC Students and Staff

CERL, the Computer-based Education Research Laboratory at the University of Illinois, has been testing prototype hardware and software that allow personal computers connected to the UIUC campus computer network (UIUCnet), via Ethernet or its equivalent, to operate as PLATO/novaNET[1] terminals. CERL put a 30-port service in operation before the 1989 UIUC Fall semester began.

This means that any 30 appropriately equipped personal computers on UIUCnet could be simultaneously accessing the CERL PLATO/novaNET systems. There will be no charge for use of this "campus-wide classroom" by UIUC students enrolled in courses using PLATO/novaNET. Access by faculty and staff for system evaluation and courseware exploration is encouraged. Games and recreational notesfiles will be restricted at these free access ports, and some time limitations may apply. Unrestricted access will likely be available at a modest charge.

What you will need:

1. A PLATO/novaNET signon. This should be provided by your instructor if you use PLATO in a class; otherwise, call the telephone number below.
2. Access to a personal computer connected to the UIUC campus computer network. Such machines are available many places on campus.
3. Terminal emulation software (an "access disk") appropriate for the personal computer you will be using. This will be a different access disk than the the one which works for telephone dialup access. CERL has this software available for IBM PC and IBM PS/2 systems running certain Ethernet interfaces. Support for Apple Macintosh-II systems is forthcoming.

Information: Further information about this service is available by contacting Celia Kraatz as celia/pso on PLATO/novaNET, celia@cerl.uiuc.edu on Internet or (217)244-4296 by telephone.

BITNET/CSNET ANNOUNCE MERGER AND FORMATION OF CREN

Washington, DC, August 18, 1989: Two of the nation's leading academic and research computer networks announced today that final steps are being taken to merge their organizations. Ira Fuchs, President of BITNET, and Bernard Galler, Chairman of CSNET, jointly reported that the two networks, which together include 600 colleges, universities, government agencies, and private sector research organizations, will unite to form the Corporation for Research and Educational Networking, CREN.

Galler, a Professor of Electrical Engineering and Computer Science at the University of Michigan, commented: "The aims of CSNET and BITNET--to support and promote the use of computer networks on campuses and within research organizations--have converged over the last several years. We believe that by bringing these two networks into a single organization, we will be able to provide better service to our network users and more effectively participate in the fast- changing national network environment."

[1]The PLATO system is a development of the University of Illinois. PLATO is a trademark of Control Data Corporation. novaNET is a service mark of University Communications, Inc

Fuchs, Vice President for Computing and Information Technology at Princeton University, sees the move as a strengthing factor: "The need for campus networks and the introduction of new technology make it necessary to build a common base of network services using the most progressive technology available. By eliminating overlap between our two organizations, we will become more efficient, and more importantly, we can take a stronger role in the the formation of the national education and research network. We can achieve this goal faster and at lower cost by leveraging the efforts of the two major academic networking organizations."

The merger of CSNET and BITNET has been studied for more than a year by a planning group consisting of representatives from both networks. CSNET currently lists 145 institutional and corporate members, and BITNET 480 members. Together, the two networks cover all 50 states and 32 foreign countries, including Japan, Brazil, Mexico, and Argentina. Both maintain gateways to EARN (European Academic Research Network), NetNorth (Canada), and the National Internet.

The planning group's recommendations to merge were approved by the BITNET, Inc. Trustees and the Directors of the University Corporation for Atmospheric Research, operators of CSNET for the last five years. An information packet on the merger is being mailed to all members of both networks this week, with a ballot for BITNET members, who must approve the final legal steps under the provisions of BITNET By-Laws. In an advisory vote last winter, BITNET members approved the merger in principle by more than 90% of those voting.

A gradual transition period is planned to bring together CSNET and BITNET services. CREN plans to continue use of EDUCOM and Bolt, Beranek and Newman (BBN) to provide technical and general management services to its members.

EDUCOM President Kenneth M. King commented, "We are entering a particularly challenging period in the creation of an advanced national network infrastructure for research and education. CREN will play a major role in the future of these computer networks, which are becoming more and more important to the conduct of research and the quality of education. EDUCOM is pleased to have an opportunity to support the services and activities of CREN."

Frank Heart, Senior Vice President, BBN Systems and Technologies Corporation, said, "In keeping with its long involvement in the development of networking technologies, BBN is pleased to play a major supporting role in the evolution of BITNET and CSNET."

The proposed CREN Board includes Fuchs and Galler; Douglas Bigelow, Wesleyan University, William Curtis, University Corporation for Atmospheric Research; David Farber, University of Pennsylvania; Suzanne Johnson, INTEL Corporation; Mark Laubach of Hewlett-Packard Corporation; Philip Long, Yale University; Dennis Ritchie, AT&T Bell Laboratories; Martin Solomon, University of South Carolina; Douglas Van Houweling, University of Michigan; and William Yundt, Stanford University.

For more information, contact CREN, Suite 600, 1112 16th Street NW, Washington, DC, 20036; 202 872-4215.

MORE SHAKESPEARE AND OTHER MACHINE-READABLE TEXTS AVAILABLE

Michael Hart
SIG Coordinator -- PC User Group

The Personal Computer User Group is supporting the move to machine-readable-texts through its Machine Readable Classics SIG (Special Interest Group). This group creates, distributes and exchanges texts with other interested groups and individuals throughout the nation and the world. The collection reaches from the ancient Greeks to 20th century science fiction, with emphasis on collecting the 100 books which people most often request, both fiction and non- fiction. Some texts are released into the public domain, some are copyrighted locally, others are still under normal copyright protection and may be copied only for academic purposes. Mr. Hart keeps an extensive listing of texts available around the world. This information is available on request via email to hart@uiucvme or by US Mail to Duncan Research, POB 2782, Champaign, IL 61825 (please include SASLE). Duncan Research distributes these texts for a maximum fee of $5 per 360K disk and a minimum fee of $2.

Mr. Hart is a member of several electronic discussion groups in which this and other related applications are constantly under discussion, and is a founding member of a third group, as yet unnamed, which is expressly designed to further the creation and dissemination of electronic books into libraries, schools, and for the public at large. Additional information about these e-mail groups is also available on request.

A CD-ROM manufacturer has already expressed interest in mastering and distributing this collection. If you have any suggestions of what books you would like to see available on disk, please send them to one of the addresses listed above. At this stage in the development of computer aided educational programs, your input can have a great bearing on the future directions these programs will take. Your input on all levels will be greatly appreciated. The creation of machine readable libraries is happening around the country at a very fundamental grass-roots level and the benefits are immediate.

A non-profit organization called Common Knowledge also supports the creation and distribution of public domain information and we have included a portion of their first newsletter in this article. The Free Software Foundation has pledged support of the Duncan Research project to create an on- line unabridged dictionary of the highest quality, which is to be added to EMACS, GNU, and the other products created and distributed by Richard Stallman and the Free Software Foundation. For more information, contact:

Richard Stallman
545 Technology Square, Room 703
Cambridge, MA 02139

e-mail: rms@ai.mit.edu

The following excerpt has been reprinted from the Common Knowledge newsletter with their permission:

How Libraries Can Share the Wealth

Libraries were created to share, but have become isolated and strangled by their dependence upon information merchants for many of their basic needs.

Common Knowledge provides an alternative.

Through this non-profit, membership-driven organization, a database is being created. This database contains copyright- free, public domain information. Members are encouraged to pool machine-readable, non-copyrighted information such as bibliographic records, indexes, holdings information, bibliographies, directories, government publications, or specialized databases, (possibly regional) to form a "Universal Index". This index will be as rich and varied as the membership is active.

Members, national and international, have access to all data contributions. All information will lie forever within the public domain: easily accessible, as knowledge must be.

Common Knowledge was formed on the tenet that the time has come for a long-term alternative to information merchants. At this time, the development of Common Knowledge lies in the hands of its members. The 327 members hail from 38 states, The District of Columbia, from Belgium, England, British Columbia, Alberta and Quebec. Seventy-nine percent of the members are librarians, software developers, computer scientists, systems analysts, and representatives of the Federal and organizations such as OCLC, UTLAS, CLSI and Pacific Bell.

A few years ago a project like Common Knowledge would not have been possible. The transfer of information to digital form is a fantastic opportunity to continue the time-honored library goal of providing enrichment. If inexpensive computing, hypertext techniques, and artificial intelligence are used to further this goal of enrichment, and can be accomplished through a cooperative effort, then so much the better.

The time has come, technologically, to reconsider how to access and distribute information. The time has come to emancipate libraries from repeatedly paying for publicly available information.

Replication and distribution of structured text costs less then one cent per megabyte, a megabyte equaling one million characters: approximately 500 pages of information. Using 680 megabyte CD-ROM as the initial medium (with user software and regular updates) is a logical choice for a cheaply available "universal index".

For more information about Common Knowledge and/or membership rates, write to: Common Knowledge, Jefferson, MD 21755.

WHAT'S NEW IN THE MRC?

Bi-Shen Chuang & Mark Zinzow
Microcomputer Resource Center

Recently, many of our patrons who come to obtain the PC-SIG disks have shown an interest in public domain/shareware software other than the PC-SIG collection. Numerous public domain/shareware programs are available to you either at the MRC or in various directories on CSO's mainframe computers. In this article, we list different sources of public domain and shareware software. We welcome new users to try them out, and encourage current users to increase their usage. Our inventory of commercial software, vendor literature, vendor newsletters, and magazines is also growing. Please refer to the included lists for materials that may be of interest to you.

Public Domain/Shareware Sources

From Bulletin Board Systems

Every local bulletin board system has its own public domain/shareware software. If you have a PC, a modem, and communications software, and would like to download files, please come to the MRC, where we have a phone list of local BBS's. In addition, we have downloaded software from Exec-PC, the world's largest electronic BBS.

Anonymous ftp servers

Extensive collections of free and shareware software are stored on uxe.cso.uiuc.edu. Once you login (or anonymous ftp) to uxe, check the following directories:

- ~ftp/pc/bbs -- descriptions of several local BBS systems and a list of local BBS phone numbers are in the file **chambana.lst**.

- ~ftp/pc/exec-pc -- contains files downloaded from Exec-PC.

- ~ftp/pc/exec-pc/new -- contains new files downloaded from Exec-PC; the files currently in this subdirectory will be moved to ~ftp/pc/exec-pc when the next batch of new files are added.

- ~ftp/pc/simtel20 -- some files and an occasionally updated local index of the files on the anonymous ftp server, **simtel20.army.mil**. **simtel20** conatins a colossal amount of free public domain software for the CP/M, PCDOS/MSDOS, UNIX, and the DOD standard programming language, Ada; e.g., **fv119.arc** (file view) which shows the contents of five compression formats.

- ~ftp/pc/index -- contains an alphabetical listing of all the files available.
  exec-pc.all is a text listing of everything available from Exec-PC, and **exec-pc.local** is a text listing of everything in the exec-pc subdirectory. The most current lists of what is on Exec-PC show up in the log files of the new directory, and the files **xfer*.***.

- ~ftp/pc/pcmag -- contains all the recent software featured in PC Magazine. (If you wish to contribute older PC Magazine files that we don't already have, please contact Mark Zinzow.)

- ~ftp -- has the file **sites.ftp**, a list of many other anonymous ftp servers and a short description of what they have.

From Public Domain/Shareware Companies

Public Domain/shareware companies, such as PC-SIG, and Public Brand Software, distribute free or unregistered evaluation copies of software. Thousands of these programs are available at the MRC and on uxa, uxe, and VMD.

On uxe.cso.uiuc.edu:

- **~ftp/pc/local/sydex** -- a small collection of eight useful utilities, including an amazing "pop-up" background formatter **CNFMT104.arc**. Note that we have registered a version of this for the campus and the registered version is available in the MRC.

- **~ftp/pc/pbs** -- a central location for storing disks from Public Brand Software. Although the MRC does not purchase or subscribe to their disks, there are some disks which they have donated to us that we have placed in this subdirectory. A catalog is available on-line and at the MRC.

- For those who can log into uxe, archives are available for the notesfiles (sometime referred to as Internet news) **comp.binaries.ibm.pc**, as well as for **comp.binaries.mac**.

- Recently the CU MUG (Macintosh) collection has been added to the anonymous ftp server **doc.cso.uiuc.edu**. **/mac/MUG** contains the CU MUG collection, indexed in Biglist.MUG.

- **/pc/cb** contains comp.binaries.ibm.pc archives for 1988. The file **cb.ibm.pc.88.cat** is the index of what is available here.

On uxa.cso.uiuc.edu:

- **~ftp/pcsig** -- at the time of this writing, it contains PC-SIG disks 1-1240. The files are all indexed in the text file **1_1000.upp**. The MRC has ordered the most recent update of the PC-SIG CD-ROM that contains disks 1-1484. The CD-ROM should be at the MRC by the time this article goes to press, and also should be uploaded to a UIUC anonymous ftp server shortly after we receive it. A new catalog "The PC-SIG Encyclopedia of Shareware" is available at the MRC.

From User's Groups

The Resource Center has public domain and shareware programs from user's groups. We distribute a collection of Macintosh software from the Champaign-Urbana Macintosh User's Group, and Amiga disks from the Champaign-Urbana Commodore Amiga User's Group. The UIUC PC User's Group has a PDUSIG, which also has publicly distributable software, and anti-virus programs. On uxe.cso.uiuc.edu, refer to the following subdirectories:

- **~ftp/pc/amiga** -- the entire collection of Fred fish disks is here, and also at the MRC.

- **~ftp/pc/virus** -- contains anti-virus software.

Others

Miscellaneous public domain and shareware disks are at the MRC. We would like to mention the PC Magazine's Interactive Reader Service on uxe in **~ftp/pc/pcmag**, where you can find popular utility programs featured in the PC Magazine's Programming Column. Also, on uxe.cso.uiuc.edu in the ~ftp directory, the file **sites.ftp** will provide you with a list of anonymous FTP sites from which various other public domain

software may be transferred.

New Commercial Software

Title	*Publisher*	*Application*
DOS 4.0 Technical Reference Application Programming	IBM	Technical ref.
High C *(includes an EC Text Editor from C source, Inc.)*	Metaware Inc.	C compiler
Igor 1.1 (Mac)	WaveMetrics	Graphing & Data Analysis
IZE	Persoft, Inc.	Text retrieval
MathType (Mac) *(demo version)*	Design Science, Inc.	Mathematical equation editor
Pro-Cite 1.4 *(demo version)*	Personal Bibliographic Software, Inc.	Bibliography
Pro-Cite 1.3 (Mac) *(demo version)*	Personal Bibliographic Software, Inc.	Bibliography
Twin Advanced	Mosaic Software, Inc.	Spreadsheet, graphics, data management
Watcom C optimizing Compiler and Tools	Watcom Systems Inc.	C compiler
XTree	XTree Company	Disk management

New Public Domain/Shareware Software

PKZ101.EXE --the latest version of an archiving/unarchiving utility, also on uxe in ~ftp/pc/exec-pc.

The Power User's Tool Kit II from Micro Wavehouse Inc. -- This disk (for Macintosh computers) has 17 useful applications, utilities, desk accessories, INITs, FKEYs, CDEVs, and virus detection and repair kit. Twelve are absolutely free, the rest are shareware.

Site Licensed Software

The MRC will be the distribution center for the evaluation version of Personal Designer MicroCADDs by Prime Compute, Inc. Anyone interested in getting the software must present a valid faculty/staff/student ID to the MRC staff.

Updates

FileMaker II from Claris -- This updated disk may be copied.

Vendor Literature and Newsletters

Product literature on Lotus 1-2-3 -- Compares version 2.01 and version 3.0.

Trius Newsletter -- for As-Easy-As spreadsheet users.

Free Software Opportunities

(as described in the latest issue of Shareware magazine.)

Microsoft Excel for Windows -- Fully-operational spreadsheet program. Call 1-800-541-1261 and mention Shareware Magazine to get your own free copy. The MRC has two copies available.

MINITELNET -- Terminal software for accessing the French Information Network, MINITEL. Set your modem to 1200 baud(8/N/1), and dial 800-999- 6163. At the login prompt, type MINITEL.

New Magazines and Reference Publications

Personal Computing

High Resolution Graphics Cards Survey for the IBM/PC and PS/2 Published by Technology & Business Communications, Inc, this is a reference report on over 190 MS/DOS compatible cards from more than 90 manufacturers.

Please ask an MRC staff member to see the following magazine trial issues:

Personal Publishing
Portable Computer Review

New IBMPC Anti-Viral Programs

(Note: The following are edited excerpts from Jim Wright's (jwright@atanasoff.cs.iastate.edu) recent postings to the Bitnet VIRUS-L mailing list.)

For the most recent archive site listings, see Vol 2 Num 209 of VIRUS-L (Oct. 2, 1989). Back issues of VIRUS-L may be anonymous ftp'd from IBM1.CC.LEHIGH.EDU. Bitnet users may send a MSG (TELL command) or mail to LISTSERV@LEHIIBM1 with the following command to get a copy of Vol 2 Number 209:

GET VIRUS-L LOG8910A

uxe.cso.uiuc.edu contains our local campus archive in ~ftp/pc/virus. All the files in this batch are shareware.

Short descriptions of recent anti-virus software for IBM PC's and compatibles:

NOCRM11.ARC	Fights the DataCrime viruses.
COLUMBUS.ARC	Save & restore track zero of hard drive.
M-3066.ARC	Recover from the 3066 virus.
SCANRES7.ARC	Resident program to detect viruses.
SCANV37.ARC	Scans drives and reports presence of viruses.
VIRSIMUL.ARC	Simulates non-destructive behavior of viruses.
SCANV38.ARC	Scans hard drives and reports viruses found.
SCANRES8.ARC	Resident program scans progs for viruses before executing.
FIXCRIME.ARC	Removes infections of DataCrime virus
BOOTCHK.EXE	Verifies boot sector against secure copy, v1.00
M-1704.ARC	Repairs and removes infections of 1704A and 1704B viruses
NETSCAN.ARC	Network compatible program to scan for viruses, 0.4v33
SCANRS39.ARC	Resident program to check for viruses, 0.9v39
SCANV40.ARC	Scans disks and reports viruses found, 0.7v40
SHEZ48.EXE	Shell for archive manipulation w/ virus checking, v4.8

nocrm11.arc -- Version 1.1 of NoCrime has been sent to the IBMPC anti-viral archive sites. This program is meant to combat the DataCrime virus strains receiving so much publicity lately. This file, NOCRM11.ARC, replaces version 0.1 sent out previously under the name NOCRIME.ARC.

columbus.arc -- Program to backup track zero of a hard drive and restore track zero. Meant for disaster recovery, such as that from Columbus Day virus. Includes source!

m-3066.arc -- Program to repair damage due to the new "3066" virus. Checks and repairs and entire drive. Use with caution.

scanres7.arc -- Memory resident program to check each program for viruses before it is executed. This replaces the previous release of scanres.

scanv37.arc -- Scans hard drives or floppies for viruses. This replaces the previous release of scanv.

virsimul.arc -- Program to simulate the non-destructive effects of various viruses. Very useful in figuring out what everyone else is talking about.

scanv38.arc -- Update to replace previous versions of viruscan. Note that the documentation has an incorrect version number in it. This is how the archive was released. (The updates have been fast and furious, so it's understandable.) Also note that the size of the executable is larger than what John McAfee promised it would always be. I guess when he said "always," he didn't forsee the number of revisions of the program he'd be releasing. Executable is version 0.5v38.

scanres8.arc -- Update to replace previous versions of scanres. It is possible that the previous version I sent was identical to an even more previous version I sent. In any case, this one's NEW. :-) Again, note that the docs and the program disagree on version number. Executable is version 0.8v38.

fixcrime.arc -- Will fix files infected by DataCrime virus. Operates only on .COM files, not .EXE. Has programs to combat three different strains of DataCrime. *Use with caution!*

bootchk.exe -- Program to verify boot sector of disk. Performs comparison with secure copy of boot sector. To be used in autoexec.bat. Sent to me by author. Version 1.00 (first release). Self-extracting zip.

m-1704.arc -- Update to previous file of same name. Only change is in docs to warn of possible false alert issued by viruscan. Direct from author's BBS.

netscan.arc -- Network compatible program to scan disks for known viruses. Version 0.4v33, update to previous releases. Direct from author's BBS.

scanrs39.arc -- Resident program to scan executables for viruses before loading. Version 0.9v39, update to previous releases. Note minor change in spelling of archive name. Direct from author's BBS.

scanv40.arc -- Program to scan disk and report any viruses found. Version 0.7v40, update to previous releases. Direct from author's BBS.

shez48.exe -- Shell program for manipulating archives which, with this new release, is compatible with viruscan. Version 4.8. From HomeBase where it was placed by author. Self-extracting LZH archive. [I was unable to get the viruscan aspect to work as advertised. but I only put forth a minimal effort. -- jrw]

PCTEX SITE LICENSE UPGRADED TO VERSION 2.931

Edmund DeWan

CSO has acquired the upgrade to version 2.931 of the PCTEX program. This article is an update to a previous article, which appeared in the May-June 1988 issue of Off-Line, announcing the upgrade of the PCTEX site license to Version 2.1. New features are described in the sections, "New Features in Version 2.1", and "New Features in Version 2.931", near the end of the article.

What is TEX?

TEX -- pronounced "tech", as in "technology" -- is a public domain typesetting/formatting language, developed by Donald E. Knuth at Stanford University. It provides textbook-quality formatting of printed material, especially material involving scientific and mathematical notation. PCTEX is a proprietary implementation of TEX for the PC by Personal TEX, Inc.

The PCTEX Program

PCTEX is a text *formatter*. A formatter, instead of being "what you see is what you get", is more like "what you get depends on what you see, after the program gets done with it". The user creates a file containing embedded codes along with the text, using any standard editor or word processor, and then submits the file to the formatter to be processed.

For example, your file might contain the following line of input text:

{\it This is italic type,} and this is Roman.

The output from this line of text would be:

This is italic type, and this is Roman.

This approach is attractive to many people because good formatters are superior to the best word processors when it comes to complicated formatting operations. They offer power and flexibility, and give the user almost complete control over the end result. In addition, the command sets are usually mnemonic and easy to remember, which cannot be said of many word processing systems. The particular advantage of PCTEX is that it offers a complete mathematical typesetting capability, in addition to its normal text formatting.

PCTEX has the ability to paginate, hyphenate and justify, draw rules, and do many other functions associated with professional typesetting. It has accents for words in foreign languages that are based on the Roman alphabet, and devices for indicating proper hyphenation for exceptional words.

PCTEX has a macro language facility that allows single commands to serve as abbreviations for complicated sequences, such as those used for formatting the beginning of a new chapter or for specifying the page header style. Macros can be written by the user, or pre-defined macro packages can be used. The PCTEX package includes four macro packages, called VANILLA, LATEX, PLAIN, and AMS-TEX, which can be used for varying purposes, from simple applications to complicated mathematical text. Of these, the LATEX macro set is one of the most popular, since it provides the user with most document formatting capabilities, and is very well documented. (See the later section, "Documentation", for further remarks on the available manuals.)

Readers who wish to find out more about the language may examine a copy of the PCTEX Manual at the CSO Microcomputer Resource Center.[1]

[1]The CSO Microcomputer Resource Center is located in the North Basement of the Illini Union, phone 244-6261. Their hours are 10am-6pm, Monday through Friday.

Device Drivers

When you run PCTEX, the program reads your input file, and creates an intermediate file containing device-independent commands. This file is called a DVI file. In order to produce the output on some kind of device, such as a printer, the DVI file must be translated by a program called a device driver. PCTEX comes with three device drivers, for dot-matrix printers. These are 1) Epson FX, RX and MX with Graftrax, IBM Graphics Printer, and IBM Proprinter, 2) Epson LQ (800, 1000, 1500, & 2500), and 3) Toshiba 1340, 1341, 1350, 1351, and P3xx printers. You can separately purchase screen previewers, and laser printer drivers. For further information on these items, see subsequent sections in this article.

System Requirements

PCTEX Version 2.931 requires the following minimum system features: 1) IBM PC, XT, AT, or compatible and MSDOS 2.0 or later, 2) Standard display (graphics adapter required for previewers), 3) 512K RAM (385K for normal operations, 455K to install), 4) 6-10 MB hard disk space, 5) text editor or word processor, 6) at least one floppy disk drive, high-density or low-density, to read the distribution disk files onto your hard disk.

TEX Fonts

The Computer Modern family of fonts supplied with the TEX device drivers were created at Stanford University using the font-design program METAFONT. Two versions of these fonts are available: the AM fonts, and the CM fonts, the latest version of the Computer Modern fonts. Because Personal TEX now distributes the CM fonts as the default version, we have purchased the CM fonts with the PCDOT drivers. See the section "Improvements & New Features" for more information on the AM and CM fonts.

Prices and Distribution

PCTEX is distributed on the Urbana campus to individuals who are affiliated with the University of Illinois. The PCTEX manual, by Michael Spivak, is sold and distributed at the CSO Distribution Center[2], independently of the PCTEX software. This manual costs $15.00. (See the later section, "Documentation", for information on other TEX manuals.)

The software is sold at the Distribution Center, but distributed at the Microcomputer Resource Center, in the North Basement of the Illini Union. This separation of functions is made necessary by the large number of disks involved in the transaction. If you are a first-time purchaser of the software, or if you wish to buy a manual, go first to the Distribution Center. If you only want a software upgrade, however, go directly to the Microcomputer Resource Center, with suitable evidence of ownership, as described below.

The full price of the software is $54.00, which includes initial software costs, upgrade costs, and a $2.00 installation guide reprint fee. The full price must be paid by all non-student, first-time purchasers. Students may obtain the software free, but must pay the $2.00 reprint fee.

The Resource Center will accept your written receipt as proof of purchase. Also, a diskette with the original CSO labels will suffice as proof of purchase.

Note that you will be required to bring your own diskettes, as described in the next section.

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[2]The CSO Distribution Center is located at 1208 W. Springfield Ave., Urbana, phone 333-7752. Their normal working hours are from 8-12am and 1pm-5pm Monday through Friday.

Diskettes

Each disk you bring to the Resource Center should be formatted in advance on your own machine, and it is a good idea to run CHKDSK on each disk, to make sure they are all good. Bring one or two extras, for good measure.

The program comes on 4 low-density diskettes. In addition, there are two sets of PCDOT fonts, one set consisting of 5 low-density diskettes, and the other of 6 low-density diskettes. Also, there is one installation diskette, containing the printer drivers, bringing the total number of diskettes to 16. The set of 6 is for EPSON FX dot-matrix printers, and the set of 5 covers both EPSON LQ and Toshiba dot-matrix printers. Thus, if you wish to have the full package, you will need at least 16 low-density diskettes.

