. 15, No. 1: January-February 1987

off line

niversity of Illinois at Urbana-Champaign

irector: George Badger
ditor: Lynn Bilger

omputing Services Office

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*CSOB is the new CSO Office Building, 101 S. Gregory, Urbana.

Academic and research computing is done on the following machines: CDC Cyber 175 running NOS 1; CDC Cyber 174 running NOS 2; IBM 3081 running VM; IBM 4341 running VM; VAX 11/780 running UNIX and driving a GSI CAT-8 phototypesetter; three Pyramids and a Sequent running UNIX. In addition CSO serves as Facility Manager for various departmental machines (e.g., other IBMs) and for the National Center for Supercomputing Application's CRAY X-MP.

Operating Hours (see HEARYE,SCHEDUL for exceptions):

	CYBER 174/175	IBM
M-F	8 am - 6 am	8 am - 6 am
SAT	8 am - Midnight	8 am - 6 am
SUN	Noon - 6 am	Noon - 6 am

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Contents

OFF-LINE is published every two months by the Computing Services Office at the University of Illinois, Urbana-Champaign. Mention of manufacturer and trade names in this newsletter does not imply endorsement. Information in this issue is current as of January 21, 1987. 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.

INTRODUCING A NEW MANUAL FROM CSO

The *Introduction to CMS at UIUC* is a new reference manual produced by CSO. This manual is intended to serve as an introduction to CMS, the Conversational Monitor System, on the IBM computers at the University of Illinois at Urbana-Champaign. It assumes that you have little or no experience with computers. The manual is available at the CSO Distribution Office (1208 W. Springfield, Urbana) and the Illini Union Book Store (715 S. Wright, Champaign) for $2.50. We suggest that you read the entire manual, and then refer to sections as you need them.

The first section of the manual is an introduction to IBM timesharing, CMS Processing Environments and the array of machines on campus that are running CMS. Once introduced to the "Who," "What" and "Where," the next section works on the "How" by delving into logging on. The third unit contains a list of CMS policies, so if you need to know "Why" read through this section; there are some interesting tidbits here. The next section gives the basics of working with the system: here is where you read about how to get help, the editor, execs, macros, and how to print/plot and run a program. The next section discusses communication between users. The last unit describes some of the other facilities available to CMS users. There is an introduction to FILEDEFs (which is the way to define data files to your programs), TD (temporary disk space), tape usage, the batch system (VMBATCH), the directory management system (VMSECURE on VMD), and how to transfer files to and from the Cyber.

CSO MANUALS AVAILABLE IN THE UNDERGRADUATE LIBRARY CLOSED RESERVES

Joan Mills

The Statistical Consultants maintain a collection of computer and statistical manuals in the Closed Reserves section of the Undergraduate Library (lower level). The collection has recently been reviewed and updated. The following is a list of the current contents of the collection. Copies of this list will also be available at both consulting offices. The list may change from time to time as further updates are made. Call numbers are listed for all but the most recently changed items.

CALL NUMBER	MANUAL NAME
CSO.999 VA195	ACED User's Guide
CSO.999 SP179	BMDP - Statistical Software 1983
CSO.999 SP111	Conversational Statistics with IDA
CSO.999 SP142	GRAB/SHARED Documentation
CSO.999	IBM SCRIPT/SP Document Composition Facility
CSO.999	IBM SCRIPT/SP Document Library Facility
CSO.999	IBM SCRIPT/SP Generalized Markup Language
CSO.999 VA209	IBM VM/SP CMS Command and Macros Reference
CSO.999 SP158	IBM VM/SP VMS Document Composition Facility Users' Guide
CSO.999 SP170	IBM VM/SP CMS Intro., Term. Ref., Lib. Guide, Index V 1
CSO.999 SP172	IBM VM/SP CMS General Information Release 3
CSO.999 SP166	IBM VM/SP CMS Release 3 Guide, V6
CSO.999 SP167	IBM VM/SP CMS System Messages and Codes V8
CSO.999 SP169	IBM VM/SP System Product Editor Command and Macros Reference V4
CSO.999 SP173	IBM VM/SP CMS System Product Editor Users' Guide Rel. 3
CSO.999 SP168	IBM VM/SP VMS System Product Interpreter User's Guide, System Product Interpreter Reference, Exec Ref. V5

CSO.999 SP164	IBM VM/SP CMS CP Command and Reference for General Users V3
CSO.999 SP162	IBM VM/SP CMS Users' Guide V2
CSO.999 SP118	IBM VM/SP CMS VS Fortran Application Programming Guide, Language and Library
CSO.999 SP161	IBM VM/SP CMS Primer Release 3
CSO.999 SP175	IBM VM/SP CMS Primer for Line-Oriented Terminals Rel. 3
CSO.999 SP117	IDA Users' Guide
CSO.999	Introduction to CMS at UIUC, and Introduction to Computing Services Office
CSO.999 SP113	IMSL Reference Manual Vol. 1
CSO.999 SP114	IMSL Reference Manual Vol. 2
CSO.999 SP115	IMSL Reference Manual Vol. 3
CSO.999 SP116	IMSL Reference Manual Vol. 4
CSO.999	Kermit User's Guide, 6th Ed., Rev. 2
CSO.999 SP143	LINDO Users' Manual
CSO.999 SP121	LISREL IV Analysis of Linear Structures
CSO.999 SP141	LISREL V Users' Guide
CSO.999 SP177	LISREL VI Users' Guide
CSO.999 SP123	MPOS Multi-Purpose Optimizing System Users' Guide
CSO.999 SP122	MULTIQUAL: Log-Linear Analysis of Nominal and Ordinal Qualitative Data by Method of Maximum Likelihood
CSO.999 VA200	RATS User's Guide Ver. 4.11
CSO.999 SP163	RNF Documentation, June 1983
CSO.999 SP180	S: An Interactive Environment for Data Analysis
CSO.999 VA189	SAS/AF User's Guide and Technical Reports Ver. 5
CSO.999 SP135	SAS Applications Guide 1980
CSO.999 SP165	SAS Communications (periodical) from Vol. IX
CSO.999 VA202	SAS Companion for the VM/SP Operation System '86 Ed.
CSO.999 VA184	SAS/ETS User's Guide Ver. 5
CSO.999 VA190	SAS/FSP User's Guide Ver. 5
CSO.999 SP176	SAS/GRAPH Creating Maps with SAS/GRAPH Procedures
CSO.999 VA183	SAS/GRAPH User's Guide Ver. 5 and TR P-142: Annotate
CSO.999 VA193	SAS/GRAPH Guide to Hardware Interfaces
CSO.999 VA194	SAS/IML User's Guide Ver. 5
CSO.999	SAS Introductory Guide Rev. 1985
CSO.999 SP136	SAS for Linear Models
CSO.999 VA185	SAS Matrix Procedure TR P-135 Ver. 5
CSO.999 VA192	SAS/OR User's Guide (Operations Research) Ver. 5
CSO.999 VA181	SAS Programmer's Guide Ver. 5 (TR P-139)
CSO.999 VA206	SAS Programmer's Guide PL/I Ver. 5
CSO.999 VA197	SAS RTERM
CSO.999 VA198	SAS Introductory Guide for PC's
CSO.999 VA201	SAS Language Guide for PC's and TR P-144 RLINK
CSO.999 VA196	SAS Procedures Guide for PC's
CSO.999 VA210	SAS Statistics Guide for PC's
CSO.999 VA205	SAS SUGI Supplemental Library Users' Guide Ver. 5
CSO.999 VA186	SAS User's Guide Basics Ver. 5
CSO.999 VA182	SAS User's Guide Statistics Ver. 5 and TR A-108 Cubic Clustering
CSO.999 VA191	SAS Technical Reports
CSO.999 SP153	SCSS Short Guide
CSO.999 SP151	SCSS Users' Guide
CSO.999 SP156	SHARLIB Documents (cont'd from GRAB/SHARED)
CSO.999 VA207	SHAZAM: An Econometrics Computer Program V4.6
CSO.999 SP124	SIR Scientific Information Retrieval
CSO.999 SP178	SOUPAC Statistical Package 1985
CSO.999 SP133	SPSS Introductory Guide

CSO.999 SP130	SPSS Statistical Algorithms Rel. 8
CSO.999 SP140	SPSS Statistical Package for Social Sciences - CDC Update Rel. 8.3
CSO.999	SPSS Statistical Package for Social Sciences - CDC Update Rel. 9.0
CSO.999 VA204	SPSS Stat. Pkg. for Social Sciences - User's Guide
CSO.999 SP131	SPSS Stat. Pkg. for Social Sciences - Update 7-9
CSO.999 VA211	SPSS/PC+ User's Manual and Advanced Statistics
CSO.999 VA187	SPSSX Advanced Statistics Guide
CSO.999 SP154	SPSSX Introductory Statistics Guide
CSO.999 SP149	SPSSX Statistical Algorithms
CSO.999 VA203	SPSSX Users' Guide 2nd Ed.
CSO.999 SP171	SPSSX Release 2.0 Documents (LISREL in SPSSX, New Procedures and adding Procedures)
CSO.999	SPSSX Release 2.1 Documents (New Procedures)
CSO.999 SP128	STAT Conversational Stat. Pkg. Users' Manual
CSO.999 VA208	UNIX for Beginners

NEW PRODUCTION RELEASE OF SAS INSTALLED ON IBM

Vicky Dingler

Version 5.16 of SAS has been installed on VMD. This is the production release of SAS and has been updated to fix several problems found in Version 5.08. The problems were primarily in the area of memory management. There are several procedures in Version 5.08 that would exceed the memory limit of the user's virtual machine. Most often, the job would run only as a VMBATCH job where larger virtual machines can be obtained. Version 5.16 deals with most of the problems with memory management found in Version 5.08.

In order to use SAS Version 5.16, use the LINKTO command as follows:

LINKTO SAS (F

The **F** option indicates that the future version of SAS, namely Version 5.16, will be linked. The current version of SAS is still Version 5.08. Version 5.16 will become the default (current) version on February 16, 1987. When Version 5.16 becomes the default, the **(F** parameter will no longer be necessary. At that time, the command **LINKTO SAS** will link you to Version 5.16 automatically.

There are a number of new features in Version 5.16. First, the European and Pacific Countries map data sets have been installed. These map data sets include the internal boundaries of foreign countries. The countries and their internal boundaries included in the map data sets are: United Kingdom, Ireland, Spain, Portugal, France, Belgium, the Netherlands, West Germany, Austria, Switzerland, Italy, Denmark, Sweden, Norway, Finland, Japan, New Zealand, Australia and Taiwan. The following countries in the map data sets are without internal boundaries: Andorra, Monaco, Luxembourg, Liechtenstein and San Marino. The map data sets have the filetype EUROPAC. The filenames of the data sets are: AUSTRAL, BENELUX, FRANCE, GERAUSSW, ITALY, JAPAN, NZ, SCANDIN, SPPORT, TAIWAN, UKIRE. Documentation for using these map data sets is called *Data Library Series: D-104*, and is available for purchase at the CSO Distribution Office, 1208 W. Springfield, Urbana.

A second feature of Version 5.16 is a protocol converter that will allow graphic display on an ASCII terminal in full-screen mode. In Version 5.08 (and in all previous versions), graphic display can be accomplished in line mode only. Version 5.16 has provided a 7171 protocol converter that will allow the user to log onto VMD in full-screen mode and display graphs. The protocol converter can be utilized by including the following parameter in a GOPTIONS statement:

```
GPROTOCOL=GSAS7171
```

For example, the GOPTIONS statement might look like:

```
GOPTIONS DEVICE=TEK4105 GPROTOCOL=GSAS7171;
```

The SAS program can be run and graphs displayed, all using full-screen mode.

A third feature is a user-written procedure called MIXMOD that analyzes mixed models. The MIXMOD procedure, written by F. Giesbrecht, will analyze data by general linear models that include both fixed and random effects. The range of possible models is large. Therefore, the output from the MIXMOD procedure is stored in a sequence of four SAS data sets. Then, matrix facilities (PROC MATRIX or IML) are used to obtain the final results. Free documentation is available at the CSO South Statistical Consulting Office, 85 Commerce West.

If you have questions about any of the above features or about SAS Version 5.16, please contact the CSO South Statistical Consultants in 85 Commerce West (333-2170).

PROBLEMS WITH PROC COPY IN SAS VERSION 5.08 (IBM)

Vicky Dingler

Using PROC COPY to copy multiple SAS data sets to tape in the same job with SAS Version 5.08 will cause an unidentified error. SAS will copy only the first file specified to tape. The saslog, however, will indicate that all files have been successfully copied to tape. For example, the following program specifies three files to be copied from disk to tape:

```
cms fi tapeout1 tap1 nl 1;
cms fi tapeout2 tap1 nl 2;
cms fi tapeout3 tap1 nl 3;
proc copy in = sasds1 out = tapeout1;
proc copy in = sasds2 out = tapeout2;
proc copy in = sasds3 out = tapeout3;
```

In SAS Version 5.08, only the first SAS data set, sasds1, is copied to tape, even though the saslog indicates that all three have been copied to tape.

If you have used PROC COPY to copy multiple files to tape, please check the contents of your tape. If you are unable to check the contents of your tape satisfactorily, contact the CSO South Statistical Consultants in 85 Commerce West (333-2170).

NOTE: In SAS Version 5.16, the above example works correctly; all three files are copied to tape.

ACSL INSTALLED ON THE VMD CMS SYSTEM

Stan Kerr

The ACSL simulation package, commonly used in engineering, has been installed on the IBM 3081 (VMD), and can now be used under CMS. (ACSL has been available for some years on the Cyber 175.) It is linked and accessed by the command

LINKTO ACSL

There is a help file under the CSO category, which explains basic usage of ACSL. This help file can be viewed by entering the command

HELP CSO ACSL

At the present time, the graphics which are supported under our CMS ACSL are:

- low resolution "print plots"
- Zeta plots
- IBM 3279 and 3179 graphics terminal plots

At this writing, there was some difficulty with the Tektronix plot drivers, but it is hoped this will be resolved soon.

The following manual describes ACSL in detail:

Advanced Continuous Simulation Language (ACSL) Reference Manual

CSO sells some copies of this manual through the Documentation Center at 1208 W. Springfield, but instructors are reminded that classes intending to use the manual should make it available to students through the regular campus bookstores.

The version of ACSL which is available for CMS at present is a single precision version; on the IBM machines, this means it works in 6-7 decimal figures of precision, which may not be adequate for some simulations. (The Cyber version is also single precision, but Cyber single precision is 14 figures, so it is satisfactory for most scientific work.)

THE YALE SPARSE MATRIX PACKAGE ON VMD

Stan Kerr

The Yale Sparse Matrix Package (YSMP) has been installed on VMD and can be accessed by the command

LINKTO YSMP

This links and accesses the disk containing the YSMP library, and adds the library to the global library set. You then need only compile and run a Fortran program which calls YSMP routines.

The Yale Sparse Matrix Package contains routines for analyzing and solving sparse linear systems — systems in which only a small fraction of the matrix coefficients are nonzero — for both symmetric and nonsymmetric matrices.

If there is additional software for sparse matrices that is in particular demand for use on the VMD system, CSO would like to hear of it. Other software exists on the Cyber (NSPIV in UOILIB, the Y12M routines, the Harwell routines), but time does not allow us to install it all immediately on the IBM; thus, we welcome user suggestions as to which software is most desirable. If you have any comments, please direct them to Stan Kerr (phone 333-4715, signons 3K9NYTD on UIUCNOSA, and STANKERR on UIUCVMD).

The YSMP disk contains a document describing the library. This document is formatted for the IBM 3800 laser printer and can be printed by the command

NPLOT YSMP MANUAL * (DEST 3800 TYPE SCRIPT BIN xx

where **xx** represents a bin number in which the output will be filed. IBM 3800 output must be picked up at Room 14 Digital Computer Laboratory.

There is a brief help file in the CSO category for YSMP; this can be viewed on-line by the command

HELP CSO YSMP

THE CMS HELP FACILITY

Stan Kerr

We would like to remind our CMS users about the extensive help facilities available on our CMS systems. The CMS HELP command can be used to view a large number of help files which describe CMS commands, CP commands, XEDIT commands, REXX and EXEC2 facilities. A number of products installed on CMS have their own special help files, and special help categories exist, such as the CSO help category, which is used to describe some non-IBM-supplied software we have installed and also to provide more information about some of the IBM software. In addition, on the VMD system, the WRITEUP facility provides a means of obtaining printouts of help files, either one at a time or in groups; WRITEUP may be used, for instance, to print all the CMS help files for easy reference.

A help file is designated by a topic and a category on CMS. For instance, there is a help file called POLICY under the CSO category. (This help file summarizes CSO's policies regarding the CMS service.) To view this help file, you can enter the command

HELP CSO POLICY

Notice that the category name is placed before the topic name.

If you are working at a full-screen terminal, CMS displays the help file to you a whole screen at a time. You can use the PF keys to move forwards and backwards in the help file: PF7 moves you back one screen, PF8 moves forward one screen, PF10 moves back a half-screen, PF11 moves forward a half-screen, PF3 exits from HELP. In addition, you can enter commands and use the abilities of XEDIT to search for particular things in the help file. For example, if you enter the help command above, and you want to find the part of the help file which pertains to policies on FSF (File Storage Facility), you might enter the following after the help screen is displayed:

/FSF

This causes XEDIT (which is used to display the help file) to search forward in the help file for the first occurrence of FSF; that line is placed at the top of the screen and the whole screen following it is shown to you. If you are not at the right part of the help file yet, you might enter the following in the command area:

=

This tells XEDIT to repeat the last command (the /FSF); it will find the next occurrence of FSF.

CMS HELP also offers a menu facility, whereby you can view at once the names of all the topics in a particular help category, and choose which help file to view. If you enter

HELP CSO MENU

then HELP consults a menu file for the CSO category, and displays a screen which has the names of all the CSO help files. To view a particular help file, you need only place the screen cursor anywhere over the name of the help file, and press the ENTER key; the cursor can be conveniently moved around the screen using the cursor keys and the tab keys. When you press the ENTER key, the particular help file is displayed; when you have finished viewing it, you can press PF3 to quit and put yourself back in the CSO menu, or you can press PF4 to remove yourself completely from the HELP facility. (Note: Names of help files are listed alphabetically in columns in the menu, and each column may span more than one screen. Thus, it may be necessary to make frequent use of PF keys 7 and 8 to scroll backward and forward in the menu to search for a particular topic.)

A help menu may "point" to other menus. For example, in the CSO menu, you will see a number of topics with an asterisk by them, such as

***CMS**

The asterisk means that the name following it is the name of a help category rather than a help file. Placing the cursor on *CMS and pressing ENTER causes you to be placed in the CMS help menu, from which you can select a CMS help file for viewing. When you have finished viewing the CMS help file, PF3 puts you back in the CMS menu, and you can select another CMS help file to view, or press PF3 to put you back in the CSO menu. Following the convention mentioned earlier, if you go from the CSO menu to the CMS menu to a CMS help file, and then press PF4, you are removed altogether from HELP and placed back in CMS command mode.