If you have a 5 1/4 inch or 3 1/2 inch, high-density diskette drive, you will need 5 diskettes of at least 1.2 MB capacity. The Microcomputer Resource Center is equipped to handle low, high, and "medium" density (720K) diskettes, in both 5 1/4 inch and 3 1/2 inch formats. (With 720K diskettes, you will need at least 10.)

Technical Support

Technical support is strictly through CSO (333-7318), and consists primarily of help with installation, since Personal TEX does not commit itself to support on TEX language questions. However, although there is no official language support, our consultant will provide general assistance whenever possible.

Personal Use Option

Along with the software and documentation, we have purchased a Personal Use Option, which permits qualified buyers to keep and use their software after they have left the Urbana campus, or have severed their ties with the University.

IBM Proprinter & Others

Since the IBM Proprinter is the successor product to the IBM Graphics (5152) printer, you can use the EPSON FX printer support package with the Proprinter, with the IBM Graphics printer, with the IBM 3812 Pageprinter (which operates in IBM Graphics mode), and any other printer which correctly emulates one of the printers supported by the PCDOT package.

Laser Printers

Since there are several different kinds of laser printer currently in use on campus, we have decided to leave laser printer support up to the individual purchaser. Personal TEX sells laser printer drivers at at a variety of prices, in the neighborhood of $195.00 and up. Printers supported are Cordata LP-300/LP-300X, Canon LPB-CX (HP LaserJet and others), HP LaserJet Plus and Series II, QMS Lasergrafix 800 and 1200, PostScript (Apple LaserWriter, QMS-PS 800/1200/2400, Data Products LZR 2660/5, NBI model 8, Linotype Linotronic 100/300, etc.), and Imagen 8/300, 12/300, 24/300. For further information on laser printer support and other items, see the Personal TEX Product Catalog, which can be examined at the Microcomputer Resource Center.

Screen Previewers

Screen previewers present a similar difficulty, so we have opted to leave this up to the purchaser as well. There are three available from Personal TEX, PTIVIEW by Personal TEX ($139), Preview by Arbortext ($149), and MAXview by Aurion Technologia ($125). You can get further information by consulting the Product Catalog mentioned above.

Documentation

PCTEX purchasers can buy the PCTEX Manual, by Michael Spivak, at the CSO Distribution Center for $15.00, as noted above. In addition, there are numerous books available, both through Personal TEX and through local bookstores. Note that prices for books obtained locally are usually a couple dollars cheaper, and you save an $8 shipping fee; however, Personal TEX has a fairly complete selection, including the LATEX User's Guide, the TEXbook, The Joy of TEX by Spivak, The METAFONT Book by Knuth, and The pcMF Users Manual by Henderson. Ordering information on these products can be found in the Personal TEX catalog.

The TEXbook, by Donald Knuth, is an exhaustive discussion of the TEX language, complete with extensive exercises and answers. The LATEX User's Guide, by Leslie Lamport, describes the LATEX macro utility, which comes with the PCTEX package. The LATEX User's Guide is a good buy, for the following reasons: a) it is very well organized and written, and is therefore useful as a reference work (the PCTEX Manual and The TEXbook are good for initial study, but are not as good as reference works), b) the LATEX macros, which come with the PCTEX package, form a self-contained, complete text formatting system for most applications, so it is generally not necessary to write original TEX code.

New Features in Version 2.931

The significant improvement in Version 2.931 is the addition of the /X option for use with computers that have Expanded Memory Specification (EMS) memory installed. PCTEX now automatically makes use of up to 64 pages (1 megabyte) of EMS for virtual memory. The /X option is provided to suppress or limit the use of EMS. For example, /X=32 limits the use of EMS to 32 pages.

Of course, version 2.931 supports all the features described next for version 2.1, the older version.

New Features in Version 2.1

PCTEX Version 2.1 supports path names to locate support files called from the main program. This means, in essence, that the user does not have to keep the TEX program, macro packages, and device drivers on the same disk partition or in the same general directory area in order to operate PCTEX. Additional improvements in Version 2.1 include support for networking PCTEX, improved speed performance, and larger capacities for string pools, input buffer sizes, and stacks.

Finally, the CM fonts are now the standard distribution fonts, instead of the earlier AM fonts. Version 2.1 lets you install the program to work with a designated "primary" font set (CM by default), and optionally with a "secondary" font set. Thus, you can install the AM fonts as your primary set, and continue to work with your old AM printer drivers. Alternatively, you can install the CM fonts as your primary set, and the AM fonts as the secondary set, allowing you to use both the CM and AM fonts, if necessary. This will, of course, take up a considerable amount of your hard disk space. Other options include installing only the CM fonts as the primary set, and installing the AM fonts as the primary set and the CM fonts as the secondary set.
Users who have separately purchased laser printer drivers with the AM fonts will, in the same manner, be able to continue using their upgraded program with the old printer drivers. However, if they wish to upgrade to the CM fonts, they will have to do so directly through Personal TEX, for a fee of $35.00.

TEX for the Macintosh

Personal TEX sells the program TEXTURES, a Macintosh implementation of TEX. This package costs $495, and includes an editor, a previewer, PostScript and Imagewriter drivers, installation guided, and *The TEXbook* by Donald Knuth. The LATEX for TEXtures package costs an additional $50, and $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX for Textures costs $95. This product is listed in the Personal TEX catalog.

Public-Domain Printer Drivers Available from the MRC

Prof. Doug McDonald, at the U. of I. Chemistry department, has made available to CSO for free distribution, a set of TEX device drivers (DVI translators). The three drivers and the associated font files are in the public domain. The HP LaserJet and PostScript drivers were written by Nelson Beebe and others at the University of Utah; the screen previewer is an adaptation of this code by Doug McDonald.

The drivers require an IBM PC or compatible with 512K or more of memory. The screen driver requires an EGA, a VGA, or an MCGA graphics adapter, or clones thereof. Also, a clock speed of 8 or 10MHz is highly desirable; 20 or 25MHz will do nicely. The fonts and driver files take up approximately 5.2 megabytes of disk space. (The accompanying documentation, which you MUST read before using the package, describes the appropriate use of the font files.)

This package is now available at the CSO Microcomputer Resource Center, where it can be copied to 5 1/4" or 3 1/2" disks in low (17 disks required), high (5 disks required), or medium (9 disks required) density format. Take the requisite number of diskettes, labeled appropriately, and already formatted (also run CHKDSK on them to make sure they are in good working order). If you have any problems with installation on your hard disk, call 333-7318 for assistance. For on-screen instructions on how to install, place the first disk in a suitable floppy drive on your PC and type "<drive>:install", where <drive> is the appropriate drive letter, e.g., "a:install".

To transfer the package to your floppy disks, go to the CDROM machine, and type the following commands:

```
c:
cd \tex\dvi
putlow (or puthigh or putmed)
```

The Microcomputer Resource Center personnel will assist you if you have any trouble.

CSO wishes to thank Prof. McDonald, on behalf of the TEX user community, for his efforts in making these drivers available.

SYMANTEC UTILITIES FOR MACINTOSH

Dave Long
CSO Research Programmer

Symantec Utilities for Macintosh (SUM) is a set of programs designed to help with the basic operation of your Macintosh. It is a diverse assortment, bringing together file recovery tools, a file optimizer, a disk partitioning utility, a utility for quick disk duplication, a low-level disk and file editor, and a shell program to tie the programs together and simplify their use.

The file recovery tools fall into two categories: Guardian and a number of scanning programs. Guardian is a utility that maintains two files that greatly simplify the process of recovering a lost file or a crashed disk. One of Guardian's files is a copy of your disk's directory. Under ordinary circumstances, if the original directory of a disk is corrupted, all the files on that disk are lost. Guardian allows you to rebuild the disk directory from its "volume save" file, restoring access to the files on that disk. Guardian also maintains a list of the last 50, 100, 150, or 200 files deleted. This allows for quick recovery of accidentally deleted files.

Guardian makes file and disk recovery quick and easy, but it does require the installation of its two files before anything happens to a disk. If you have a disk that has crashed, or deleted a file before installing Guardian's "volume save" and "file save" files, Guardian cannot help. At this point, the scanning programs come into play. SUM has three scanning programs: HFS Recover, Scanner/Signature Scanner, and Floppy Recover. Each has its own strengths, and is used in different circumstances. HFS Recover is usually the first program used to recover files from a crashed disk. It will examine any disk in the HFS format (which includes almost all Mac disks used today). It will not recover deleted files. For these and for files which could not be turned up by HFS Recover, the next program to try is Floppy Recover. It will find more than HFS Recover, but it only works on floppy disks. For hard disks and even more elusive files, the Scanner program is the next and last resort. Scanner can be set up to look either for beginning-of-file markers or for the signatures of specific file types, such as Microsoft Word or MacDraw documents.

Probably the most important thing you can do to safeguard your files is to back them up. Unfortunately, this version of SUM does not include any utility to handle this. Symantec has promised this feature in their next release of SUM, which is due out very soon.

Another shortcoming of this version, which should be addressed in the next version, is the HD TuneUp utility. This program is a file-optimizer: it finds the various parts of your files scattered across the disk and joins them into a single contiguous file. This speeds up operations using these files, since you no longer have to wait for the Mac to find these various parts as you are working. The problem with this utility is that in its current version, it does not move the files into contiguous blocks — that is, it leaves spaces between files, thus in many cases actually increasing the fragmentation of your hard disk. Until version 2.0 is available, you should use another utility, such as AlSoft's DiskExpress, to handle disk optimization.

The next utility also suffers from the shortcomings of HD TuneUp. Symantec included the HD Partition utility to allow users to create partitions on their hard drives. Partitions appear as separate disks on the desktop, but HD Partition allows the user to set a password for them, so that access to the files contained in them will be restricted, and the actual files encrypted. This is convenient for keeping sensitive or personal files on a machine that is in a public or semi-public place, and the encryption ensures that the files are secure even from a disk-level editor such as Fedit or SUM's Symantec Tools. There are two major problems with this utility, however. First, it requires contiguous free space in which to set up the partition. If you've been using your hard drive for some time, and have happened to use HD TuneUp, you probably don't have much more than 256K of free, contiguous space, even if the finder indicates that you have 2 or 3 megabytes free on your disk. The second problem becomes apparent when using password protection on a partition. If an error

occurs and the partition becomes unmountable, or if you forget your password, there is no way to recover the files that were in the partition. Backing up becomes even more essential!

The next utility in SUM is QuickCopy. This is a memory-based copy utility program. It copies disks in less than half the time required by the finder. Testing on a Mac SE with 1 Meg and a Mac II with 5 Meg gave similar results. Formatting and copying a disk with the finder took about 3 minutes, 15 seconds. QuickCopy did the same in approximately 1 minute, 30 seconds. QuickCopy is limited by the amount of memory in your system — if you have a 1 Meg Mac and use System version 6.0 and/or many INITs, QuickCopy will not have enough memory available to copy most disks.

The next utility, Symantec Tools, is a low-level disk and file editor that enables you to see and modify what information is actually written on your disks, sector by sector. It is not intended for the novice user; it is possible to seriously damage files using this program. (For example, I used the Symantec Tools to damage a test partition created with HD Partition — the partition failed to mount afterwards.) An interesting feature of this program is that it will display a graphic Disk Map of the used and unused sectors of any disk. This makes it easy to see the amount of fragmentation present. The program also allows the user to change file attributes — locking files, making them invisible, and so forth. Most users will probably not need to use Symantec Tools for anything other than this.

The last utility, Disk Clinic, is really a shell program that ties all of the other programs together and makes it easy for the novice user to recover files. Disk Clinic presents the user with a menu of choices — if the problem is a crashed disk, Disk Clinic steps the user through a number of questions to determine the exact situation, and transfers to the appropriate utility. It also preconfigures the settings of each recovery utility so that all the user needs to do is to click on the "Recover" button, and select the files to be recovered.

On the whole, Symantec Utilities for Macintosh is a very useful set of utilities. It makes the tricky business of file recovery manageable for any Mac user. It has a number of other utilities which may prove useful to some, but is definitely worth having for its recovery utilities alone. Symantec has promised that version 2.0 will include a backup utility and an improved optimization utility. These should help make up for the main deficiencies I found in this version. Based on the generally well-polished state of this product, I would not hesitate to recommend it.

UNIX SESSION COST ESTIMATION

Daniel S. Pommert
Research Programmer

Two new commands have been installed on uxe, ux1 and uxh that aid in the estimation of total session cost. They are **timetocost** and **installtimetocost**. The **timetocost** command is usually placed in the .logout file. That way, you will see an estimation of how much a UNIX session costs whenever you log off.

The **timetocost** command translates the output from the **time** command into Service Units, and dollars and cents. The **timetocost** command does **not** take into account printing charges, tape mount charges, or the cost related to permanent disk space usage. It also does not make adjustments for the increased connect time rates if you are calling in through an 800 telephone number.

The **installtimetocost** command is provided to correctly place the **timetocost** command in your .logout file. Issuing the **installtimetocost** command will place the following commands into your .logout file:

```
time > $home/.lasttime
timetocost $home/.lasttime
sleep 2
```

The **installtimetocost** attempts to intelligently handle the situation of finding an already present **timetocost** command or sleep command in the .logout file.

For uxh users, the **timetocost** command also takes into account the sliding rate scale for CPU usage. The **timetocost** command applies this scale to the current session's CPU usage; during actual billing this scale applies to an entire day's usage. Therefore the **timetocost** command may give an over-estimate of the cost of CPU usage on uxh.

Additional information about the **timetocost, installtimetocost** and rates can be found by issuing the

man timetocost

command and by looking at the notefile

ux*n*.policy

where ***n*** is **e**, **h** or **1** depending on whether you are using the uxe, uxh or ux1 systems, respectively.

UNIX MATHEMATICAL AND GRAPHICAL SOFTWARE

Daniel S. Pommert
Research Programmer

The last year has been a time of rapid expansion of UNIX services here at CSO. We have upgraded our Convex system to a model C220. We have installed a new Sequent Symmetry system. We have also installed many new mathematical and computer graphics packages. By the time you read this article, it will be out of date — either because it has failed to mention some new software which has been installed or because the status of some software product already on a system has changed. At the time this article was written (September 11), it was current. However, a lot can happen in a month!

Be that as it may, here is a summary of the mathematical and graphical software currently available on uxe, uxh and ux1.

Software Available on uxe

S — (Not new S) S is a language and an interactive programming environment for data analysis and graphics written and distributed by AT&T. The S language is a very high-level language for specifying computations. The language is part of an interactive environment: S encourages you to compute, look at data, and program interactively, with quick feedback to enable you to learn and understand. S is mainly used on uxe for its statistical and graphical capabilities.

Software Available on ux1

Ingres — Ingres is a relational database system.

Software Available on uxh

Graphics Software

DI-3000 — Precision Visual's DI-3000, in conjunction with its associated packages, is a full-functioned, Fortran and C callable graphics library. The basic package provides 2- and 3-D line, polygon and text primatives. DI-3000 supports many different graphics devices. Included with the DI-3000 basic package, are (among others) the Blaze and Contouring package. The Blaze package is an easy-to-use, yet powerful, X-Y plotting package. The Contour package provides 3-D contour and surface plot capabilities. See **man di3000**.

NCAR Graphics — The NCAR Graphics package is a Fortran and C callable general purpose graphics package. It is built upon the GKS standard and provides powerful contour and 3-D surface plots. Its contouring and surface plotting routines are, in general, more powerful than those of DI-3000. See **man ncarg**.

Hoops — The Hoops graphics library is a Fortran and C callable general purpose graphics package. It is an object-oriented graphics system which supports 3-D orthographics or perspective projection; wireframe or hidden line/surface rendering styles; and 3-color models (i.e., RGB, HLS, HIC). See **man hoops**.

Numerical Software

ABAQUS — A large class of stress analysis problems can be solved with ABAQUS. It can handle both static and dynamic problems which may contain material, geometric and boundary non-linearities.

ACSL — ACSL is the Advanced Continuous Simulation Language which is available on our IBM system (and was on the old Cyber). Programs written in the high-level ACSL language describe continuous and mixed-continuous simulation models. See **man acsl**.

Ellpack — Ellpack is a large package designed to aid in solving 2- and 3-dimensional elliptic partial differential equations. It is also designed to provide the tools necessary to test out elliptic pde solution techniques. It accepts as input programs written in the problem-oriented Ellpack language, translates them into Fortran and loads them together with the Ellpack library. See **man ellpack**.

FIDAP — FIDAP is a fluid dynamics simulation program. It is a general purpose computer program that uses the finite element method to simulate many classes of incompressible fluid flows. Two-dimensional, axis-symmetric, and three-dimensional steady state or transient simulations in complex geometries, including the effects of temperature, are possible, with the analysis being limited in size only by practical considerations of computer time and the ultimate capacity of secondary (disk) storage devices when required for problems that cannot be solved in memory. See **man fidap**.

GLIM — GLIM stands for Generalized Linear Interactive (statistical) Modeling. It is an interactive statistical package. We are running GLIM 3.77. See **man glim**.

GRG — The Generalized Reduced Gradient package aids in the efficient and stable solution of multidimensional nonlinear optimization problems with linear or nonlinear constraints. It can be run stand-alone or called as a Fortran subroutine. See **man grg**.

IMSL — The IMSL library is a Fortran and C callable mathematical and statistical library. It is the single most comprehensive mathematical and statistical library running on any of our computing systems. We are running IMSL Version 10, which is the same version found on our IBM VMD system. See **man imsl**.

LSODE — LSODE is a library of subroutines for the solution of initial value problems in ordinary differential equations, developed by Alan Hindmarsh and others at Lawrence Livermore Laboratories. The package offers both stiff and nonstiff methods of solution of the ordinary differential equations. See **man lsode**.

Minos — Minos is a mixed linear/nonlinear optimization package which will optimize an objective function described by a Fortran subroutine and a file specifying various constraints. Nonlinear constraints may also be specified. See **man minos**.

MINPACK — MINPACK is a library of subroutines for solving nonlinear least squares problems and for solving systems of simultaneous nonlinear equations. The Levenberg-Marquardt method is used by the nonlinear least squares routines, and a modified Powell hybrid method is used for the nonlinear equations routines. The user must write a Fortran routine which evaluates the functions involved. See **man minpack**.

MPOS — MPOS is a program from Northwestern University for solution of linear, integer and quadratic optimization problems. It accepts symbolic input for problem variables and constraints. See **man mpos**.

PLTMG — PLTMG is a Fortran and C callable subroutine library designed to solve a second-order two-dimensional boundary value problem using a finite element method. It has a graphical output which calls DI-3000. See **man pltmg**.

Spice 3 — Spice is a general-purpose electronic circuit simulation program for nonlinear dc, nonlinear transient, and linear ac analyses. Circuits may contain resisters, capacitors, inductors, mutual inductors, ideal switches, independent voltage and current sources, four types of dependent sources, transmission lines, and the five most common semiconductor devices: diodes, BJTs, JFETs, GaAs MESFETs, and MOSFETs. See **man spice**.

XMP — XMP is a structured library of high-quality, portable, reliable Fortran subroutines for mathematical programming. XMP is presently composed of a Fortran subroutine library and three stand-alone products: ZOOM, IMP and XML. The Fortran subroutine library also presently contains two components: the XLP linear programming library and the GUB Generalized Upper Bounding library.

XLP solves large sparse linear programs with bounded variables using the primal or dual simplex method. There is a complete set of routines for sensitivity and parametric analyses. GUB solves linear programs with generalized upper bound constraints, handling these special constraints implicitly. This makes it possible to solve some very large models.

ZOOM (Zero-One Optimization Methods) solves zero/one nonlinear programs by a combination of heuristics and branch-and-bound.

IMP (Interactive Mathematical Programming) is an interactive, menu-driven, user-friendly front end for XLP and ZOOM that makes it possible to browse through the problem data, solve the problem, browse through the solution, perform sensitivity or parametric analyses, change the problem data, and re-solve the problem as many times as desired. It is also possible to exercise some control over the branch-and-bound search procedure for solving mixed-integer programs.

XML translates linear programming and mixed-integer programming models expressed in a simple algebraic modeling language into MPS-standard input files. See **man xmp**.

YSMP — YSMP is a library of routines for the solution of sparse systems of linear equations; sparse means that only a small percentage of the coefficients of the system are nonzero. See **man ysmp**.

Projects Currently in Progress

There are several projects that are currently in progress on uxh. They are the installation of the most recent versions of ACSL, FIDAP and ABAQUS. The installation of a new package, IRAF, is also in progress. IRAF, Image Reduction and Analysis Facility, is a large, extensive system designed to aid in the handling of optical and spectrographic data.

Future Projects

We are interested in knowing what you would like to see installed on our UNIX systems. Your input will influence the priority that we apply to installing and maintaining various packages.

At present, the following is a list (incomplete) of packages on our stack for possible installation:

AIPS	-- Astronomical Image Processing System
MATLAB	-- Matrix Laboratory
C++ 2.0	-- Newest version of C++
G++	-- GNU version of C++

If you would like to give us input as to what packages you would like to see running on our UNIX systems please send e-mail to either: r-penka@uiuc.edu, pommert@uiuc.edu or stankerr@uiuc.edu.

FOR SALE

For sale: Sperry (IBM XT compatible) PC, 640K ram, 1200 baud internal modem, 10MB hard drive, software, color monitor; $700.00 Xerox 4045 laser printer w/photocopier; $1200.00. NEC 8800 Spinwriter w/document feeder; $700.00. Call Jeff at 333-6712.

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If you wish to be placed on our mailing list, have a change of address, or wish to be deleted, please check the appropriate box and fill in the information below. Please help us keep our mailing list up-to-date by informing us if issues are being sent to someone no longer in your department; fill in the information below and return to us so that his/her name may be removed from the list.

Please check as appropriate:

_____ Please *ADD* my name to the mailing list.

_____ Please *DELETE* my name from the mailing list.

_____ Please *CHANGE* my address (provide old address also).

If you have a campus mailing address:

Name _____

Department _____

Room & Bldg _____ M/C_____

If you do not have a campus mailing address:

Name _____

Address _____

_____

_____

City, State, Zip _____

If you are requesting a change of address, please indicate your old address:

_____

_____

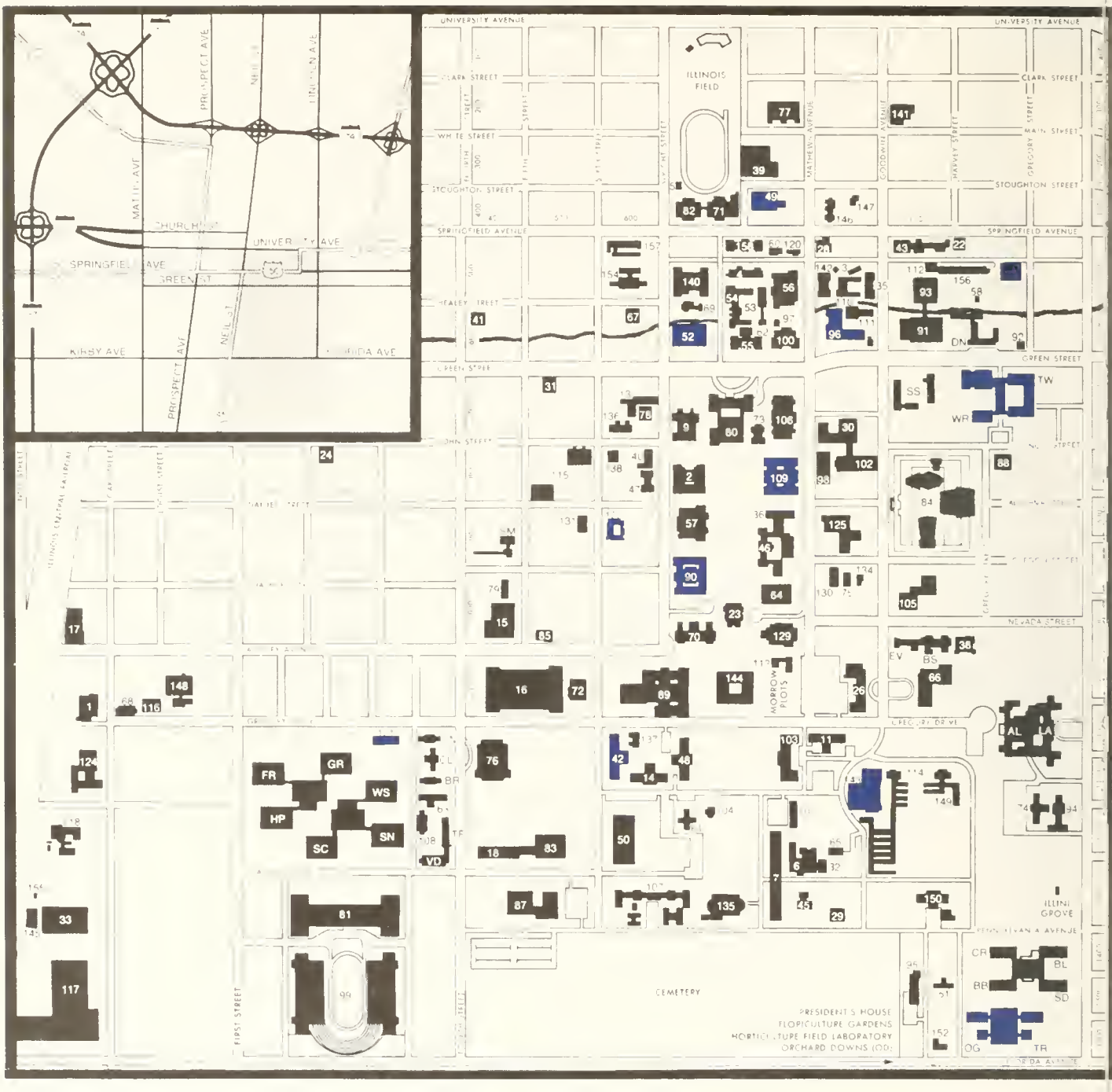
Mail to:

OFF-LINE
Computing Services Office
150 Digital Computer Laboratory (M/C 256)

University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH	
14 Digital Computer Lab 333-7685	Monday-Friday, 6 am - 12 mid. Saturday-Sunday, 8 am - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Thursday, 8 am - 12 mid. Friday-Saturday, 8 am - 10 pm Sunday, 12 noon - 10 pm
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday, 9 am - 12 noon Sunday, Closed
CHEMISTRY	
154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Sunday-Thursday, 12 noon - 12 midnight Friday, 12 noon - 5 pm Saturday, Closed
ELECTRICAL ENGINEERING	
146 Everitt Lab 333-4936	Monday-Thursday, 8 am - 8 pm Friday, 8 am - 5 pm Saturday, 12 noon - 5 pm Sunday, Closed
ENGLISH BUILDING	
8 English Building 244-0386	Monday-Thursday, 8 am - 12 mid Friday, 8 am - 6 pm Saturday, 12 noon - 6 pm Sunday, 1 pm - 12 mid
FAR	
Florida Avenue Residence Halls 333-2695	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
ISR	
Illinois Street Residence Halls 333-0307	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Friday, 8 am - 12 mid. Saturday-Sunday, 12 noon - 12 midnight
PSYCHOLOGY	
453 Psychology 333-7815	Monday-Friday, 8 am - 5 pm Saturday-Sunday, Closed
SOCIAL SCIENCE	
202 Lincoln Hall 333-0309	Monday-Thursday, 8:30 am - 9 pm Friday, 8:30 am - 5 pm Saturday-Sunday, 12 noon - 5 pm
ILLINI UNION MICROCOMPUTER SITE	
244-7935	Monday-Thursday, 8 am - 12 midnight Friday, 8 am - 10 pm Saturday, 10 am - 10 pm Sunday, 12 noon - 12 midnight
MEDIA CENTER -- UNDERGRADUATE LIBRARY	
333-2667	Monday-Thursday, 8 am - 1 am Friday, 8 am - 12 mid Saturday, 9 am - 12 mid Sunday, 12 noon - 1 am



CSO Sites (marked in blue on map)

42 Commerce West
49 Digital Computer Lab
52 Electrical Engineering
90 Lincoln Hall
96 Mechanical Engineering
109 Chemistry - Noyes Lab
121 CRH Snack Bar
122 Psychology
143 Agriculture - Turner Hall
Illinois Street Residence Halls
Florida Avenue Residence Halls
CSO Office Building
(101 South Gregory)

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off line

niversity of Illinois at Urbana-Champaign

irector: George Badger
ditor: Lynn Bilger

CSO
Computing Services Office

IMPORTANT TELEPHONE NUMBERS

Departmental Office	150	DCL	333-1637
CSO Support Center	123	DCL	244-1000
User Accounting Office	1208	W. Springfield	333-7752
Documentation Center	1208	W. Springfield	333-9230
Systems Consulting	1208	W. Springfield	333-6133
Statistical Consulting	85	Comm West	333-2170
Text Processing Consulting	212	CSOB*	333-7318
Micrococonsulting Hotline	91	Comm West	244-0608
Microcomputer Resource Center		Federal Room, Illini Union	244-6261
Maintenance & Repair Service	194	DCL	244-1000
Tape Service, Special Plots, Special Printers.	14	DCL	333-8640

*CSOB is the CSO Office Building, located at 101 South Gregory, Urbana.

DIAL-UP NUMBERS

Terminal Server	up to 2400	baud	333-4000
SWITCH (Sytek)	1200	baud	333-4008
	2400	baud	333-4007
LCS (Library)			333-2494

LOCALNET CALL NUMBERS

Note: Certain CSO Sites are on a separate channel of LocalNet than the rest of the campus. These are designated below as **A Sites** and include the following CSO Sites: ME, EE, COMM, LH, and AGRIC. All other LocalNet access areas are designated as **B Sites**.

VMD	CALL 4400	(A Sites)
	CALL 4500	(B Sites)
VME	CALL 4600	(A Sites)
	CALL 4700	(B Sites)
uxa (Pyramid 90x)	CALL 66DD	(A Sites)
	CALL 66AA	(B Sites)
uxe (Pyramid 90x)	CALL 12FA	(A Sites)
	CALL 12EE	(B Sites)
uxf (Sequent)	CALL 66CC	(A Sites)
	CALL 66BB	(B Sites)
ux1 (Sequent S81)	CALL 1650	(A Sites)
	CALL 1600	(B Sites)
uxh (Convex)	CALL 1850	(A Sites)
	CALL 1800	(B Sites
LCS (Library)	CALL 6400	

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Articles, suggestions, comments and/or subscription requests may be sent to: Lynn Bilger, Off-Line Editor, 150 Digital Computer Lab, University of Illinois, 1304 W. Springfield, Urbana, IL 61801 (telephone: (217) 333-6236; e-mail: bilger@ux1.cso.uiuc.edu).

SENDING TEX/LATEX FILES TO THE LASERWRITER

(Editor's note: Rohit Gupta, who is one of our Systems Consultants, has written a short shell script to make the printing of TeX or LaTeX files to the LaserWriter in Room 14 DCL easier. We publish it here in the hopes that our users will find it useful to copy and use.)

TeX and LaTeX have been installed on the ux1 system. To save yourself some trouble when trying to print, type the following into a file called **print_latex**. Make sure you do a **chmod 755 print_latex** before trying to run this script.

```
latex $1.tex
dvips $1.dvi
lpr -Paleph $1.bit
rm $1.dvi $1.bit $1.log $1.aux
```

Now, say you have a file called foo.tex. To print the file foo.tex, simply type **print_latex foo** and the file will be sent to the LaserWriter in 14 DCL. **WARNING:** This script will work fine for simple files with few or no errors. If you have a large file or a file with a bibliography, then I would suggest running LaTeX interactively and putting the remaining three lines in the script file. If you have questions, please contact Rohit at **gupta@ux1.cso.uiuc.edu**.

SAS/ETS FOR THE PC

SAS/ETS (Econometrics and Time Series) has been released for the IBM PC and compatibles. The package has 5 diskettes (1.2 MB high density AT) and takes 6 MB of disk space. The procedures will run in 640K, but will work better with expanded memory.

The procedures in the PC version are the same as in the mainframe version and all have been enhanced.

CSO will license the product if there is enough interest. The cost will be around $50.00, depending on the number of people interested in licensing the product. This first year licensing fee will drop by nearly half if the product is renewed the next year and subsequent years.

If you are interested in this product, please notify me by campus mail (or e-mail dingler@vmd.cso.uiuc.edu):

Victoria W. Dingler
CSO SAS Representative
150 DCL
Campus

JMP FOR THE MACINTOSH

JMP is an exploratory statistical graphics program with a spreadsheet utility and data manager. The product is distributed by SAS Institute and requires an Apple Macintosh with at least 1 MB of memory, but 2 MB are strongly recommended.

Educational discount prices range from $298.85 to $347.50 per package per machine, depending on the number of packages purchased (price does not include shipping costs). The product is on two 3.5" diskettes.

JMP fits models with different kinds of effects, such as crossed, nested, general crossed and nested, crossed interval by nominal for homogeneity of slopes test, response surface and polynomial. It handles all three kinds of measurement levels for the response: least squares, maximum likelihood logistic for nominal responses, and maximum likelihood cumulative logistic for ordinal responses. Contrasts can be specified with respect to the least-squares means. JMP uses the 80 bit, 10-byte IEEE floating point.

CSO will license the product if there is enough interest. If you are interested in this product, please notify me by campus mail (or e-mail dingler@vmd.cso.uiuc.edu):

Victoria W. Dingler
CSO SAS Representative
150 DCL
Campus

VIREX SITE LICENSE FOR MACINTOSH

CSO has just purchased a site license for Virex, an anti-virus software package for the Macintosh. Virex monitors your Mac for all currently known Macintosh viruses, and it may be configured to automatically check all floppies inserted into your system at any time, making it ideal for use in computer lab situations. Our current license only covers CSO's sites, the Speech Communications Lab, and the Hypermedia Lab, but this can be extended. The license fee is $20 per machine, but please note that this does not include automatic upgrades — we have decided to handle these on a case-by-case basis. If you are interested in having Virex for your lab, please call Dave Long at 244-0731 for more details.

NEW E-MAIL ADDRESS FOR OFFLINE

Since all uxe signons are being moved to ux1, the new e-mail address for messages to *Off-Line* (requests to be added or deleted from the mailing list, or address changes) should be addressed to **offline@ux1.cso.uiuc.edu**. Any messages to Lynn Bilger, the *Off-Line* editor, should also be addressed to **bilger@ux1.cso.uiuc.edu**.

ANNOUNCING CSO.NEWS ON UNIX

A new notesfile called **cso.news**, which is comparable to HEARYE on VMD, is now available on uxh and ux1. **cso.news** will contain announcements about problems on the system, CSO site hours for holidays/semester breaks, and other announcements of interest to UNIX users. Currently, the Christmas/Semester Break site hours may be viewed by typing:

notes cso.news

ANNOUNCING A SECOND UIUCNET TERMINAL SERVER

(Editor's note: This article was originally published in the March/April/May 1989 issue of Off-Line. Since that time some changes have occurred and the article has been updated by Mark S. Zinzow to reflect these changes.)

A terminal server is a computer system that connects a bank of dial-in modems (or any serial device) to the campus computer network UIUCnet. It allows you to login from a dial-in modem to any computer system that is attached to UIUCnet and is registered with the terminal servers.

Before the terminal server became available, if you wanted to access a computer system via a terminal and dial-in modem, you had to dial the computer directly or dial-in to a data switch such as the Gandalf switch, which CSO continues to support. (Note: One problem with using the Gandalf switch is that only a limited number of computer systems are accessible to this switch.) Additionally, if you wanted to login to other computer systems, you had to first login to a system that had both dial-in and UIUCnet access and then use TELNET or RLOGIN programs to cross UIUCnet to the other machine.

The terminal servers have both dial-in and network access, but ONLY provide the user with TELNET and RLOGIN functionality across the network. Because a terminal server is a computer system, it does provide more functionality than direct dial-ins to a host or a data switch but, at the same time, it is more complex.

Due to heavy use and a demand for more connections and services, CSO has added a second terminal server (**term1**) to the first terminal server (**mossberg**). With the second server, we have about doubled the number of regular dial-up lines, and added lines for access via eight high-speed modems, LocalNet (Sytek), and a few experimental digital phone lines (ISDN-like) connected to Datapath LSDU's (low speed data units.) It is also planned to have direct connections between the terminal server and the 7171 for IBM 3270 protocol conversion by the time this article reaches print. See the terminal servers' login banners for announcements of new lines.

One major difference between direct dial-ins and the terminal server that you will see is character buffering. When you dial-in directly to a computer, or go through the Gandalf switch, there is very little hardware to buffer output from the computer. If you interrupt the output of a program, the stream of characters usually stops quickly. With the terminal server a different interface is used on the host computer. The host, terminal server, modem on the terminal server, and potentially the modem on your pc, can all buffer characters. If you start a program that streams output and then interrupt it, it may take a while for the output to stop. You may want to get in the habit of using 'page at a time' options such as the 'more' facility in UNIX.

An Example Showing How to Use the Terminal Server

The following is an example of using a terminal server (mossberg) to connect to a CSO system. System prompts/messages appear in Roman type, commands that the user must enter exactly as shown are **in bold type**, and commands that are optional or must be replaced by the user's own response are in ***bold italics***. Comments (on the right) are in *Roman italics*.

atdt3334000	*Dial the terminal server and wait for system to respond.*
CONNECT	*Message from your modem that it has connected to the modem on the terminal server. Wait a few seconds while the server sets up your line.*

"CSO and Student Fee Dial-up to UIUCnet service. This server is restricted to a subset of UIUCnet for security reasons."

Message of the Day from the terminal server.

mossberg>

Terminal server's name is mossberg. This is the EXEC command prompt.

mossberg> ***ter dow***

For 'terminal download.' Configure terminal server for transparent communications to allow for example serial protocol file transfers like Zmodem or Kermit.

mossberg> ***uxh***

Enter the name of the host to which you want to be connected (e.g., uxh).

UTX/32 (uxh.cso.uiuc.edu)

Login prompt from uxh.

login:

(At this point you login and do your work as usual with two exceptions. All characters are passed between your terminal and the computer system without interpretation by the terminal server, except CTRL-^ if you did not set terminal download, and the software flow control characters CTRL-S/CTRL-Q if you are not using an MNP (Microcom Networking Protocol) error correcting modem. If you type CTRL-^x (control uparrow x) or send a BREAK after setting ter dow, you escape back to EXEC mode in the terminal server. You can reconnect to your login session by typing 'resume', or entering an EXEC command.)

logout

End your session.

[Connection to uxh closed by foreign host]

End of session message from terminal server.

mossberg> **exit**

Type 'exit', 'quit', or 'hangup' to hangup from terminal server.

Command Interpreter

The terminal server command interpreter is called the EXEC. This software interprets and executes the commands you type.

Commands may be in upper or lower case, and may be abbreviated to the least number of characters that is still unique.

CTRL-H, the DELETE key, or the BACKSPACE key will cause the terminal server to erase one character while in EXEC mode. CTRL-U will cause the current command line to be erased and ignored; CTRL-W will erase a word. CTRL-C will abort the current command. Press the RETURN key to end a command line.

By default the sequence CTRL-^x (control uparrow x) escapes from a Telnet session back to the command interpreter EXEC. If you are in transparent mode (specified with **ter dow**), then a BREAK signal is used to

obtain an EXEC prompt. You may type an EXEC command, switch between sessions, or return to your original session by just entering a RETURN.

Type a question mark (?) to get a list of available commands. The explanation of some of the commands produces more than one screen of output. At the bottom of each screen the server pauses and produces the message, '---More---'. Enter a space to get the next screen, or anything else to terminate the list and return to the EXEC.

Following is a list of commands that can be used with the terminal server.

telnet hostname
or
hostname
or
rlogin hostname

telnet and **rlogin** will both connect to remote hosts; however, **rlogin** operates differently than **telnet**. Check the documentation on your remote system for the differences between the two. If the hostname is in the cso.uiuc.edu domain, you may use just the name of the CSO machine (e.g., VMD, uxh, etc.); if it is not in the cso.uiuc.edu domain, then you need to specify the full domain name (e.g., m.cs.uiuc.edu).

where

The **where** command lists information about all sessions that you currently have open. An asterisk indicates the current session.

help

The **help** command displays a list of user commands and a short description of each.

systat [all]

The **systat** command lists information about active lines; the **all** option specifies all lines in the terminal server.

resume [connection # or connection name]
or
number
or
RETURN key

resume a previous connection by number (connection #) or by name of host (connection name). If you have connected to several hosts and omit the number or name on **resume**, you will be connected to the last host accessed. You may omit the **resume** part and just enter the number. If you press the **RETURN key**, you will be connected to the last host accessed (indicated by an asterisk in a **where** command).

disconnect [connection # or connection name]

Disconnect the specified **connection** (number or name), or by default, the current connection. **You should use this command only if you are unable to log out from the host normally.**

show [options]

The **show** command has several useful options. These are listed below:

?	shows a list of all show options
hosts	Displays a list of hosts currently in the terminal server's address cache. If a connection requests a hostname that is not in the current cache, the terminal server must look up the address in one of the UIUCnet domain name servers.
sessions	Shows your current sessions.
terminal	Shows your terminal configuration.
users	Shows a list of users currently using the terminal server.

terminal [no] [option]

Note: If you use any of the following options on the terminal (ter) command, you can turn them off by using the **no** prefix (e.g., **ter no dow**).

?	Shows syntax and options for the **terminal** command.
download	PC file transfer programs sometimes require data-transparent connections between the personal computer and the host. This means that they need to be able to send any of the 256 possible 8-bit values without the terminal server or modems interfering. Since this often is not possible in the real world, most file transfer programs will "work around" a few characters which will not pass through the network. The terminal server by default will not pass three characters: CTRL-S, CTRL-Q and CTRL-^(or CTRL-6 depending on your terminal). The first two are used as flow control between the modem and the server. The third is used to get the attention of the command interpreter on the server. Telnet also sometimes interferes with line feed or return unless you set it to transparent mode. The terminal server EXEC command:

ter dow

(abbreviation for terminal download) will change the command character to the BREAK signal and set telnet-transparent. If you are not using an MNP modem your software of choice must still avoid the use of CTRL-S and CTRL-Q unless it is using them for flow control. Persons planning to transfer files using a serial protocol file transfer package, such as Kermit or Zmodem, should be sure to use this command (see previous example) as should those connecting to a Unix system to run tn3270 to connect to an IBM system.

terminal-type option

Lets you define your terminal type, where **option** is the 'name' of your terminal. For example, if you enter

ter ter vt100

the server will tell the host system (when the connection is made) that you are using a terminal-type of vt100. The server assumes the terminal-type 'unknown' unless you have specified a type.. An alternative is to have your login startup file recognize 'unknown' terminal type and substitute your terminal type.

notify

One of the nice features of the terminal servers is the ability to maintain multiple sessions to several remote hosts. For example, one may be expecting electronic mail on one system, while needing to work on another. If **notify** is turned on, the terminal server will notify you if characters are sent from a session other than the current one. The message looks like:

[New data from connection N, HOSTNAME]

and one would then respond with the escape sequence to return to exec mode and issue the command **res N**, to resume the Nth session which has pending information.

Like most terminal options, **notify** may be turned off with the **no** prefix (**ter no notify**).

telnet-transparent

If you want to use tn3270 without changing the CTRL-^X escape sequence, you may set **telnet-transparent** by itself, e.g.,

ter telnet-t

exit
or
quit
or
hangup

Any of these commands can be used to hangup from the terminal server. If you have any outstanding sessions to host computers, they will be dropped.

name

The **name** command allows you to assign a name to a session. Thereafter, the name will show up in status commands and can be used instead of the session number when resuming a session, etc.

Connecting to the Servers

All of the modems on the terminal servers are on a device known as a rotary. This allows users to call one number (the first in the rotary) and if that number is busy, the call is automatically routed to the next available free phone line. This prevents having to dial many numbers before establishing a connection, and requires users to only remember one phone number. On rare occasions, a modem will fail to answer the phone, or will answer but not establish a connection and hang up quickly. If this modem is near the beginning of the rotary, it may be difficult to connect, as it will usually be on the first available free line.

If this should happen, users should call 244-1000 to report the problem and get instructions on how to work around it. Should help be unavailable at 244-1000 (as perhaps during the wee hours of the night), it is helpful to know some phone numbers further down in the rotary which one can try and thus bypass a malfunctioning modem. For this reason, a list of numbers is included here, however, it should be noted that this list is subject to change without notice.

Low speed (2400 baud) connections to mossberg start at 333-4000, and continue (in the order of the rotary) with 333-4026 through 333-4040, 333-4006, 4005, and 4068 through 4073. More 2400 baud lines are available on term1 starting at 333-4025, and continuing from 333-4010 through 333-4024. The high speed modems are all on mossberg, 244-4976 and 244-5020 for the two U.S. Robotics® COURIER HST dual standard modems, and 244-5109, 5128, 5132, 5140, 5150, and 5161 for the Telebit T2500 (TrailBlazer Plus with V.32).

Sytek users may also reach a terminal server with CALL 1000 and, from the terminal server, Sytek hosts may be reached with the command sytek and two carriage returns which will provide the usual # Sytek (LocalNet) prompt. There are only eight Sytek lines available, so as a courtesy to those who really need them, it is recommended that these lines only be used when no alternative is available.

If your host is not registered with the terminal servers please contact gardner@uxI.cso.uiuc.edu or call Mike Gardner at 244-0914 to arrange support for your host. If you are using a Sytek link to CALL 4500 to access the 7171 for full screen access to an IBM mainframe, please call the CSO Accounting Office at 333-7752 for information on how to obtain an account on a UNIX host that will allow you to use tn3270. Note also that by the time this article is distributed, direct connections to the 7171 should be available from the terminal servers.

Modem Configuration

The terminal server is connected to a bank of Multitech 224ER modems. These modems support 300, 1200 and 2400 baud connections, as well as Autoreliable mode (MNP-4) and Data Compression mode (MNP-5). Because of these new functions, as well as the difference in transfer rates between phone lines and UIUCnet, both the terminal server and the modem must understand and use flow control. The server and modem are configured to use software flow control with the characters CTRL-S and CTRL-Q. Your own modem need not understand flow control unless you configure it to use MNP-4 (Autoreliable) or MNP-5 (Data Compression) modes. If you have a Multitech mt224ER modem that supports these modes, this is the suggested setup:

&E1	set MNP Autoreliable mode
&E5	set modem initiated-flow control
&E6	set Xon/Xoff passed through (default)
&E8	set Eng/Ack pacing off (default)
&E11	set Normal Mode flow control on
&E13	set Pacing on (default)
&E15	set Data Compression enabled

WARNING: If you turn on Autoreliable or Data Compression mode, then your modem transmits a sequence of characters to the other modem as soon as it connects. If the modem on the other end does not understand these modes, you may have trouble connecting. If this happens, set your modem back to the factory defaults (these modes off) and try again.

To make the modem remember the settings, type

at&w0

If you use a U.S. Robotics® high speed modem such as the Courier HST, or the Courier V.32, or the Courier HST dual standard, set &B1 for HST mode and &B0 for V.32 mode, and always &H1 to enable flow control. First, set your baud rate (speed) to 19,200 (bps). A useful initialization string for a COURIER modem calling the HST lines in HST mode would be **AT &A2 &B1 &H1 X6**. When using a COURIER modem to call the Telebit lines in V.32 mode use **AT &A2 &B1 B0 &H1 X7**. Note when calling in V.32 mode, voice result recognition is disabled (X7), as the link negotiation to the Telebit modems will sound like a long electronic dog and cat fight and an HST will return a VOICE result and not connect if X6 is set. Maximum throughput in PEP, HST, and V.32 modes is 19.2Kb, 17Kb and 9600 baud, respectively.

If you use a different brand of modem, your modem's syntax and switch settings may differ. Check the documentation that came with your modem or contact the CSO Hotline at 244-1000 for assistance. They will have someone get in touch with you.

Serial Line Internet Protocol

Another new feature available is SLIP (Serial Line Internet Protocol). For packages that support it, this allows one to call the terminal server and use the same or similar application software that one normally uses on systems directly connected to a LAN on the campus backbone. This would allow one to run ftp directly to one's PC, or run electronic mail software, or a local tn3270. One advantage would be the ability to transfer files in the background while running host applications in the foreground. Two PC packages that may work are the TCP package available from FTP Software Inc., and a public domain package available from Carnegie Mellon University (CMU). Neither of these is tested and supported locally, but SLIP may provide some networking solutions in the near future.

Currently all the high speed modem lines on mossberg and the low speed lines on term1 are configured to allow SLIP.

WHAT'S NEW IN THE MRC?

Bi-Shen Chuang and Mark Zinzow
Microcomputer Resource Center

The Microcomputer Resource Center's collection of commercial software, anti-viral software, vendor newsletters, product literature, and magazines continues to grow. The following lists will give you an idea of the new materials we have received recently. Readers are invited to use these resources at the MRC.

New Anti-Viral Software

IBM Virus Scanning Program 1.0 -- IBM's own virus scanning program. To get a free copy of the disk, users must obtain a copy of the site license agreement available at the MRC. Please ask for both the original and the version 1.33 update if you are interested in this package.

VirALARM 2.6 -- The latest version of VirALARM from Integrity Technologies, Inc. Users must fill out a Non-Disclosure form before reviewing the two disks — one is the actual system, and the other the documentation. This version has many fine features, including a pattern matching system called PATMAT. This program scans your system for known viruses that may be resident. Please also fill out a survey form if you are interested in a site license for this package.

Viruscan Version 1.1V50 -- From McAfee Associates (Computer Virus Industry Association). This is the recommended software for checking disks and systems for viruses. CSO has recently negotiated a two year site license for the University of Illinois so you needn't send in your $25 Shareware contributions for use of this package. If you are using any version prior to 43, please get an update via the campus network or the MRC as the old versions did not abort in the presense of the Dark Avenger virus and will inadvertently spread this virus to all files checked if run on an infected system.

New Commercial Software

Ashton-Tate Products for the PC:

Draw Applause 1.1 -- Business graphics.

Framework III 1.1 -- Word processing, spreadsheet, graphics, outlining, database management, communications, and electronic mail capabilities all in one package.

Master Graphics 1.0 -- Presentation graphics and business graphics.

Multimate Advantage II -- A word processing package. The MRC also distributes free demo disks for Multimate Advantage II. (Wang users will feel at home with this on a PC.)

Trading Places -- Swaps dBASE III plus or dBASE IV in and out of memory and manages up to 32 TSR programs.

NOTE: Ashton-Tate now has a Campus Program that allows U. of I. faculty, staff, and students to order their products directly from Ashton-Tate at departmental prices. Contact the MRC or the Micro Order Center (244-7938) to obtain order forms, copies of End-User Agreement, and price lists.

Silicon Beach Software for the Macintosh:

Digital Darkroom -- Image processing software.

Super 3D 2.0 -- Three-Dimensional modeling and animation software.

SuperCard -- Your personal software tool kit that enables you to make your own Macintosh applications.

SuperPaint 2.0 -- The latest version of SuperPaint. A painting and drawing program.

Jandel Scientific:

SigmaPlot (for the PC) -- For scientists to make publication quality graphs.

Personal Bibliographic Software, Inc.:

Pro-Search Trial Size Version 1.07 -- A communications and on-line searching program that includes a complete manual and a trial size disk. Features include searching BRS with DIALOG commands or DIALOG with BRS commands.

The MRC also has demonstration copies of **Pro-Cite** (for IBM and Macintosh) from Personal Bibliographic Software. Pro-Cite is a database management system designed for bibliographic references. The complete manuals and demo disks can be loaned to users wanting to do a full evaluation or to give a presentation. A copy of Pro-Cite presentation guide for the PC is available at the MRC, and the demo disks may be duplicated.

WordPerfect August Disk of the Month -- This disk has an elegant envelop-printing macro, an example of a menu macro, and many more.

Vendor Catalogs and Newsletters

CompuAdd 1989 Holiday Catalog.

Currents Macintosh Issue, Autumn 1989, Vol.1 No.1 -- Published by Symantec, this issue features information on using MORE II.

Format -- Quarterly news guide from Personal Bibliographic Software, Inc.

Magazines

DBMS -- Users are welcome to review the trial issues of DBMS, a monthly magazine published by M & T Publishing, Inc. If there is enough interest, we would like to subscribe to this magazine for you.