Creating your own CMS help files is quite easy. The filename of the help file is the same as the topic name, and the filetype is HELP followed by the first 4 letters of the category name. For example, the help file for HELP CSO POLICY is named POLICY HELPCSO. The text inside the help file can be written any way you wish, and is displayed exactly as you enter it (so it shouldn't be over 80 columns wide). There are some special flags that can go inside the help file; for information on these, you should consult the CMS User's Guide. When the HELP CSO POLICY command is entered, CMS searches for file POLICY HELPCSO on all your accessed disks; if there is more than one such file, the one with the lowest mode letter is used. (Thus, a help file you create on the A disk always takes precedence over a help file of the same name on another disk.)

A menu file is also easy to create. Suppose you have made up your own help category called STUFF; you have many help files in this category, all with a filetype of HELPSTUF. The menu file would be called STUFF HELPMENU. In this file you would place, at the beginning, a block of text; this is usually an explanatory paragraph and is simply displayed on the screen

when you enter HELP STUFF MENU. Following this block of text you must place TWO blank lines; this is used to signify that the list of help files is next. Following these two blank lines, you can place the names of the help topics, one per line, starting in column 1, in any order. That's all there is to it. When you enter

HELP STUFF MENU

the opening block of text is displayed, and then the names of the help files are displayed, neatly arranged across the screen. You can pick and choose which help files to view.

For more information about HELP, you can consult the CMS User's Guide.

We suggest you use HELP CSO WRITEUP to find out more about the WRITEUP facility, which you can use to print help files. A help file can be printed, of course, using the NPRINT command (see HELP CSO NPRINT), but WRITEUP produces a "nice" document with titles and pagination, more pleasant for reference. Moreover, WRITEUP can format the output for the IBM 3800 laser printer so that it comes out in "book" format, which is even nicer for desk use.

NOTES ON SPSS RELEASE 9 DOCUMENTATION FOR THE CYBER

Joan Mills

SPSS Release 9 on the Cyber still requires the use of the SPSS manual second edition and SPSS Update 7-9 manual. In addition, four packets of additional material have been prepared. Two of these are being given away free and one other will not be needed by those who have SPSS Release 8.3 supplementary documents; that is, the documents provided by Northwestern University for Release 8.3. Thus, only one packet typically will need to be purchased. You may wish to retain all your Release 8.3 documents in case there are problems in Release 9.

The four packets are described below:

1. Release 8.3 to 9 Changes
   Cross-reference
   SPSS Statistical Procedures

   These documents tell you what documents or what pages in manuals to use for various procedures and briefly what has changed since Release 8.3. These three items are stapled together as one packet and are free. The packet is available at 85 Commerce West.

2. Release 9 Update Manual

   This document emphasizes changes other than those in procedures (i.e., in COMPUTE, SORT CASES, etc.). This manual replaces the free SPSS Release 8.3 Update. It is free and available at 85 Commerce West. Since this Update Manual was provided to us in an on-line format, you may also use the WRITEUP command to access the file and print your own copy as follows:

```
WRITEUP,SPSSUPD
PRINT,UPDATE/AS/CC/EJ/DEST=3800/PAGEDEF=LR66/FONT=GT12/BAN='SPSS UPDATE'
```

where PAGEDEF and FONT are required by the 3800 printer at DCL. You may choose another printer at another site if you wish.

3. Tetrachoric
   G3SLS
   PLOT
   Summary Tables
   J Factor

   These documents are packaged together and available at the CSO Distribution Office, 1208 W. Springfield, Urbana. They have not changed since Release 8.3, so only new Cyber SPSS users will need to purchase this package. The package costs $2.60.

4. Regression Reference
   Nonlinear
   Spectral
   MANOVA

   These documents are packaged together and available at the CSO Distribution Office, 1208 W. Springfield, Urbana. They have been changed or are new since Release 8.3. The package costs $5.25.

   If you are only interested in the MANOVA manual, describing enhancements beyond the 7-9 Update Manual, you may access and print an on-line copy of the MANOVA manual via WRITEUP as follows:

   WRITEUP,SPSSMAN
   PRINT,MANDOC/AS/CC/EJ

   NOTE: If you wish to print this document on the 3800 printer at DCL, your print command should be as follows:

   PRINT,MANDOC/AS/CC/EJ/DEST=3800/PAGEDEF=LR66/FONT=GT12/BAN='SPSS MANOVA'

Also note: SPSS Release 8.3 documents will be withdrawn from sale at 1208 W. Springfield and from the free shelves at 85 Commerce West. If anyone should need Release 8.3 documentation, the CSO South Statistical Consultants will keep a few copies to give out.

Be sure to use the command

GRAB,SPSS/F

to access SPSS Release 9 on the Cyber (where F indicates "future").

CSO OPENS MICROCOMPUTER RESOURCE CENTER

Cass Morrow

Campus personal computer owners now have a major technical information center available for their use in 1987. CSO's Microcomputer Resource Center opened its doors during the last week of January. Located in Room 106, CSO Office Building, 101 South Gregory, Urbana, the Resource Center provides on-site computer workstations for hardware and software evaluation.

In addition, a broad spectrum of public domain software is available for distribution and purchased software for short-term loan to off-site or home trial locations.

Advanced microcomputer systems are available for client use. The Resource Center has an RT System with 70 MB of memory, an AT system with dual monitors for monochrome and professional graphics, as well as an XT system with a 10 MB hard disk. In addition, clients have access to a CD-ROM containing PC-SIG public domain software and a Macintosh Plus with its own laser printer. Vendor demonstration units displaying new personal computer systems are a welcome addition to the Center's permanent hardware.

The proposed software collection includes low or no-cost packages from PC-SIG, as well as Shareware. Business and statistical packages, communications, utilities, graphics and word processing software will comprise the balance of the collection. Some examples might include Mac 3D Graphics, MacWrite, MacPaint, MacDraw, Freelance, Grapher-3D, Ontio and Office Writer 5.0. We have many commercial packages and are expecting more. Budget constraints do not permit us to carry all of the major packages. Some vendors and manufacturers have donated packages, and we are soliciting others.

The Microcomputer Resource Center is a comfortable, accessible, private reading and evaluation room. Campus personal computer owners may drop in and browse through a variety of current trade magazines for IBM, Heath/Zenith, Apple and Macintosh users. Hardware and software buyer's guides, price lists and an array of vendor literature and seminar announcements are also on hand.

A student from the Graduate School of Library and Information Science is available during regular hours to assist users in locating material and charging out software packages. All federal copyright and state contract laws are enforced. Any copying of software for personal use is strictly forbidden. The Resource Center Staff routinely answers and refers technical questions to the Microcomputer Support Staff of CSO. Additional print, software and technical services are planned for the future.

The Resource Center hours are as follows: Monday, 1-5 pm; Tuesday, 1-5 pm; Wednesday, 10 am-2 pm; Thursday, 1-5 pm; and Friday, 10 am-2 pm.

For further information users are invited to contact Mark Zinzow, Resource Center Director, at 244-1289 — or contact the Center directly at 244-6261. An answering machine is provided for patrons at other than the regular Resource Center hours. All calls will be returned by a Resource Center staff member.

EXTENDED MICROCOMPUTER SUPPORT

Ron Szoke

CSO is taking a new initiative in microcomputer support. Starting in 1987, a staff of part-time student consultants, trainers troubleshooters and programmers will be available to make "house calls" for the purpose of providing on-site assistance to faculty, staff (academic and non-academic), and graduate students in furtherance of their instructional, research, and administrative work using small computers. (The service is not intended to provide help to students with coursework or class assignments.)

Requests for custom services will be entertained in the following areas:

- training and specially tailored short courses in various microcomputer applications packages, especially the most widely used word processing, spreadsheet, database, and communications packages;
- setup, configuration and checkout of new equipment such as memory expansions, hard disks, printers, modems, etc.; and
- custom programming and applications development in the principal standard languages, such as BASIC, Pascal, C, Lotus 1-2-3, and dBASE.

The first hour of such services will be provided at no cost, allowing fast, free, no-hassle resolution of many small and uncomplicated problems. Clients will be billed at the rate of $6 per hour after the first hour.

Questions, comments, and requests for service should be communicated to Ron Szoke, 333-8630, or message to 244-1257.

MICROCOMPUTER DISK CARE

Joan Schraith

The event of disk failure tends to follow Murphy's Law: when you don't have time for it, and haven't made a backup, that's when your disk will fail. Frequently, a little prevention can go a long way towards protecting your data.

First of all, NEVER touch the actual disk. Fingerprints or other debris left on a disk can cause the disk drive's head to skip over or make data patterns difficult to pick up.

Insert floppies carefully into the disk drive to avoid bending the disk. If bent, a disk may become warped, making it difficult for data to be read. Also, always insert the edge of the disk with the two small grooves on it into the drive first. (This is the side opposite the label.)

Keep floppies away from magnets, telephones, television sets, monitors, etc. If exposed to a strong enough magnetic field, the data pattern on the disk may become reversed or even erased.

Store disks in their jackets and inside a disk container to keep them free from dust, moisture and other contaminants. Don't crowd your disks in the container, as you might bend them.

Use the disk in temperatures ranging from 50 to 125 degrees Fahrenheit. Neither extreme heat nor extreme cold is good for disks.

Even with the proper care outlined above, disk failures can still occur — from age, accidents, a program that writes files in the same place repeatedly, etc. Always assume that a disk will eventually fail. Thus, you should always make backups. You can use the DOS backup command for a hard disk, to make copies on floppies, and the DOS copy command (or backup command) to backup a file onto another floppy. Gauge the frequency of backup by the value of your modifications. If you are writing a paper, and have edited 10 pages, exit the word processor and copy the file containing the modifications onto your backup disk, place the backup disk back into its protective sleeve, and reenter the word processor. Don't think of it as a

waste of time. If you had to retype it, it would take much longer to restore the work you have done than the few seconds needed for backing up. Don't just backup files onto the same floppy, use another disk.

Don't send your disks through X-ray machines at the airport, and protect them from static electricity. If you travel (even carrying a disk from a home computer to the PC Lab), bring a copy of the disk and not the original — just in case.

If your disk IS damaged and you DON'T have a backup, your data MIGHT be restorable. We have a copy of Norton's Utilities at the Microcomputer Hotline Office (94 Commerce West), and can also use the DOS RECOVER and CHKDSK commands to try to retrieve lost data. This is a much less attractive option than restoring your data from a backup, however. Generally, we can retrieve text without formatting using these options — but not necessarily in a complete file. RECOVER, for example, will give clusters of text in separate files — which might originally have been contained in one or many files. Furthermore, if the disk directory has been damaged or lost, most of the Norton Utilities won't be of much help.

So, PLEASE, if your data is of any value to you, take care of your disks and make frequent backup disks. The savings in time and headaches more than make up for the slight trouble of prevention.

MASTER CONTROL: A PC HARD DISK SECURITY PACKAGE

Steven Miller

The personal computer hard disk, although fast and easy to use, has created a large problem for software developers and PC users. This problem is one of security. Most software, once it is put on a hard disk, can be copied off to floppy by anyone with enough determination to figure out DOS. This fact has caused many researchers to resort to doing all developmental work on floppies in order to protect their code from other users of the hard disk. Also, departments on campus have had to restructure computer rooms due to fears of software pirating and the tougher stance by the software industry toward pirating. As a result of all this, hard disks are not being used to their greatest efficiency.

The industry has been developing software that will provide security for hard disks. One such software package, called Master Control, has been developed and is distributed by Master Control Systems, Inc. (MCS). The security features of this package allow the fear of having your research or copyrighted software stolen to be put to rest. The package also supplies the PC user with several other nice features.

The entire Master Control package consists of the main software module, four optional software modules (Master Security, Master File Manager, Master Audit Trail, Master Network), and one optional hardware module (Master Card). The optional modules allow users to customize Master Control to meet their own individual needs.

Master Control Main Module

The Master Control main module allows a user to set up menus to execute programs in much the same way as macro keys. The main difference is the ability to pass not only parameters to the program but also keystrokes to execute while in the program. Keystrokes must be passed in ASCII format, so a 13 would represent a carriage return. This is particularly convenient when you like to execute the same series of statements once you have an application loaded. For example, sending the series of keystrokes

@3 "USE ACCOUNT" @3 "DISPLAY STRUCTURE"

to DBASE has the same effect as loading DBASE, issuing a use account statement and then issuing a display structure statement. The **@3** fools the application into thinking that the keyboard buffer is empty when in fact it's not. This is particularly useful because several programs require the keyboard buffer to be clear prior to executions (DBASE and Lotus 1-2-3 are two programs that have this requirement).

In addition to allowing you to pass keystrokes to your program, the main module allows you to create submenus of the original menu. You can have DBASE as a choice in your main menu and then have a submenu that allows you to enter DBASE with certain options, depending upon which selection you make in the submenu. You can put up to eighteen programs or submenus on a double column menu, or up to nine on a single column menu. The double column menu allows you to custom design a logo to be displayed between the two columns.

Another nice feature of Master Control's main module is the ability to password-protect an entry on the menus. This means that in the above example you could have the user enter a password to get to the submenu of DBASE and then have them enter another password to get that particular application to execute on the machine. Master Control's main module includes a submenu that has most DOS functions programmed into a single keystroke.

Master Card

Master Control optionally uses a hardware module called Master Card. This half-length card allows nothing to get control of the computer before Master Control does. This means that people attempting to boot from a floppy will be unsuccessful!

Master Card also locks out the floppy disk drives unless permission is given by the system administrator. This means that no files can be copied from your system without the system administrator's authorization (this option requires the software option of Master Security to function properly).

(NOTE: At the time of publication the Master Card had NOT been received for evaluation. The description given has been derived from MCS literature.)

Master Security

The optional software module called Master Security allows you to encrypt your programs so they will only operate under the control of the Master Control software. This will allow you to thwart people who try to bypass Master Control through floppy boots or exits to DOS.

A second option of Master Security allows you to set up user IDs and passwords for logon to your system (this option requires the Master Audit Trail module). A third option gives you the

ability to choose areas that you will allow individual users to access (this function requires the Master File Manager module).

Master File Manager

The Master File Manager software allows the user to do all file manipulations without a prior knowledge of DOS. For those of you familiar with public domain software, it is very similar to the Directory Scanner software.

Master Audit Trail

The Master Audit Trail software allows you to gather system activity reports. If the Master Security module is installed, you can obtain reports based on user IDs. The system administrator has the ability to set the type of audit tracking that is done. Also, the audit reports can be generated in several forms (based on user ID, user name activity, program usage, or daily log reports).

Master Network

The Master Network module allows Master Control to supervise network activity user by user throughout the network. (NOTE: At the time of publication, the Master Network software had not been evaluated. The above description was derived from MCS literature.)

A truly notable aspect of the Master Control software is the price. The Master Control main module is available at a single copy price of $50.00. Each of the optional software modules mentioned is $30.00, and the Master Card is $50.00. Master Control Systems has also initiated multi-copy discounts for those of you interested in securing classrooms of personal computers.

A suggested configuration for good general security and program control is the Master Control main module and the Master Security module. Use the Master Security module to encrypt all your files and use the main module to put enough password protection on the menus to make yourself comfortable. If just encryption is not sufficient (e.g., your office mate is Super-Hacker who loves to prowl through BIOS code), then I would recommend spending the extra $50.00 for the Master Card. The total cost for a single machine is $80.00 for Master Control plus Master Security, or $130.00 for these two modules plus the Master Card. (The entire Master Control package — main module, 4 optional modules + Master Card — would be $220.00.)

NOTE: There are other security packages available and some of them may cost less and do more. This article is NOT an endorsement by CSO of this particular product; it is just an evaluation of one security software package for your information. If you are interested in purchasing a security package for your PC and would like help or more information, please contact Steven Miller at 244-0730.

REDEFINING KEYS WITH KERMIT

Mark Zinzow

In a recent article, the basics of file transfer with Kermit, including what Kermit is, were covered. This article will cover the commands for, and the uses of, key redefinition in Kermit-MS. Future articles will cover other amenities available in Kermit such as color definitions and auto logon script files, and new features in Kermit-MS 2.29A and CMS Kermit 3.1 that allow local printing of VMD files on your PC.

Key redefinitions in Kermit-MS have a number of uses. One is to customize your keyboard to your taste, a particular host, or host application. An example of this is the 7171KEYS.DEF file that is used by the MSKERMIT.INI file on our campus. Another is to cut down on typing of repetitive character strings such as the sequence of information used to login to a particular host.

> *(NOTE: In the following article, Kermit prompts appear in regular Roman type; commands, parameters, etc. that are to entered by the user (as shown) are in upper case bold; parameters, variables, etc. that the user must replace are in lower case bold.)*

Keys are defined with the SET command and displayed with the SHOW command. In general the syntax of the SET command is:

> **SET parameter [parameter] [value]**

For example the MSKERMIT.INI file contains a **SET BAUD 1200** line which specifies the communications speed. Here **BAUD** is the parameter and **1200** is the value of that parameter. Those people connecting to a host via a LocalNet port would edit this line to read **SET BAUD 9600** to change the default setting, rather than typing in the SET BAUD command after the Kermit prompt appears.

When SET is used to define keys in Kermit-MS the syntax is:

> **SET KEY {SCAN number | Fn | BACKSPACE} <Enter>**
> **value**

where **number** is a decimal scan code for the key you wish to define, **n** is the number of the function key, and **value** is the string you wish assigned to that key. Characters that are not easily typed may be included by typing their numeric equivalents as three octal (base eight) digits preceded by a backslash, e.g., \015 for a carriage return.

For example, to define F1 (function key one) to generate the string "hi there" when pressed, the command would look like this:

> Kermit-MS>**SET KEY F1**
> Definition string: **HI THERE**

Unlike the backspace and functions keys, most keys do not have a special name that can be used in the SET KEY command. For this reason most key redefinitions are done by scan code. There are tables of the scan codes generated by all the keys on the keyboard in the manuals included with most systems; however, the easiest way to find out what the scan code is for a particular key is to use the SHOW KEY command in Kermit. Simply type **SHOW KEY** (can be abbreviated to **SH K**) at the Kermit-MS> prompt and you will be prompted to press the key. The scan code for the key and a redefinition (if the key is redefined) will be displayed. If the key has not been defined with the SET KEY command, the definition will be blank rather than a display of the actual character sent to a host by Kermit (by default) when the key is pressed.

Here's how to look at, and then program, F1 for our 7171:

```
Kermit-MS>SHOW KEY
Press key:
  Scan code: 59
  Definition:

Kermit-MS>SET KEY F1
Definition string: \0331
Kermit-MS>SH K
Press key:
  Scan code: 59
  Definition: \033
  1
```

The command SET KEY SCAN 59 would be the same as SET KEY F1 in the above example. Most keys have a different scan code when combined with the SHIFT, CTRL, and ALT keys. With the various combinations of one or more of these modifier keys it is possible to assign 80 different strings to the ten function keys alone! (For those with the new keyboards with F11 & F12 keys, current versions of Kermit-MS, including test releases through 2.29B, do not recognize these keys; however, release 2.30 will support these keys when released.)