The LATEST & GREATEST Macintosh Software Product Offering

LATEST & GREATEST is a program by Marketing Arts that allows Apple customers, employees, resellers, consultants, and individuals (who will use the software for teaching or demonstration purposes) to purchase fully working copies of the hottest Macintosh software packages at prices at least **70% off retail**. There are six special collections available:

A. Engineering and Design
B. Presentations and Multimedia
C. General Business and Utilities
D. Desktop Publishing Essentials
E. Advanced Desktop Publishing
F. Bonus Offer: The Macintosh Office

Each collection features between 4 and 22 packages. Your application(s) for orders will be reviewed and prioritized in groups determined by the date your application is received. The DEADLINE for these groups is currently DECEMBER 28; however, this deadline may be extended.

Orders may be placed by phone, AppleLink, FAX or mail to:

LATEST & GREATEST
483 East Main Street, Suite 221
Grass Valley, CA 95945
FAX: (916)272-1074 or (415)941-5626
Ph: (916)477-2787

For more information, or to see if the deadline has been extended, contact Marketing Arts at the above address or telephone number.

Please use the MRC vendor file - Marketing Arts or call the LATEST & GREATEST hotline at (916)477-2787 or send an AppleLink to SELECT.SW for additional information.

New Site License

As-Easy-As 4.0b has been site licensed for use on campus. Update manuals are on order and will be available from the CSO Accounting and Distribution Office for a little over $5.00 each. You may anonymous ftp the new software from mrcnext.cso.uiuc.edu in pc/local/asez40b.zip.

New Public Domain and Shareware

The following files (among many others) are available for anonymous ftp from uxe.cso.uiuc.edu in the pc/exec-pc directory and may be of special interest to many of our readers:

LIST71A.ZIP	BUERG'S LIST.COM - RELEASE 7.1A - 10/28/89.
PCW3.ZIP	PC-WRITE V3.03 (Bug Fix) DISK #3 REFERENCE DISK
PCW2.ZIP	PC-WRITE V3.03 (Bug Fix) DISK #2 UTILITY DISK
PCW1.ZIP	PC-WRITE V3.03 (Bug Fix) DISK #1 PROGRAM DISK
DIRTYD9B.ZIP	DIRTY DOZEN LISTING V9.B as of 5-NOV-89

PING PONG VIRUS (PC) FOUND HERE

Mark Zinzow
Microcomputer Resource Center

Recently the Ping Pong B virus was found on an XT in Newmark hall here at the University of Illinois at Urbana-Champaign. Reports indicate, however, that this virus has been present since at least last June. This is the third (IBM PC) virus found here, the previous were Brain and Jerusalem.

This virus is a boot sector infector and also goes by the names Bouncing Ball, Italian, VERA CRUZ, and VERA CRUZ B.

Please use **scanv50.arc** (anonymous ftp from uxe.cso.uiuc.edu in the directory pc/virus) to search systems for infection, and **unvir6.arc** (from the same place) to remove the virus from infected systems. VIRUSCAN, the name for the package of programs in **scanv50.arc**, is a shareware product. CSO has purchased a site license for the U. of I. so you may ignore the request for a $25 registration if you are using this software here.

SCAN.EXE (in scanv50.arc) will report two versions of Ping Pong when it is found. This is a bug, the B version also triggers the message for the non-B version. So far, we think we only have one version of this virus floating around.

The program IMMUNE by Yuval Ratavy in **unvir6.arc** will make your system immune to the Ping Pong, Jerusalem, and several other viruses.

Here are some interesting notes about this virus from archives of the VIRUS-L mailing list (also the notes file or news group comp.virus):

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VIRUS-L Digest       Wednesday, 18 Jan 1989       Volume 2 : Issue 18

Date:        Tue,  17 Jan 89 15:06:39 +0200
From:        Y. Radai <RADAI1@HBUNOS.BITNET>
Subject:     Re: The Ping-Pong virus (PC)

  Eldad Salzmann asked about the Ping-Pong virus.  It is a virus
which first appeared in Israel about three months ago, and which got
its name because of a bouncing point which appears on the screen.
Like the Brain virus, it resides in the boot sector of disks, in bad
sectors, and in high RAM.  (Since I haven't heard of any reports of
its appearance anywhere else, I presume that it originated in Israel,
probably in the Tel Aviv area.)
  Among the points in which it differs from the Brain virus: (1) It
infects hard disks, not only 5 1/4-inch floppies.  (2) It marks only
two sectors as bad.  (3) It grabs only 2K of high RAM.  (4) To the
best of my knowledge, it does not cause any damage to files or to the
FAT.  In particular, the bad sectors seem to always be chosen from
unused clusters.
  As to Eldad's question about the possibility of a connection between
the Ping-Pong virus and his WordPerfect problem, I strongly doubt that
there is any.
  No, there is no panacea against viruses.  However, the same program
UNVIRUS which was originally written to eradicate the "sUMsDos"
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(Friday-the-13th) Israeli virus, and was later extended to three other Israeli viruses, has also been extended to eradicate the Ping-Pong virus, both from the disk and from RAM. (The author of all versions of UNVIRUS is Yuval Rakavy.)

I said above that points (1)-(4) were supposed to be in contrast to the Brain virus, but actually I'm not at all sure what the latter does with respect to point (4). I have read (A) that it isn't at all destructive; (B) that it "has been hacked ... into a very malignant form which can infect hard disks and which destroys FAT entries, deletes files, and performs other malicious activities" (quoted from the InterPath document); (C) that is is destructive only to the extent that it may copy its code to sectors which may belong to existing files. Obviously, each of these descriptions may be correct for a different strain of the virus, although sometimes the reports contradict themselves even when talking about the *same* variant (e.g. with respect to that which hit the Univ. of Miami). In any case, can anyone verify from *actual first-hand experience* that there is a version of Brain which is destructive in sense (B)?

Y. Radai
Hebrew Univ. of Jerusalem

VIRUS-L Digest Thursday, 9 Mar 1989 Volume 2 : Issue 61

Date: Tue, 07 Mar 89 16:31:28 +0200
From: Y. Radai <RADAI1@HBUNOS.BITNET>
Subject: Re: Bouncing ball virus (PC)

In #58 Rob Nauta asked about the bouncing ball virus. This was described in #18 (18 Jan), where I referred to it as the Ping-Pong virus. As I described it then,

> It is a virus
>which first appeared in Israel [in October 1988], and which got
>its name because of a bouncing point which appears on the screen.
>Like the Brain virus, it resides in the boot sector of disks, in bad
>sectors, and in high RAM. ....
> Among the points in which it differs from the Brain virus: (1) It
>infects hard disks, not only 5 1/4-inch floppies. (2) It marks only
>one cluster as bad. (3) It grabs only 2K of high RAM. (4) To the
>best of my knowledge, it does not cause any damage to files or to the
>FAT. In particular, the bad sectors seem to always be chosen from
>unused clusters.

The bouncing dot appears only under very special conditions: when (1) the system clock shows a multiple of 30 minutes and (2) the disk is being accessed. The simplest way to force the dot to appear (if RAM is infected) is to enter TIME 0 and then immediately type a character and press Enter. (Even after the dot appears, you can continue working. The dot will disappear only when you reboot or turn off the computer.)

Other symptoms: 2K missing from RAM (or a multiple of 2K if infection has taken place more than once); one bad cluster on disks. Both

of these can be checked by performing CHKDSK, of course. If you see 1K in bad sectors on a diskette, that's a pretty sure sign of this virus since FORMAT marks bad sectors in blocks of 5K. (Anyone know why?) Note that when the virus marks the bad cluster, it does so on only one copy of the FAT.

Finally, the virus causes access to diskettes to be slower because of the attempts to infect them.

It seems to be more contagious than the Brain virus; presumably the main reason is its infection of hard disks also.

In response to Rob's other questions, I'm fairly sure that there's no counter which will trigger further damage when it reaches some specified value, and that there's no specific "seeder" program. However, when Rob said that it spreads on bootable disks, he presumably meant *only* bootable disks, which is incorrect: like Brain, it also spreads on non-system diskettes. (They too have boot sectors.)

At the time I posted my earlier article, I had not heard of this virus outside of Israel, so I assumed that it was a local product. Since then I've heard of it (or something very similar to it) in the UK (in May 88) and in Italy (and now in the Netherlands). In the UK it is referred to as the Italian virus since it was traced (by Dr. Alan Solomon) to Torino, Italy. (Some of the information given above was supplied by him.)

In answer to Joseph Beckman's question, this virus is not just a splice of the Brain virus with ball code. On the one hand, it infects hard disks too; on the other hand it's considerably smaller than Brain and lacks some of Brain's features, such as feeding you the contents of the original boot sector when you try to look at the infected boot sector.

Y. Radai
Hebrew Univ. of Jerusalem

VIRUS-L Digest Friday, 10 Mar 1989 Volume 2 : Issue 62

Date: Fri, 10 Mar 89 14:03 N
From: ROB_NAUTA <RCSTRN@HEITUE5.BITNET>
Subject: bouncing ball virus (PC)

Thanks everybody for the replies. I can answer some questions. First of all it's not the face.com joke program, it's a real bootsector virus. It is indeed like someone described a virus that marks one sector bad, not three like the brain virus i read about in the magazine Computers & Security. Defeating it is easy but I'm glad there is no additional counter or timer. I found the following in the code of the bootsector..

```
XOR     AH,AH
INT     1A
TEST    DH,7F
JNZ     0203
TEST    DL,F0
JNZ     0203
PUSH DX
CALL    03B3
```

```
INT 1A with AH=00 gets the time of day. This explains the assumed
irrational behaviour: the virus appeared on IBM PC's but not on some
others (i mean the ball part). I could never get it to bounce at home,
probably because of the differences in cold boot time (the ibm takes
forever)... and why it would appear after a cold boot but not after
some warm boots..

Rob J. Nauta

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VIRUS-L Digest       Wednesday, 10 May 1989       Volume 2 : Issue 112

Date:     Tue,  9-May-89 08:50:39 PDT
From:     portal!cup.portal.com!Alan_J_Roberts@Sun.COM
Subject: Yet more on SYS (PC)
Original-From: Lynn Marsh (HomeBase)

        In reference to the SYS command, I'd like to point out that
for some boot viruses we have to precede the use of SYS with the
Norton Disk Doctor 4.5 "Make Disk Bootable" option.  Notably some
versions of the Ping Pong virus will not succumb to SYS alone.  The
instruction list we provide to infected sites is very long and it's
difficult to encapsulate it into a message for a forum such as this,
so it is easy for people to misunderstand or misinterpret global
statements that Mr. McAfee is prone to make.  He is correct that the
SYS always works.  He did not go into detail on preparations for its
use.
------------------------------
```

MONITORS: WHAT DO ALL THOSE ACRONYMS MEAN?

(Editor's Note: The following article was first published in Classroom Computer Learning, *January 1989. It is reprinted here from the March/April 1989 issue of the University of New Hampshire's newsletter,* on-line.*)*

MDA, CGA, EGA, VGA, TTL, RGB, NTSC — these are just a few of the acronyms that are used when referring to the world of monitors and computer display. ... But what do they mean? Becoming familiar with these acronyms and other terms that relate to graphics hardware will help you to understand your computer system's capabilities and to get the most from it.

Inside the Hardware

The first step in gaining a basic understanding of computer displays is to know something about the hardware inside the computer that sends signals to the monitor. In the MS-DOS world, this hardware generally comes in the form of an add-on board called a controller or adapter card. This card fits into a slot on the main board of the computer and has a connector port that protrudes from the back of the computer system's case; the monitor is connected to the card using a cable.

Outside the MS-DOS world, controller cards are much less common. With the exception of the Macintosh II computer, which requires the addition of a graphics adapter card before it can display any of the high-

resolution color it is famous for, most other computers, including the Apple II, Macintosh Plus and SE, Atari ST, and Commodore Amiga, have the monitor control "built into" the machine.

On the other hand, there are several important advantages to a system that allows graphics adapters to be added. Such an open system allows users to decide what they will need and buy only that. Also, by separating control of the monitor from the architecture of the main computer board, the systems avoid the possibility of having to replace the entire main board if there is a failure that relates to the monitor interface. And, most important, such a system is easier to upgrade as industry-wide graphics standards improve.

A compromise that is appearing more and more frequently in the MS-DOS world involves the bundling of new computers with basic adapter cards capable of low-end color graphics. The user then has the option of remaining with the introductory system or adding an extra card to enhance its display capabilities further.

What do the controller cards control? The monitor controller, whether built into your computer or sold separately, determines the appearance of output in two important ways. First, the card determines screen resolution by controlling the number of dots or "pixels" (short for picture elements) that can be generated by the computer. In general, the greater the number of dots produced, the cleaner and crisper the images will be on the screen. And second, the controller determines the color palette (the total number of colors that can be produced) as well as the number of colors that can be displayed on the screen at any one time. ...

The Monitor: Monochrome and Beyond

While the computer and its adapter card are the most important factors determining graphics output, the monitor's capabilities need to be considered as well. If you connect an adapter card that allows for color or extremely high resolution to a monochrome monitor or one with low resolution, you won't get the results you want.

In the monitor world, as in the graphics adapter world, there are terms and acronyms to be deciphered. Monitors can be classified into three groups: monochrome, composite, and RGB.

The most popular mono screen colors are green, amber, or white on a black background. With some mono monitors, white is used as a background color with black being used to make up the images or letters. No one has really determined which of these mono colors is the best on the eyes, although each person is likely to have a preference.

Composite monitors are generally the least expensive option for those interested in color output. This is primarily because the technology they employ uses only one signal, from which the three primary video colors of red, green, and blue must then be generated. Such technology may result in images that have fuzzy edges.

The newer RGB or RGBI monitor (the acronym stands for "red, green, blue interface") has become increasingly popular for these more powerful machines. What makes an RGB color monitor different from a color monitor is that it projects each primary video color of red, green, and blue as a separate signal. Consequently, an RGB monitor can do a more precise job of combining those colors to produce other hues, which means you can generally get a sharper image and a greater number of colors than with a composite color monitor.

Actually, there are two types of RGB monitors: digital and analog. The names refer to the sort of signal the monitor expects from the computer or controller card. RGB analog monitors generally produce a greater number of colors than RGB digital monitors...because analog signals allow for greater mixing capabilities.

Practically all microcomputers on the market today can use the RGB color monitor if they are fitted with the proper adapter card. Be aware, however, that some computers and adapters will work only with analog and others only with digital RGB monitors... Fortunately, there are a number of RGB monitors with switches that allow them to be used as either a digital or an analog monitor.

Two other acronyms should be defined here since they are frequently used to describe monitors. The letters TTL stand for Transistor-Transistor Logic and refer to the type of circuits and digital input signal timing used by the monitor. Basically, in the monitor world, the terms TTL and digital are synonymous. The final acronym, encountered most frequently in a discussion of RGB monitors, is NTSC, which stands for National Television System Committee. If a manufacturer uses these letters it simply means that the monitor has met a number of technical standards set down by this committee.

Other Variables

When it comes to other details such as exact screen resolution, monitors vary quite a bit. Some monitor manufacturers provide a dots-per-inch (dpi) measurement to indicate the capability of their monitors. Dpi is a factor to consider when you compare monitors of different sizes. ...Seventy-two dpi is considered to be excellent for graphics.

Another ingredient is the resolution formula is the number of characters and lines that can be displayed. A standard display offers 80 characters across (columns) by 25 lines up and down (rows). However, 20-, 40-, 90-, and 132-column rows are also available on some systems.

Other variables that determine the appearance of screen output include bandwidth speed, frequency scan rate, and refresh rate. Bandwidth, measured in megahertz (millions of cycles per second, abbreviated MHz), indicates how often an electric beam is fired at the inside of the monitor tube. The faster the cycle, or higher the MHz rate, the crisper the image on your monitor. Televisions range from 4 MHz to 20 MHz or more. Some computer monitor manufacturers are now able to generate 30 MHz bandwidth and greater....

With frequency scan and refresh rates, the faster the better.... A rate of 15.75 KHz has been the norm for frequency scan rates until quite recently, but some newer monitors are capable of 20 KHz, 30 KHz, and more. Refresh rates tend to range from 50 Hz to 70 Hz.

Dpi, columns and rows, bandwidth, and scan and refresh rates, like other aspects of computer display, are determined both by the monitor and by the hardware within the computer.

Big and Flat

To help add to the clarity of monitors, manufacturers are now making a bigger monitor display surface. Twelve-inch diagonal measurement used to be considered large, but 13-inch and 14-inch monitors are now becoming more common. That extra inch or two can make a great deal of difference, especially when it comes to graphics and animation. You can even find 18- or 19-inch monitors, ideal for demonstrating something to a group of students.

The hot new monitor at trade shows today is the flat screen monitor... Flat screen monitors are far superior to the standard curved variety, which often bend straight lines, giving them a rough appearance. Also, flat screens don't reflect as much light as curved screens do, and consequently offer less glare.

Assembling a System

The most important criterion in selecting a monitor is compatibility with the computer and controller with which it will be used. Once you know what sort of graphic capabilities you expect from your computer, you will want to select a monitor that can take advantage of those capabilities. Keep in mind, however, that software is the final variable to consider in the picture.

Graphics Standards in the MS-DOS World

It's hard to define a "standard," since each computer and controller card manufacturer seems to offer a slightly different version of CGA, VGA, etc.

MDA (Monochrome Display Adaptor) is used to produce monochrome color — usually green images on a black background although amber on black is also very popular...

CGA (Color graphics Adaptor) produces up to 16 colors and relatively low resolution graphics.

EGA (Enhanced Graphics Adaptor) produces more colors at a higher resolution (particularly noticeable with animation and curved shapes).

VGA (Video Graphics Array) produces multiple colors and very high quality, high resolution graphics and animation.

MCGA (a subset of EGA and VGA graphics introduced by IBM in the PS/2 Model 25 and 30) offers same number of colors available throughout the line, but with less resolution than the higher end PS/2 machines.

ABOUT UNIX

(Editor's Note: "About Unix" first appeared in Acronyms, published by Michigan State University, Volume 19, Number 5, March 27, 1989. This article was then obtained from the Articles Database of CCNEWS, the Electronic Forum for Campus Computing Newsletter Editors, a BITNET-based service of EDUCOM and printed in the University of British Columbia's Newsletter, Campus Computing, Volume 4, Number 5 with a few minor changes. It has also appeared in several other newsletters, and we thought it might be of interest to our UNIX users.)

In 1987, UNIX-based computing systems comprised 8% of all computer shipments and it is projected that by 1990, UNIX-based computing systems will comprise 10% of all computer shipments. UNIX has many names including many you are probably familiar with, such as Ultrix (Digital Equipment Corporation), HP-UX (Hewlett-Packard), A/UX (Apple Computer, Inc.) and AIX (IBM) to name a few. So, what is UNIX and why is it gaining in popularity?

UNIX is a command-line operating system, just like MS-DOS or PC-DOS, which runs on more kinds of computing systems than any other operating system. While many DOS users will agree that DOS commands are sometimes hard to learn and remember, UNIX commands are terse, cryptic and often unintelligible. For example, the command

```
cd fromdir; tar cf-. | (cd todir; tar xfBp)
```

is used to copy files from one directory to another and includes a variety of specific parameters.

In addition, UNIX demands careful attention to details when typing commands because UNIX is case-sensitive — something new to most seasoned computer users. Rarely do upper- and lower-case letters mean the same thing in UNIX. UNIX is also sensitive to spacing — a misplaced space may well lead to giving the operating system the wrong instructions. For a careless user, the cryptic commands can also lead to instructing the operating system to do something other than originally intended.

UNIX is designed around distinct modules. For example, UNIX comes with over 200 utilities which perform a variety of tasks including managing files, administering the system, and managing text and data. Some of these UNIX utilities can be compared with commercial software programs available for microcomputers, like the UNIX utility that enables printing banners and vi, a text editor.

The two basic components of UNIX are the kernel and the shell. The kernel is the core of the operating system. It manages the hardware, like handling communications with peripherals, and performs many other basic tasks, like memory management. Other programs work with the kernel via system calls to accomplish specific computing tasks. The standard system calls (some sixty of them) are the same on every UNIX implementation. However, some implementations of UNIX add calls which in turn make applications that use these added system calls difficult to port from one computing system to another. It is the kernel that must be changed to run on the various hardware brands and configurations.

UNIX shells, which can vary across vendors, are what the end user sees, learns and uses (i.e., the user interface). When the user types commands at the UNIX prompt (often a simple $ — the standard UNIX prompt), the shell passes the commands on to the kernel for execution. The shell can remain constant across varying hardware configurations, thus making it easy for users to move from microcomputer to mainframe and back. UNIX shells often take the form of a simple one-character prompt, but can be elaborate, easy to use menu-driven or graphical interfaces, depending on the particular version of UNIX (e.g., Venix, Xenix, Ultrix).

The UNIX shell offers the capability of writing shell scripts which are much like batch files written for MS-DOS, but can be much more powerful. Other common UNIX shell features include hierarchical file structures (root and subdirectories), the path command, and piping. Because the standard UNIX user interface is

not very friendly, vendors often alter it. X Windows System, a freeware product developed at MIT, is an example of an easier to use UNIX shell.

Advantages

UNIX

- is a multi-user, multi-tasking operating system
- is useful if more than one kind of computing equipment is needed and/or computing equipment is shared among several users
- runs on many different computing systems
- presents the same user interface whether it is running on a microcomputer or a mainframe
- has cost advantages.

Multi-user

A multi-user operating system allows more than one user to access a computer, but it appears that each user has control of the system. In reality, the system resources are being shared by multiple users.

With a multi-user system, many terminals can be connected via serial cables or modems to a computing system running UNIX without the hassles of configuring a local area network (LAN). A computing system running UNIX will also eliminate the need for products from the variety of vendors that is usually necessary to create a LAN.

To use the UNIX computing system, a user must log on and supply a unique password to gain access. Files can be protected against unauthorized access as well.

A UNIX-based computing system allows expansion without purchasing new software, provided multi-user software is purchased in the first place. In this case, a single copy of the software is needed and can be accessed by more than one user simultaneously. Software that allows multiple users will probably be more expensive than a single copy of the same software, but should be less expensive than buying single copies of the software for each user on the system.

Multi-tasking

A multi-tasking operating system allows you to run more than one program at a time. The multi-tasking system enables the user to perform one task and monitor another while a third, completely different task is displayed on the monitor and worked on. For example, a user can send a word processing document to be printed while compiling a computer program and updating a spreadsheet simultaneously. And, UNIX provides real-time capabilities which means a task doesn't necessarily have to wait for its internally designated time to be executed by the CPU. Instead, the CPU processes tasks based on a user-determined set of priorities.

Uniformity

A large number of the UNIX systems are based on the same original core of code, so the systems often

appear similar to end users. UNIX general features are usually the same, but some of the added features vendors choose to include can differ across vendors. Thus, UNIX can present the same user interface whether it is being used on a microcomputer, minicomputer, or mainframe. This uniformity means it is easier to provide support and training for users which also leads to a cost savings.

Portability

Because UNIX runs on many different computers, from microcomputers to minicomputers to mainframes and back again, the software that runs under UNIX is portable. Most is written in C (a high-level programming language) which allows the software to run on different computers simply by recompiling. This is often easier and cheaper than buying new software for every computer a user wants to use the same application on.

Many computer users often begin computing with small systems only to find they have outgrown the system in a short time. With software running under UNIX, the software can be ported to the new computing system and the user can continue without s lot of relearning time.

Popularity

UNIX has become increasingly popular over the past years and cost is a key factor. A simple UNIX-based computing system can use low-cost microcomputers running the UNIX operating system with software licensed for multi-users. To create a computing environment that will support eight to sixteen office users can cost as little as $10,000. Even smaller systems that will support three or four users can be based on an IBM PC/AT-compatible microcomputer and cost far less.

UNIX-based computing systems are becoming more popular in office environments due to the availability of popular software including word processors, spreadsheets and database managers, and UNIX gives the benefits of a LAN with less cost. Another factor in increased popularity is the development of standards such as X Windows System which creates a friendlier, easier to use UNIX environment. In addition, development tools are now proliferating so new software will likely continue to be marketed.

More and more software for UNIX-based computing systems has become available including products for accounting, database management (Ingres, Oracle, Informix FoxBASE Plus), word processing (Microsoft Word, WordPerfect), spreadsheets (SCO Professional), and electronic conferencing (PicoSpan), to name a few.

Disadvantages

UNIX was created in a technical setting and was designed to be used by experienced users. UNIX can be hard to use for novices due to the cryptic commands, sensitivity to upper- and lower-case letters, and specific command syntax spacing. Many people believe that UNIX is well suited to engineers but too complex for office workers.

Often multi-user systems can be slower due to timesharing, especially since UNIX allows individual users to set their own priorities for utilizing system resources. Standard UNIX does not protect the system against one user monopolizing all the resources or tying up the CPU. Standard UNIX is not very secure; only a little more secure than a single-user microcomputer, but many vendors offer versions of UNIX that incorporate elaborate security systems. Many UNIX error conditions are best solved by rebooting the system which poses problems in a multi-user environment.

Training a system administrator is time-consuming and expensive because the system administrator must have a high level of understanding of the intricacies of the UNIX operating system. The system administrator for a multi-user UNIX computing system must learn about using UNIX more in-depth than other end users and be able to do troubleshooting should the system fail. Another task the system administrator needs to learn about is multi-user backups.

Portability does not mean the same as compatibility. In DOS computing environments, compatibility means being able to take an application from one machine and use it on another without any glitches. Portability in the UNIX computing environment means moving software from one system to another is possible, but is not simple. However, porting software can be done and is easier than trying to port operating systems from one computing environment to another. UNIX takes more RAM (Random Access Memory) to run than many desktop computers have available and so is not a viable solution in many cases.

Who Uses UNIX?

Since UNIX is apparently gaining in popularity, who's using it? The list of UNIX users is long and includes a variety of people and working environments. Vendors who are in the business of selling UNIX are concerned with promoting it, of course, and do everything they can to contribute to its popularity. Users who need to use a variety of computing hardware to complete their tasks find UNIX meets those needs. Programmers find UNIX is a good developing environment. And, since UNIX got its beginning exposure in university settings, the people who became familiar with UNIX as college students are rapidly influencing UNIX acceptance in business and industry.

UNIX used to be viewed as an engineer's tool, but has recently been creeping into more and more office environments. UNIX today is typically used on medium-sized computers — those that fill the computing space between microcomputers and mainframes — like minicomputers and workstation-class computers.

USING BUFFERS IN THE vi EDITOR

Rohit Gupta
CSO Systems Consultant

A buffer is simply a location in memory. One way that vi uses buffers is for temporarily holding deleted information. For example, if you wish to undo your last deletion, you use the **undo** (**u**) command. This will place the deleted text back in its original position. However, this must be done before you issue another command because the buffer will hold the deleted information only until another command is issued.