Obviously it is far too cumbersome to type in key definitions manually every time Kermit is run. That is why there are three ways to store these commands in files: command files, macros, and the initialization file. Any simple text editor can be used to create a file of Kermit commands and then such a file can be executed by Kermit with the TAKE command. If this file has a special name (MSKERMIT.INI in MS-DOS, userid KERMINI in CMS) Kermit will automatically TAKE it when it starts up.

In CMS the following are commands that would be appropriate to be placed in a userid KERMINI file (e.g., CMS user MARKZ would call this file MARKZ KERMINI A):

```
SET BLOCK 3
SET RECEIVE PACKET-SIZE 1000
SET WARNING ON
```

(None of these commands are necessary; they are given here only as an example of an initialization file. See HELP CSO KERMIT for an explanation that will allow you to determine the desirability of these commands for you.)

Macros are defined with the DEFINE command and executed with the DO command. The syntax of the DEFINE command is:

```
DEFINE macro-name [command [, command [, ...]]]
```

All commands associated with a macro name are placed after the macro name, separated by commas. For example, here are some define commands that might be typically found in a MSKERMIT.INI file:

```
DEFINE 96 SET BAUD 9600
DEFINE NO SET PARITY NONE
DEFINE E SET PARITY EVEN
DEFINE BA SET KEY BACKSPACE,\010
DEFINE VM TAKE VM
DEFINE UNIX TAKE UNIX
```

The first four DEFINE commands create macros that are just shortcuts for longer commands, i.e., it is easier to type DO NO than SET PARITY NONE. The last two TAKE files (named VM and UNIX) that might have more commands than would fit in a macro definition. They

would contain commands to customize the keyboard for the host operating systems for which they are named (UNIX and VM/CMS).

For instance, here is a file (called VM in our example, stored in the PC Kermit directory on disk) of commands suitable for modifying Kermit for use on VMD:

```
; Modifications to default INI's for VM
SET PARITY EVEN
SET RECEIVE PACKET 1000
SET SEND PACKET 1000
; personal enhancements to the standard key definitions follow
; correcting backspace assigned to backspace key
SET KEY SCAN 14
\033OD\177
; fast Left assigned to ctrl left key
SET KEY SCAN 1139
\033OD\033OD
; fast Right assigned to ctrl right key
SET KEY SCAN 1140
\033OC\033OC
; Home assigned to keypad -
SET KEY SCAN 74
\010
SET TERM COLOR 33,40
```

Probably the most useful of these definitions is the one for the backspace key. Since Kermit-MS is emulating a VT102 terminal, which is very similar to a DEC VT100 terminal, the ASCII control codes used with Kermit on the 7171 protocol converter are those for the VT100. These codes were designed for a keyboard layout different from that of a PC. Normally the backspace key generates the ASCII backspace control code eight (010 in octal). The 7171 performs the HOME function when it receives this code and places the cursor in the upper left hand corner of the screen.

Since this is generally not what one expects when the backspace key is pressed, it is convenient to make that key perform in the usual manner. However, there is no code available on the 7171 to perform this function. The trick lies in realizing that a backspace involves two other simpler functions: moving the cursor left and deleting the character then under the cursor. These functions are available, so the backspace key is assigned both the ESC O D left arrow sequence and the DEL (ASCII 127, 177 in octal) control codes.

Another common function on many systems is a line delete (e.g., "kill" in UNIX) used to erase an entire line of input when one wishes to start over. Again the 7171 does not perform this function, but it can be simulated using two simpler functions: field back tab and erase to end of field. The 7171KEYS.DEF file defines the Del key to be the character delete DEL. To define shift Del to be a line delete (which doesn't alter the unshifted Del) the following commands could be added to the VM file (referenced above):

```
SET KEY SCAN 595
\033\011\033\177
```

Remember that the backslash introduces octal codes. In this case, it is for ESC (\033) TAB (\011) ESC (\033) DEL (\177) where ESC TAB is the 7171 field back tab and ESC DEL is erase to the end of the field.

When creating key definitions it is useful to have a table of ASCII codes and a copy of the VT100 control codes used by our 7171. ASCII tables are included in the system manuals of most computer systems and terminals, and are also available as Reference Guide RF-0.5 at CSO

Sites. VT100 codes used by the 7171 may be read on VMD with the command HELP 7171 VT100, and printed with WRITEUP 7171 VT100. Some of the comments in the 7171KEYS.DEF file supplement the 7171 VT100 help file with the actual ASCII character sequences generated by VT100 keystrokes such as ESC O M which is generated by the VT100 numeric keypad enter key and used by the 7171 to clear the screen.

Some keys provide special functions when using the terminal emulator in Kermit-MS. These functions would be lost (until the next release of Kermit) if those keys are redefined. Some of these keys are: Home, End, PgUp, PgDn, and the keypad + (grey). All of the special functions are documented on page 210 of the *Kermit User Guide* (Sixth Edition, Revision 2) and are well worth exploring. Two of the more interesting ones are PgUp and PgDn. PgUp is used to view the last page of text that has scrolled off the screen, and PgDn scrolls back down the buffer. This is very handy and simple to use on a UNIX system, but more difficult to make use of in a full screen environment where the screen is always cleared before it has a chance to scroll.

This feature can be used on VMD, for example, by filling the screen buffer before beginning a 7171 terminal session. This could be accomplished simply by holding down the enter key at the LocalNet (Sytek) # prompt and letting the # symbols scroll off the screen, or by logging into a UNIX system prior to your session on VMD. Now if you see a screen you think you might wish to refer back to later, you could hit the PgUp key and redraw the screen with the reset (Ctrl G) or the reshow (Ctrl V) commands, and then continue your session. The saved screen could then be quickly viewed by pressing PgDn, and then the current screen could be returned to by pressing PgUp. With a little experimentation this can be a very handy feature of Kermit-MS, as several screens may be held in the screen buffer.

The cursor (arrow) keys are also special and might not work on all hosts if redefined. The VT100 terminal can generate two different sets of cursor motion control codes. Which code is used by Kermit-MS depends on whether the VT102 emulator is in *cursor/numeric* or *application* mode. Usually the host will tell the emulator which mode it expects the keypad to be in when the terminal is initialized. This happens on VMD when you enter the VT100 (or KERMIT) terminal type. Kermit-MS defaults to *numeric* mode and the 7171 uses *application* mode. Should your PC have missed the command to set *application* mode, your arrow keys either won't work at all, or will produce codes that will be interpreted as strange function keys. This situation can also occur if noise on your communications line causes the set *cursor/numeric* mode command to be sent to Kermit-MS, or if you hit the Alt = reset emulator command. If this happens, simply type the 7171 reset command Control G. The 7171 will then reinitialize your emulator and redraw the screen. In UNIX this may cause your arrow keys to stop working in the vi editor; again you must reinitialize your terminal.

Scan codes are not affected by the status of the Caps Lock, Num Lock, and Scroll Lock keys. This can lead to unexpected problems. For example, the 7171KEYS.DEF file redefines the Ins key. Normally when Num Lock is depressed the Ins key is the number zero; however, when the key is redefined the new definition supersedes the Num Lock function and the insert codes are generated by this key. To work around this, remove the insert key definition from your 7171KEYS.DEF file if you wish to use your keypad in numeric mode, or hold down a shift key when typing numbers on the keypad.

The 7171KEYS.DEF file redefines only those keys which are not normally used on most hosts, such as the function keys. If it included a definition such as the one mentioned above for the backspace key, that key would not function properly on a UNIX-based host. When logging off a VM/CMS system, a user with all the example files above would type:

```
CTRL-] C
DO UNIX
C
```

(where C is the abbreviation for connect) before logging onto a UNIX system. Here are a few lines that might be found in the file UNIX:

```
SET KEY BACKSPACE
\010
SET PARITY NONE
SET TERM COLOR 37,44
```

Since there are many keys not normally used, they can be assigned strings for tasks in which the same sequence of commands are typed day after day. A common example is the sequence used to log into a host. Here is a set of definitions a CMS user with a userid of MARKZ might use to streamline logging in to VMD from an office LocalNet port:

```
SET KEY SCAN 2092  ; ALT-Z
CALL 4500\015
SET KEY SCAN 2093  ; ALT-X
KERMIT\015
SET KEY SCAN 2094  ; ALT-C
\015l MARKZ\015\015
```

With these definitions all MARKZ would type to login to VMD would be Enter until the # prompt appeared, Alt-Z, Alt-X, Alt-C, his password, and another Enter. A variant of this for users that share a single machine would be to place each person's userid on the Alt letter of a first initial.

References

Kermit: A File Transfer Protocol, Frank da Cruz, Digital Press, Bedford, Massachusetts 01730, 1987

Although more expensive than other sources, this is the best information available on every aspect of Kermit. This book assumes no prior computer knowledge and explains every aspect of Kermit in very simple terms. The book ends with a thorough explanation of the implementation of all the features of the Kermit protocol with numerous programming examples. This book is highly recommended for anyone who wants a detailed understanding of Kermit.

Kermit User Guide, Sixth Edition, Revision 2, Frank da Cruz, editor, Columbia University Center for Computing Activities, New York, New York 10027, May 26, 1985

This is the primary reference guide for Kermit and its major versions. It includes sections on Kermit in general and chapters on the major implementations. The general sections are on the high density distribution versions of the Kermit disk for the IBM AT and compatibles. It is also on VMD in the file KUSER DOC. This may be ordered directly from CUCCA, but is available for $3.00 from the CSO Distribution Center at 1208 West Springfield Avenue in Urbana.

Kermit Protocol Manual, Fifth Edition, Frank da Cruz, Columbia University Center for Computing Activities, New York, New York 10027, April 5, 1984

This manual contains all of the information necessary to write your own version of

Kermit for a computer that may not already have it. This is on VMD in the files KPROTO DOC and KPROTO UPD. It is replaced by the Kermit book Kermit: A File Transfer Protocol. See *Kermit Info-Digest*, Volume 5, Number 13.

Kermit: A File-Transfer Protocol for Universities, by Frank da Cruz and Bill Catchings
"Part 1: Design Considerations and Specifications," BYTE the Small Systems Journal, p. 255, June 1984, Vol. 9, No. 6
"Part 2: States and Transitions, Heuristic Rules, and Examples," BYTE the Small Systems Journal, p. 143, July 1984, Vol. 9, No. 7

These articles provide interesting background and technical information on Kermit. They are combined on VMD in BYTE DOC.

Info-Kermit Digest

A series of InterNet note discussions on all versions of Kermit and enhancements to the general protocol. These may be viewed on some UNIX systems by typing **notes comp.protocols.kermit** and on other UNIX systems under a recently changed newsgroup name with **notes mod.protocols.kermit**. These are available on most systems that carry net news or notes and will soon be available on VMD.

In addition to these resources, each implementation of Kermit for any specific computer is usually accompanied by one or more documents specifically for that version.

PART-TIME TECHNICIAN NEEDED

The Center for Supercomputing Research and Development would like to hire a University undergraduate student to work as a part-time technician. Applicants must be able to work at least 15 hours per week, with at least 10 of those hours worked between 8am-5pm, and in shifts no less than two hours each. Desirable background includes electronics installation and debugging, soldering experience, familiarity with UNIX, and familiarity with computer peripheral devices. Many of the tasks will be menial, while others will offer some opportunity to learn about CSRD's hardware and software.

Applicants should apply to Debbie Hudson, 321-C Talbot Laboratory (244-6174).

COMPUTER TERMINAL FOR SALE

The Library Research Center has an IBM3101 1200 baud computer terminal which is approximately 4 years old. We would like to sell this equipment to another department who would have use for it. It is University inventoried. The price is negotiable.

If you have further questions, or are interested in this equipment, please contact the Library Research Center, 333-1980.

USER TRAINING PROGRAM

Short Courses, Manuals and Training Packages
for the CSO Computer Systems
Spring Semester 1987

SHORT COURSES

CSO is offering the following noncredit short courses during the Spring semester 1987 to acquaint potential users with our computing systems, facilities and services.

Short Course Policy

Please note that:

1. CSO makes a small charge for most short courses. This is due to two factors: (1) There is a need for equipment to support improvement in teaching methods; (2) The volume of short courses has risen to the point where it is a serious drain on consulting staff time, and some compensation in staffing must be made.

2. REGISTRATION IS REQUIRED for all courses except where noted. Registration is accomplished by filling out a SEPARATE copy of the registration form and SEPARATE check or voucher for each registration and sending these documents to CSO in either campus or U.S. mail. Walk-in registrations will be accepted in 162 DCL.

3. If fees are paid by check, each check must be dated as of the FIRST DAY the corresponding class is taught. Other checks will be returned.

4. The registration form is available on-line and may be printed from the Cyber via:

   GET,REGFORM/UN=COURSES
   PRINT,REGFORM/AS/CC/EJ/DEST=site

   or printed from IBM VMD via:

   NPRINT COURSE REGFORM * (DEST site CC EJ

   Or you may call 244-1257 and request that one be sent to you.

5. Each registrant will be sent a confirmation of registration on which the place of meeting is noted. This slip must be taken to all meetings of the class and shown when requested.

6. Refunds of fees will be made only for canceled classes, or upon receipt of an application for refund on or before the day BEFORE the second meeting of the class. There are no refunds for classes that meet only once. Application for a refund must be made in room 162 DCL during normal office hours; no applications will be accepted by telephone. Refunds are made by means of a credit memorandum (good for one year); exceptions will be made only in extremely unusual circumstances and at the discretion of the user training coordinator.

7. A copy of the current (updated) short course listing may be examined on-line from the Cyber via:

TYPE,COURSES/AS/UN=COURSES.

or from the IBM VMD via:

HELP COURSES MENU

8. Updates (changes) since the printed short course listing was issued may be examined on-line via:

   TYPE,UPDATES/AS/UN=COURSES.

   This file contains current information on courses and sections that have been newly opened, canceled, filled and closed, etc.

9. CSO reserves the right to cancel courses or sections with insufficient enrollment. All fees paid for these classes will automatically be returned.

Questions, comments and suggestions should be addressed to the CSO user training coordinator: Ron Szoke, (217) 333-8630; or TELL,SZOKE from the Cyber; or NOTE SZOKE @ UIUCVMD from CMS; or electronic mail to **uiucuxc!szoke** from UNIX USENET.

Short Course Summary: Titles

NOTE: For ease of reference, short courses are now classified into six groups, depending on the computing system addressed:

* Special attention is called to new courses in 1986-87, which are enclosed in asterisks. *

G series: General and Introductory

G10. Orientation to CSO Facilities and Services
G11. Computing for Poets
G31. *Remote Access Data Communications*

Computer Graphics

G61. *Survey of CSO Graphics Facilities*

M series: Microcomputers

M11. Basic Concepts in Computer Information Processing
M21. Quick PC
M22. *Quick Mac*
M27. *Communicating with and Networking Microcomputers*
M39. *Using a Documentation Package*
M41. Using a Word Processing Package
M43. Using a Spreadsheet Package
M45. Using a Database Package
M47. *Intermediate PC*
M51. *Using a Desktop Publishing Package*
M55. *Intermediate Database*

Computer Graphics

M61. *Introduction to Microcomputer Graphics*

Statistical Computing

M73. Using a Statistical Package
M75. Micro Versions of Mainframe Statistical Packages
M76. *Using Kermit with SPSS/PC and SPSS-X

C series: The CDC Cyber Network Operating System (NOS)
C11. Introduction to the Cyber System: NOS Version 1

I series: The IBM VM/CMS System
I13. CMS Orientation
I23. Introduction to IBM Timesharing: CMS and XEDIT
I25. *Using the Document Composition Facility*
I33. *Intermediate CMS*
I35. Using Tapes on CMS
I51. *Introduction to the VM/SP System Product Interpreter*

Statistical Computing

I72. BMDP for SAS Users
I76. Introduction to SPSS-X
I78. *Intermediate SPSS-X*
I79. *Regression Analysis Using SPSS, SPSS-X, or SAS*
I83. Introduction to SAS (Statistical Analysis System)
I87. *Using SAS with VMBATCH from CMS*
I89. Repeated Measures Analysis Using SPSS, SPSS-X, or SAS

Statistical Package Graphics

I97. Introduction to SPSS Graphics
I98. Introduction to CMS SAS/GRAPH

U series: The UNIX System

U11. Introduction to the UNIX System
U31. UNIX Text Processing
U41. Intermediate UNIX
U73. *The S Package for Data Analysis and Graphics*

X series: Mixed and Other Systems

X25. *Survey of CSO Print Services*
X31. *Introduction to Electronic Mail*

Computer Graphics

X63. Introduction to the DI-3000 Graphics Package

Statistical Computing

X76. *Using SPSS-X with VMBATCH from the Cyber*
X87. *Using SAS with VMBATCH from the Cyber*

Short Course Listing

G series: General and Introductory

G10. Orientation to CSO Facilities and Services

A brief, nontechnical presentation for prospective users on the following topics: the mission and organization of CSO; computing equipment; locations of facilities and hours of operation; available software; where to obtain documentation; the user training program (short courses and training packages); consulting and other services; how to set up a computer account. No prerequisites. No fee. NO REGISTRATION REQUIRED.

1. Jan. 23 12N-1pm 115 DCL [Szoke]
2. Jan. 29 4pm-5pm 111 Gregory Hall [Engelbrecht-Wiggans]
3. Feb. 4 8am-9am 168 Elect. Engr. [Kerr]
4. Feb. 10 12N-1pm 130 Commerce West [Gengler]
5. Feb. 16 4pm-5pm 505 E. Green, Room 226 [Wetzel]
6. Feb. 24 8am-9am 110 Lincoln Hall [Mills]

G11. Computing for Poets*

This is a brief general exploration in "computer literacy" for those in the humanities and fine arts. Intended especially for those with "computer anxiety" and those who are "anti-computer" or "anti-technology," the course assumes no background in computing, mathematics, or any other technical field. NOTE that this is not a "hands-on" course, and that there is substantial overlap with M11. Prerequisites: none. Fee: $15.

*"Poets" is meant poetically, not literally.

Feb. 9,10,11,12 12N-1pm [Szoke]

G31. Remote Access Data Communications

This presentation deals with computer communications between UIUC and other sites (especially other campuses). Topics covered include how to sign onto UIUC machines remotely and how to transfer files between computers, including the Cray supercomputer. This course does not deal with BITNET. Prerequisite: M11 or equivalent knowledge of basic computer concepts. Fee: $10.

Feb. 24,26 3:30pm-5pm [Krol]

Computer Graphics

G61. Survey of CSO Graphics Facilities

This class presents an overview of the graphics facilities available on CSO's Cyber and IBM-CMS systems. Samples from the major graphics packages will be presented, along with explanations of (1) what kinds of applications each is best suited for, and (2) their respective weaknesses. The various graphics device drivers will also be introduced as time permits. Prerequisite: G10. Fee: $10.

Mar. 10,12 3pm-4:30pm [Albin]

M series: Microcomputers

M11. Basic Concepts in Computer Information Processing

An introductory survey of computer information processing concepts and terminology, intended especially for those beginning to use a small computer or word processing equipment. The needs of UI administrative, clerical and nonacademic personnel have been central to the planning of the course. Some guidelines for selecting a personal or microcomputer are suggested, but attendees will NOT be told which one to buy, nor which one is "best." NOTE that there is no laboratory or "hands-on" component to this course, and that its content substantially overlaps G11. No prerequisite. Fee: $15.

Feb. 9,11 3pm-5pm [Szoke]

M21. Quick PC

A concise review of essentials of using the IBM Personal Computer: basic hardware configuration (keyboard, system unit, disk drives, printer); proper care and handling of diskettes; hands-on experience using the PC-DOS operating system to format a diskette and to copy, type, rename and delete files; software packages available from CSO and how to check them out; how to load and run programs and software packages. Prerequisite: G10 and familiarity with basic computer terminology equivalent to G11 or M11. Fee: $10 (includes one diskette). Enrollment limited to 15 per section.

1. Feb. 3 3pm-5pm [Knott]
2. Feb. 12 3pm-5pm [Knott]
3. Feb. 17 3pm-5pm [Knott]
4. Feb. 26 3pm-5pm [Knott]

M22. Quick Mac

A concise review of essentials of using the Apple Macintosh computer: basic hardware configuration (system unit, disk drive, mouse, printer); proper care and handling of diskettes; hands-on experience using the Macintosh "desktop" operating system and pull-down menus to initialize a diskette and to move and "trash" files; software packages available from CSO and how to check them out; how to load and run programs and software packages. Prerequisite: G10 and familiarity with basic computer terminology equivalent to G11 or M11. Fee: $10 (includes one diskette). Enrollment limited to 15 per section.

1. Feb. 5 3pm-5pm [staff]
2. Feb. 12 3pm-5pm [staff]
3. Feb. 13 3pm-5pm [staff]

M27. Communicating with and Networking Microcomputers

This class will discuss: connecting a microcomputer to a host mainframe locally and remotely; long distance data communications; standard interface wiring; modems; asynchronous communications and local area networks; file transfer between microcomputers and the software available for accomplishing this (emphasizing Kermit). Prerequisite: M11 and M21 or equivalent knowledge of microcomputer fundamentals. Fee: $15.

Apr. 14,16 4pm-6pm [German and Zinzow]

M39. Using a Documentation Package: Notebook II and Bibliography

This class shows how to construct and maintain a text database using a notetaking program and how to generate a bibliography from the database using a bibliography management program. Together, these features provide "database management for almost unlimited text." This package is supported by CSO and available from CSO at a large discount. Prerequisite: M21 or equivalent. Fee: $15. User must purchase software prior to class; available at the CSO Distribution Office, 1208 W. Springfield, Urbana. Enrollment limited to 12 per section.

Mar. 10,12 3pm-5pm [DeWan]

M41. Using a Word Processing Package

How to use a microcomputer and word processing package to produce (create, revise and print) publication-ready manuscripts. Prerequisite: M21, M22, or consent of instructor. Enrollment limited to 12 per section. Fee: $25 (includes one diskette).

1. MacWrite on the Macintosh
   Feb. 16,18,20 3pm-5pm [staff]
2. Volkswriter on the PC
   Mar. 24,26,27 3pm-5pm [Szoke]
3. Microsoft Word on the Macintosh
   Apr. 20,22,24 3pm-5pm [DeWan]

M43. Using a Spreadsheet Package

"Electronic spreadsheet" packages (such as VisiCalc, its successors and spinoffs) are widely considered the most impressive and useful software available for microcomputers. This course introduces participants to the analytical and "what if --" capabilities of a new generation spreadsheet package, Lotus 1-2-3 on the IBM PC. Also, glimpses of this package's database and graphics features if time permits. Prerequisite: M21, M22, or equivalent. Enrollment limited to 15. Fee: $25 (includes one diskette).

1. Lotus 1-2-3 on the PC
   Feb. 24,26,27 3pm-5pm [Szoke]
2. Lotus 1-2-3 on the PC
   Mar. 31, Apr. 2,3 3pm-5pm [Szoke]
3. Microsoft Excel on the Macintosh
   Apr. 20,22,24 3pm-5pm [staff]

M45. Using a Database Package

An introduction to microcomputer database management emphasizing the fundamentals of using database software. Using a leading database package, we will design and create an information file, enter, select and sort data, and use the package to write a report. If time permits, we may also write and run a simple program file. Prerequisite: M21 or equivalent. Enrollment limited to 15. Fee: $25 (includes one diskette).

1. dBASE II and III on the PC
   Feb. 17,19,20 3pm-5pm [Szoke]
2. R:base 5000 on the PC
   Mar. 10,12,13 3pm-5pm [Szoke]
3. dBASE III on the PC
   Apr. 14,16,17 3pm-5pm [Knott and Keefe]

M47. Intermediate PC

This is a second course in using the IBM PC/XT/AT and PC-DOS. It covers aspects of DOS 2.x and 3.x not covered in the introductory course (M21: Quick PC). Topics include: DOS versions, file specifications, device names, global filename characters, tree-structured directories and subdirectories, hard disk usage, redirecting input/output, batch files, and configuring your system. Other topics that may be covered as time permits: the EDLIN line editor, batch file commands, the LINK and DEBUG utilities, and using compilers. Prerequisite: M21 or equivalent. Fee: $20 (includes one diskette). Enrollment limited to 15 per section.

1. Mar. 2,4,6 3pm-5pm [Szoke]
2. Apr. 20,22,24 3pm-5pm [Szoke]

M51. Using A Desktop Publishing Package

Pagemaker is a popular electronic layout program that allows you to combine text and graphics created with other Macintosh applications, such as MacWrite, MacPaint, MacDraw, and Microsoft Word. It also provides built-in editing and graphics tools for correction and creation of text and simple graphics, such as boxes, lines, and shading. Prerequisite: M41 or equivalent word processing experience. Fee: $15.

Apr. 6,8 3pm-5pm [DeWan]

M55. Intermediate Database

This is a second course in use of a database management package, emphasizing hard disk usage, relational operations, simple programming (writing and debugging command files), and steps in designing and developing a database application. Prerequisite: M45 or equivalent basic knowledge of a database package. Fee: $25 (includes one diskette).

dBASE II, III and III PLUS on the PC
Apr. 7,9,10 3pm-5pm [staff]

Computer Graphics

M61. Introduction to Microcomputer Graphics

This course surveys the varieties of graphics software and hardware commonly available for microcomputers. Topics include the differences among types of software and what each is best used for, the types of input devices such as mouses and digitizers, and hard copy devices such as plotters and printers. The course is intended for newcomers to graphics who are sorting out what equipment they may need. Prerequisite: M21 or equivalent. Fee: $15.

Apr. 7,9 7pm-9pm [Smyser]

Statistical Computing

M73. Using a Statistical Package

This course demonstrates how to download a data set from the Cyber system to an IBM PC diskette file. A microcomputer statistical package (probably Microstat) is then used to obtain basic descriptive statistics and do an illustrative regression and analysis of variance. Prerequisites: M21 or equivalent and a good grasp of basic statistical analysis. Enrollment limited to 15 per section. Fee: $30 (includes one diskette).

Microstat on the PC
Apr. 14,16,17 3pm-5pm [Szoke]

M75. Micro Versions of Mainframe Statistical Packages

This is a survey course covering the current state of microcomputer (IBM PC compatible) versions of three popular mainframe statistical packages: SPSS, BMDP and SAS. Issues covered will include, but not be limited to, the following: required hardware configuration and operating system; programs/routines available; comparative installation procedures; relative pros and cons; current plans for future development. Demonstrations of each package will be given as time and machine availability permit. Prerequisite: M21 or equivalent. Fee: $10.

Feb. 24 7pm-10pm [Roy]

M76. Using Kermit with SPSS/PC and SPSS-X

This course covers communications (including file transfers) between SPSS/PC and mainframe SPSS-X using the widely available Kermit package. Prerequisite: Experience with SPSS, and minimal familiarity with Kermit. Fee: $10.

Apr. 16 7pm-10pm [Roy]

C series: The CDC Cyber Network Operating System (NOS)

C11. Introduction to the Cyber System: NOS Version 1

This course is intended for the first time Cyber 175 system user. Covers signing on, obtaining system information, and basic file concepts and maneuvers. The emphasis is on timesharing usage and the ICE text editor. Batch usage may also be discussed. Prerequisite: course G10. Fee: $15. Enrollment limited to 10 per section.

Feb. 16,17,18,19,20 4pm-5pm [Albin]

I series: The IBM VM/CMS Systems

113. CMS Orientation

This is a very brief orientation to CMS, aimed at users who have just acquired a CMS userid. It covers the use of an IBM keyboard, logging on, and a brief description of HELP files. Prerequisite: Possession of a CMS logon (userid) and the *Introduction to CMS at UIUC*. Fee: none.

1. Jan. 30 12N-1pm [Engelbrecht-Wiggans]
2. Feb. 11 12N-1pm [Gengler]
3. Feb. 24 3pm-4pm [staff]
4. Mar. 5 5pm-6pm [Scheid]

123. Introduction to IBM Timesharing: CMS and XEDIT

This course presents an introduction to general CMS (Conversational Monitor System) virtual machine and XEDIT concepts. The CMS portion covers standard and locally written CMS commands and utilities, sending files between the Cybers and CMS, guidelines for utilizing the available documentation, how to use ASCII terminals in full-screen mode. The XEDIT portion introduces the text editor used under CMS. The presentation covers useful commands for both "ASCII typewriter" and "full-

screen" or "simulated full-screen" terminals. Recommended prior reading: *Introduction to CMS at UIUC*, available for $2.50 at the CSO Distribution Office, 1208 W. Springfield, Urbana, or the Illini Union Bookstore, 715 Wright Street. Prerequisite: course G10 or equivalent knowledge. Enrollment limited to 14 per section. Fee: $15.

1. Feb. 9,11,16,18 4pm-6pm [Alster]
2. Feb. 23,24,25,26,27 4pm-5:30pm [Engelbrecht-Wiggans]
3. Mar. 9,10,11,12 7pm-8:30pm [Kerr]
4. Mar. 30, Apr. 1,6,8 7pm-9pm [Roy]
5. Apr. 13,14,15,16 4pm-6pm [Mills]

I25. Using the Document Composition Facility

This course is an introduction to using SCRIPT/VS, a component of IBM's Document Composition Facility, to produce publication-ready documents. The Generalized Markup Language (GML), which provides a means to describe your document to SCRIPT, is the primary focus of this course. Prerequisite: I23 or equivalent general knowledge of CMS and XEDIT. Fee:$10.

Feb. 16,17,19 5pm-6pm [Gengler]

I33. Intermediate CMS

This course is designed for CMS users having at least six months' experience with CMS. The course treats in more detail some topics in the introductory CMS course (I23) as well as discussing more advanced topics such as execs, efficient space utilization, an introduction to using magnetic tapes, customizing your CMS work environment, and some commands useful in advanced CMS applications. Enrollment limited to 20. Prerequisite: I23 or equivalent. Fee: $25.

Apr. 20,21,23 7pm-9pm [Roy]

I35. Using Tapes on CMS

This courses will begin with a discussion of the characteristics of magnetic tapes, then will cover the use of tapes on CMS, including the TAPE command, MOVEFILE, TBROWSE, and examples of using tapes with some application languages and packages. Prerequisite: I23 or equivalent experience using CMS. Fee: $10.

Apr. 13,15,17 2pm-3pm [Wetzel]

I51. Introduction to the VM/SP Product Interpreter

Introduction to the System Product Interpreter (SPI) under CMS. SPI allows you to write programs comprised of CP, CMS, and/or XEDIT commands using one of three languages: EXEC, EXEC2, or REXX (the Restructured Extended EXecutor language). Using SPI, you can write or tailor your own CMS commands (called "execs") or XEDIT commands (called "macros"). You can also write procedures (called "execs") which accomplish a sequence of repeated tasks by simply entering the name of the exec. This course gives an overview of SPI with primary emphasis on the REXX language. Examples will include creating your own PROFILE EXEC and PROFILE XEDIT files. Recommended references: *The VM/SP System Product Interpreter User's Guide* and the *VM/SP System Product Editor User's Guide*, available at I208 W. Springfield. Prerequisites: I23 or equivalent. Fee: $25.

Apr. 13,14,16 4pm-6pm [Kesner]

172. BMDP for SAS Users

BMDP, a widely-used package of statistical programs developed by UCLA's Department of Biomathematics, is oriented toward the biological, medical, nutritional, agricultural and veterinary sciences. This is an introductory course on the use of BMDP on the IBM system. This course is geared toward experienced SAS users who are looking for procedures not available in SAS. Topics covered: data preparation, elements of the BMDP language, running BMDP programs at terminals, data editing, creation and use of system files, and examples of using BMDP for descriptive statistics, regression and analysis of variance. Prerequisite: 123 and 183, or consent of instructor. Fee: $25.

Mar. 9,10,12 7pm-9pm [Roy]

176. Introduction to SPSS-X (Statistical Package for the Social Sciences)

This course is designed to present the basics of SPSS-X usage. Topics will include file definition, data input, and sample procedure specification. The emphasis of the course will be on the structure and implementation of SPSS-X programs. Examples will be used extensively. Recommended reference: *SPSS-X Introductory Statistics Guide*, available from the CSO Distribution Office, 1208 W. Springfield. Prerequisite: 123 or equivalent. Fee: $25.

Mar. 9,11,13 4pm-6pm [Mills]

178. Intermediate SPSS-X

This (second) course covers how to select among the various options in selected SPSS-X statistical procedures and how to run the corresponding data analyses. Procedures to be covered include regression, MANOVA, LISREL, and loglinear. An elementary approach will be followed using examples and handouts. Prerequisite: Knowledge of CMS and SPSS-X equivalent to 123 and 176; some statistical vocabulary desirable. Fee: $15.

Mar. 23,25 4pm-6pm [Mills]

179. Regression Analysis Using SPSS, SPSS-X, or SAS

After a brief review of concepts essential for comprehending standard regression outputs and related documentation, this course covers the application of various regression methods and interpretation of the output generated by SAS, SPSS-X and BMDP regression procedures. It covers: elements of simple linear, multiple, stepwise and nonlinear regression analysis; diagnosing multicollinearity; examining outliers ad influential data points; selecting the "best" model; limitations, assumptions and inferences from each procedure. Prerequisite: 172, 176, or 183 or equivalent; some knowledge of calculus, matrix algebra, and the concept of ordinary least squares. Fee: $15.

Apr. 13,15 4pm-6pm [Roy]

183. Introduction to SAS (Statistical Analysis System)

An introduction to SAS processing using the IBM CMS timesharing system. Topics include using SAS interactively and non-interactively, using the DATA and PROC steps, creating temporary and permanent SAS data sets under CMS, reading and writing external data files, using basic SAS procedures, programming in the DATA step, using

SAS Display Manager (the SAS Full-Screen Interactive Product) to interactively edit and submit SAS jobs, and an overview of CSO SAS features and services. Recommended references: *SAS Introductory Guide* and the *SAS Companion for the VM/CMS Operating System.* Prerequisite: I23 or equivalent knowledge of CMS and XEDIT. Fee: $20.

Feb. 24,26 4pm-6pm [Dingler]
Lab: Feb 28 10am-12N

I87. Using SAS with VMBATCH from CMS

VMBATCH can be used to submit SAS jobs from CMS. This course will introduce the necessary job control and programming statements for this type of processing. Prerequisite: I23 or I83. Fee: none.

Mar. 5 4pm-5pm [Dingler]

I89. Repeated Measures Analysis Using SPSS, SPSS-X or SAS

After a review of concepts and terminology useful for understanding SPSS and SAS documentation for repeated measures analyses, examples are presented step by step with emphasis on the interpretation of output. Guidance is provided on choice of contrasts for answering specific research questions and on presentation and summarization of results. Course describes use of SPSS or SPSS-X MANOVA for repeated measures analysis, followed by a discussion of the new REPEATED option in SAS GLM (Version 5). For comparison, the same data are analyzed using SPSS-X MANOVA and SAS GLM. Prerequisite: Some knowledge of analysis of variance and at least minimal experience using a statistical computer package. Fee: $15.

Mar. 2,4 4pm-6pm [Alster]

Statistical Package Graphics

I97. Introduction to SPSS Graphics

Features of the new SPSS interactive graphics product will be reviewed using examples. Step by step, the process for obtaining plots will be explained, using handouts sufficient for participants to reproduce the plots. Pie charts, bar charts, line charts, maps and text will be covered. Prerequisite: I23 or equivalent and familiarity with SPSS. Fee: $10.

Apr. 1 3pm-6pm [Mills]

I98. Introduction to CMS SAS/GRAPH

An introduction to using SAS/GRAPH on the IBM CMS timesharing system with CMS SAS. Topics include: how to use SAS/GRAPH output, global features of SAS/GRAPH, using map data sets, calculating dimensions and proportions for Zeta plots, and highlights of new features in SAS/GRAPH. Prerequisites: I23 and I83 or equivalent knowledge of CMS, XEDIT, and SAS. This course consists of two two-hour lectures. Fee $15.

Mar. 24,26 4pm-6pm [Dingler]

U series: The UNIX System

U11. Introduction to the UNIX System

This course introduces the new user to the UNIX timesharing system and the "ex"

editor.

It covers terminal setup, logging in and out, basic "ex" commands, file commands and useful utility programs. It also discusses the "mail" and "mesg" facilities, how to set up a file directory, and how to use the on-line help programs. Prerequisite: G10. Fee: $15. Enrollment limited to 10 per section.

1. Feb. 9,11,12 7pm-9pm [Scheid]
2. Mar. 31, Apr. 1,2 7pm-9pm [Edwards-Iwe]

U31. UNIX Text Processing

This course covers the "command mode" and "insert mode" for both the line-oriented "ex" editor and the screen-oriented "vi" editor. In ex, command structure and addressing along with the most useful editing commands are presented. The basics of vi are discussed along with learning how to physically move through files and around the terminal screen. Use of the nroff and troff text formatters and typesetter is then considered. Prerequisite: U11 or equivalent. Fee: $10. Enrollment limited to 10.

Mar. 23,25 7pm-9pm [Edwards-Iwe]

U41. Intermediate UNIX

An explanation of shell concepts is given: redirecting input-output, pipelines, filters, tees, background processing, shell scripts and subshells. Features specific to the C and Bourne shells are covered. The UNIX "make" utility will also be discussed. Prerequisite: U11 or equivalent. Enrollment limited to 10. Fee: $15.