You can use buffers to store information (to be used later in the same editing session) by using the **yank** (**y**) command. Use **y** to yank a word into a buffer and **yy** to yank a line into a buffer. As with most vi commands, you can prefix the command with a number to indicate how many words/lines to yank.

Once your text is 'yanked', issue the **put** (**p**) command. This will place your text immediately following where your cursor is. Use **P** if you wish to place it *before* where your cursor is.

The **yank** and **put** commands are often used together to copy text from one point to another. For example, to copy four lines of text from line 11 to line 24, you would first move to line 11 and type **4yy**. You would then move to line 24 and type **p**. If you wish to move the text (as opposed to copying it), then you would issue **4dd** from line 11.

A little-known vi feature is that the last NINE deleted lines are stored in nine buffers. These buffers are numbered 1, 2, ..., 9. Use the doublequote (") to access a specific buffer. For example, if you wish to recover your third to last deletion, then type **"3p**. The deletion from buffer3 is placed after the cursor.

The vi editor also has 26 named buffers which you can use for copying and moving text. To yank text into a specific buffer, precede the **yank** command with the doublequotes and a letter. The letter indicates which of the 26 buffers to store your data in. For example, if you wanted to store the four lines starting on line 11, then typing **"a4yy** would save all four lines in buffer **a**.

To **put** the contents of buffer **a** at line 24, you would issue **"ap** from line 24. You can **put** the contents any time during your current vi session.

When you first yank to a buffer, you must specify its name in lower case. The next time you yank to that buffer, you can specify the letter in uppercase if you wish to append to that buffer. Specifying it in lower case will overwrite that buffer so *be careful!*

One other nice use of named buffers is to move text between files. But this involves learning how to edit multiple files and travel between files without leaving vi — a topic that we'll save for another day!

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OFF-LINE MAILING LIST

If you wish to be placed on our mailing list, have a change of address, or wish to be deleted, please check the appropriate box and fill in the information below. Please help us keep our mailing list up-to-date by informing us if issues are being sent to someone no longer in your department; fill in the information below and return to us so that his/her name may be removed from the list.

Please check as appropriate:

_____ Please *ADD* my name to the mailing list.

_____ Please *DELETE* my name from the mailing list.

_____ Please *CHANGE* my address (provide old address also).

If you have a campus mailing address:

Name _____

Department _____

Room & Bldg _____ M/C_____

If you do not have a campus mailing address:

Name _____

Address _____

_____

_____

City, State, Zip _____

If you are requesting a change of address, please indicate your old address:

_____

_____

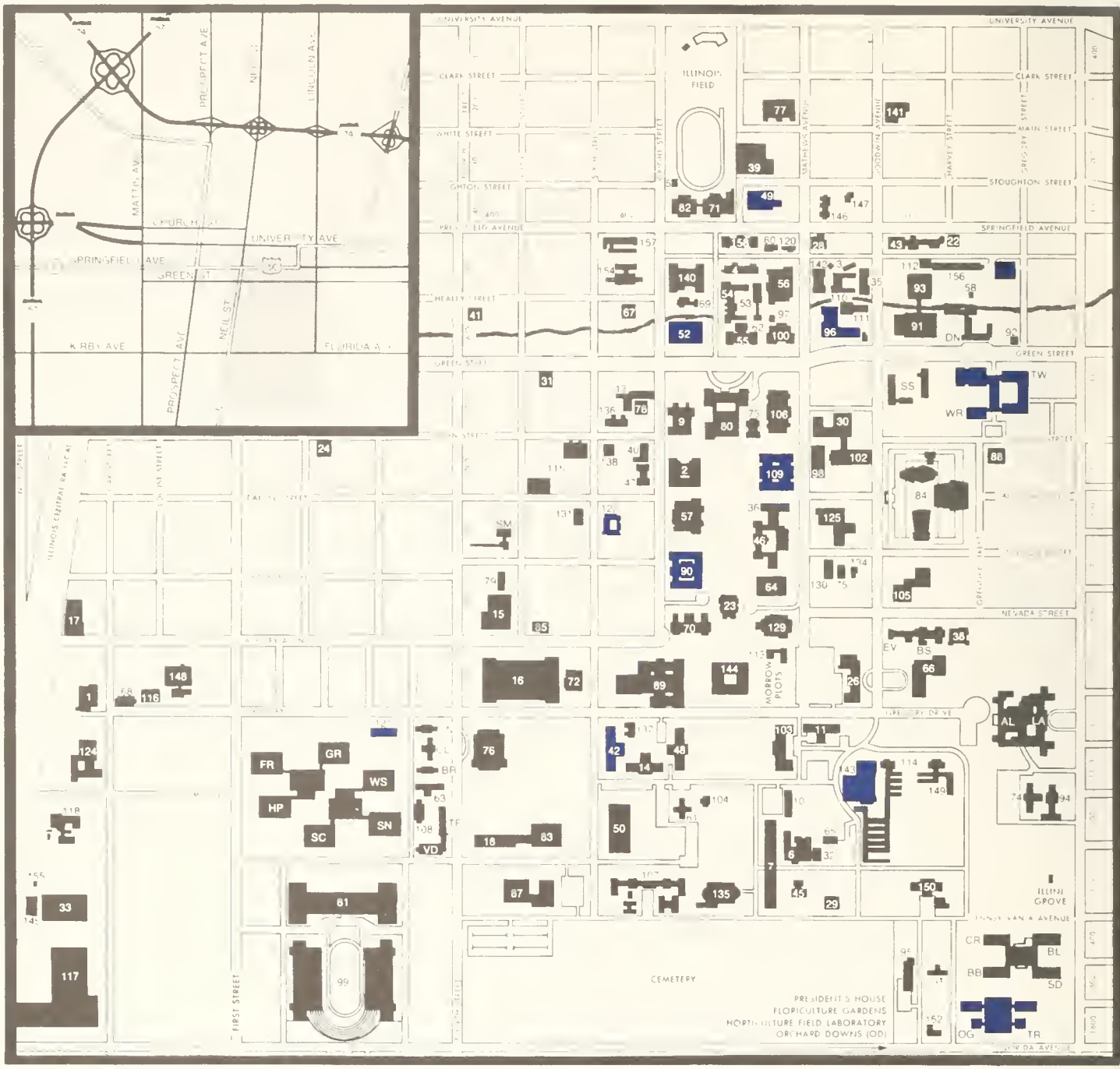
Mail to:

OFF-LINE
Computing Services Office
150 Digital Computer Laboratory (M/C 256)

University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH	
14 Digital Computer Lab 333-7685	Monday-Friday, 6 am - 12 mid. Saturday-Sunday, 8 am - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Thursday, 8 am - 12 mid. Friday-Saturday, 8 am - 10 pm Sunday, 12 noon - 10 pm
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday, 9 am - 12 noon Sunday, Closed
CHEMISTRY	
154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Sunday-Thursday, 12 noon - 12 midnight Friday, 12 noon - 5 pm Saturday, Closed
ELECTRICAL ENGINEERING	
146 Electrical Engineering 333-4936	Monday-Thursday, 8 am - 8 pm Friday, 8 am - 5 pm Saturday, 12 noon - 5 pm Sunday, Closed
ENGLISH BUILDING	
8 English Building 244-0386	Monday-Thursday, 8 am - 12 mid Friday, 8 am - 6 pm Saturday, 12 noon - 6 pm Sunday, 1 pm - 12 mid
FAR	
Florida Avenue Residence Halls 333-2695	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
ISR	
Illinois Street Residence Halls 333-0307	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Friday, 8 am - 12 mid. Saturday-Sunday, 12 noon - 12 midnight
PSYCHOLOGY	
453 Psychology 333-7815	Monday-Friday, 8 am - 5 pm Saturday-Sunday, Closed
SOCIAL SCIENCE	
202 Lincoln Hall 333-0309	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, 12 noon - 5 pm
ILLINI UNION MICROCOMPUTER SITE	
244-7935	Monday-Thursday, 8 am - 12 midnight Friday, 8 am - 10 pm Saturday, 10 am - 10 pm Sunday, 12 noon - 12 midnight
MEDIA CENTER -- UNDERGRADUATE LIBRARY	
333-2667	Monday-Thursday, 8 am - 1 am Friday, 8 am - 12 mid Saturday, 9 am - 12 mid Sunday, 12 noon - 1 am



CSO Sites (marked in blue on map)

42 Commerce West
49 Digital Computer Lab
52 Electrical Engineering
90 Lincoln Hall
96 Mechanical Engineering
109 Chemistry - Noyes Lab
121 CRH Snack Bar
122 Psychology
143 Agriculture - Turner Hall
Illinois Street Residence Halls
Florida Avenue Residence Halls
CSO Office Building
(101 South Gregory)

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off line

iversity of Illinois at Urbana-Champaign

rector: George Badger
itor: Lynn Bilger

nputing Services Office

IMPORTANT TELEPHONE NUMBERS

Departmental Office	150	DCL	333-1637
CSO Support Center	123	DCL	244-1000
User Accounting Office	1208	W. Springfield	333-7752
Documentation Center	1208	W. Springfield	333-9230
Systems Consulting	1208	W. Springfield	333-6133
Statistical Consulting	85	Comm West	333-2170
Text Processing Consulting	212	CSOB*	333-7318
Micrococonsulting Hotline	91	Comm West	244-0608
Microcomputer Resource Center		Federal Room, Illini Union	244-6261
Maintenance & Repair Service	194	DCL	244-1000
Tape Service, Special Plots, Special Printers.	14	DCL	333-8640

*CSOB is the CSO Office Building, located at 101 South Gregory, Urbana.

DIAL-UP NUMBERS

SWITCH (Sytek)	1200	baud	333-4008
	2400	baud	333-4007
LCS (Library)			333-2494

LOCALNET CALL NUMBERS

Note: Certain CSO Sites are on a separate channel of LocalNet than the rest of the campus. These are designated below as **A Sites** and include the following CSO Sites: ME, EE, COMM, LH, and AGRIC. All other LocalNet access areas are designated as **B Sites.**

VMD	CALL 4400	(full-screen mode - A Sites)
	CALL 4500	(full-screen mode - B Sites)
VME	CALL 4600	(A Sites)
	CALL 4700	(B Sites)
uxa (Pyramid 90x)	CALL 66DD	(A Sites)
	CALL 66AA	(B Sites)
uxe (Pyramid 90x)	CALL 12FA	(A Sites)
	CALL 12EE	(B Sites)
uxf (Sequent)	CALL 66CC	(A Sites)
	CALL 66BB	(B Sites)
uxg (Gould)	CALL 1000	(B Sites only)
uxh (Convex)	CALL 1850	(A Sites)
	CALL 1800	(B Sites
LCS (Library)	CALL 6400	

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Articles, suggestions, comments and/or subscription requests may be sent to: Lynn Bilger, Off-Line Editor, 150 Digital Computer Lab, University of Illinois, 1304 W. Springfield, Urbana, IL 61801 (telephone: (217) 333-6236; e-mail: bilger@ux1.cso.uiuc.edu).

NEW CSO ASSISTANT DIRECTOR FOR USER SERVICES

George Badger
Director, CSO

CSO is pleased to announce that Greg Kesner has been appointed as the Assistant Director for User Services. While we initially expected to fill the position from outside, and had over 100 applicants from elsewhere, the search committee put Greg at the top of its list.

The top three outsiders, along with Greg, were interviewed prior to this selection. The search committee consisted of Duncan Lawrie (Computer Science and CSRD) Richard Dennis (College of Education and CSO Liaison Committee), Stan Kerr and Bob Penka (CSO). They identified Greg's outstanding acceptance by our users, his energy and his ideas in putting him ahead of other candidates.

With Greg's appointment, we can move ahead aggressively on plans for user services for all faculty and students. Please give him your full support in getting these services into place.

I would like to thank Stan Kerr for serving as Acting Assistant Director of User Services during the search.

Our readers might be interested in reading a little of Greg's history with CSO that qualifies him for this position.

During Greg's years as a student at the University of Illinois, he worked in various capacities for CSO. He worked as a machine room and routing room operator, often on the "graveyard" shift. He was student manager of the Commerce West site and then planned, set up, and student-managed the ISR and FAR sites in the mid-70's.

After receiving his degree, he worked for the Agronomy Department until December 1981, and then returned to CSO. From then until 1985, he served as a CSO Statistical Consultant, taught short courses, and often wrote for *Off-Line*. He also served as campus coordinator for SAS and CMS services during this period.

Greg spent six months (January to July 1985) at CBN University in Virginia. During this time he helped develop computer support for research and teaching, developed and supervised a microcomputer laboratory, and helped develop training courses. He returned to the U of I in July 1985.

From July 1985 to August 1989, he planned, established, and managed a remote IBM mainframe facility at Commerce West, established and coordinated the UIUC CMS user group, assisted with the Campus PC Fair, established and coordinated the campus PC User's group, and was active in providing academic user services.

From August of 1989 to present, Greg was responsible for the general oversight of all CSO public computer sites on the UIUC campus offering network-access to mainframe and microcomputer services.

Since 1981, Greg has been involved in nearly all aspects of user services.

Greg's own statement about this new opportunity:

"I feel this next decade of computing on the UIUC campus will be an exciting one, challenging us to find new ways to provide quality user services to students, faculty, and staff in a distributed computing environment that relies increasingly on network connectivity and services. This will be a challenge not only to CSO, but to many departmental units, and the campus as a whole. Creative and innovative strategies for cooperation will be crucial to our reaching this goal together for the sake of our educational and research efforts.

"I'm very interested in fostering dialogues on these issues with concerned faculty and students. Together, I believe we will develop innovative methods for effectively using computer and network technologies, hopefully avoiding unnecessary duplications of effort. I believe coordination, leading to a campus-wide strategy for effective computer user training and consulting, will best serve the needs of both students and faculty.

"There's an exciting and promising future for our networked campus computer user services. I'm very glad to be a part of it. No doubt, budgetary constraints will motivate us to find creative collaborative solutions. I'm looking forward to working cooperatively with my colleagues on this campus to fulfill that promise."

CHANGES IN CSO USER SERVICES

Greg Kesner
Assistant Director User Services

Computing Services Office is revising the structure and presentation of its User Services operation. We would like to tell our customers what we are doing with it and what they can expect to see in the future. If you have comments about the changes described below, or suggestions for us, please send them either by electronic mail to CSO@VMD.CSO.UIUC.EDU, or by campus mail to:

Greg Kesner
User Services
Computing Services Office
150 DCL
MC-256

The changes in User Services described below began with the start of the Spring 1990 semester, and will continue over the course of the next few semesters. CSO will keep the campus community informed about these changes through *Off-Line* and various online forums such as notesfiles (on UNIX) and HEARYE (on IBM/VMD).

Following studies by several advisory committees which evaluated our consulting services last year, we are revising the structure of our consulting operation to encourage more participation from software experts and internal consultants in many departments of the University. It has become clear, with the explosion of hardware and software for microcomputers, that there is far too much variety of activity in this area for CSO to attempt to be the sole source of consulting help and

support for the campus. What we can hope to do, however, is help bring together a network of people who are experts (or knowledgeable users) in many of these areas, and assist the diffusion of their expertise throughout the campus. There is a great deal of expertise in many areas spread around the campus; we want to open paths of communication that will broaden the audience of this expertise.

To accomplish such a goal, CSO User Services needs to restructure and redirect its energies. The building of a network of consultants necessarily entails less focus on our traditional forms of walk-in and phone-in consulting, so we will be providing somewhat less of those services. To offset this change, we are developing some formal policies for electronic mail consulting and for appointment consulting, and we plan to bring all our consulting operations together in one place, to strengthen the central consulting which still remains and to foster the development of the Microcomputer Resource Center toward a more general computing resources center.

Below are some details on the various aspects of this plan:

1. A Network of Consultants

   A program is being constructed to encourage communication and mutual support among experts and consultants in the various departments. we plan to offer these individuals some benefits, such as free training, electronic mail access, and an inside line on CSO services, and hopes, in return, to foster communication and cooperation between consultants and experts in different departments. The goal is to help them become better consultants in their own departments, and then to add their energies together to produce a strong network of support for the varied computing activities on campus. They can also perform a vital service by keeping us in closer touch with the needs and activities of the campus.

   If you are interested in participating in this program, please call me at 244-0540, or send electronic mail to kesner@uiuc.edu. A general meeting of interested parties is being planned for late February.

2. Stronger Consulting Services at CSO Sites

   The attendants at our various sites have frequently been called upon to perform consulting jobs, even when they have been quite unprepared to do so. We are beginning to train our attendants to handle many of the day-to-day questions that arise at the sites. This additional training is expected to largely benefit the student users of CSO sites, but should also benefit our other users who run into minor problems in their work at the sites.

3. A Central Site for Consulting and Information Services

   The CSO Systems, Statistical and Microcomputer consulting services will be brought together with the Microcomputer Resource Center, and CSO Accounting and Distribution, at a central site. This will provide a single site for all walk-in and phone-in consulting, although the hours will be restructured to permit more time for the non-centralized forms of consulting, such as e-mail and appointment consulting. Currently, several sites are still under consideration.

4. Systems and Statistical Consulting Have Merged

   To prepare for this larger consolidation, we have brought together the Systems and Statistical

consulting services at 1208 W. Springfield Avenue, Urbana, for the Spring semester. The Statistical consulting office at Commerce West has been closed. (The Microcomputing Consulting Office will remain at Commerce West for the Spring.) We are keeping the separate phones for Systems (333-6133) and Statistical (333-2170) consulting, at least until the final consolidation.

There will be fewer total hours of office consulting this Spring. A Statistical consultant will be on duty every afternoon (Mon-Fri, 1pm-5pm) and on two mornings (Mon & Thurs, 9am-11am) [this is down from 30 hours to 24 hours]. One Systems consultant will be on duty every day (Mon-Fri) from 9am-11am and 1pm-5pm; a second Systems consultant will be on duty those mornings (Tues, Wed & Fri, 9am-11am) that a Statistical consultant is not on duty [this is down from 50 hours to 36 hours].

This move will result in some inconvenience, we realize, but we see some real benefits to it as well. Statistical and Systems consultants will be able to work better together to help users with problems that require the talents of both groups. The proximity to Accounting will mean that a single office visit can serve to handle both software problems and system accounting problems. Finally, users should be less subject to the 'you called the wrong office' syndrome.

5. Appointment Consulting

Since CSO is reducing the hours for its walk-in and phone-in consulting, we will instead handle some questions by setting up appointments. We are developing a means whereby a user may call in and request an appointment with a particular consultant, or whereby a consultant on the phone line can set up an appointment to deal with a question that is unsuitable (too complicated or too time consuming) for handling on the phone.

We plan to have the framework for appointment consulting in place soon. Our hope is to use this as a vehicle to track a major part of our formal consultative efforts, thereby providing us data for periodic evaluation of the quality of this service.

6. Electronic Mail Consulting

Many people have used electronic mail for consulting purposes for a long time, simply by sending notes to consultants whose addresses are known to them. Such e-mail consulting has never been formally announced to the campus so all our customers could make use of this service. We are now developing a program whereby people may submit a question by electronic mail and the question will then be guaranteed a response within some fixed, reasonable period of time. This program will be put into place during the Spring 1990 semester.

As you can see, the current restructuring attempts to reallocate our limited departmental resources in response to the increasingly distributed computing environment on our campus. Yet our response, along with that of many of your departments, is only a partial solution to the evolving needs of the campus. Some user service issues transcend the departmental level, requiring dialogue among various departments and colleges to determine efficient, productive strategies that better serve us all. We welcome your comments, ideas, and collaboration as we examine and seek to enhance UIUC campus computer user services in the '90s.

CSO OPENS NEW MICROCOMPUTER SITE

On January 17, CSO opened a new microcomputer site, called the Oregon Site, located on the corner of Oregon and Lincoln in Urbana. The building, which formerly housed the Campus Center - Church of Christ, was purchased by the University and has undergone extensive remodeling to make it suitable for computer use. Two rooms of the building have been equipped and are open to UIUC students andfaculty; future plans call for remodeling and equipping the main room as a possible site for professors to use for classes.

The hours at the Oregon Site are:

12:00 noon - 12:00 midnight	Sunday through Thursday
12:00 noon - 10:00 pm	Friday and Saturday

The telephone number is 244-7513.

The "MAC" room includes the following equipment:

20 Macintosh SE/30s with Hard Disks (capable of reading IBM 3.5" disks)

1 Apple LaserWriter II

3 Apple ImageWriter IIs

and has the following software:

Cricket Graph	Mac Draw II	MacWrite II
Hypercard	MacPaint 2.0	Microsoft Word 4.0
Kermit 0.9(40)	SuperPaint	Microsoft Excel 2.2

The "IBM" room includes the following equipment:

10 IBM PS/2 Model 50Zs, each with Hard Disks, VGA Graphics, and Color Monitor. Also, 3 external 360K 5.25" drives.

2 Epson Fx-850 (IBM-compatible) printers

1 Hewlett Packard LaserJet

and has the following software;

As-Easy-As	Lotus 2.01S
DOS 4.0	Turbo Pascal 4.0
Kermit 2.32	Word Perfect 5.1

CSO hopes that the addition of this new microcomputer site will help meet the growing needs for microcomputing on the campus. We invite you to stop by the site to become acquainted with its features. We also welcome your suggestions on how to enhance the services at the site.

WDEF OUTBREAK ON CAMPUS

The U of I has been hit by yet another annoying Macintosh virus — this particular one is called WDEF, and it spreads quite rapidly. The WDEF virus lives inside the desktop file of an infected disk, and can be spread simply by inserting an infected disk into a Mac and opening it to view the contents!

CSO first became aware of the WDEF virus on the morning of December 11, when it was found by a site operator at Comm West using Version 1.4 of Disinfectant, a free virus scanning utility provided by John Norstad of Northwestern University.

In response to the latest virus attack, CSO has purchased update subscriptions for the Virex software we have been using to protect the lab sites. If anyone is interested in obtaining Virex for a departmental lab or other high-risk site, please call Dave Long at 244-0731. We are distributing the software at cost, which is currently $25 per machine, plus $12.50 per machine for one year's subscription service.

For personal machines we recommend using Disinfectant 1.6 to scan all disks, using a system monitor such as Vaccine or GateKeeper to prevent infection by earlier viruses, and using GateKeeper Aid to prevent infection by WDEF. All of these programs are available in the Micro Resource Center in the Illini Union, and on CSO's uxe in the **/micro/mac/virus** directory. If you have questions about Macintosh viruses or anti-virus software, you can call the MRC at 244-6264 where the staff will be glad to help you.

LANGUAGE SYSTEMS FORTRAN FOR THE MACINTOSH

Language Systems has a Fortran compiler for the Macintosh which is reputed to be good. CSO would like to get some copies of the compiler at a discount, if there is sufficient interest in it. The compiler requires MPW (Macintosh Programmers Workshop) and is sold for $345 with it or $250 without it. For $1000 CSO can acquire a '10 pack' which includes one set of manuals and 10 compilers with MPW; additional manuals are $50 each for Fortran and $50 each for MPW. If CSO purchases a 10 pack plus Fortran and MPW manuals for each copy, the net cost to CSO will be $1000 + 9*50 + 9*50 = $1900. We could thus sell a compiler with MPW plus manuals for $190 (plus some overhead charges).

If this deal is of interest to you, please call Stan Kerr at 333-5217, or send him e-mail at stankerr@uiuc.edu. If you know of Macintosh users who are interested in Fortran, please pass this information to them.

COMPUTER FAIR TO BE HELD IN THE FALL

The Annual Computer Fair will not be held this spring. Instead, it will be held in the fall on September 26-27 in the Assembly Hall. More information will be forthcoming.

REVISED CMS MANUAL AVAILABLE

CSO has revised its *Introduction to CMS at UIUC*. The new version of the manual is called *CMS at UIUC*, and is available at the CSO Distribution Center, 1208 W. Springfield, Urbana and at the Illini Union Bookstore on Wright Street. The cost of the manual is $2.50.

WHAT'S NEW IN THE MRC

Bi-Shen Chuang, Nancy Boddy, and Mark Zinzow
Microcomputer Resource Center

Note from Mark Zinzow: Bi-Shen Chuang, who has done a tremendous job as librarian, left the MRC last December. We miss her, and wish to thank her for all the helpful work she did in the MRC. Please welcome our new librarian, Nancy Boddy, who is already working very hard at organizing our resources for the future.

The Microcomputer Resource Center's collection of commercial software, anti-viral software, vendor newsletters, product literature, and magazines continues to grow. The following lists will give you an idea of the new materials we have received recently. Readers are invited to use these resources at the MRC (located in the basement of the Illini Union).

The MRC has recently acquired a Mac-IIci for patron and staff use.

New Commercial Software

Title	*Publisher*	*Application*
DOS Help! (covers DOS 4.0 and previous versions)	Flambeaux Software	DOS Tutorial
Critique	Timp Software	Grammar/Style checker
Tempo II	Affinity Microsystems, Ltd.	Macintosh automation

New Anti-Viral Software

Disinfectant 1.6 (MAC) is now available at the MRC or by anonymous ftp from **~ftp/mac/virus/disinfectant1.6/** on uxe.

VIRUSCAN/SCANRES/NETSCAN

The University of Illinois at Urbana-Champaign has a site license to distribute this diskette and any program updates at no charge to any computer users within UIUC for a two-year period. (This also means the registration fee is no longer required.) Please check the McAfee Associates vendor file at the MRC for details and the actual license.

At the time of this writing, version 57 is current (SCANV57.ARC via anonymous ftp from uxe in pc/virus).

The Jerusalem B virus for the IBM PC has been spreading again lately, so please use this software to check your disks! UNVIR6.ARC from the same directory is an excellent tool for disinfecting this virus.

Commercial Updates

WordPerfect 5.1 Printer Disks & Bitstream Fonts

WordPerfect 5.1 printer files PRT51-09, 10, 11 are installed on the mrcnext computer.

The MRC has received the new release of Bitstream Fonts (3.0), which includes documentation (30 copies) and six diskettes. Users must bring their own diskettes and proof of purchase of WordPerfect 5.0 or 5.1 to the MRC to copy the software, as well as to get a copy of the documentation.

WordPerfect 5.1 upgrade packages are available from the CSO Accounting and Distribution Office at 1208 W. Springfield, Urbana.

HyperCard 1.2.5 -- To be used in conjunction with Macintosh OS 6.0.4, which has been released from Apple Computer, Inc.