Apr. 6,8 7pm-9pm [Pommert]

Statistical Computing

U73. The S Package for Data Analysis and Graphics

S is an interactive statistical environment available on UNIX machines. It comprises a high-level language for specifying computations and a support system for data management and graphics. This introductory course provides an overview of S commands and an exposure to the S environment. The flexibility and graphical capabilities of S will be stressed. The course is divided into lecture/discussion and hands-on sessions using S. Recommended references: R.A. Becker and J.M. Chambers, *S: An Interactive Environment for Data Analysis and Graphics*; J.M. Chambers and others, *Graphical Methods for Data Analysis*. Prerequisite: U11 or equivalent, and a good grasp of basic statistical analysis. Fee: $15. Enrollment limited to 8.

Apr. 13,15 7pm-9pm [Higgins]

X series: Mixed and Other Systems

X25. Survey of CSO Print Services

An overview of how things are printed from the various CSO computers, including special print services such as the Xerox 2700 and IBM 3800 laser printers. Prerequisite: C11 or I23 or U11 or equivalent. Fee: none.

1. Feb. 5 4pm-6pm [Engelbrecht-Wiggans]
2. Mar. 30 4pm-6pm [Engelbrecht-Wiggans]

X31. Introduction to Electronic Mail

Electronic mail allows users to send mail to other users on the same computer and on many other computers. This course presents an overview of electronic mail and an introduction to its use on the IBM-CMS, UNIX, and Cyber systems. Prerequisite: none. Fee: $5.

Mar. 24,26 12N-1pm [Wetzel & Pommert]

Computer Graphics

X63. Introduction to the DI-3000 Graphics Package

DI-3000 is a library of Fortran-callable subroutines for device-independent computer graphics. It is an implementation of the 1979 ACM/SIGGRAPH CORE graphics system proposed standard. This course is for those with little or no experience using DI-3000. It covers capabilities, structure, and basic use of the package. No high-level or X-Y plotting capabilities will be presented. Prerequisite: a working knowledge of Cyber or VM-CMS Fortran. Fee: $10.

Mar. 3,5 4pm-6pm [Scheid & Booth]

Statistical Computing

X76. Using SPSS-X with VMBATCH from the Cyber

VMBATCH can be used to submit SPSS-X jobs from the Cyber. This presentation will introduce the necessary job control and programming statements for this type of processing. Since VMBATCH is used under the CMS operating system, an explanation of the file naming scheme and disk management techniques will be given. Prerequisite: C11 or equivalent. Fee: none.

Apr. 8 4pm-5pm [Mills]

X87. Using SAS with VMBATCH from the Cyber

VMBATCH can be used to submit SAS jobs from the Cyber. This presentation will introduce the necessary job control and programming statements for this type of processing. Since VMBATCH is used under the CMS operating system, an explanation of the file naming scheme and disk management techniques will be given. Prerequisite: C11 or equivalent. Fee: none.

Mar. 3 4pm-5pm [Dingler]

MANUALS

The following manuals are strongly recommended for certain short courses. The first five manuals listed may be purchased individually at the Illini Union Bookstore (Reference Section), 715 South Wright Street, or may be purchased as a set at the CSO Distribution Office, 1208 W. Springfield. The last two manuals may be purchased at either place as individual manuals.

1. Introduction to the Cyber Systems, $2.00
2. A Tutorial Guide to the ICE Text Editor, $1.25
3. ICE Reference Manual, $3.25

4. An Index to Software on the Cyber, $3.25

5. Cyber Fortran Debugging, $1.25

NOTE: The above 5 manuals may be purchased as a package at the CSO Distribution Center for $11.00.

6. RNF Documentation: Tutorial, Macros and Reference, $4.00

7. Introduction to CMS at UIUC, $2.50

The following (recommended) manuals are only available at 1208 W. Springfield:

UNIX User's Manual (2 volumes), $19.00
UNIX Programmer's Manual (2 volumes), $18.00

TRAINING PACKAGES
VIDEO CASSETTES

CSO makes available to the user community nineteen videotape training cassettes: three introducing the Cyber system, six on the fundamentals of using SAS (Statistical Analysis System), and ten on SAS color graphics (SAS/GRAPH). The tapes may be obtained at the Media Desk in the Undergraduate Library (upper level, in back). Show your University ID to the clerk on duty there and state the title of the videotape you wish to use. If a machine is available, you will be taken to a room containing the videotape equipment and shown how to operate it. If all machines are in use you can make a reservation for a later time.

CSO Videotapes

CSO has produced a series of three videotapes (comprising eight segments) which introduce the novice to computing on the Cyber system. A viewing guide containing the major displays in this series is available and can be used to facilitate note taking. Ask for your free copy of the viewing guide when you check out any of these videotapes for viewing.

The title and a brief synopsis of each segment is given below. Running time is 10 to 15 minutes for each segment.

1. **CSOVT1.**
   1.1 Introduction to Computing at CSO: A brief look at the steps required to solve a problem using a computer, and at some of the hardware used.
2. **CSOVT2.**
   2.1 Using a Terminal: A description of the physical operation of a terminal and some of the keys that have a special meaning to the Cyber.

   2.2 Introduction to Cyber Timesharing: A tutorial on logging on and off the Cyber.

   2.3 File Usage: Local files and indirect access to permanent files. An introduction to Cyber files and the commands used to manipulate them.

   2.4 Introduction to ICE Text Editing: A tutorial on entering and modifying files with ICE.

3. **CSOVT3.**

3.1 Running a Fortran Program: Concepts. A discussion of the concepts of compilation, loading and execution.

3.2 Running a Fortran Program: The PROGRAM statement. A discussion of the PROGRAM statement and its relationship to files accessed by the program.

3.3 Running a Fortran Program: Control Statement. A discussion of the control statements used to compile, load, and execute a Fortran program.

A copy (Beta-1 format) of these videotapes is available for loan from CSO to any instructor wishing to use them in class. They have been effectively used in this environment several times recently, with the instructor stopping the playback equipment whenever he/she wished to elaborate further or questions arose from the class. To borrow a videotape for classroom use and obtain copies of the viewing guide for class distribution, call the CSO training coordinator: Ron Szoke, 333-8630. If you do not already have access to the required videotape equipment, Betamax viewing equipment can be borrowed from the Office of Instructional Resources, 333-3690.

SAS Videotapes

CSO has leased the SAS Basics 100-Series video training course. The course combines video and workbook media to deliver performance-based SAS training. The information in the course is contained in six videotapes.

The videotaped instruction is not complete without the workbook, which contains exercises and illustrations to reinforce the material presented in the videotapes. A copy of the workbook is available for reference at the Media Desk. You may, however, wish to obtain a personal copy of the workbook to complete the exercises, to take notes, and to use as a reference after the course is completed. The workbook may be purchased for $8.00 at the CSO Distribution Center, 1208 West Springfield, Urbana.

NOTE: The SAS videotapes are not available for loan.

The title of each of the videotapes is given below. Running time is about 45 to 60 minutes for each tape.

B101. Introduction to SAS.

B102. Getting Your Data Into a SAS Data Set.

B103. Program Processing.

B104. Working with SAS Data Sets.

B105. Report Writing.

B106. SAS procedures.

A Cyber terminal user may obtain more information about each via:

TYPE,SASVID/AS/UN=COURSES.

The Media Desk also has the ten tapes in the SAS color graphics (SAS/GRAPH) series and a reference copy of the student workbook. For more details:

TYPE,SASGRAF/AS/UN=COURSES.

Audio Cassettes

CSO makes available to the user community three sets of audio cassette tapes for the training of microcomputer users:

1. How to Operate the IBM Personal Computer (on 3 cassettes)
2. How to use MultiMate (3 cassettes)
3. How to use Lotus 1-2-3 (4 cassettes)

These cassettes, with accompanying printed materials, may be borrowed for up to one week by contacting Leslie, 244-1257.

Computing Services Office -- UIUC
Short Course Registration Form, Fall 1986

Note: USE A SEPARATE SHEET FOR EACH COURSE. This form may be copied freely as needed. Fill in all blanks down to the "* * *" and send completed forms to: CSO Short Courses
150 DCL
1304 West Springfield
Urbana, IL 61801

University ID (Social Security) number (9 digits)   Name: (Please print clearly) last   first

_____-____-_______   _________________________, _________________________

Status (circle): Undergrad Grad Faculty Ac staff Non-ac staff Other

Telephone: Work __________________________ Residence ____________________

Send receipt to: (address)

____

____

_____ CAMPUS MAIL or ZIP _____________________________

Course number	Section number	Course title	Course fee enclosed
______	______	______________________________	$__________

Paid by: (enclose a SEPARATE check or voucher for each course)

_____ Check dated as of the first day of the course, and made payable to the University of Illinois.

_____ University account: Attach a signed STORES / SERVICE Voucher (Form 11-48-8000) credited to CSO, 150 DCL; Account: 1-3-10104-0798, Computer Service. The department, account number (11 digits), and title to be charged must also be filled in. NOTE: "Real money" accounts only; Research Board, SARA, and class accounts are NOT acceptable.

- -

This portion will be returned. You MUST take it to class with you.

Computing Services Office -- UIUC
Short Course Registration Receipt and Admission Slip, Fall 1986

Course Number/Section/Title   Last name   Initial

______________________________   _________________________, ________

Date(s) and time: ____

* * *

Meets in room: ____

Validation by registrar: Date:_____/_____/_____

RS 08/12/86

Computing Services Office -- UIUC
Short Course Registration Form, Fall 1986

Note: USE A SEPARATE SHEET FOR EACH COURSE. This form may be copied freely as needed. Fill in all blanks down to the "* * *" and send completed forms to: CSO Short Courses
150 DCL
1304 West Springfield
Urbana, IL 61801

University ID (Social Security) number (9 digits) ____-___-______

Name: (Please print clearly)
last ______________________, first ______________________

Status (circle): Undergrad Grad Faculty Ac staff Non-ac staff Other

Telephone: Work ____________________ Residence ________________

Send receipt to: (address)

____

____

____ CAMPUS MAIL or ZIP ______________________

Course number	Section number	Course title	Course fee enclosed
____	____	______________________________	$__________

Paid by: (enclose a SEPARATE check or voucher for each course)

____ Check dated as of the first day of the course, and made payable to the University of Illinois.

____ University account: Attach a signed STORES / SERVICE Voucher (Form 11-48-8000) credited to CSO, 150 DCL; Account: 1-3-10104-0798, Computer Service. The department, account number (11 digits), and title to be charged must also be filled in. NOTE: "Real money" accounts only; Research Board, SARA, and class accounts are NOT acceptable.

- -

This portion will be returned. You MUST take it to class with you.

Computing Services Office -- UIUC
Short Course Registration Receipt and Admission Slip, Fall 1986

Course Number/Section/Title ______________________ Last name ______________, Initial ______

Date(s) and time: ________________________________

* * *

Meets in room: ________________________________

Validation by registrar:

Date: ____/____/____

RS 08/12/86

OFF-LINE's Mailing List

If you wish to be placed on our mailing list for future issues of *OFF-LINE*, if you wish to be removed from the list, or if you wish to enter an address correction, please complete and return this page. **(Current subscribers are kept on the mailing list until a specific request for removal is received, or until a mailing is returned as undeliverable.)**

Check one:

- ☐ Place my name on mailing list
- ☐ Make the following corrections or changes
- ☐ Delete my name from mailing list

_____

First name -- Initial -- Last Name

Campus Address:

_____

department

_____

Room - Building

Off-campus Address:

_____

Organization or Company (if applicable)

_____

Street Address

_____

City -- State -- Zip Code

If address correction, give old address and zip code below.

_____

_____

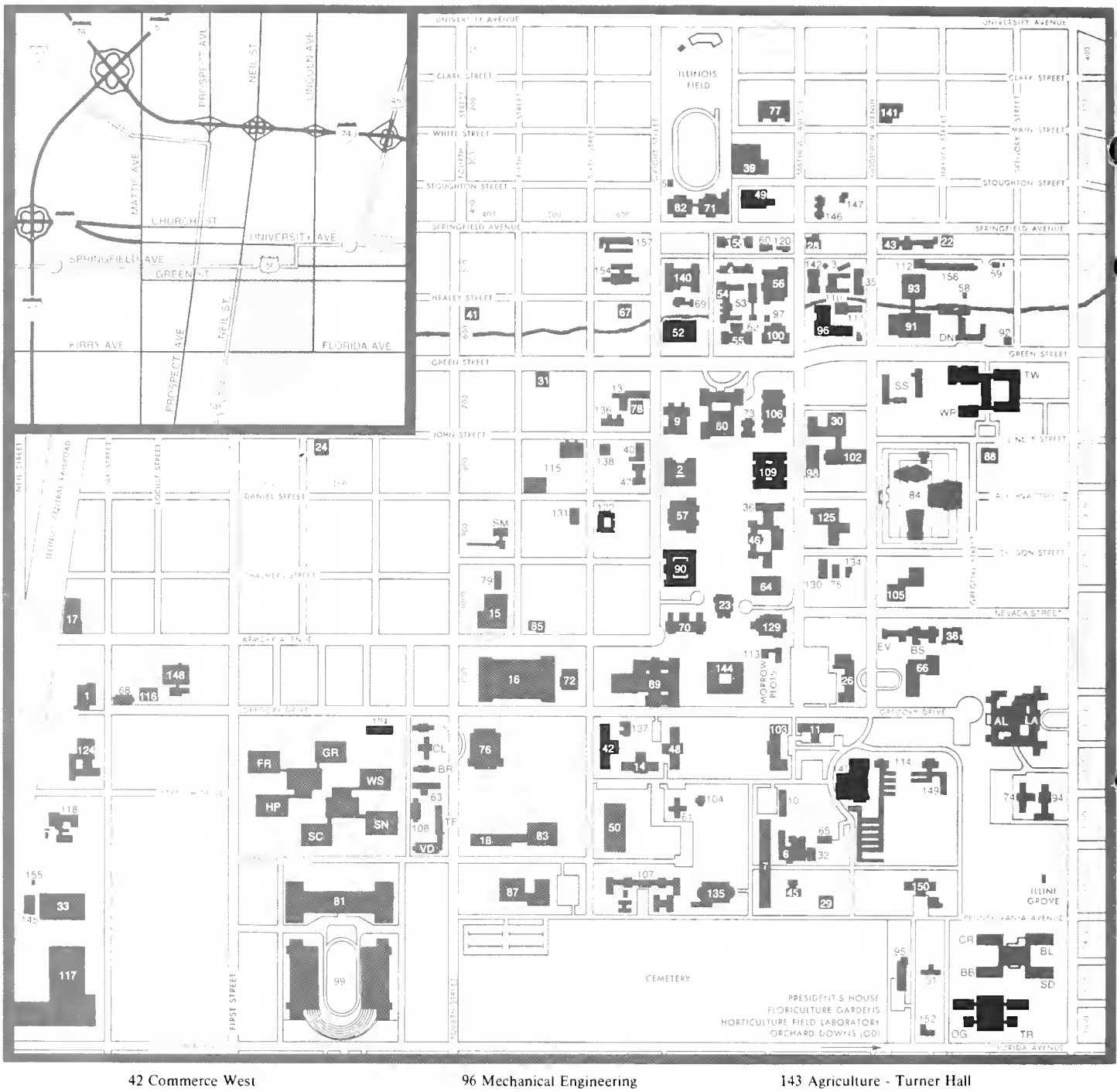
_____

SEND TO:

OFF-LINE
150 Digital Computer Laboratory
University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH (DCL)	
14 Digital Computer Lab 333-7685	Monday-Saturday, 24 hours/day Sunday, 12 noon - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Saturday, 8 am - 12 mid. Sunday, 12 noon - 12 midnight
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, Closed
CHEMISTRY	
150-154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Daily, 12 noon - 12 midnight
ELECTRICAL ENGINEERING	
146 Electrical Engineering 333-4936	Monday-Friday, 8 am - 12 mid. Saturday, 8 am - 5 pm Sunday, Closed
FAR	
Florida Avenue Residence Halls 333-2695	Daily, 12 noon - 12 midnight
ISR	
Illinois Street Residence Halls 333-0307	Daily, 12 noon - 12 midnight
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Saturday, 8 am - 12 mid. 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-Friday, 8 am - 12 mid. Saturday, 10 am - 5 pm Sunday, 12 noon - 5 pm



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

Vol. 15, No. 2: March-April 1987

off line

University of Illinois at Urbana-Champaign

Director: George Badger
Editor: Lynn Bilger

Computing Services Office

CSO DIRECTORY

USER SERVICES AND HARDWARE/SOFTWARE SUPPORT

User Accounting	**1208**	**W Springfield**	**333-7752**
Documentation Center	**1208**	**W Springfield**	**333-9230**
Systems Consulting	**1208**	**W Springfield**	**333-6133**
Statistical Services Consulting	**85**	**Comm West**	**333-2170**
PC Consulting	**91**	**Comm West**	**244-0608**
Text Processing Consulting	**212**	**CSOB***	**333-7318**
Maintenace & Repair Service	**194**	**DCL**	**333-0969**
Tape Service, Special Plots, Xerox Laser Printer	**123**	**DCL**	**333-8640**

DIAL-UP NUMBERS

CYBER 175 (NOSA)	**300 baud**	**333-4000**
IBM 3081 GX (VMD)	**300 baud**	**333-4006**
Switch	**1200 baud**	**333-4008**
TELENET (local no.)		**384-6428**

CSO STAFF

Director	George Badger	150	DCL	333-4103
Business Manager	Stanley Rankin	150	DCL	333-6530
Secretary	Joyce McCabe	150	DCL	333-1637
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Hardware Maintenance & Communication	Mike Gardner	173	DCL	244-0914
Personal Computers/EXCEL	Robert Penka	119	CSOB*	333-4709
Supercomputer Activities	Sandra Moy	1207	W Springfield	333-9772
Maintenance	Larry Crotser	131C	DCL	333-5190
Consulting	Stan Kerr	208	CSOB*	333-4715
Statistical Services	Joan Alster	202	CSOB*	244-0937
Accounting Services	Gary Bouck	1208	W Springfield	333-7752
Microcomputer Laboratory	Jack Knott	102	CSOB*	333-6562
User Training (Short Courses, Videotapes)	Ron Szoke	108	CSOB*	333-8630
Documentation	Lynn Bilger	207	CSOB*	333-6236
CYBER-IBM-VAX Operations	Myra Williams	168	DCL	244-0186
Site Operations	Sylvia Hansen	65	ME	333-6285

*CSOB is the new CSO Office Building, 101 S. Gregory, Urbana.

Academic and research computing is done on the following machines: CDC Cyber 175 running NOS 1; IBM 3081 running VM; IBM 4341 running VM; VAX 11/780 running UNIX and driving a GSI CAT-8 phototypesetter; three Pyramids and a Sequent running UNIX. In addition CSO serves as Facility Manager for various departmental machines (e.g., other IBMs) and for the National Center for Supercomputing Application's CRAY X-MP.

Operating Hours (see HEARYE,SCHEDUL for exceptions):

	CYBER 174/175	IBM
M-F	8 am - 6 am	8 am - 6 am
SAT	8 am - Midnight	8 am - 6 am
SUN	Noon - 6 am	Noon - 6 am

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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. Information in this issue is current as of March 17, 1987. 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.

A WORD FROM THE EDITOR

In an effort to keep making our newsletter better, we continue to make changes. In the last issue I added section headings to the Table of Contents to make it easier to check for articles pertaining to specific systems. In this issue I have added page headings, which I hope will make it even easier to find the articles that may be of particular interest. I also have added a new section entitled "Special Announcements". This section will contain brief announcements of changes, new services or software, etc., that CSO feels our users should know about, but that do not warrant a long article. (In some cases, an announcement may provide early warning of an upcoming change, with a follow-up article containing complete details in the next issue.)

In particular, I wish to call attention to the enlarged section on microcomputing. Many people still think the newsletter deals only with CSO's mainframes. However, the Microcomputing section of CSO is quite active, and will be contributing many more articles on microcomputing in the future in an affort to be of more service to our users.

Once again, I would like to extend an invitation to our users to contribute articles about what they are doing with computers, special hints that others may find useful, etc. We receive newsletters from other Universities that sometimes contain articles that have been contributed by their users, and find them very interesting to read and informative. For example, I feel that readers would be interested in learning how computers (micros or mainframes) are being used in architecture, music, CAD/CAM, history, art, and on and on. I realize that everyone is very busy, but how about writing an article to tell others about what you find interesting in working with computers, or how computers have helped you in your field.

I continue to welcome suggestions, comments, or even criticism from our users because this can only help to improve our documentation. If you have suggestions/comments about the newsletter (or documentation in general), please send them to Lynn Bilger, 150 DCL (333-6236).

Lynn Bilger

MVT DATA TO BE DESTROYED IN AUGUST 1987

Since the removal of the old MVT system on the IBM a year ago, there have been very few requests for the datasets which we saved just before MVT was removed. CSO will retain these datasets until August 1987, and then they will be destroyed; it will not be possible to obtain these datasets under any circumstances after August.

If you believe you have old data that was stored on the MVT system, and you would like to retrieve it, you **must** talk to the CSO Systems or Statistical Consultants **before August**. You must have some record of the name under which the data was stored, or the PS number under which it was stored. The Systems Consultants are located at 1208 W. Springfield Avenue in Urbana (phone 333-6133). The Statistical Consultants are located in Room 85 Commerce West (phone 333-2170).

CYBER DAYTIME MEMORY LIMITS ADJUSTED

CSO has adjusted the daytime memory limits for the Cyber 175. They are now as follows:

- From 9:30 am to 4:30 pm, the maximum memory anyone is allowed to use is 200000 octal (about 65000 decimal) words.
- From 4:30 pm until 9:30 am, the maximum memory is as specified for your account in the LIMITS command.

GRAPHICS ON THE 3800 PRINTER
CSO TO BEGIN ASSESSING CHARGES

In the near future, CSO will begin assessing charges for DI-3000 metafiles and Zeta format GML files plotted on the 3800 printer. To plot one of the above types of files, the file must first be run through a translator to be translated into 3800 graphics format. A user will be charged for the CPU and I/O required to translate the file. This charge will be in addition to a charge of 1.5 SU/1000 records generated by the translator.

More details will appear in an article in the next issue of *Off-Line*.

CSO ACCEPTING MORE REQUESTS FOR UNIX SERVICES

CSO is now accepting more requests for UNIX services. Charges for most of these services may be paid with standard Research Board funds (no SARA accounts); the exceptions include laser-printer output, and any long distance phone calls made through the autodialer.

Questions should be directed to Bob Foertsch, 164 DCL, 333-8033.

UNIX SERVICE NEW OFFERING — LIMITED RESOURCES ACCOUNTS

CSO is offering, on a test basis, a UNIX service that provides limited resources. These accounts offer only 30 disk blocks, simple file editing, sending and receiving mail, and reading notesfiles. This service is billed at $0.22 per day to a hard-money University account.

Contact Bob Foertsch, 164 DCL, 333-8033 for additional details.

APOLLO USER NOTICE

The University of Illinois and Apollo Corporation have recently signed a campus-wide agreement. The agreement provides the U of I campus with the following:

- Blanket software licensing agreement between Apollo and the U of I.
- Campus-wide hardware maintenance and software distribution agreement.

The blanket agreement qualifies the U of I for substantial price discounts for both maintenance and software, which will be passed back to the users.

CSO was chosen to administer the Apollo program. We would like to form an Apollo users group on campus to meet on a regular basis to discuss all the ramifications and benefits. If you are an Apollo user, please drop a letter to Larry Crotser, 131N DCL, or call 333-5190. Please include the following information: name, address, telephone number, equipment list, and how you would prefer software updates distributed.

CSO INTRODUCING THE CSO RESOURCE CARD FOR ENGLISH BUILDING SITE ONLY

NOTE: At the present time, these cards can only be used to pay for resources available at the English Building site and so, only users who use the facilities there can purchase the card.

CSO is introducing a "CSO Resource Card" on a test basis. The card may be purchased for $5.00 (no refunds) and can be used to pay for resources that would normally carry a minimum charge to be paid by check. The card has 50 squares, each square representing one unit, and is used to pay for resources like laser-printer output at a rate of one unit per page. The operator will punch holes in the card when the output is picked up.

If the test period at the English Building proves that this would be a good service to offer the general computing community, CSO will expand the service to other sites.

CAMPUS DISTRIBUTION OF COMPUTER GRAPHICS SOFTWARE

James Bozek

The Graphics Group of the Computing Services Office (CSO), in an effort to better support the computer graphics needs of the campus, has recently secured a site license agreement with Precision Visuals, Inc. (PVI), a prominent graphics software vendor. The agreement allows CSO to redistribute computer graphics software at a substantially reduced cost to those on campus wishing to obtain it.

Among a number of computer graphics software vendors, PVI was selected for the following reasons:

- PVI has consistently concentrated on software supporting a science and engineering market, while maintaining a substantial presence in the business and presentation graphics software market;
- PVI has the largest customer base of all graphics software vendors whose products are currently on campus;
- The list of specific machines on which PVI software currently runs includes most mainframes, minicomputers, and workstations; and,
- PVI offered the most attractive deal.

Graphics software from PVI consists largely of FORTRAN callable subroutine libraries which enable the user to display information in a variety of graphic formats independent of a specific physical graphic device. The following six software packages are currently available through the agreement:

- **DI-3000** — A modular package of FORTRAN callable subroutines containing standard primitives and attributes used in building and displaying 2D/3D graphic models.
- **GK-2000** — A package of FORTRAN callable subroutines supporting a level 2b implementation of the Graphic Kernel System (GKS).
- **Contouring System** — A set of FORTRAN callable subroutines that create, from regularly or randomly spaced data, surfaces which can be displayed later as contour maps or meshed surfaces.
- **Grafmaker** — A system of FORTRAN callable subroutines used for generating bar graphs, line graphs, and pie charts.
- **DI-Textpro** — A high quality, polygonal 2D/3D text option that was designed to be used in conjunction with other PVI products.
- **Metafile System** — An Interactive translator that can interpret device independent graphic data files created with DI-3000, edit them, and display their contents on a physical graphic device.

Device independent graphics software from PVI requires the use of special software for each physical graphic device on which data is to be displayed. This special software is referred to by PVI as a device driver. Although many different types of device drivers are available from PVI, the following is a list of device drivers available under the current site license agreement:

Tektronix 4105	HP 2623A	Zeta
Tektronix 4113	HP 2627	Imagen 12/300
Tektronix 4010	HP 7475A	VT 240
Tektronix 4027	HP 7221	VT 100
Tektronix 4662	HP 7580	Printronix
Tektronix 4014	Calcomp	Seiko
Tektronix 4107/9	IBM 3179G	Skeleton
Tektronix 4510		

CSO plays a major role as administrator of the site license agreement and as the liaison between PVI and the end user. Within the context of the agreement, CSO will perform the following:

- CSO will serve as a single point of contact for ordering the software and for obtaining technical information with respect to installation of the software;
- CSO will provide consultation with respect to the use of the software; and,
- CSO will receive payment for software and maintenance through campus accounting.

It is expected that software distributions will begin by the third week of March, 1987. Questions, requests, and general inquiries can be directed to:

Jim Bozek
Computing Services Office
181 Digital Computer Lab
1304 W. Springfield Ave.
Urbana, IL 61801
(217) 333-2048

COMPUTER IMAGE RECORDING AT THE CSO VIDEO GRAPHICS FACILITY

Randy Cetin and James Bozek

Due to increased awareness, knowledge, and interest In the areas of computer graphics, animation, and video technology, the Graphics Group of the Computing Services Office (CSO) has established a Video Graphics Facility (VGF). The VGF enables a user to record a series of digitized or synthesized computer images on industrial quality 3/4" U-matic and/or consumer grade 1/2" VHS/Beta video tape. This process is applicable to all disciplines, including Art, Education, Engineering, Humanities, and Science where dynamic animation of computer synthesized or digitized images Is desired.

Files containing computer image data will be accepted in the following formats:

- binary images consisting of 8 bits (1 byte) per pixel written in scan lines;
- Multihalo (Media Cybernetics, Inc.) format;
- ASCII format as discussed with VGF personnel; and,
- other formats as discussed with VGF personnel.

Although images delivered to the VGF may be subject to certain constraints in aspect ratio, they can vary in size. Once recorded, however, images will be bound to a format which can display approximately 512(H) pixels x 512(V) pixels.

In addition to image data, 256 x 24 color map data can be specified and used. It is suggested that the color maps be organized as 768 bytes of information (i.e., 256 bytes of red component data followed by 256 bytes of green component data followed by 256 bytes of blue component data). However, the use of other formats can be discussed with VGF personnel.

Computer image data will be accepted on the following media:

- 5 1/4" floppy disk written in an MS-DOS or PC-DOS format; or,
- TECMAR QIC60 (1/4 Inch Cassette) written in an MS-DOS or PC-DOS format.

The VGF is based upon microcomputer technology, specifically an IBM PC/AT. This IBM PC is connected to the campus network. If pre-production arrangements are made with VGF personnel, it is possible that image data can be transferred from a remote (e.g., departmental) computing machine that is also operationally connected to the campus network.

If the reader is unfamiliar with any of the terms or products mentioned earlier (e.g., pixel, scan line, pure binary image, ASCII, Multihalo Format, MS-DOS, PC-DOS, or TECMAR QIC60, etc.), or if general information is desired, contact VGF personnel listed below:

Randy Cetin
Computing Services Office
1304 W. Springfield Ave.
Urbana, IL 61801
(217) 244-3224 - 131 DCL or (217) 244-6292 - 129 DCL

Ken Fortenberry
Computing Services Office
1304 W. Springfield Ave.
Urbana, IL 61801
(217) 333-8640 - 123 DCL or (217) 244-6292 - 129 DCL

On Monday, March 9, 1987, VGF services were made available to the general campus community. Since it is difficult to assess the exact cost of a video production without knowing its specific goals and constraints, those who may be interested in using this service are encouraged to inquire.

TRANSACTIONS ON MATHEMATICAL SOFTWARE

Stan Kerr

We now have on tape all algorithms published in Transactions on Mathematical Software up to June 1986 (from algorithm 493 published in the first issue of March 1975, up to algorithm 643). Algorithms from the September 1986 issue will be ordered when that issue arrives.

All TOMS algorithms are kept on a public tape; a document describing how to access this tape and summarizing the algorithms it contains can be obtained by entering one of the following commands.

On the Cyber:

WRITEUP,TOMS
PRINT,TOMSDOC/AS/CC/EJ

On VMD (CMS):

HELP CSO TOMS **or** **WRITEUP CSO TOMS**

Algorithms published in TOMS in March and June 1986 are as follows.

In the March 1986 issue:

639 : To Integrate Some Infinite Oscillating Tails

640 : Efficient Calculation of Frequency Matrices from State Space Models

In the June 1986 issue:

641: Exact Solution of General Integer Systems of Linear Equations

642: A Fast Procedure for Calculating Minimum Cross-Validation Cubic Smoothing Splines

643: FEXACT: A FORTRAN Subroutine for Fisher's Exact Test on Unordered r-by-c Contingency Tables

If you are looking for software, Transactions on Mathematical Software is one of the journals to check, along with *Numerische Mathematik*, the *Computer Journal*, and various publications of ACM (the Association for Computing Machinery) and SIAM (the Society for Industrial and Applied Mathematics).

We have in the Systems Consulting Office at 1208 W. Springfield bound volumes containing all the algorithms published in Communications of the ACM from 1960 to 1975 (when the algorithms department of CACM became Transactions on Mathematical Software).

STANDARD UPPER LIMIT FOR IBM/CMS VIRTUAL STORAGE IS INCREASED

Greg Kesner

The standard virtual storage upper limit for general users of CMS has been increased from 2000K (kilobytes) to 4000K. Virtual storage is the amount of virtual memory your virtual machine has available to execute programs. When you log on to CMS, your virtual storage is automatically defined at 1600K and may now be increased via the CP DEFINE command up to the new limit of 4000K (note that this restarts your virtual machine and leaves you in CP). If you find you need more virtual storage for a particular application, contact one of the CSO consulting offices for assistance.

Please note that in general, the initial 1600K is quite adequate for most applications (e.g., editing most files, reading/sending electronic mail, rudimentary SAS, FORTRAN, or SPSSX programs). If your program uses large arrays or matrices, or involves complex graphics, you may find that more memory is required. HOWEVER, YOU ARE URGED NOT TO INCREASE YOUR VIRTUAL STORAGE BEYOND 1600K UNLESS YOU ARE CERTAIN OR HAVE GOOD REASON TO SUSPECT YOU NEED THE LARGER VIRTUAL STORAGE. Having many concurrent users with large virtual storage defined tends to degrade the overall response-time of the system for all users. Therefore, in consideration of your fellow users, please define larger virtual storage only when your current application requires it.

If you have further questions about CMS virtual storage in general or with respect to a particular application, we invite you to contact one of the CSO consulting offices for assistance.

POLO-FINITE NOW AVAILABLE ON VMD

Andy Torchalski

POLO-FINITE is a simple to use finite element analysis program that allows users to define structures using a command-driven input system and/or the PATRAN[1] interface. Individual structures can be linked together into a complex hierarchy containing many levels of substructures; a single COMPUTE statement is sufficient to analyze the entire structure. POLO-FINITE uses a virtual database system that allows its users to automatically restart previously solved problems and to analyze very large structures with very little overhead.

While solving problems, POLO-FINITE uses a "compute what is missing" philosophy. For example, when a stiffness matrix for a structure is needed, POLO-FINITE examines the topology of the structure and automatically computes the stiffness of any other structures and elements that are required. The input processors automatically detect when users modify the structural definition and destroy the affected information in the database. Computational processors then regenerate only the affected data structures, minimizing the cost of reanalysis.

[1]PATRAN is a trademark of PDA Engineering.

NOTE: Since the POLO-FINITE program requires a minimum of 10 Meg of virtual storage and this is more than is given in default limits, users who wish to use this program MUST get prior authorization to go over the default limit. Please contact the CSO Accounting Office to change your limit.

To access and run the POLO-FINITE program, you should first define more virtual memory by using the following two CP commands:

DEFINE STORAGE 10M
IPL CMSL

(Note: If you receive the message, REQUESTED STORAGE EXCEEDS MAXIMUM, contact the CSO Accounting Office.)

To access the POLO-FINITE program, use the command

LINKTO FINITE

The program is then run simply by typing the command

FINITE

(Note: If you do not define more virtual memory before using the LINKTO command, you must repeat the LINKTO command after the DEFINE and IPL CMSL commands.)

For more information about running FINITE problems, enter

HELP CSO FINITE

or

WRITEUP CSO FINITE

which will give you more detailed information. You may purchase a POLO-FINITE manual for $10.00 from:

Mrs. Reuter
Dept. of Civil Engineering
2143 Newmark CE Lab
208 N. Romine
Urbana, IL 61801

Users wishing to try this package should be aware that at the current time, CSO does not provide consulting for FINITE.

XMENU — A FULL-SCREEN MENU MANAGER

Stan Kerr

XMENU, a full-screen menu management package, has been installed on the VMD system. It is accessed by the command

LINKTO XMENU

and there is a HELP CSO XMENU help file which explains basic information about the package.

XMENU provides tools which help you to design full-screen applications for CMS.

A format or menu can be set up which specifies how information should be displayed on the screen, and what parts of the screen are available to the user for input; these parts or fields can be given names for convenient access from execs and programs. The menu definition is stored in a separate file, but it is possible to create a library file with many menu definitions in it; this is useful for an application which requires the use of many different screen formats.

Once a menu has been created, it can been displayed from an exec using the MENUEXEC program, or displayed by a program using the XMENU Subroutine Library. The user can then enter information into the input fields of the menu and pass control back to the exec or program by pressing the ENTER key or a PF key. The exec or program can then easily determine what input was entered and take appropriate action. Fields of the menu can be given names, and exec variables of the same names can be used to set the contents of the fields or to receive input typed in the fields.

There are two manuals for XMENU, both of which are available for viewing at the CSO consulting offices and at the DCL site:

XMENU/E User's Guide

XMENU/E Subroutine Library Reference

The second manual is needed only if you want to invoke the facilities of XMENU from Fortran, PL/1, Pascal, or assembler language. Each manual costs $25 and can be purchased from the vendor of XMENU:

Kolinar Corporation
3064 Scott Boulevard
Santa Clara, California 95054-3301

CSO is not presently stocking the manuals, as the demand for them is not certain; XMENU is fairly easy to learn, and there are extensive help files on-line, so the manuals may not be needed in large quantity.

A convenient reference card, the *XMENU/E Reference Summary*, may be purchased for $1.00 at the CSO Documentation Center, 1208 W. Springfield.

There are three major components to XMENU, and three sets of on-line help files corresponding to them:

1. The XMENU program — this is used to initially set up a full screen menu, to format the screen and assign names to parts of it.

   The help files for the XMENU program can be viewed by first linking XMENU and then entering

   HELP XMENU MENU

2. The MENUEXEC program — this is used to invoke a menu from within an exec. The menu is displayed on the screen (and MENUEXEC can be given special instructions on how to display it), the user enters input (if that is allowed by the particular menu), and then the user presses the ENTER key or a PF key. The exec is then passed information on what input was typed by the user, as well as what key was pressed to leave the menu.

   The help files on MENUEXEC can be viewed by entering

   HELP MENUEXEC MENU

3. The XMENU subroutine library — this is used only if you want to invoke menus from within a program. In this case, you don't necessarily have to define the menu beforehand. The library provides some facilities for defining the appearance of a menu from a program.