The Macintosh OS 6.0.4 release must be used in conjunction with HyperCard 1.2.5. However, users do not need to upgrade the operating system unless they are using HyperCard 1.2.5 or are using a CPU that requires the 6.0.4 version of the operating system.

SmartForm Designer 1.1 -- added features include: Import of Encapsulated PostScript (EPS) defined files; new **CaseOf** function used for matching tables of values, and additional date formats such as dd/mm/yy and Julian.

SmartForm Assistant 1.1 -- added features let you: Include multiple forms per file; collect separate forms and form sets into one form set; enter search criteria to locate a form within a form set; export form sets to SYLK, DIF, DBF, and WKS; and insert PICT and EPS disk files directly into entry fields.

Evaluation Disks

Teach Yourself WordPerfect 5.0 -- a free evaluation disk of ATI's computer-based training program.

Da Vinci eMail -- a DOS evaluation disk by Da Vinci Systems Corporation.

Special Offers

Free Catalog of Hewlett Packard Fonts

Hewlett Packard is offering The HP MasterType Library Encyclopedia -- a free catalog of their fonts, font cartridges, and scalable type faces. Please call 1-800-545-5478 to get your own copy. Check the Hewlett Packard vendor file at the MRC to examine this catalog. A copy of the HP LaserJet Printer MasterType Library Reference Guide is also available in the vendor file.

ButtonWare has combined features of PC-File:db and PC-File+ to create the new PC-File version

5.0. It's faster, friendlier, and more powerful, and until March 31, 1990, an upgrade will cost only $39.95 for registered PC-File users.

WISC-WARE

Wisc-Ware has software for Arts and Humanities, Business, Computer Science, Graphics, Image Processing, Health Science, Mathematics, Statistics, Social Sciences, and many other academic areas. The MRC has received the latest (fourteenth) distribution of Wisc-Ware, which contains new packages and updates for previously published packages. For information on ordering software, please see "How to Order Software from Wisc-Ware" at the front of the Wisc-Ware catalog (ask for the new December, 1989 edition).

We last printed information in *Off-Line* on the twelfth update, so here is the summary information for both the thirteenth and fourteenth updates comprising 65 new packages, as well as eight updates to previous packages.

New Packages (an asterisk indicates that the package requires Microsoft Windows 2.03):

Update 13

Pkg# Package Name	*Author(s)*	*School*
060 Double Auction Market	G. Duke	Minnesota
156 *TEACH:Spanish	Abercrombie, et al	Pennsylvania
157 *TEACH:Linguistics	Abercrombie, et al	Pennsylvania
166 *HedgeSim	Meyer & Hudson	Illinois
181 PVA	Ray & Oliver	Valdosta State
182 DESC	Ray & Oliver	Valdosta State
185 *Plant Root Model	Wilkinson, et al	Illinois
187 *TUNINGS	I. Popovic	Yale
208 *IMMEX	R. Stevens	UCLA
209 ASYMPLOT	V. Hajivassillou	Yale
213 *MacroEconomic Theory	S. Goldman	Berkeley
215 *Coupled Rate Eqns	J. Rasmussen	Berkeley
222 Dynamics & Vibrations	T. Caughey	Cal-Tech
223 Multislice	C. Ahn	Cal-Tech
224 Animated Quantum Mech	Filippone & Campbell	Cal-Tech
225 Fieldplot	Edwards & Pillsbury	Dartmouth
226 *Partial Diff Eq Solver	Stenstrom & Taghavi	UCLA
227 *Activated Sludge	Neethling, et al	UCLA
229 *DATABNK	P. Rao	Washington
230 *SKY	J. Hudson	Berkeley
232 MDSP	D. Keefe	Washington
233 *AGS/Windows	Mackenzie & Bassett	Cornell
234 *RealTree	H. Horn	Princeton
235 metaview	Edwards & Franklin	Dartmouth
236 graf	Earickson & Haas	Dartmouth
237 POPGEN	Holmes & Kidd	Yale

239 *POWER	D. Whetten	Illinois
240 COORD	J. Roberts	Cal-Tech
241 *M-Sequence Generator	Kumar & Sutter	USC
242 Educating Special Learners	G.P. Cartwright	UC/Davis
243 Simulated Eval Ex	Alkin & Robinson	UCLA
245 *CED	D. Musliner	Princeton
246 *NET	D. Musliner	Princeton
247 FABRIC	Bowen & King	Ripon
248 *PERC	Long & Wool	Illinois
251 Regress	J. Klotz	Wisconsin
258 Chaos	J. Sprott	Wisconsin

Update 14

Pkg# Package Name	*Author(s)*	*School*
144 PLTPDF	V. Hajivassillou	Yale
146 *Image	Momany & Hackert	Texas-Austin
175 *Shaper	Anderson, et al	Minnesota
191 AstroLabs	ASDG	Maryland
231 AstroPoint II	D. Ferguson	Baldwin-Wallace
238 *MRPEST	Weitekamp, et al	Cal-Tech
249 La Maitrise	S. Ferraro	Michigan
250 Economics PC	N. Wilson	Johnson County
253 *VOptix	C. Ahrikencheikh	Wisconsin
254 *SYMple	Marleau & Klein	Wisconsin
255 *MacroPolicy	J. Veitch	USC
256 MacroTutor	J. Veitch	USC
261 PRAP	Campbell & Lee	Cal-Tech
262 Difeq	E. Horton	Dartmouth
263 PDE Solver	A. Edwards	Dartmouth
264 Northcalc	Edwards & Rick	Dartmouth
265 Physiological Test D/B	P. Spannbauer	Hudson Valley
266 Cyclic Voltametry Sim	Judkins & Seymour	Texas-Austin
267 *Fiscal Impact Mapper	Heikkila & Sutter	USC
268 *E_Field	C. Sutter	USC
269 RIGDBOD	C. Peck	Cal-Tech
270 Pattern Maker	Pickrell & Schoelzel	UCLA
271 Police Deadly Force	J. Domm	Oakland CC
272 SIS	K. Burger	Columbus State
273 Stereo SketchPad	G. Young	Penn State
274 Macroeconomic Policy	P. Labinski	Rochester CC
277 Temp Deciduous Forest	E. Odum	Santa Fe CC
279 Emer Medical English	M. Coates	El Paso CC
280 Stone Tools	D. O'Neil	Palomar
281 Prehistoric Tools	D. O'Neil	Palomar
282 Kinship	D. O'Neil	Palomar
285 The Right Way	B. Gold	CC of Baltimore

287 Dental Hygiene Boards	C. Brickle	Normandale CC
290 Plaque Control	Greenwood & McClintock	Montgomery CCC

ANNOUNCING MS-DOS KERMIT 3.0

Editor's Note: The following excerpts have been taken from the on-line **Info-Kermit Digest**, which is edited by Christine M. Gianone, the Manager of Kermit Development and Distribution at Columbia. Requests for addition to or deletion from the Info-Kermit subscriber list should be sent to Info-Kermit-Request@WATSUN.CC.COLUMBIA.EDU or to KERMIT@CUVMA.BITNET.

At the University of Illinois, Kermit may be obtained from the MRC (Microcomputer Resource Center), located in the basement of the Illini Union (244-6261). Kermit files also may be obtained over networks. On the Internetwork, use ftp to log in to host WATSUN.CC.COLUMBIA.EDU, a SUN-4/280 running UNIX (SUNOS 4.0), IP host number 128.59.39.2. Login as user anonymous (note, lower case), any password, and GET or MGET (MULTIPLE GET) the desired files. The Kermit files are in directories kermit/a, kermit/b, kermit/c, kermit/d, and kermit/e. Test versions are in kermit/test. You can also get Kermit files over the BITNET/EARN network; to get started send a message with text HELP to KERMSRV, the Kermit file server, at host CUVMA. For detailed instructions, read the file kermit/a/aanetw.hlp (AANETW.HLP on KERMSRV).

This is to announce the final release of MS-DOS Kermit 3.0, first announced for beta-testing in Info-Kermit V11 #2. The major new features of 3.0 are:

- DEC VT320 terminal emulation.
- Many additions to Tektronix graphics emulation, including features from the DEC VT340 (color, sixel, but not REGIS) and HDS2000/3000, suitable for use with mainframe versions of WordPerfect 4.2 and 5.0.
- Saving of graphics screens on disk in TIFF 5.0 format, suitable for import into PC Paint, Ventura Publisher, Pagemaker, WordPerfect 5.0, etc.
- True half duplex operation with RTS/CTS hardware handshake.
- International character set support for both terminal emulation and file transfer.
- Sliding window packet protocol.

Problems reported and fixed during the testing period include:

- Incorrect Attribute packet character set announcers.
- Problems when receiving badly formatted packets 1800-2000 bytes in length.
- Incorrect receive packet length after SET WINDOWS command.
- Incorrect crosshair cursor report in Tektronix mode.
- Automatic return to wrong text terminal type after Tektronix emulation.
- Several incorrect special terminal character translations.
- Incorrect operation of SET TRANSLATE INPUT.

- Terminal lockup after failure to automatically enter 132-column mode.
- Insufficient maximum allowed number of ANSI escape sequence parameters.
- Nonfunctional 3COM BAPI network support.
- Case sensitivity of ARGC, VERSION, and other special numeric variables.
- Various minor escape sequence misinterpretations.

The non-IBM-compatible versions of MS-DOS Kermit 3.0 are not done yet. Some (DEC Rainbow, Heath/Zenith-100) are currently in preparation and will be announced when they are ready.

Our deepest thanks to Professor Joe R. Doupnik of Utah State University (JRD@USU.BITNET) for the year of hard work he put in on this release, and for his continuing devotion to the Kermit effort over the years. Thanks also the many others who contributed to 3.0, particularly Terry Kennedy, Jack Bryans, John Junod, Bert Tyler, Mikko Laanti, Fred Richter, Hirofumi Fujii, Gary Stebbins, Drew Derbyshire, and Paul Whitmer. And for the accompanying utilities, thanks to Mark Buda, Terry Kennedy, Phil Benchoff, Mark Zinzow, R. Brooks Van Horn, and Frank da Cruz.

MS-DOS Kermit 3.0 Questions and Answers

Here are the questions that came up most frequently during the MS-DOS Kermit 3.0 beta testing period:

Q I tried using the Latin-1 (or DEC-MCS) terminal character set, but I didn't get any special characters on my screen, only incorrect ASCII characters where the special characters should be.

A To see 8-bit text characters, you need an 8-bit no-parity connection to the host, and you must tell MS-DOS Kermit to SET DISPLAY 8 (7 is the default). In the 7-bit environment, you can still use an 8-bit character set if your host sends shift-in/shift-out codes (but see MSKERM.BWR). Otherwise you must use one of Kermit's 7-bit "national replacement character sets" (Italian, Norwegian, etc), in which brackets, vertical bars, etc, are replaced by national characters.

Q If none of Kermit's built-in terminal character is suitable for my language or computing environment, what can I do?

A Put a lot of SET KEY and SET TRANSLATE INPUT commands in your MSKERMIT.INI file. These commands override Kermit's built-in translations of outbound and inbound characters, respectively. Also remember to SET TRANSLATE INPUT ON. Using these mechanisms, you can construct an entirely new terminal character set.

Q Word-11 or other DEC PDP-11 or VAX/VMS applications do not seem to work right with 3.0. Screens are fractured, etc.

A Kermit's new VT320 terminal emulation is noticed DEC by operating systems like VMS 5.0 or later, causing them to send 8-bit control sequences which are ignored by MS-DOS Kermit unless you SET DISPLAY 8. SET DISPLAY 7 is still the default, for

compatibility with earlier releases.

Q If Kermit does VT340 graphics, how come my SAS graphs don't come out right if I tell SAS that I have a VT340?

A Kermit implements many VT340 graphics features, including colors and sixels, but not DEC's REGIS graphics language, which is what SAS uses. There are no current plans to implement REGIS, which is huge. The VT340 features which are supported by Kermit can be used to best advantage with host-resident versions of WordPerfect (4.2 and 5.0) on VAX/VMS or UNIX.

Q Why do I have to SET FILE TYPE TEXT and SET FILE TYPE BINARY with 3.0 when I didn't have to do this in previous versions?

A During file transfer, version 3.0 does two things that previous versions didn't do: text file character set conversion, and conveying and using the file type given in the file attribute packet. If you want to approximate the old mode of operation, in which you did not have to (and indeed could not) give SET FILE TYPE commands, you can SET TRANSFER CHARACTER-SET TRANSPARENT (this is the default anyway) and SET ATTRIBUTE TYPE OFF.

New MS-DOS Kermit Book Available

Christine M. Gianone, who is the editor of the Info-Kermit Digest, Manager of Kermit Development and Distribution at Columbia, designer of recent extensions to the Kermit protocol, author of recent pieces in Data Communications Magazine, PC Week, etc etc, has written a book on MS-DOS Kermit 3.0: *Using MS-DOS Kermit*, Digital Press, Bedford, MA (1990).

This book includes MS-DOS Kermit 3.0 for the IBM PC family on a 5.25-inch PC diskette. Printing should be complete by early- to mid-February. The short beta-testing period for 3.0 was due to the printing and binding deadline for this book+disk package.

Chris's book is quite different from the earlier MS-DOS Kermit manuals. It is tutorial in nature, geared mostly towards the typical non-computer-expert PC user. It includes illustrated step-by-step instructions for program installation and hooking up your cables and modems, an introduction to MS-DOS, and chapters devoted to major Kermit topics including terminal emulation, file transfer, server mode, international character sets, script programming, features for people with disabilities, etc. Every concept is illustrated by examples. A complete command reference is included, along with tables of PC keyboard scan codes, Kermit keyboard verbs, and PC character sets, plus glossary, index, etc. The detailed technical appendices (escape sequences, etc) found in the previous manuals are omitted; this information is (or will be) available in other forms. *Using MS-DOS Kermit* is an excellent introduction to MS-DOS Kermit 3.0 and its new features, and the command summaries and tables also make it a valuable reference.

The new book+disk package provides higher-quality documentation to a wider audience. Its tutorial approach will reduce the consulting burden on the organizational help desk. The book will give Kermit software a more "serious" and professional image in the corporate and government sectors, and in the press. Ultimately, the result should be increased popularity for Kermit, new

inroads into the mass market, and some badly needed revenue for Kermit Development and Distribution at Columbia to keep the Kermit project alive. See the file MSKERM.HLP for availability and ordering information.

Of course, the Kermit software itself remains free, copyable, and sharable, with source code openly available. Online documentation is available too, including:

MSKERM.HLP - Expanded summary of MS-DOS Kermit 3.0 features and commands.
MSKERM.BWR - The "beware" file, listing limitations, bugs, workarounds.
MSR300.UPD - Description of the new features in 3.0.
MSKERM.ED - Detailed edit history since 2.32/A.
MSVIBM.VT - Description of terminal emulator escape sequences, keys, etc.
MSVIBM.TEK - Description of graphics emulation features and escape sequences.
MSKERM.DOC - The 2.32/A manual (long). Also .MSS and .PS versions.
MS*.ASM,.H - The source code! (very long).

All these files are new except for the 2.32/A manual (which still applies, since 3.0 is backwards compatible with 2.32/A). In addition, there are numerous supporting files (contributed script programs, key mapping files for various applications, notes and hints found in the Info-Kermit digest, etc). Those who don't have access to the book should be able to find whatever information they need in these files, and of course can tailor or combine these documents to produce whatever local documentation they need.

Announcing Microsoft Windows Kermit 4.11

From Bill Hall of Santa Clara, CA, comes version 4.11 of Microsoft Windows Kermit (WINKER). This program works on any PC that has Microsoft Windows 2.0 or greater. It performs Heath-19 terminal emulation, does Kermit file transfer, and two copies of it can be going at once, one on each COM port.

Version 4.11 is a minor update to the previous release, 4.10 of September 1989. The major change is the inclusion of a comm driver (with Microsoft's permission) that fixes an Xon/Xoff bug in the standard driver that is distributed with Windows 2.10 and 2.11. The source (Microsoft C 5.1) and .BOO files are in the "A" area of Kermit distribution as win*.*. Binaries (for those who have access to binary FTP) are in kermit/bin/win*.*. The .BOO files may be "un-BOO'd" using the MSBPCT utilities, also found in the Kermit distribution "A" area.

Networks Department

Kermit includes high-level interfaces for a variety of local area network protocols (Netbios, DECnet, NASI/NACS, etc), but it does not include device drivers for specific network boards and it does not execute the TCP/IP or Telnet protocols. Kermit is Kermit and can't really afford (in terms of space and complexity) to do this.

What is needed here is a public-domain (or copyright but free, like Kermit) program which executes Telnet (like NCSA) over TCP/IP, allows drivers for various Ethernet boards to be plugged in, and can be run as a TSR interceptor for Bios Int 14H, the communication port interrupt. Such a

program would work through Kermit's SET PORT BIOS1 command. Several such programs already exist, but they are commercial products. There is some possibility that a future release of NCSA Telnet itself will provide the desired Bios hook.

We'd like to start collecting information about how to set up MS-DOS Kermit 3.0 to work with various kinds of PC LANs (or vice versa!), similar to the information IN MSKERM.HLP about Novell networks. If you have hints about setting up and using 3.0 with DECnet-DOS, 3COM, Net-bios, Starlan, etc, please send them in and we'll start collecting them into a file called MSVIBM.NET (no such file yet). Particulars about which programs and versions are used, how to run them and in what order and with what options, etc, would be very useful.

New Graphics Documentation

A file listing all of MS-DOS Kermit 3.0's graphics escape sequences is now available as kermit/a/msvibm.tek on watsun.cc.columbia.edu for Internet FTP access, and as MSVIBM.TEK on CUVMA for BITNET access via KERMSRV. As readers will note, there are many strange and powerful new capabilities here that graphics-oriented applications can take advantage of, once educated to them.

Kermit does not emulate one particular kind of graphics terminal, but rather combines the features of the Tektronix 4010 and 4014 monochrome graphics terminals with selected features of the HDS 2000/3000 and DEC VT340 terminals, including color control, sixel graphics, line and area patterns, rectangle fill, and more.

So far, very few host programs know how to take full advantage of this mix of capabilities. In fact, the only one we know of is host-resident WordPerfect version 4.2 or 5.0. SAS Institute has been furnished with the new Kermit graphics specifications, and they will consider adding support to SAS/Graph in a new release -- thanks to all of you who called them about this, but please don't call them any more, they got the message!

Experimentation is needed. Try telling your graphics application that you have a Tek 4010, a Tek 4014, an HDS 2000, an HDS 3000, and a VT340, and compare the results. Let us know which terminal type produces the best results for which application (SAS/Graph, SPSS, S, DISSPLA/TELL-A-GRAPH, etc). Note once again that VT340 will usually mean REGIS graphics to the host, but Kermit does not support VT340 REGIS graphics, only sixel.

Better still, if your graphics application allows it, use the information in MSVIBM.TEK to build a new driver, say "MSKERMIT300" (or encourage your package vendor -- except SAS -- to do so), so that maximum advantage can be taken of Kermit's new features. If you succeed in doing this for a particular package, please send us the information and we'll add it to the MSVIBM.TEK file.

A second new file is also available: MSGTIF.DOC. This is the Aldus/Microsoft memo describing TIFF 5.0, the format used by MS-DOS Kermit 3.0 when dumping graphics images to disk. Note: MS-DOS Kermit cannot read TIFF files, it can only write them. To our knowledge, Kermit's TIFF format is supposed to be compatible with WordPerfect 5.0, Pagemaker, Ventura Publisher, PC Paint, Gem Paint, and Publishers Paintbrush. Users of these packages are encouraged to send reports, hints, etc, and we'd also like to hear about any other uses for, or packages that go with,

Kermit's TIFF files.

Packages that definitely do not import Kermit's TIFF files include Microsoft Windows Paint 2.03 (even though TIFF is partially a Microsoft invention) and the MIT X graphics conversion utilities PGM, PBM, etc (these only have support for an earlier version of TIFF).

SITE LICENSE OBTAINED FOR IMSL LIBRARY FOR PC'S

Stan Kerr
CSO Systems Consultant

CSO has now obtained a site license for the IMSL Subroutine Libraries for PC's. (For those unfamiliar with the IMSL libraries, they are a collection of hundreds of routines for numerical and statistical computation. They are very widely used and respected.) Our license permits us to sell up to 100 copies of the libraries at a considerable discount. Both popular compilers for the IBM PC are supported: Microsoft Fortran and IBM Professional Fortran. The library is supplied in object form only.

The Library consists of three components, sold separately at the following prices:

MATH/LIBRARY : $60 ; numerical routines
STAT/LIBRARY : $60 ; statistical routines
SFUN/LIBRARY : $15 ; special functions

These prices do not include manuals, which are sold separately at the following prices:

MATH/LIBRARY manual: $15
STAT/LIBRARY manual: $15
SFUN/LIBRARY manual: $ 7

Purchasers of the libraries must sign a license agreement, which permits perpetual use of the software, as long as the purchaser remains associated with the University; upon leaving the University, the purchaser agrees to return the software. There will be a modest yearly fee to obtain updates for the software; the fee has not been negotiated yet for next year, but is expected to be reasonable.

The IMSL Library can be obtained at the CSO Accounting and Distribution Office, 1208 W. Springfield, Urbana (phone 333-6760). If you have questions about the Library or licensing it, please talk with Stan Kerr (phone 333-5217, e-mail address stankerr@uiuc.edu).

CSO is quite interested in obtaining licenses for the workstation and Macintosh versions of the IMSL Libraries; we are eager to hear of your interest in these packages, as a certain level of commitment is necessary before they can be acquired.

SUN WORKSTATION SUPPORT SERVICES

CSO has announced a new support program for SUN Microsystems workstations. This program is in response to the ever growing SUN workstation population on this campus and the high cost associated with obtaining services from SUN Microsystems. We estimate that there are over 600 SUN workstations currently installed on the Champaign-Urbana campus, many without any maintenance program, and more are being acquired every week. We believe that we can provide excellent service at a much reduced price, allowing departments to purchase maintenance contracts.

In creating this support program, CSO has tried to keep costs to a minimum yet provide what we believe to be the most necessary services to the user community at a single point of contact. We also feel that the group providing these services will serve as a foundation for future expansion to other workstations or services. We have identified the following areas as essential in a base level support initiative:

1. General system consulting
2. Hardware maintenance support
3. Software management (special licensing arrangements)

These items are discussed further in the rest of this article.

GENERAL SYSTEM CONSULTING -- Contact: Steven Miller (333-2048) or Randy Cetin (244-3224).

General system consulting includes a wide variety of topics. Its initial focus will be "system" issues rather than user application consulting. The service is intended for system owners, system administrators, or those who oversee the use and management of SUN workstations. System consulting includes:

1. hardware/software installation information
2. hardware/software configuration information
3. 3rd party hardware information
4. system administration issues (including NFS YP, etc.)
5. pre-purchase system configuration
6. system trouble shooting

HARDWARE MAINTENANCE -- Contact: Larry Crotser (333-5190)

CSO will offer hardware maintenance contracts on four of the most popular SUN workstations: SUN 3/50, SUN 3/60, SUN 3/80, SUN 4/60 (SPARCstation1). Maintenance contracts will include a same day response and 48-hour repair turn-around time. Repairs will be performed "on site" whenever possible; however, CSO will provide "free" pick up and delivery of equipment which requires "in shop" repairs. Contracts will be available for other SUN workstations, including servers, as this becomes practical (see fee schedule for contract prices).

SOFTWARE MANAGEMENT -- Contact: Steven Miller (333-2048) or Randy Cetin (244-3224)

When dealing with a large quantity of computer systems it is more cost efficient to have a central entity acquire and manage software licenses. We have begun to do this with SUN software and have licenses for the following SUN products:

1. SUN OS *upgrade* license (68020, 68030, Sparc, Sparc4c)
2. SUN Fortran *upgrade* license (68020, 68030, Sparc, Sparc4c)
3. SUN PCNFS *upgrade* license

Note: Installation and upgrade services are available for SUN software (see fee schedule).

We will also pursue licensing agreements for other software products which are commonly used, or which many users have an interest in. We will continue to keep abreast of the software available in the public domain and periodically publish lists of software which we feel may be useful to others.

FEE SCHEDULE

SUN Licenses (68020, 68030, Sparc, Sparc4c)

OS upgrade license	$100.00/workstation
Fortran upgrade license	no charge
PCNFS upgrade license	no charge

Note: OS licenses require current Right to Use (RTU) license before workstation can be added to upgrade license. Upgrade fees are yearly fees.

SUN OS Installation/Setup

stand-alone system	$100.00/workstation
server & associated clients	$175.00/server
other "on-site" services	$35.00/hour

Note: Install/upgrade service includes basic system setup; additional system customizing, tuning, file system restores and trouble shooting will be charged at the hourly service rate of $35.00/hour.

SUN Hardware Maintenance Contracts

SUN Product	*(diskless)*	*(w/disk)*
3/50	$240.00/yr	$480.00/yr
3/60	$403.00/yr	$537.00/yr
3/80	$336.00/yr	$528.00/yr
4/60	$230.00/yr	$460.00/yr

Note: Add $192.00 for systems with color monitors. All maintenance prices quoted above are 40% of SUN prices.

OLD SPSS RELEASE 9 TO BE DISCONTINUED

Joan Mills
CSO Statistical Consultant

SPSS Release 9 on the IBM CMS VMD system is finally being phased out. This product has not been supported (or updated) by its vendor, SPSS, Inc., since its replacement, SPSSX, came out about 1983. CSO has continued to make SPSS Release 9 on the IBM system available because it does not involve any extra licensing cost — we can run this product if we license the newest SPSSX. Also SPSS Release 9 was a good transition tool for those converting CDC Cyber SPSS programs. The Cyber did not have SPSSX. The Cyber has been gone over a year now.

SPSS, Inc. has hinted that future releases of SPSSX will simply be called SPSS. Since the use of SPSS Release 9 on VMD has decreased substantially, CSO has decided it is time to remove SPSS Release 9 from the system.

To provide advance warning to remaining users of Release 9, the removal process will be in three phases: (1) a warning will go into LINKTO very soon that SPSS Release 9 will be discontinued; (2) the LINKTO for SPSS Release 9 will be dropped about mid-summer (after that, you must see a CSO Statistical Consultant for information on how to access Release 9); (3) the product will be removed completely from VMD in the Fall.

Please note that this change does not affect our support of SPSSX, currently at Release 3.1. In fact we expect the arrival of SPSSX Release 4 any day. When SPSSX Release 4 is loaded it will be accessed as LINKTO SPSSX(F. There will also be an announcement in this medium.

KINETICS FASTPATH FOR SALE

We have a Kinetics FastPath 3 for sale. The FastPath is in perfect working condition and can serve as a gateway between an Appletalk network and the campus wide network.

Pros:

- Appletalk / Ethernet gateway
- Works with NCSA Telnet
- Kinetics will give you $1000 for it toward buying a FastPath 4
- Large installed base
- Very reasonable price

Caveats:

- Couple of years old
- Updated to FastPath 3
- Power supply replaced once

If you are interested in the FastPath, please contact John Kemp at 333-6881 or via e-mail at **kemp@uiatma.atmos.uiuc.edu**, or phone Karen Garrelts at 333-2046.

SYTEK 16 PORT MUX FOR SALE

We have a Sytek LocalNet 20/220 multiplexer which we are no longer using. It is in perfect working condition, and has 16 RS-232 connections with room for more.

The LocalNet and its 8 2-port cards were purchased in January 1987 for a total price of $6,480. No reasonable offer will be refused!

If you are interested in the Sytek, please contact John Kemp at 333-6881 or via e-mail at **kemp@uiatma.atmos.uiuc.edu**, or phone Karen Garrelts at 333-2046.

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New Rental Disk Facility (RDF) Available on VMD ....p.35, Vol. 17, No. 2, Mar/Apr/May 1989
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Old SPSS Release 9 to be Discontinued ....p.20, Vol. 18, No. 1, Jan/Feb 1990

OFF-LINE MAILING LIST

If you wish to be placed on our mailing list, have a change of address, or wish to be deleted, please check the appropriate box and fill in the information below. Please help us keep our mailing list up-to-date by informing us if issues are being sent to someone no longer in your department; fill in the information below and return to us so that his/her name may be removed from the list.

Please check as appropriate:

_____ Please *ADD* my name to the mailing list.

_____ Please *DELETE* my name from the mailing list.

_____ Please *CHANGE* my address (provide old address also).

If you have a campus mailing address:

Name _____

Department _____

Room & Bldg _____ M/C_____

If you do not have a campus mailing address:

Name _____

Address _____

_____

_____

City, State, Zip_____

If you are requesting a change of address, please indicate your old address:

_____

_____

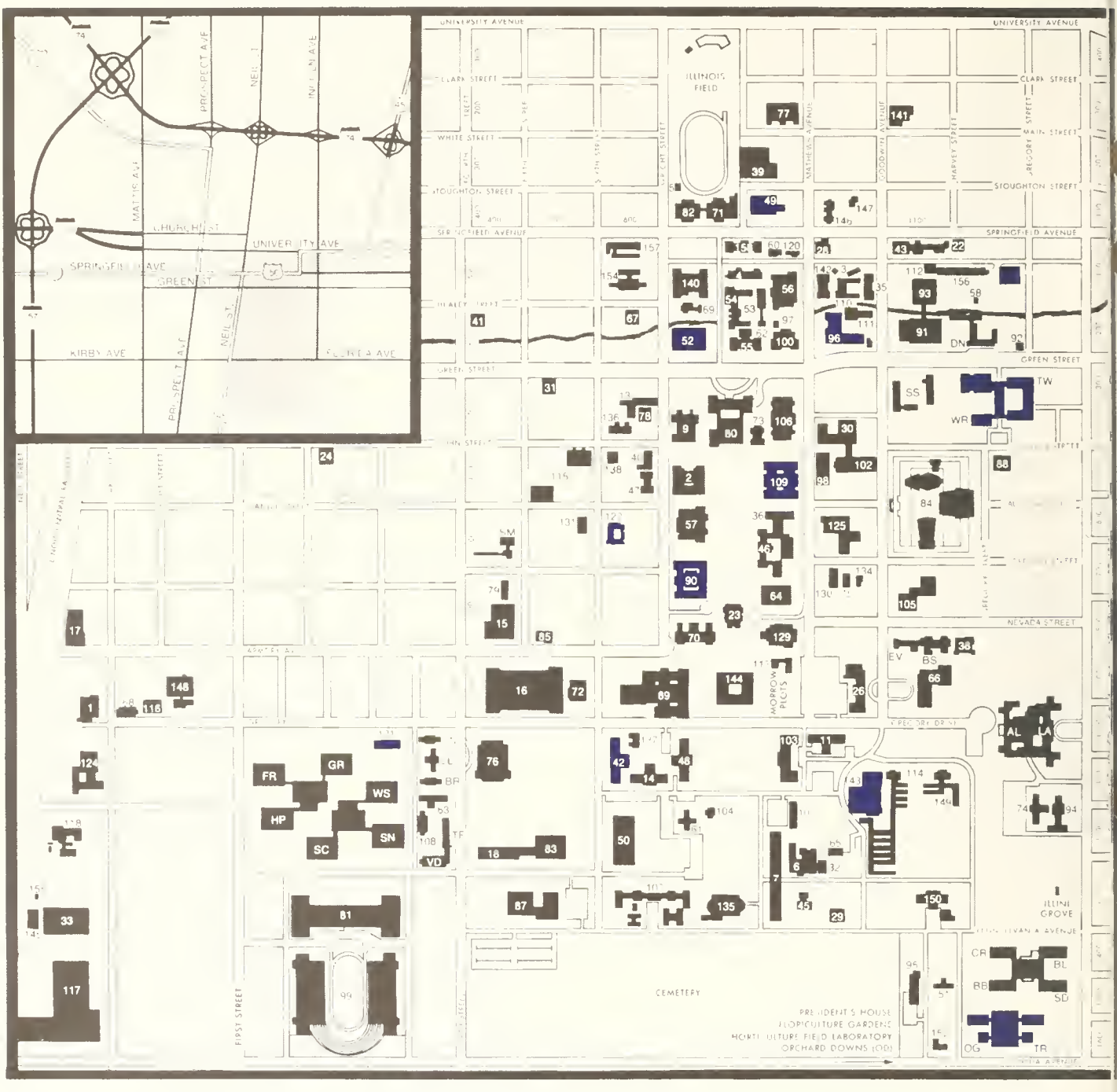
Mail to:

OFF-LINE
Computing Services Office
150 Digital Computer Laboratory (M/C 256)

University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH	
14 Digital Computer Lab 333-7685	Monday-Friday, 6 am - 12 mid. Saturday-Sunday, 8 am - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Thursday, 8 am - 12 mid. Friday-Saturday, 8 am - 10 pm Sunday, 12 noon - 10 pm
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, Closed
CHEMISTRY	
154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Sunday-Thursday, 12 noon - 12 midnight Friday, 12 noon - 5 pm Saturday, Closed
ELECTRICAL ENGINEERING	
146 Everitt Lab 333-4936	Monday-Thursday, 8 am - 8 pm Friday, 8 am - 5 pm Saturday, 12 noon - 5 pm Sunday, Closed
ENGLISH BUILDING	
8 English Building 244-0386	Monday-Thursday, 8 am - 12 mid Friday, 8 am - 6 pm Saturday, 12 noon - 6 pm Sunday, 1 pm - 12 mid
FAR	
Florida Avenue Residence Halls 333-2695	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
ISR	
Illinois Street Residence Halls 333-0307	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Friday, 8 am - 12 mid. Saturday-Sunday, 12 noon - 12 midnight
PSYCHOLOGY	
453 Psychology 333-7815	Monday-Friday, 8 am - 5 pm Saturday-Sunday, Closed
SOCIAL SCIENCE	
202 Lincoln Hall 333-0309	Monday-Thursday, 8:30 am - 9 pm Friday, 8:30 am - 5 pm Saturday-Sunday, 12 noon - 5 pm
ILLINI UNION MICROCOMPUTER SITE	
244-7935	Monday-Thursday, 8 am - 12 midnight Friday, 8 am - 10 pm Saturday, 10 am - 10 pm Sunday, 12 noon - 12 midnight
MEDIA CENTER -- UNDERGRADUATE LIBRARY	
333-2667	Monday-Thursday, 8 am - 1 am Friday, 8 am - 12 mid Saturday, 9 am - 12 mid Sunday, 12 noon - 1 am



CSO Sites (marked in blue on map)

42 Commerce West
49 Digital Computer Lab
52 Electrical Engineering
90 Lincoln Hall
96 Mechanical Engineering
109 Chemistry - Noyes Lab
121 CRH Snack Bar
122 Psychology
143 Agriculture - Turner Hall
Illinois Street Residence Halls
Florida Avenue Residence Halls
CSO Office Building
(101 South Gregory)

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off line

niversity of Illinois at Urbana-Champaign

irector: George Badger
ditor: Lynn Bilger

CSO

omputing Services Office

IMPORTANT TELEPHONE NUMBERS

Departmental Office	1120	DCL	333-1637
CSO Support Center	123	DCL	244-1000
User Accounting Office	1208	W. Springfield	333-7752
Documentation Center	1208	W. Springfield	333-9230
Systems Consulting	1208	W. Springfield	333-6133
Statistical Consulting	1208	W. Springfield	333-2170
Text Processing Consulting	212	CSOB*	333-7318
Micrococonsulting Hotline	91	Comm West	244-0608
Microcomputer Resource Center		Federal Room, Illini Union	244-6261
Maintenance & Repair Service	194	DCL	244-1000
Tape Service, Special Plots, Special Printers.	94	DCL	333-8640

*CSOB is the CSO Office Building, located at 101 South Gregory, Urbana.

DIAL-UP NUMBERS

Terminal Server	up to 2400	baud	333-4000
SWITCH (Sytek)	1200	baud	333-4008
	2400	baud	333-4007
LCS (Library)			333-2494

LOCALNET CALL NUMBERS

VMD	CALL 4500
uxa	CALL 66AA
ux1	CALL 1600
uxh	CALL 1800
LCS (Library)	CALL 6400

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OFF-LINE is published every two months by the Computing Services Office at the University of Illinois, Urbana-Champaign. Unless otherwise indicated, permission to reprint is freely granted, provided that the author, if named, and the Computing Services Office (CSO) are credited. Mention of manufacturer and trade names in this newsletter does not imply endorsement.

Articles, suggestions, comments and/or subscription requests may be sent to: Lynn Bilger, Off-Line Editor, 150 Digital Computer Lab, University of Illinois, 1304 W. Springfield, Urbana, IL 61801 (telephone: (217) 333-6236; e-mail: bilger@ux1.cso.uiuc.edu).

IBM's Higher Educational Software Consortium (HESC)

CSO has purchased the right to distribute an extensive list of software called the Higher Education Software Consortium (HESC) from IBM. Under this agreement, CSO has the right to distribute, at greatly reduced cost, the software listed below for the RISC System/6000 line. HESC also provides the user with access to future updates for the supported packages, which will be made available through CSO.

For more information on this program, contact Steven Miller of CSO's Workstation Support Group at 333-2048 or email to smiller@dragon.cso.uiuc.edu.

For users who elect to join HESC at the same time they purchase a RISC System/6000, the membership fee will be $150.00 per machine, with an annual renewal fee of $150.00 per machine. Note that some of the software packages have an additional licensing fee. These additional fees are payable to CSO, who will forward them to IBM. For those users who have already purchased a RISC System/6000, but now would like to join HESC, the membership fee is $500.00 per machine with an annual renewal fee of $150.00 per machine

CSO will have a copy of some manuals for evaluation. To purchase documentation, call the IBM local office (351-2300) with a document number or call the IBM local office and ask to speak with an AIX systems engineer.

EXAMPLE 1: If you purchase a RISC System/6000, join HESC, and wish to use X, Fortran, and graPHIGS (tm), the fees would be as follows:

Membership fee for HESC	$150.00
Licensing fee for AIX	$300.00
Licensing fee for X	$ 80.00
Fortran	NC
graPHIGS (tm)	NC
Total	$530.00 (plus documentation costs)

This figure represents a savings of $1912.50 compared to the best educational discounted price.

EXAMPLE 2: You purchase a RISC System/6000 and AIX at the list price, and do **not** join HESC. If in the future you decide to join HESC and run Fortran, X, and graPHIGS (tm) on your machine, the fees would be as follows:

Membership fee for HESC	$500.00
Licensing fee for X	$ 80.00
Fortran	NC
graPHIGS (tm)	NC
Total	$580.00 (plus documentation costs)

This figure represents a savings of $1075.00 compared to the list price.

Following is a list of software supported under the HESC agreement for the RISC System/6000 line. For your information some of the list prices, discounted for educational environments and excluding documentation, are in parenthesis after some of the items.

Program Number	Program Name	List	HESC
5601-230	AIX Personal graPHIGS (tm) Programming Interface/6000	(500.00)	N/C
5601-248	AIX XL FORTRAN Compiler/6000	(840.00)	N/C
5601-251	AIX XL Pascal Run Time Environment/6000		N/C
5601-253	AIX Network Management/6000(e)		100.00
5601-254	AIX XL Pascal Compiler/6000	(756.00)	N/C
5601-256	AIX 3278/79 Emulation/6000	(331.00)	N/C
5601-257	AIXwindows (tm) Environment/6000(b)	(315.00)	80.00
5601-258	AIX VS COBOL Compiler/6000(a)	(1260.00)	300.00
5601-259	AIX VS COBOL Run Time Environment/6000(e)		100.00
5601-260	AIX 3270 Host Connection Program/6000	(693.00)	N/C
5601-263	AIX Personal Computer Simulator/6000(d)	(315.00)	30.00
5601-266	AIX XL FORTRAN Run Time Environment/6000		N/C
5601-287	AIX System Network Architecture Services/6000		N/C
5601-384	AIX NextStep (1) Environment/6000(b)	(315.00)	80.00
5601-386	AIX Computer Graphics Interface Toolkit/6000(c)	(756.00)	150.00
5601-457	AIX Xstation Manager/6000(b)	(315.00 + 50.00 per Xstation)	80.00
5621-013	AIX Optimization Subroutine Library/6000	(2520.00)	N/C
5706-291	AIX Ada/6000		N/C
5706-294	AIX Ada Run Time Environment/6000		
5756-030	AIX Version 3 for RISC System/6000	(787.50)	300.00

(tm) Trademark of NeXT, Incorporated.

CSO To Expand SUN Hardware Maintenance Program

In January of this year CSO launched a SUN Microsystems hardware self-maintenance plan for the campus. The plan's objectives were simple, offer quality, affordable, same day hardware maintenance for SUN workstations. The initial maintenance plan was offered only for the desktop workstations, the SUN 3/50, 3/60, 3/80, and the new Sparcstation1 (4/60). As of May 1, 1990 CSO will expand it's coverage to all the SUN 3/4 workstations, including the larger server class machines.

If you wish to sign up for CSO's SUN hardware maintenance or have any questions regarding CSO's maintenance plan please contact Larry Crotser at:

Phone:	(217)-333-5190
E-mail:	crotser@ux1.cso.uiuc.edu
Mail:	University of Illinois 150 DCL 1304 W. Springfield Ave. Urbana Illinois 61801

Disinfectant 1.8

Disinfectant 1.8 is a new release of a free Macintosh virus detection and repair utility.

Version 1.8 recognizes the new MDEF virus. Thanks to Tom Young for reporting this new virus and sending us a copy.

The MDEF Virus

The MDEF virus was first discovered at Cornell University in May, 1990. It is also sometimes called the "Garfield" virus.

MDEF infects both applications and the System file. It does not infect document files. The Finder and DA Handler also usually become infected. The System file is infected as soon as an infected application is run. Other applications become infected as soon as they are run on an infected system.

As with all of the other known Macintosh viruses, MDEF does not intentionally attempt to do any damage, but it is harmful anyway. It does not beep, display messages or pictures, or do anything other than spread from file to file.

For technical reasons, the MDEF virus only spreads on some kinds of Macintoshes. It causes the Mac 128K and the 512K to crash. It spreads successfully on the 512KE, Plus, SE, SE/30, II, IIx, and IIcx. On the Mac IIci and IIfx, it spreads from infected applications to uninfected system files, but it does not spread from infected systems to uninfected applications. We have not yet had the opportunity to test the virus on the Mac Portable.

The MDEF virus has an unfortunate reaction with Vaccine. On Vaccine-protected systems, if an infected application is run, Vaccine properly notifies the user of the attack, but it blocks only part of the attempt by the virus to infect the System file. The virus cannot spread from the System file to applications in this situation, but the System file is damaged, and menus no longer work properly. When you press on a menu title in the menu bar, no menu pops down. Menus continue to work properly only in infected applications, they do not work properly in the Finder or in uninfected applications. Disinfectant will properly detect and repair these kinds of damaged System files.

GateKeeper is totally effective against the MDEF virus. It successfully blocks the attempt by the virus to infect the System file. The System file is unchanged. Menus do not work properly in infected applications, but they do work properly in the Finder and in uninfected applications. This menu behavior is the exact opposite of what happens on Vaccine-protected systems.

The MDEF virus is named after the type of resource it uses to infect files. MDEF resources are a normal part of the Macintosh system, so you should not become alarmed if you see them with ResEdit or some other tool.

The MDEF and WDEF viruses have similar names, but they are completely different and should not be confused with each other.

Other Changes in Version 1.8

A change was made in Disinfectant 1.7 which caused problems with GateKeeper for a few people. The change made it necessary to grant Disinfectant 1.7 GateKeeper privileges even when just

scanning for viruses. Previous versions required privileges only when repairing infected files. This problem has been fixed in version 1.8, GateKeeper privileges are now once again required only when repairing files.

A change was made to the way that auto-floppy scanning works. Disinfectant first examines the internal floppy drive and the external floppy drive (if you have one) to see if they both contain inserted disks. If they both do, Disinfectant ejects one of them, then asks you to insert the first floppy to be scanned. Disinfectant will no longer eject a CD-ROM or any other kind of non-floppy removable disk in this situation.

How to Get a Copy of Version 1.8

A copy of Disinfectant 1.8 has been placed on ux1 in the /pub/mac/virus/disinfectant1.8 directory; it's also available from acns.nwu.edu, as stated in the announcement below.

Disinfectant 1.8 is available via anonymous FTP from site acns.nwu.edu [129.105.49.1]. It is also available on sumex-aim, rascal, comp.binaries.mac, CompuServe, Genie, Delphi, BIX, MacNet, America Online, Calvacom, AppleLink, and other popular sources for free and shareware software.

Macinstosh users who do not have access to bulletin boards, networks, user groups, or online services may obtain a copy of Disinfectant by sending a self-addressed stamped envelope and an 800K floppy disk to the author at the address below.

John Norstad
Academic Computing and Network Services
Northwestern University
2129 Sheridan Road
Evanston, IL 60208

WHAT'S NEW IN THE MRC

Mark Zinzow and Nancy Boddy, MRC

As usual, we are continually working to build our collections and update the resources available to our patrons. Here are the highlights of what we've been working with since the last issue of Off-Line.

The MRC has received the (first) 1990 edition of the Datapro Master Index. The index is designed to help locate information on the subject being researched, by looking up the subject, product name, vendor, key word or phrase. And if for some reason we don't have a particular report, they will send the needed report for a small fee. This book should make locating information in DataPro a lot easier. It is kept behind the staff desk in the MRC's Reference section.

VSHIELD and FSHIELD

The following is reprinted from a notesfile entry from John McAfee.

We have made two changes to the SCAN shareware product line that I hope will improve the virus protection capabilities and respond to the numerous change requests we have received from the user base.

The first is a redesign of SCANRES and (please bear with us) a name change from SCANRES to VSHIELD. The new VSHIELD contains all of the functionality of SCANRES, plus it is now able to prevent all known boot sector and partition table infections as well as all known file infections. This capability was added because of the increasing prevalence of boot sector viruses such as Stoned, Ping Pong, etc. SCANRES was able to identify such infections immediately after they occurred, but could not prevent them. VSHIELD prevents such infections from occurring, providing of course that VSHIELD is in memory. Thus, soft reboots (Ctrl-Alt-Del's) will no longer transfer a boot virus infection providing VSHIELD has been loaded. If the system is powered down before rebooting from a floppy, then VSHIELD is no longer running and the infection can occur. In this case, VSHIELD, like SCANRES, will flag the infection immediately upon the next boot-up from the hard disk. Other changes include error level settings identical to SCAN, a de-install function, and improved reporting when an infected file or diskette is blocked from entering the system. These changes have been requested by users for some time, and we regret the delay in implementing them. Beta testing by a few dozen fearless people has uncovered no false alarms or other system hindrances from VSHIELD.

The second change is an added new program designed specifically for software manufacturers, developers and distributors to protect their software products prior to distribution. The program, FSHIELD, attaches a small module to existing executable code that will monitor for infection similar to innoculation programs, but in addition it automatically removes the virus and repairs the host program if the host program becomes infected. Files shielded in this fashion cannot contract or pass an infection and cannot be damaged by a virus attachment.

The shield module detects and removes known and unknown viruses, including "stealth"-type viruses, and adds approximately 2K to the size of the host program.

WORDPERFECT

February Disk of the Month — This disk contains many useful macros and style sheets, as well as several new graphic images.

April Disk of the Month — The April disk contains: a 5.1 table for listing tax deductions, PlanPerfect spreadsheets, a macro for multiple files, powerful style libraries and macros, and a macro that allows printing on both sides of the paper.

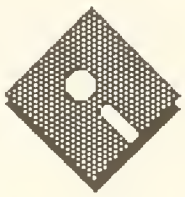
SITE LICENSES

CERL Level 1 Protocol Program for MS-DOS and Level 1 Protocol Program for Apple Macintosh, by the University of Illinois Board of Trustees. These are CERL's new MS-DOS and Macintosh PLATO Pad software which may be freely copied by University students, faculty, and staff. It includes TCP/IP Connection information.

NEW COMMERCIAL SOFTWARE

OmniSpell for the Macintosh
Caere Corporation. OmniSpell is an advanced100,000 word spellchecker designed specifically to work with OmniPage. It enhances the recognition power of OmniPage through its ability to correct optical character recognition errors based on letter shape (for example: where a g has been replaced by a q)

PC Storyboard (version 1.1)
IBM Corporation. A presentation-quality graphics system that consists of Picture Taker, Picture Maker, Story Teller, and Story Editor. This is a second copy so it can be checked out of the Center.



DEMO DISKS

AccuText Evaluation Kit
Xerox Imaging Systems, Inc. The evaluation kit provides an opportunity to test out AccuText's capabilities, which include: text recognition and formatting, image scanning, previewing, and help features. (It is filed by Vendor)

DataPerfect
A demo disk that describes the filing system, report generator, and data organizer available with the software package.

PlanPerfect
A demo disk that describes this spreadsheet and its capabilities with integrated graphics, data base, file management, and printing.

Definitions Plus!
Word Science Corporation The Office Edition of the electronic "American Heritage Dictionary." It contains the complete "Definitions Plus!" programs for words beginning with the letters B and M. The demo disk can be freely copied

Lotus Freelance Plus
Lotus Development Corporation. For graphics and business communication.

Lotus HAL
Lotus Development Corporation. A productivity tool.

Saber LAN Administration
Saber Software. It is a demo disk that includes information/features of products offered by Saber Software.

TRIAL ISSUES

Journal of Object-Oriented Programming
It is the May/June 1990 issue and it features articles on Object-Drawing, C++, ACT++, and OODBMS.

MAGAZINES

Embedded Systems Programming
This magazine includes information on multitasking, virtual machines, and embedded design. Please ask at the staff desk to view the current issues.

Netware Technical Journal
The magazine's focus is on the Novell Network and this issue emphasizes development tools. Please ask at staff desk to view current issues.

The ***PC Resource Special Issue*** magazine and program disk havearrived. This special issue is entitled "Tips, Tools, and Techniques" and contains information on hardware, DOS, programming, and applications.

Software Digest Ratings Report just came out with a Special Report that lists the advantages and disadvantages of DOS vs. OS/2. The individual programs included in the report are:

HyperAccess/5
Lotus 1-2-3 Release 3
Microsoft Excel
Microsoft Word
Oracle
PageMaker
Paradox
Q&A
R:Base, and WordPerfect

The April 1990 issue of ***Software Digest Ratings Report*** contains a report that rates advanced word processing programs such as:

Ami Professional
Microsoft Word

WordPerfect
WordStar
OfficeWriter, and MultiMate.

The May 1990 issue of ***Software Digest Ratings Report*** is an evaluation and comparison of LAN Operating Systems. Included in the report are: detailed information on each program, specifications, product summaries, screen shots, selected performance results, and bar graphs showing how the programs compare in various catagories. The programs evaluated in the report are:

SFT Netware (Novell)
NetWare/386 (Novell)
Vines/386 (Banyan), and
3+Open LAN Manager Advanced (3Com).

LEARNING AIDS

Patrons will be able to check out the MRC's new training programs/learning aids. The following packages have a 3-day loan period and follow the standard MRC Checkout procedure:

Advanced Training for the Lotus 1-2-3 Program — Cdex Corporation
Advanced Training for WordPerfect 5.0 — FlipTrack Learning Systems
The Basics (Mac Plus w/hard drive) — Personal Training Systems
Beginning PageMaker — Personal Training Systems
The Expert Series: dBase II/dbase II Plus — Cdex Corporation
Harvard Graphics — FlipTrack Learning Systems
How to Operate the Macintosh II — Flip Track Learning Systems
How to Use Lotus 1-2-3 — FlipTrack Learning Systems
How to Use PageMaker-Mac 3.0 — FlipTrack Learning Systems
How to Use the IBM AT with PC DOS — Cedex Corporation
How to Use WordPerfect 5.0 — FlipTrack Learning Systems
Teach Yourself Lotus 1-2-3 — ATI
Teach Yourself WordPerfect 4.2 — ATI
Training for the IBM PC DO — Cdex Corporation
Using Ms-DOS on a Hard Disk — FlipTrack Learning Systems

WISC-WARE

Since Wisc-Ware is rarely used, CSO has decided to no longer subscribe. The software listed below will be the final updates/new versions of software that the MRC will receive.

We have received the 15th distribution of software from Wisc-Ware. This contains 32 new packages, 3 updates, and an update to the Wisc-Ware database, SHOW. The updates are for packages #14 (Philo from Illinois), #133 (Minimat from Wisconsin), and #168 (SuperPower from Illinois).