   To use the library, you must add the library to the global library set before running a program which calls routines in it. This is done by the command

   ADDLIB XMENUSUB

   The help files on XMENUSUB can be viewed by entering

   HELP MSUBS MENU

The WRITEUP exec can be used to obtain a complete printout of all these help files, for easy reference. For example, the command

WRITEUP XMENU * (DEST 3800 PAGE CONTENTS BIN xx

(where **xx** is the print bin where you want the output filed), causes WRITEUP to assemble all the XMENU help files in a single document and print it, with a table of contents, on the IBM 3800 laser printer at DCL. A similar WRITEUP command for MENUEXEC and MSUBS could be used to print the other two sets of help files.

SPSSX RELEASE 2.2 AVAILABLE ON VMD

Joan Mills

The latest release of SPSSX has been installed on the IBM VMD machine. The following list of changes was taken from the document *SPSSX Release 2.2 New Procedures and Facilities*, available on-line by adding the command **INFO ALL** to an SPSSX Rel. 2.2 program. The list of changes can also be obtained at the Statistical Consulting Office, 85 Commerce West.

To access and run the new release use:

```
LINKTO SPSSX (F
SPSSX fn
```

on VMD. The new release will become current on April 15, 1987. At that time it will be accessed with:

```
LINKTO SPSSX
SPSSX fn
```

Also at that time, SPSSX Rel 2.1 will become the past version (accessed by **LINKTO SPSSX(P)** and SPSSX Rel. 2.0 will become unavailable. If this is a problem for you, please contact the Statistical Consultants (333-2170) or Joan Mills (333-2172).

Please note that the Rel 2.2 New Procedures document only contains updates from the *SPSSX User's Manual* 2nd edition. If you have the first edition of the SPSSX Manual you may wish to keep your copies of previous New Procedures updates or get your Rel 2.2 New Procedures document by using the SPSSX Rel. 2.2 command:

```
INFO ALL SINCE 1
```

Also, documentation for the userproc called LISREL is no longer included in the documents available on-line. Since there is no evidence that LISREL has changed, old printouts of the on-line LISREL document are as good as ever. SPSS, Inc. sells a userproc LISREL document (and has from the beginning) which is more or less the same as the Rel. 2.1 on-line document.

In the rest of the article, we summarize the changes, as documented by SPSS.

New Facilities and Procedures in Release 2.2

Release 2.2 Introduces four new commands to the system:

AUTORECODE	Recodes values from one variable into consecutive integers and stores these values in another variable. The original input values automatically are used as value labels.
DROP DOCUMENTS	Removes documents from SPSS-X system files.
INCLUDE	Processes a file of SPSS-X commands within an SPSS-X job. You supply the file handle of the file containing the commands.

RENAME VARIABLES	Changes the names of variables in the active file.

In addition, Release 2.2 permits you to specify whether you wish to use the new sort routine built into SPSS-X or the default sort program on your system.

XSORT	The XSORT subcommand on SET specifies which sort program to use in a run. You can see what the default sort program is with SHOW XSORT.

Modified Facilities

The following facilities available in previous versions have been modified. Use INFO FACILITIES to obtain more information.

longer labels	VARIABLE LABELS and VALUE LABELS commands allow longer labels; however, only TABLES can print the maximum size labels.
variable names	You can use an underscore after the first character in a variable name.
matrix input	Matrix input has been changed.
logical variables	There are new rules governing manipulation of logical variables.
output width	Now all output can fit within an 80 column page.
inline data	SPSS-X can read inline data records longer than 72 columns with the UNNUMBERED subcommand.
command aliases	SPSS-X supports SPSS/PC+ command names such as DESCRIPTIVES for CONDESCRIPTIVES and * for a COMMENT.
ANY and RANGE	Changes in missing value handling for these functions.
REPEATING DATA	Changes in the rules governing placement of transformation commands in conjunction with REPEATING DATA.
IMPORT/EXPORT	Enhancements not covered in SPSS-X User's Guide Second Edition.
SUBTITLE	Obtaining blank subtitle lines.
TEMPORARY	New rules governing reference to scratch variables after the TEMPORARY command.
string values	Both VALUE LABELS and ADD VALUE LABELS have new rules on padding values that are being labeled. There are also new rules for specifying MISSING VALUES for strings.
translator	The jobs XTOPC and PCTOX are no longer available.
USER PROCS & GET	All USER PROC and USER GET programs must be relinked to operate with SPSS-X Release 2.2 under IBM/CMS.

Modified Procedures

The following procedures available in previous versions have been modified. Use INFO procedure name to obtain more information.

AGGREGATE	No longer stores documents on aggregated output files by default. To save documents on aggregated files, use the new DOCUMENT subcommand.
ALSCAL	Now allows you to name a maximum of 100 variables on the VARIABLES subcommand. The old limit was 50 variables.
HILOGLINEAR	Contains several changes which affect saturated models.
LOGLINEAR	Contains several changes which affect saturated models.
MANOVA	Contains several new statistical enhancements, particularly in the area of repeated measures analysis. In addition, command syntax and printed output have been simplified.
REPORT	Now allows you to direct REPORT output to a separate file that includes only the report, but not the command printback or system messages.
TABLES	Has two new keywords on the TABLE subcommand for creating dimensions which contain only value labels or statistics. **NOTE:** CSO is in the process of obtaining the SPSSX TABLES facility and will announce it in *Off-Line* when available.

SOFTWARE ENHANCEMENTS ON THE ENGINEERING GRANT SYSTEM (VMC)

Bob Booth

The Engineering Grant System (VMC) is used by the College of Engineering for instruction and research in the areas of Computer Aided Design, Manufacturing, and Engineering (i.e., CAD, CAM, and CAE). The software on this system has been updated to provide what is considered to be the state of the art in Engineering Design software in an IBM environment.

One of the most important enhancements to the system was the installation of Release 4.0 of the VM/SP operating system, which was performed by Bruce Gletty. This update provides for greater compatibility between CSO's IBM mainframes, more reliability of the software, and better overall system performance.

Most of the other updates and installations have been in the area of graphics libraries and interactive engineering design/analysis programs. These packages, described below, are the principle automated design tools used by the engineering community.

CADAM (Computer Augmented Design and Manufacturing) is a program that supports interactive design of two and three dimensional wireframe objects. A database management system is also included for storage and access of these objects for manipulation and

hardcopy. CADAM has recently been updated to the latest release, 20.1.1. Some of the features of the new release include local transformation and clipping features for faster rotations and image movement, improved communication with the remote terminals that allows faster throughput of graphics, more color support (120 viewable colors from a palette of 4096), user defined line widths, color fill capability, and upper/lower text display, with a built-in screen editor.

CAEDS (Computer Aided Engineering Design System) Version 2.1 has been installed for testing purposes. CAEDS is a modeling/analysis package that supports creation of three-dimensional solids. Objects can be stored for later reference, or can be converted to formats that other packages can use. Benefits of this new version include real-time transformation and clipping using the hardware, windowing, and many added or improved engineering analysis functions. This new release of CAEDS will be made available to the general user when sufficient testing has been completed.

A new graphics package from IBM, gra**PHIGS**, has been installed. PHIGS is a set of user callable subroutines that provides creation and manipulation of two- and three-dimensional models with support for many of IBM's high resolution graphics devices, including the 5080 graphic system. Output can also be directed to many different graphic file formats providing hard copy output or input to other programs. PHIGS is a proposed three-dimensional graphics standard that builds upon the two-dimensional Graphical Kernel System (GKS).

APT (Automatic Programmed Tool) is a series of programs which converts special graphics data (usually designed with CADAM or some other interactive graphics package) into the input format used by Numerical Control Machining Equipment. This product has been updated to the most recent release (4.1).

CSO is committed to maintaining the quality of the Engineering Grant System. Plans for the future include the following:

- **GDQF** (Graphical Data Display Facility) will be upgraded to Version 1.4, allowing CADAM, CATIA, and CAEDS drawings to be viewed on the IBM 3179-G.

- **GDDM** (Graphical Data Display Manager) Version 2.1 will be installed. This new version of the graphics library will provide more output devices, improved efficiency, and added functions.

- **DCF** (Document Composition Facility) allows interactive viewing and editing of a formatted document. Editing is done on a graphics device before the document is submitted for output. DCF will be updated to the latest release.

- **CATIA** (Computer-Graphics Aided Three-Dimensional Interactive Application) will be upgraded to Version 2.2. This new release has modules specially designed for the IBM 5080 graphics system that give color, shading, local transformations with clipping (including animation), and windowing.

THE MICROCOMPUTER RESOURCE CENTER'S PC-SIG CD-ROM

Cassandra Morrow and Mark Zinzow

Microcomputer users on the University of Illinois campus are accessing the Personal Computer Software Interest Group (PC-SIG) Library on a read-only memory compact disk (CD-ROM) in greater and greater numbers. The CD containing the PC-SIG collection is the same as CDs currently revolutionizing home recordings for audiophiles. As audio CDs provide greater fidelity, when used for data storage, they provide roughly a hundredfold improvement over conventional hard disks. The CD-ROM we are using has a storage capacity of about 500 megabytes. In order to access the PC-SIG collection in a convenient and straightforward way, the staff of the Microcomputer Resource Center recommends the following procedures for PC-SIG users.

Accessing the CD-ROM

The CD-ROM is installed on the IBM PC-XT system as drive D: and as drive O: on the AT. To find drive D from drive C, for example, type:

D:

There are many index files available which describe the software. To change to the PC-SIG index directory (Directory On Disk), type:

CD D:\DOD

To display a list of index files, simply type **DIR**. You will see the disks on the directory divided into increments of 100, from 1 to 700. Printed catalogs are provided in the Resource Center for disks 1-454. You may obtain your own catalogs of the disk collection and monthly magazine updates with PC-SIG membership for $20 per year. A quick summary of the collection through disk 500 may be viewed on the computer by typing the following command:

D:DOD>LIST INDEX.TXT

The most detailed index files are those with the .UPP extension. These files are organized by disk number and may be viewed with:

D:DOD>LIST *.UPP

Scanning by key word is the best way to locate disks with a desired subject application. For example, to search for a word processor, use the LIST command shown above to display the index files and press **f** to begin the scanning mode. Type **word** and press return. Description lines will be highlighted if they contain the string **word**. Press **a** to continue with individual searches for word processors throughout the collection of disks. If you would like to return to the previous description, press **F9**. Once the file has been exhausted, press **ESC** to go on to the next. To return to a previous file press **Alt-F** and respecify the index file(s), or exit the program (with **Alt-X**) and retrieve the index command with **F3**.

Using **F3** to bring back the index command is also useful for going through the index files with a new key word. In our example, the next logical key word might be **edit**, as many word processors are also called editors.

Typing a **?** will provide a help menu, and the **PgUp** and **PgDn** keys will scroll the individual file up or down. The list program and all of its commands described above may be used with any file, not just the index files. If you prefer to scan the indexes at your leisure, copy the indexes and the list program. The list program and its documentation are found in the directory \UT on drive C: on both the XT and the AT.

Finding a Particular Disk

To access a particular disk in the collection, change directory to the range of disks into which the desired disk falls. For example,

D:DOD>CD \1-100

NOTE: The default drive should be the CD-ROM. If you are on the AT, access the O drive and proceed in customary fashion.

To access a particular disk in that range, say number 78 in our example, change directories again to the specific disk by typing the following command:

D:DOD\1-100>CD DISK078

You may list the files on that disk by displaying the disk directory with a DIR command. Textual references to the file contents are generally contained in files which have extensions .TXT or .DOC.

Copying from the PC-SIG Library to your own Disks

If you want to copy files from the public domain library to your own disks, please bring pre-formatted disks with you to the Resource Center. You may copy using the PC-XT system in the Library by placing your disk in the A: drive. If your microcomputer has a high density drive, you may want to format your disks and copy using the PC-AT system. You must use drive A: for high density disks on the AT. However, the B: drive (marked with an *) may also be used to copy 360KB formatted disks on the AT. We prefer that users do not run programs from the CD-ROM, or on machines connected to it, so that others will also have a chance to copy files.

To copy files from the CD-ROM to your preformatted disks, type **COPY *.* A:** or **COPY *.* B:** to specify the drive into which you have placed your floppy disk and press return.

D:DOD\1-100\DISK078>COPY *.* A:

If a disk has subdirectories (as shown with the DIR command), and assuming you are in the desired directory on the PC-SIG, you should use the command **XCOPY /S**. For example, to copy disk 476, you would type:

```
D:DOD\401-500\DISK476> XCOPY *.* A:  /S
```

(Note: XCOPY is slower than COPY. Since most disks do not have subdirectories, XCOPY is not recommended for most copying. Depending on available hard disk space, there is often a copy of the DOD directory on the hard disk of the XT and the AT. If it is there, text searches will also be faster using drive C: rather than the CD-ROM itself.)

PC-SIG CD-ROM on the Network

Sometimes the system will stop and do nothing but beep. This means that it is waiting for the network. Usually the system will stop beeping in a minute or two when network traffic dies down. Other times it is necessary to reboot the XT. Should you decide this is necessary, politely ask the person on the other system if that would be OK with him/her.

The Microcomputer Resource Center staff encourages you to continue to use the many public domain software programs in the PC-SIG Library. Spreadsheets, games, databases such as the five-disk DREAM, graphics and statistical packages, word processors, utilities, languages and many more software applications are conveniently listed for your use. Of course, the Center encourages patrons to make a donation to the authors for programs which have been of particular value to the user, if the author so specifies. For those University of Illinois students, staff and faculty who have not used the public domain library as yet, we hope these instructions will usher you into an exciting and fascinating world of software applications.

SITE LICENSES FOR PC VERSION OF IMSL

Stan Kerr

IMSL, Inc. now offers site licenses for their PC libraries. These site licenses come in two forms:

1. Restricted site license -- $2000 per product

   The restricted license would allow us to make up to 100 copies of each licensed library for use within the University. If CSO can be reasonably certain of selling 100 copies of each library, we can sell them for $20 each (or somewhat more to allow for handling); if demand is not that high, CSO's price to the campus would be higher.

2. Unlimited site license -- $6000 per product

   The unlimited license would allow us to make an unlimited number of copies of each licensed library for use within the University. If CSO can distribute at least 100 copies, then we can charge $60 or less, anticipating that more people would eventually want to acquire it.

Purchase of a copy of any library from CSO would not entitle the buyer to future updates, only to unlimited use of that one copy for University work. There would be a supplementary fee for updated versions of the libraries.

There are 3 PC libraries currently from IMSL:

MATH/LIBRARY	This package contains a subset of the general mathematical routines from the full IMSL library.
STAT/LIBRARY	This package contains a subset of the general statistical routines from the full IMSL library.
SFUN/LIBRARY	This package contains a variety of special mathematical and statistical functions.

CSO is very interested to know how many PC owners on campus would purchase any or all of these packages, if we get a site license. Depending on the response, we will determine whether a site license is feasible, and which type appears best for us.

If you are interested, we ask that you contact Stan Kerr by calling him at 333-4715, writing him at Computing Services Office, 1304 W. Springfield, or sending him electronic mail on the Cyber (TELL,UN=3K9NYTD) or the IBM (BITNOTE STANKERR). Please include a name and phone number in your correspondence.

SPREADSHEETS: ALTERNATIVES TO LOTUS 1-2-3

Steven Miller

This article is not an endorsement by CSO of any of the software packages mentioned. The views expressed are the opinions of the author only and are intended as a guideline for your own evaluations.

The purpose of this article is to present a few alternatives to any person thinking of purchasing a spreadsheet package for classroom or departmental use. Four different spreadsheets were evaluated: Lotus 1-2-3, Version 1A; VP-Planner, Version 1.0; Silk, Version 1.0; and a Beta version of Ontio 259. The areas of performance looked at were as follows: amount of memory used, maximum size of the spreadsheet, maximum fill size using the data fill capability, relative speed, cost, amount of disk storage needed, graphics capabilities, the "Lotus feel" to minimize retraining, and other miscellaneous items.

The amount of memory each spreadsheet used was surprisingly varied. Lotus came in with the lowest amount of base memory used at 98K after loading DOS 3.2. Ontio came In second with almost double the base memory used at 188K after loading DOS. VP-Planner was third with 197K and Silk was last with a whopping 360K.

VP-Planner and Ontio tied for top honors in maximum size of the spreadsheet with 256 columns and 9999 rows. Lotus and Silk tied for second with 256 columns and 2048 rows. This is just a measure of usable space. Depending on the data you have in the spreadsheet, these figures may be much lower.

The maximum fill characteristic is an attempt to give an idea of how many cells can be filled before you run out of memory. The Data Fill selection of the spreadsheets was used with integer values from 0 to 99999. Lotus easily ran away with first in this category with 55296

cells filled before running out of memory. Expecting Ontio to take second turned out to be a bad bet. As soon as Ontio hit the memory full limitation, errors were generated that were impossible to recover from without erasing the spreadsheet and starting over from scratch. VP-Planner grabbed second with about half of Lotus' capacity at 26103 cells. Silk rounded up third with a very poor 8136 cells.

I noticed no real difference in terms of relative speed between Lotus, VP-Planner and Silk. However, Ontio was definitely the slowest performer of the group. In some instances, I could go for a walk, have lunch and get a hair cut before Ontio would finish the task. Literally!!

In terms of storage used, Ontio was the hands-down winner. Ontio used 204K in six files. Second place was grabbed by VP-Planner at S74K in 34 files. Lotus was third with 619K in S2 files, and Silk brought up the rear with 1.2M in 49 files. For those of you with 10M hard disks, this may or may not be an important item.

It was very difficult to decide between Lotus and Silk for first place in the graphics category. Both packages have excellent graphics capability and flexibility as far as labeling and types of graphs supported. I awarded a tie for first in this case. VP-Planner was second and Ontio third. Both of these last two used low resolution graphics which may be OK for preliminary results, but definitely not for presentation quality.

All of the packages had a certain amount of the "Lotus feel." Silk and VP-Planner are not exact copies of Lotus, mostly because they add other capabilities on top of Lotus. Ontio, on the other hand, is a very, very close copy of Lotus. In my opinion, no retraining would be necessary to implement spreadsheet usage with any of the packages evaluated. As mentioned before, VP-Planner and Silk do add enhancements to the basic Lotus package and these functions would require training in order to use them effectively.

Now, what you've all been waiting for — how much do they cost? Ontio takes the bargain basement at $19.99 without documentation and $29.99 with documentation. Silk is next at $87.00. VP-Planner stepped quite easily into third at $99.9S, and Lotus brought up the rear at $221.00 through University Central Stores/Computer Center.

The Wrap-up

Ontio gets the last place. The copy I evaluated was a Beta test version and therefore, many improvements may be made before it is released. (At least I would certainly hope so!) The slow speed and the problems Ontio had when approaching memory limits justify this placement.