214 *CACTOS; by Bigling & Wensel; Berkeley
257 CDF; by J. Klotz; Wisconsin
276 Resampling Stats; by J. Simon ; Maryland
278 Viral Biology; by M. delCastillo; Elizabehtown
283 SNOWBALL; by W. Costanzo; Westchester
284 BEANS; by Reeder & Marvel; Edmonds
286 Enzymatic Action; by C. Hahn; Bristol
288 Computer Electronics; by L. Krehbiel; Johnson County
289 Data Sets for Chemistry; by P. Bernard; Golden West
293 Testing & Tutor Admin; by W. Brittain; Dupage
294 Forecasting Gene Freq; by N. LoCascio; Niagara
295 Metamorphosis; by R. Dilsizian; Westchester
296 Forensic Identification; by Kohn, et al; Wisconsin
297 The Simple in Symplex; by R. McCartney; Suffolk
298 Pipeflow; by E. Gardner; Yale
299 L.A.R.G.E,; by A. Fleisch; Miami-Dade
300 Computer Graphics; by S. Gordon; Suffolk
301 3Topics:Remedial Algebra; by Hofman & Hofman; Montgomery Cty
302 SMATH; by G. Smith; Santa Fe
304 Apply Psych Concepts; by T. Hutchinson; Atlantic
305 Apply Socio Concepts; by T. Hutchinson; Atlantic
307 Physical Fitness Eval; by R. Hastings; Monroe
311 *PathWays; by T. Friesz ; Pennsylvania
312 Nucleonics Lab; by J. Ernst; Santa Fe
315 **Yale MPG; by Gilbert & Bramhall; Yale
316 *County Data; by R. Douglas; Pennsylvania
317 *N.Central Boundaries; by R. Douglas; Pennsylvania
318 *N.East Boundaries; by R. Douglas; Pennsylvania
319 *S.Atlantic Boundaries; by R. Douglas; Pennsylvania

320 *S.Central Boundaries; by R. Douglas; Pennsylvania
321 *Western Boundaries; by R. Douglas; Pennsylvania
322 **MD-DOS/IP; by Gilbert, et al; Maryland

*These 8 packages require Microsoft Windows version 2.0.3.
**Limited documentation is available on these.

The MRC has received our 16th (and I think, final) distribution from Wisc-Ware. This distribution contains: 11 package documents plus disks; 2 package update disks and documents; Wisc-Ware database disk—June, 1990.

The packages included are:

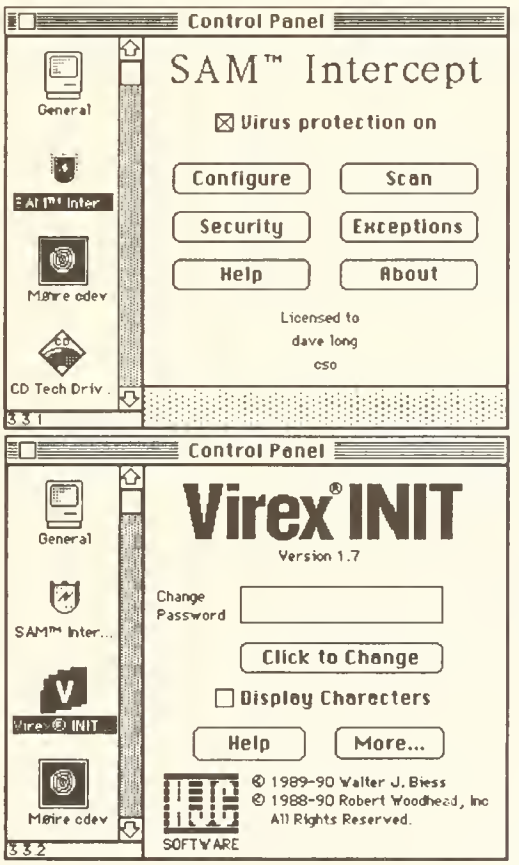
130* WinView by R. Pinkston; Texas-Austin
258* Chaos Demonstrations.by J.C. Sprott; Wisconsin
308 PASLOG.by J. Finn; Westmoreland Cty
314 Vert.Pl,FP Conducting by L. Atherton; Ball State
323 Pegasus Project by J. Cooper; Princeton
324 SUNPATH by Strus & Sharpe; Southern Illinois
325 WATERBUD II by Katsumata & Sharpe; Southern Illinois
329 UDemog by V. Klaff; Delaware
331 Italian-English Transl by L. Bonaffini; Brooklyn
333 Grade Aide by J.H. Burness; Penn State
334 Quik-Graph by R.E. Seaver; Lorain Cty
335 MOKE by M. Edwards; Wisconsin-Madison
337 ASYNCH8.TAR by D. Raila; Univ. Illinois

*Updates; includes new package documenta-

Anti-virus software for the Macintosh: SAM and Virex

Dave Long, Microcomputer Group

SAM (Symantec Antivirus for Macintosh) and Virex are two of the top commercial anti-virus packages for the Mac on the market today. Both feature a combination of an INIT/control panel device which monitors your system continually, and an application which lets you scan for viruses, and in many cases, remove them. The major differences between the two seem to be a matter of approach and updating features.



SAM's INIT/cdev is called SAM Intercept. SAM Intercept can be set to scan your system on startup, shutdown, or at the touch of a command key. It will automatically scan floppies upon insertion, or give you the option of choosing whether or not to scan each disk. All of its settings can be locked, and the INIT itself locked in the system folder with a password. SAM Intercept will also scan every file that is opened for known viruses; if it finds a virus, it will refuse to open the file. In addition to looking for known viruses, SAM Intercept monitors your system for "suspicious activity"— such things as CODE resources being copied into applications or into your system file. Whenever it discovers a suspicious operation, a warning dialog box flashes up onto the screen, giving you the option to allow or deny the activity. If it's normal behavior for the application you're using, you may also want to tell SAM to remember that this is okay by clicking the "learn" button. SAM stores these permissions, so the next time you're in that application, you won't be bothered. If the Mac you're using is shared by a number of people, you may want to disable the "learn" button. Unfortunately, there's no way to switch off or regulate the use of the "allow" button—too many normal Mac applications do things which will trigger the warning dialog box for this to be practical.

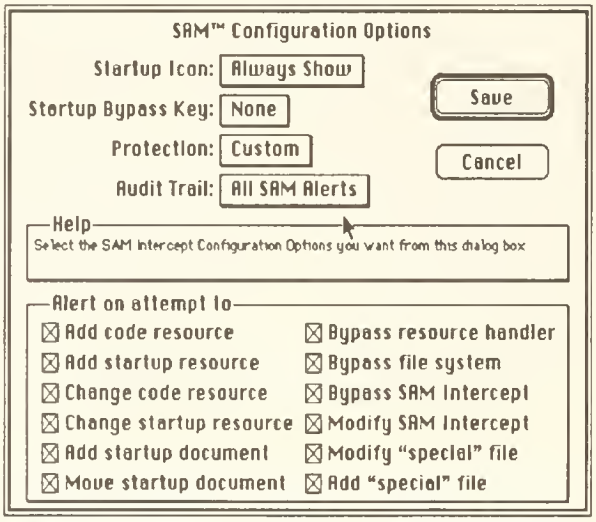
One thing I found to be annoying about SAM was the way in which the security features were implemented. The main SAM Intercept panel in the control panel has 6 buttons on it for setting scan options, security options, and so forth- when a password is set, you have to enter the password before you can look at each of 4 of those choices.

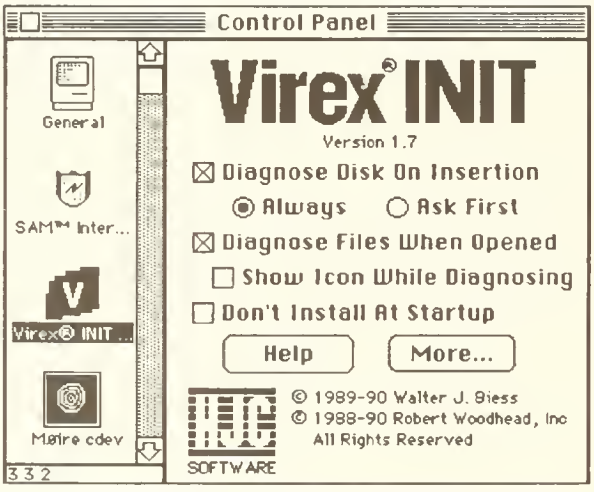
Virex has a somewhat more straightforward approach than SAM. The Virex INIT will not scan your system on startup or shutdown, and it does not monitor for "suspicious activity". It does scan for every currently known virus on any floppy you insert or any file you open. As with SAM, it gives you the option to change its settings in the control panel— if you want it to give you the choice of whether or not to scan each disk you insert, you merely click on a check box. Like SAM, the Virex INIT can be locked in the system folder, and you can use a password to lock its settings.

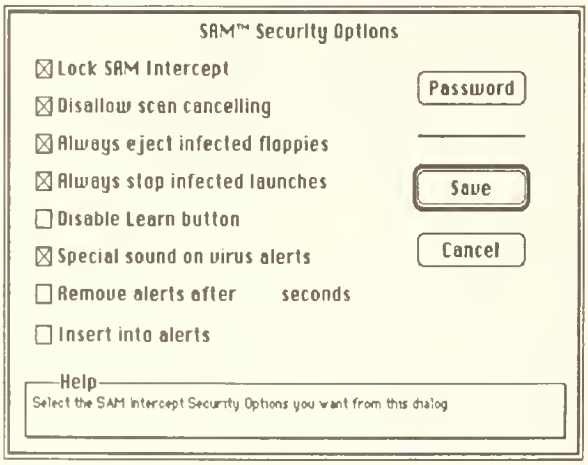
It's hard to evaluate anti-virus software without samples of real viruses to test the software's real effectiveness. I tested both programs using copies of nVIR and WDEF, both of which have been a problem on this campus. SAM and Virex each successfully found both viruses on my sample infected disks. Going a bit further, I created a fake nVIR infection on another disk by inserting a blank resource with the name "nVIR" in one of the files. This technique was used at one point to prevent nVIR infection by fooling the virus into thinking that files were already infected. When I tested previous versions of these programs, Virex successfully recognized the

fake, but SAM gave a false alarm. The current versions of both programs now ignored the fake infection.

One of the stickiest problems with anti-virus software is dealing with the seemingly constant stream of new viruses. SAM and Virex take different approaches to this problem, and this is the source of the biggest difference in the two products. SAM is designed to watch for virus-like activity, thus it has the potential to catch new viruses that are not in its list of currently known viruses and prevent them from damaging or infecting your system. The problem with this approach is that it can be confusing for novice users. Most applications used by novices will tend not to trigger SAM's warning dialogs, but there are always exceptions. SAM also allows you to type in information about new viruses, which it will then be able to scan for. This information (resource size, name, and search strings) is provided by Symantec via a toll-free phone number. Virex, since it only scans for known viruses, cannot find new viruses. If you use Virex, you will need to obtain an updated version of the program for each new virus that appears. Microcom, the distributor of Virex, has a yearly subscription service which provides automatic upgrades— when a new virus is discovered, Microcom develops a new version of Virex to combat it, and copies are mailed out to all of their subscribers.



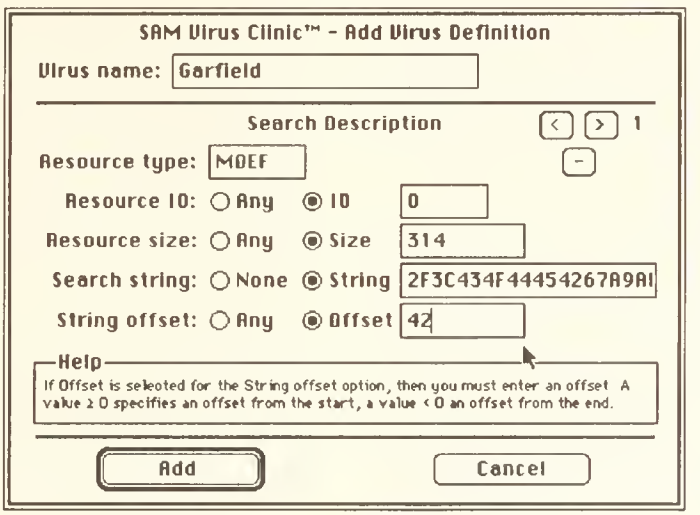




In the best of cases, anti-virus software is an effective preventative measure, keeping your system from being infected. Sometimes, however, a new virus will appear that takes people by surprise, bypassing all of the current anti-virus and security software. Such was the case with WDEF, a virus that can be passed from disk to disk merely by inserting an infected floppy into a Mac. In these cases, many Mac users find themselves with infected hard drives and countless numbers of questionable floppies. To deal with this problem, SAM and Virex both have applications that, in addition to scanning disks for viruses, promise to repair the damage that they have caused. In this respect, both programs appear to do a reasonable job; they can repair all damage caused by most current Mac viruses. Some viruses do cause irreperable damage to applications, however, so the first rule of safe computing is still, **"Back up Everything!"**

One thing that I should point out is that you will need the most current version of whichever program you are using if you want to rely upon it for repairing virus damage. If you choose Virex, you will probably want to purchase their subscription service for this. If you choose SAM, you will need to pay an upgrade fee for each new version of the program that comes out. (Note that the information you add which allows SAM to scan for new viruses does not allow it to repair the damage they do.) One alternative to this that

users of both SAM and Virex should look at is the excellent freeware utility Disinfectant. Disinfectant is very similar to the application portions of SAM and Virex— it will scan your disks for all currently known viruses, and in most cases, will repair the damage they have done. Its major advantages are that it is free, and that updates are generally available sooner than new versions of the commercial products. It also includes a very comprehensive help file that lists all of the known viruses and their effects—it's worth getting a copy just for this. John Norstad of Northwestern University writes Disinfectant, along with the help of a number of other Mac virus experts, including the authors of SAM and Virex. When a new Mac virus is discovered, John studies it and writes a new version of Disinfectant, which he then proceeds to give away freely.



At this point, I would recommend using SAM. It matches Virex on most of the major features, but the deciding factor has to be its updating feature. Within two days after the latest virus, the MDEF/Garfield virus, was discovered, I was able to configure SAM to scan for it. At about the same time, a new version of Disinfectant was released, and was available on campus within one or two days. It took two weeks after the new discovery before I received an updated version of Virex in the mail. Since Disinfectant and update information for SAM can be distributed electronically, you can be protected against new viruses very quickly.

How to obtain the software

Disinfectant is available from the Micro Resource Center (currently located in the basement of the Illini Union), and in the /pub/mac/virus directory on ux1.cso.uiuc.edu. A wide variety of public domain and shareware anti-virus utilities are also available from these sources— call the Micro Resource Center at 244-6264 for more information.

SAM is available for departmental purchase from Central Stores Computer Center for approximately $39. Call them at 244-0139 for exact pricing and information. For individual purchase, I recommend checking mail-order companies such as MacConnection and MacWarehouse; see ads in MacWorld and MacUser for price and phone numbers.

Virex is available for departmental purchase through CSO; we have arranged a limited site license arrangement that allows us to distribute copies of the software and documentation. The cost of the software is $25, and the subscription service costs $12.50 yearly. (Purchase of the subscription service is mandatory.) Call Dave Long at 244-0731 for details. For individual purchase, again, I recommend looking through the mail-order ads.

DOS Environment Trick

This article was written by Fred Williams of North Texas PCUG and is reprinted from the Blinking Cursor, the April 1990 issue of the newsletter of the Milwaukee Area IBM PC Users Group.

Jim Hoisington recently mentioned the DOS environment feature that allows referencing a DOS environment variable from a batch file. This feature was introduced with the release of DOS 3.3. I haven't seen much written on the use of this handy addition to the batch language. So, I guess I'll add my two cents worth on how I make use of it.

I'm sure I'm not the only one who has set up separate subdirectories on the fixed disk for my various software. I have seen too many other machines configured the same way. This makes for a very convenient arrangement when upgrades are required. I like knowing everything for a particular software product is within a single subdirectory. I also keep any related data (like spreadsheets for Quattro Pro) in subordinate subdirectories.

The only problem is that when you wish to use a software product the subdirectory containing the actual program files must be placed in the DOS "Path" environment variable. This must be done so that DOS can use the path to find the programs. The diadvantage to this is that the longer the DOS path is, the longer it will take DOS to find the requested program file.

The little trick I'm going to show you will keep the total length of the path variable short. We also will insure that the subdirectory containing the most heavily used program files will be listed first in the path. The only down side is that we may use some additional envrionment space.

If you have a very long path or have a busy DOS environment, you may have to increase the size of your DOS environment. I'll show you how to increase the size of your DOS environment later in this article should the need arise. But, now for the trick. To accomplish our goal, we will take advanatage of a batch file's ability to access a DOS environment variable.

What we want to do is temporarily modify the DOS path to include the subdirectory that contains the software programs we wish to use. This will allow DOS to find the programs for as long as their use is required. Once we are finished with a particular software product, The DOS path needs to be reset to its original state.

What I'm going to do is show you how I have designed a batch file that I use to run Borland's Quatro Pro on my system. Once you understand the principles involved, you can apply the method to suit your particular needs.

To set the stage, Quattro Pro's programs are resident in a subdirectory named "Quattro," and the spreadsheets reside in a subordinate subdirectory of "Quattro" named "Data." Imaginative names, wouldn't you say?

A listing of my "Quattro Pro" batch file follows:

```
@ echo off
cd\quattro\data
set tpath=%path%
path=\quattro;%path%
mouse on > nul
set tpath=
cd\
```

Now, what it does.

The first line , **@ echo off**, makes sure I don't have to see the batch file displayed on the screen every time I run Quattro. Line two, **cd\quattro\data**, switches the current directory to the directory that holds the Quattro spreadsheets.

In the third line on the batch file, **set tpath=%path%**, I create a DOS environment variable name "tpath" and set it equal to the current DOS path. Then, in the fourth line, **path=\quattro;%path%**, I establish a new DOS path with the Quattro subdirectory as the first subdirectory to be searched. The old value of the DOS path is concatenated following the Quattro subdirectory to maintain addressability to other programs that may be needed while working with Quattro.

The next batch file line, **mouse on > nul**, starts the very professional sounding "pointing device" without showing me all the Microsoft verbiage. Let's see now, IBM has "pointing devices," Mac's have "mice." Says a lot about who's user friendly, doesn't it? The next batch file line, **q**, starts Quattro Pro. Once I am finished with Quattro, the batch file line, **mouse off > nul**, turns off the mouse sans verbiage.

To restore the DOS path to the state it was in before starting Quattro, the batch line **path=%tpath%** is executed. This batch file line sets the DOS path equal to the contents of the environment variable "tpath." Remember that "tpath" contains the value of the DOS path before the addition of the Quattro subdirectory.

Now that I'm done with the temporary DOS environment variable, "tpath," the next batch file line, **set tpath=**, removes "tpath" by setting it to a "null" (empty) value. Setting a DOS environment variable value equal to nothing causes DOS to drop that variable from the current DOS environment. The last line of the batch file switches the current subdirectory back to the root directory. I do this more from habit than necessity. I don't use any menuing system or such. Real programmers run their systems from the DOS command line!

If you try this trick and part of your DOS path gets truncated in the process, this means you are short on DOS environment space. I think that is a nice little DOS feature. Just truncate the environment content and don't bother the user with an error message or anything like that.

To increase the size of your DOS environment from the default size of 128 bytes, you need to add the following statement to yours system's "Config.sys" file:

Shell=[drive]:command.com/p/e:nnn

Where [**drive**] is the drive on which your system's copy of the DOS Command file is resident; and **nnn** is the number of bytes you wish to set the DOS environment size equal to. For example, my "Shell" command line is:

Shell=d:command.com/p/e:256

My system's DOS command file is on drive "D:" and the total size of my system's new environment is 256 bytes. Don't make your environment any bigger that absolutely necessary as DOS environment size reduces the total free memory available for program execution.

Cleaning House

The BLAST Support office located in rroom 160 MEB is selling the followingirems: approximately 100 9-tracktapes (type BASF, ranging from 800 to 6250 bpi, and 1200 to 2400 ft in length), eighty 8-inch double sided floppy disks, and two Visual 102 computer terminals with manuals. For all items prices are negotiable. If interested in any of the above mentioned items, please call at 333-8345 (ask for Maria Pflaum), leave a messageat 333-2737, or send E-mail to blast@ux1.cso.uiuc.edu.

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If you wish to be placed on our mailing list, have a change of address, or wish to be deleted, please check the appropriate box and fill in the information below. Please help us keep our mailing list up-to-date by informing us if issues are being sent to someone no longer in your department; fill in the information below and return to us so that his/her name may be removed from the list.

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150 Digital Computer Laboratory (M/C 256)

University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

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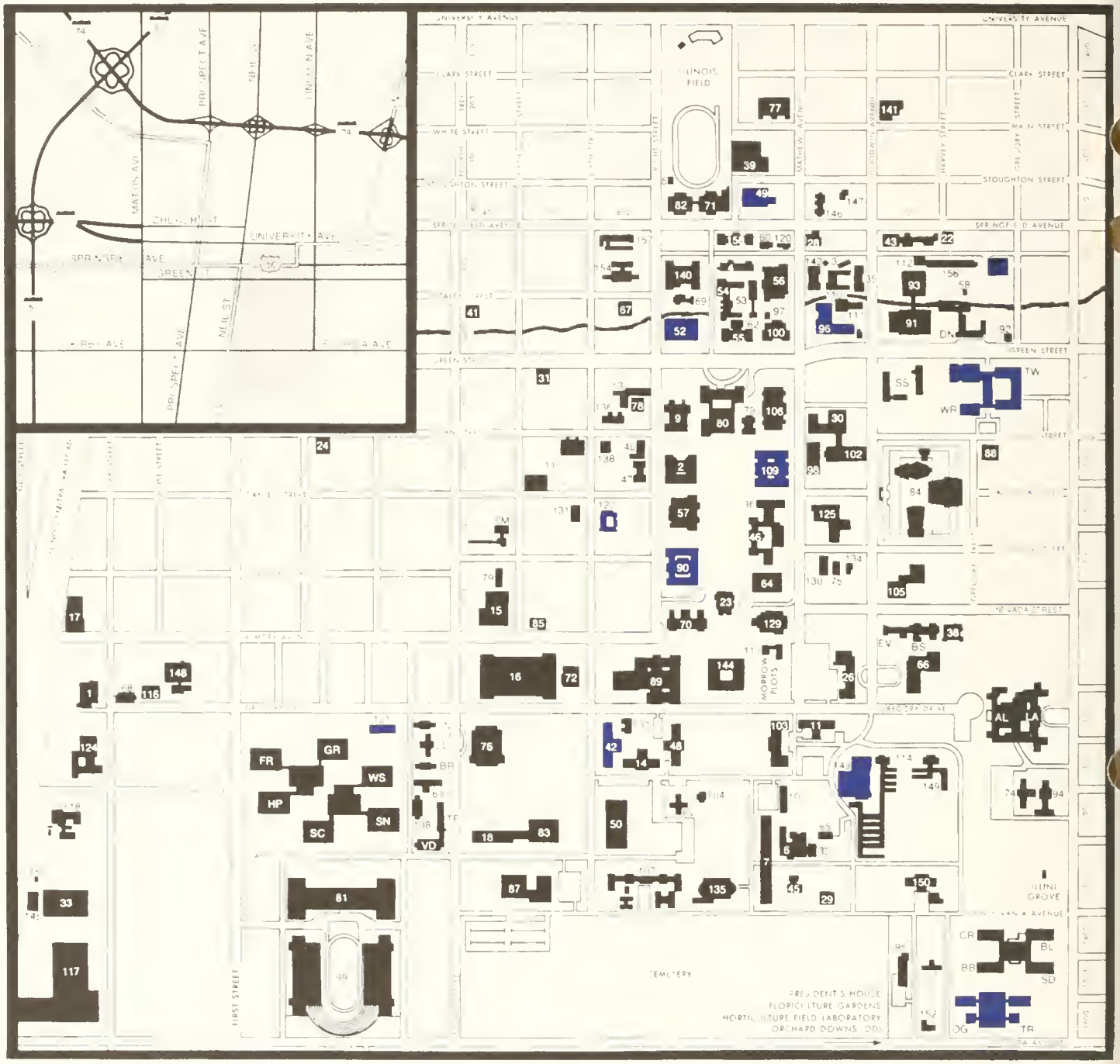
CSO SOUTH 70 Commerce West 333-4500	Monday-Thursday, 8 am - 12 mid. Friday-Saturday, 8 am - 10 pm Sunday, 12 noon - 10 pm
AGRICULTURE N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, Closed
CHEMISTRY 154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR 120 Snack Bar 333-1851	Sunday-Thursday, 12 noon - 12 midnight Friday, 12 noon - 5 pm Saturday, Closed
ELECTRICAL ENGINEERING 146 Everitt Lab 333-4936	Monday-Thursday, 8 am - 8 pm Friday, 8 am - 5 pm Saturday, 12 noon - 5 pm Sunday, Closed
ENGLISH BUILDING 8 English Building 244-0386	Monday-Thursday, 8 am - 12 mid Friday, 8 am - 6 pm Saturday, 12 noon - 6 pm Sunday, 1 pm - 12 mid
FAR Florida Avenue Residence Halls 333-2695	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
ISR Illinois Street Residence Halls 333-0307	Saturday-Thursday, 12 noon - 12 mid Friday, 12 noon - 5 pm
MECHANICAL ENGINEERING 65 Mechanical Engineering 333-1430	Monday-Friday, 8 am - 12 mid. Saturday-Sunday, 12 noon - 12 midnight
PSYCHOLOGY 453 Psychology 333-7815	Monday-Friday, 8 am - 5 pm Saturday-Sunday, Closed
SOCIAL SCIENCE 202 Lincoln Hall 333-0309	Monday-Thursday, 8:30 am - 9 pm Friday, 8:30 am - 5 pm Saturday-Sunday, 12 noon - 5 pm
ILLINI UNION MICROCOMPUTER SITE 244-7935	Monday-Thursday, 8 am - 12 midnight Friday, 8 am - 10 pm Saturday, 10 am - 10 pm Sunday, 12 noon - 12 midnight
MEDIA CENTER -- UNDERGRADUATE LIBRARY 333-2667	Monday-Thursday, 8 am - 1 am Friday, 8 am - 12 mid Saturday, 9 am - 12 mid Sunday, 12 noon - 1 am



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52 Electrical Engineering
90 Lincoln Hall
96 Mechanical Engineering
109 Chemistry - Noyes Lab
121 CRH Snack Bar
122 Psychology
143 Agriculture - Turner Hall
Illinois Street Residence Halls
Florida Avenue Residence Halls
CSO Office Building
(101 South Gregory)