Third place goes to VP-Planner for conservative reasons. VP-Planner has been named in a lawsuit by Lotus and therefore, has a very tentative status in my opinion. (For more information regarding the lawsuit, see either the January 20, 1987 *PC-Week*, page 1, or the January 26, 1987 *Info World*, Page 1.) If you choose not to worry about future support, I would consider VP-Planner as tied with Silk for first place. The multi-dimensional capabilities of VP-Planner may make it desirable to you anyway. It is your choice.

I award second place to Lotus due to the extreme cost. The other packages have capabilities that easily rival those of Lotus and in some instances surpass Lotus' abilities.

I grant the grand prize to Silk in this particular competition. Granted, Silk takes up the most memory, the most storage space, and requires a small amount of training to adapt from Lotus, but it has all the capabilities of Lotus at about one-third the price. Some of the capabilities Silk has are: conversion from Lotus files to files usable by Silk and vice-versa, conversion to and from DIF files, help relevant to the current operation you are attempting to execute, the use of forms for maintaining separate configurations for printing, graphing, sorting, etc.

For further information on this evaluation contact Steven Miller at 244-0730.

Note: There are several Public Domain spreadsheets that may be able to meet your needs which are available through our Microcomputer Resource Center. You are welcome to come in and evaluate these packages on your own. To aid your search, here are a few of the spreadsheets available and the associated disk number in the PC-Sig Library: Mini-Calc, disk#89; Spreadsheet of Steele, disk#214; Allan's Spreadsheet, disk#531; and Freecalc, disk#574. Another Public Domain spreadsheet is AS-EASY-AS, which you can also evaluate on your own.

CAMPUS DISTRIBUTION OF SYSTEM SOFTWARE FROM SUN MICROSYSTEMS

James Bozek

Early in 1986, CSO and NCSA, on behalf of the University of Illinois, entered into a site license agreement with Sun Microsystems, Inc. to serve as a campus distribution point with respect to system software updates. The agreement included the right to receive, copy, and redistribute, free-of-charge to the general campus community, update tapes and documentation. Limited technical support, by means of electronic mail, with respect to software installation and user issues was part of that agreement.

Although the site license agreement with Sun Microsystems expired on December 31, 1986, copies of the two most recent system software updates (i.e., versions 3.0 and 3.2) will continue to be available. Those interested in obtaining copies of either or both of the software updates can inquire at the locations shown below:

Jim Bozek
Computing Services Office
181 Digital Computer Lab
1304 W. Springfield Ave.
Urbana, IL 61801
(217) 333-2048

Randy Cetin
Computing Services Office
131 Digital Computer Lab
1304 W. Springfield Ave.
Urbana, IL 61801
(217) 244-3224

CSO is also considering options for renewal of the software maintenance agreement, possibly under different terms. Suggestions or comments with respect to issues concerning a new agreement are welcome.

PC SAS LICENSE AGREEMENT CLARIFIED

Vicky Dingler

During the recent SAS User's Group International Conference, several PC SAS License Agreement issues were clarified. The first is home use of the PC SAS System products. The license agreement between SAS Institute Inc. and the University of Illinois-Urbana allows people to license one copy of the PC SAS System products for one machine at work and one machine at home. Anyone who has signed an end-user license agreement and licensed a copy of the PC SAS System products, (distributed through the CSO Distribution Office at 1208 W. Springfield), can install the PC SAS System products both at home and at work (one copy each place).

The second issue that was clarified was the use of the PC SAS System products in public sites. The PC SAS System products can be installed on machines in public sites that are monitored. CSO has provided three PC SAS System products for public use at the Microcomputer Resource Center in the CSO Office Building, and at the CSO South Site in 70 Commerce West. Please see the following article for details.

Any questions pertaining to these issues can be directed to the CSO South Consultants in 85 Commerce West, 333-2170.

PC SAS AVAILABLE FOR PUBLIC USE

Vicky Dingler

The PC SAS System has been installed at two public locations on campus for evaluation purposes. The first location is the Microcomputer Resource Center located in room 106 of the CSO Office Building, 101 S. Gregory in Urbana. The second location is the CSO South Site in 70 Commerce West.

The Microcomputer Resource Center provides on-site computer workstations for software and hardware evaluation. There are three PC SAS System products installed on an IBM PC/AT in the Resource Center: Base SAS, SAS/STAT and SAS/IML. (See an explanation of these products below). These products can be evaluated in the Microcomputer Resource Center during normal scheduled hours. Documentation for these products is available in the Center. For further information contact Mark Zinzow, Resource Center Director, at 244-1289 or contact Cass Morrow at the Center, 244-6261. The Resource Center hours are as follows: Monday, 1-5 pm; Tuesday, 1-5 pm; Wednesday, 10 am - 2 pm; Thursday, 1-5 pm and Friday, 10 am-2 pm.

The same PC SAS System products have been installed on an IBM PC/AT at the CSO South Site in 70 Commerce West. Normal hours are Monday thru Friday, 7 am-midnight; Saturday, 8 am-midnight; and Sunday, 12pm - midnight.

The SAS Base product for the PC includes most of the procedures available in the mainframe version, documented in the *SAS User's Guide: Basics, Version 5* edition. The following procedures are not included in the PC SAS System: BMDP, BROWSE, CONVERT, EDITOR, OPTIONS, PDS, PDSCOPY, PRINTTO, RELEASE, SOURCE, TAPECOPY, TAPELABEL, and XCOPY.

Several procedures are available in the PC SAS System that are unavailable in the mainframe version. The DBF and DIF procedures will read and utilize DBF and DIF files. The UPLOAD and DOWNLOAD procedures are used to upload and download SAS data sets to and from the mainframe. PC SAS also allows the PC windowing facility to be used to its full extent.

SAS STAT for the PC includes several of the statistical procedures available for the mainframe. Included in the list are: GLM, REG, ANOVA, DISCRIM, FACTOR, NPAR1WAY, SCORE, TTEST, RSQUARE, STEPWISE, FREQ, CANCORR, CATMOD and ORTHOREG. Additional procedures will be forthcoming.

SAS IML for the PC is an interactive data manipulation language that operates on entire matrices of values.

Any questions pertaining to detailed use of these products can be directed to the CSO South Statistical Consultants in 8S Commerce West, 333-2170.

PC SAS REPLACEMENT DISKETTES (Zap Z02 and Micro-to-Host Link)

Vicky Dingler

There are two PC SAS replacement diskettes that are available for updating the PC SAS System. The first is a zap diskette and the second is an update to the Micro-to-Host Link.

ZAP DISKETTE

The zap diskette (Z02) contains a replacement module with several changes to your software, including fixes for packed decimal (PDw.d), positive integer binary (PIBw.d), and integer binary (IBw.d) input format bugs. Note that there is also a change to the internal software expiration date. Currently, release 6.02 of base SAS software for personal computers contains an embedded date of July 1, 1987. **Regardless of your license agreement expiration date (i.e., SETINIT date), your base SAS software for personal computers will expire on July 1, 1987 — unless the zap diskette is installed.** In the future, this date will be updated as a standard part of new releases.

MICRO-TO-HOST LINK

The enhanced micro-to-host link includes support for new communications boards. Specifically, in addition to the PC3270 adapter card and the ASYNC adapter card, support for the following cards has been added: IRMA, FORTE, CXI, and PC7879.

These cards can be specified to the SAS System from within the following files: GOSYTEK SCR or GOSWTCH SCR. These files can be found on the SAS disk on VMD. The following command specifies the device type used.

OPTIONS REMOTE=devicetype;

where **devicetype** is the name of any of the above cards.

For those who have purchased PC SAS, the software is available free at the CSO South Statistical Consulting Office in 85 Commerce West, 333-2170. Please complete the form titled "PC SAS Replacement Diskettes 03/02/87" that has been sent by mail to licensed users. Bring it with two formatted diskettes to 85 Commerce West during the following working hours: Monday and Wednesday 9am - 1pm, Tuesday and Thursday 9am - 5pm, and Friday 9am - 11:45am, 1:15pm - 5pm. The consultants will make copies of the software. If you did not receive a form in the mail, please contact the CSO Statistical Consultants.

CHANGES AT CSO MICRO CONSULTING HOTLINE OFFICE

Dan Crimmins

The new semester has brought many changes here in the Micro Consulting Hotline Office.

Our office has moved to 94 Commerce West, next door to our previous office. Our new hours are Monday through Friday 9am-5pm and 7pm-10pm, and Sunday 7pm-10pm. By expanding our office hours, we hope our office is more accessible to faculty and students with busy schedules. Our office telephone number is still 244-0608.

We are now supporting the Apple Macintosh and related software. We have two Macs in the office, and are available to answer questions dealing with most areas of Mac use, including communications and file conversions. Conversions can be performed between several Mac and IBM PC file formats, including many word processing, spreadsheet, and database formats. To assure that we will be able to perform certain conversions or transfers, please telephone ahead of time.

We have a version of the Kermit communications program for the Macintosh. MacKermit is appropriate for using the Mac as a terminal to many of the mainframes on campus, including the IBM VM series, the UNIX machines and the Cyber. MacKermit will also allow you to exchange files between your Mac and the mainframes that support the Kermit protocol. This includes the IBM VM series and most of the UNIX machines on campus. MacKermit is available free-of-charge, and can be obtained by bringing a blank Mac disk to our office in Commerce West.

If you have any questions regarding the use of microcomputers on campus, please feel free to give us a call or stop by the office.

DOCUMENT CONVERSION: A MICRO CONSULTING SERVICE

Joan Schraith

As many of the microcomputer users on this campus already know, the Microcomputing Consulting Office will do document conversion (i.e., convert documents between the word processors that we support) as one of the services we offer the University of Illinois microcomputer community. We are pleased to announce that we have just acquired a new software package that makes this service much easier to perform, and makes the results more satisfactory.

This package is called SOFTWARE BRIDGE™. It is produced by Systems Compatibility Corporation and is an extremely user-friendly package that does a remarkable job at document translation. Previous to this acquisition we could do file transfer for users, often utilizing the conversion utilities of several word processors for a single transfer. The result of this process was the loss of most formatting information, especially that relating to special functions such as emboldenment or underscoring. All lines would end in hard carriage returns, and the margins would often need to be reset.

Now, we can do translations between the following IBM word processors (including and up to the releases mentioned), retaining all formatting instructions which are in the document and are supported by the target word processor (the page image is always retained, even if the target word processor does not have codes for the function):

DISPLAYWRITE 2, 3, 4	Releases through 1.00
MICROSOFT WORD	Versions through 3.1
MULTIMATE	Versions through 3.6
SAMNA WORD III	Revisions through 2.0
WANG PC	Version 2.01
WORDMARC	Composer
WORDPERFECT	Versions through 4.2
WORDSTAR	Releases through 3.3
VOLKSWRITER	Versions through 1.0

We can also send files from an Apple Macintosh to an IBM PC, on an appointment basis. Soon, we hope to have our ATs networked with the Macintoshes, so that we may offer this service on a walk-in basis as well. These services are at no cost, the user merely needs to being in the original disk and a blank disk for the output.

For more information, contact the Microcomputer Consulting Office, 94 Commerce West, 244-0608.

NEW AND REVISED CSO DOCUMENTATION

We are in the process of reviewing all of our Reference Guides. Listed below are new or revised guides that have gone to the printer that should be available at the sites shortly. Users may notice that eventually there will be guides in the drawers that have new dates only — no actual revisions. We have changed dates on old guides to indicate that they have been reviewed and are still accurate as of the new date. Any guides that are actually revised due to this process will be announced in *Off-Line*, so that users will know which ones to replace. (NOTE: Since some of the guides listed below may actually still be at the printers when this issue comes out, please recheck the drawers after a few days if you do not find the revised guides on your first try.)

RF-0.1	Reference Guide List	Revised 3/23/87
RF-0.1a	Technical Note List	Revised 3/23/87
RF-0.2	Documentation List	Revised 3/10/87
RF-0.3	CSO Sites	Revised 3/05/87
RF-0.3a	RJE Information for Handicapped	Revised 2/23/87
RF-0.7	Sending Files to the Cyber from IBM CMS	Revised 2/24/87
RF-0.11	LocalNet	Revised 3/10/87
RF-0.12	Operating Schedules	Revised 3/10/87
RF-0.14	Accessing CSO Computer Systems	Revised 2/23/87
RF-1.1	Cyber Signon, Signoff, and Password	Revised 2/23/87
RF-1.4	Submitting VMBATCH Jobs from the Cyber	New 2/20/87
RF-3.4	Using LISREL IV on the Cyber	Revised 3/10/87
RF-3.5	Using MULTQ on the Cyber	Revised 3/10/87
RF-3.9	SPSS on the Cyber	Revised 3/10/87
RF-3.11	BMDP on the Cyber	Revised 3/10/87
RF-4.2	ALTRAN	Revised 3/10/87
RF-4.3	APEX	Revised 3/10/87
RF-4.6	EISPACK	Revised 3/10/87
RF-4.7	LINPACK	Revised 3/10/87
RF-4.15	FUNPACK	Revised 3/10/87
RF-4.19	GRG	Revised 3/10/87
RF-4.21	FORSIM	Revised 3/10/87
RF-4.23	ITPACK	Revised 3/10/87
RF-4.26	REDUCE	Revised 3/10/87
RF-4.27	FISHPAK	Revised 3/10/87
RF-4.28	AMOSLIB	Revised 3/10/87
RF-4.29	LSODE	Revised 3/10/87
RF-4.30	LINDO	Revised 3/10/87
RF-4.31	SIMSCRIPT	Revised 3/10/87
RF-4.32	MATH/PROTRAN	Revised 3/10/87
RF-4.33	MATLAB	Revised 3/10/87
RF-4.36	MP	Revised 3/10/87
RF-5.2	GCS Library	Revised 2/24/87
RF-5.7	DI-3000 Library	Revised 2/28/87
RF-6.3	GPSS	Revised 3/12/87
RF-6.4	SPICE	Revised 3/12/87
RF-6.6	SHAZAM on the Cyber	Revised 3/04/87
RF-7.3	CLAIM	Revised 3/10/87
RF-7.7	EXAMINE	Revised 3/15/87

RF-7.8	FETCH	Revised 3/15/87
RF-7.17	PSINQ - LIMITS	Revised 3/15/87
RF-7.20	R Command	Revised 3/15/87
RF-7.32	SYMPLIB	Revised 3/15/87
RF-7.34	COPYCH	Revised 3/15/87
RF-20.8	VMSECURE	Revised 2/20/87
RF-23.5	Using VMBATCH with SAS	New 2/20/87
RF-23.12	SHAZAM on IBM CMS (RF number also changed from RF-26.1)	Revised 3/04/87
RF-25.1	NPLOT	Revised 2/20/87
RF-41.7	ex Line Editor & vi Visual Editor	New 3/10/87
RF-41.7.1	The ex Command	New 3/10/87
RF-41.7.2	ed Editing Commands	New 3/10/87
RF-41.7.3	Regular Expressions and Substitute Patterns for ex Editor	New 3/10/87
RF-41.7.4	ex Options	New 3/10/87

NATIONAL SCIENCE FOUNDATION
Computer and Information Science and Engineering

The following article is a reprint of an announcement received recently from the Computer and Information Science and Engineering division of the National Science Foundation. We have included it in this issue of the newsletter because we believe many of our readers will be interested. We thank CISE for permission to reprint.

This letter is being sent to you in order to inform the scientific community of Important activities presently takIng place at the National Science Foundation. The fiscal 1987 Budget for the National Science Foundation includes funds of several million dollars in support of an initiative known as: "Computational Science and Engineering" (CSE). These funds are being distributed among the various disciplines: Biological, Behavioral and Social Sciences; Computer and Information Science and Engineering; Mathematical and Physical Sciences; Science and Engineering Education; Engineering; and Geosciences. It is anticipated that this new program will stimulate activity at the interface between sciences and advanced computer technology. The NSF strongly urges investigators to inquire further about the details of the initiative with the various program directors at the Foundation.

Many of you may know that there have been a number of organizational changes at NSF. One is the creation of a new Directorate for Computer and Information Science and Engineering (CISE), which combines several preexisting computer activities from other directorates, the Division of Information Science and Technology, and programs in Computer Engineering, Communications and Signal Processing, and the Office of Advanced Scientific Computing.

CISE supports research in computer science, Information systems and processing, robotics, networking and communications, microelectronics, advanced scientific computing and intelligent systems. The overall goal of the effort is to improve the knowledge base, research infrastructure and professional labor force needed to understand and improve the nature, synthesis and use of computing and information processing devices and systems. The current structure of CISE includes S divisions:

- Computer & Computational Research
- Advanced Scientific Computing
- Information, Robotics & Intelligent Systems
- Networking & Communications Research & Infrastructure
- Microelectronic Information Processing Systems

Formation of Research Teams

Although many of the efforts described below can be performed by single investigators, and will be, to some extent, supported in that form, this new initiative will emphasize strong inter-disciplinary approaches to the enhanced computing capability and environment of the scientist and engineer. Proposals involving computer scientists, mathematicians, scientists and engineers, and specialists in such areas as computer graphics, might be integrated in such a way as to form an interdisciplinary group or team, addressing specific problems of importance to one or more scientific or engineering disciplines. For example, such proposals might be strongly coupled with efforts of innovators of state-of-the-art algorithms and software for application on machines with highly parallel architecture. Such approaches could develop new paths for entire disciplines to follow. They will be coordinated among CISE programs and the NSF scientific and engineering disciplines.

Research Opportunities in CISE

Proposals with a strong interdisciplinary approach are being encouraged in the following computational areas, although this list is not intended to be complete:

- Software and Algorithm Development
- Visualization, Graphics and Image Processing
- Performance Evaluation of Computer Systems and Software
- Distributed and Parallel Processing and Vectorization
- Application of Advanced Technologies to problem solving
- Formulation of Novel Computational Strategies
- Network and Communication Systems

Software and Algorithm Development: It is widely accepted that software lags hardware development. This fact is especially true for supercomputers and other machines of advanced architectures. Within CISE, the Computational Science and Engineering Initiative will focus on research that addresses the development of novel algorithms and their implementation into useful software packages, the creation of friendly working environments, and the automatic production of fast, efficient code for scientists and engineers working on advanced computers. Innovations in languages, user-friendly interfaces, software tools, etc. might address issues related to the speed up of code development and therefore the

productivity of researchers. Methods which assist in the portability of code across a variety of advanced machines will also be considered.

Visualization, Graphics and Image Processing: More powerful visualization capability is being demanded to take advantage of the most powerful machines. Substantial insights are already being gained from graphics, which is the only way to understand many scientific phenomena. Among the many research topics in graphics and image processing are: extemporaneous, interactive steering of numerically intensive calculations; dynamic visualization of fields in higher dimensions; high bandwidth graphics, networks and protocols; massive data set handling and standards; vectorization and parallelized algorithms for visualization; workstation-driven remote use of supercomputers; standard graphics-oriented scientific programming environments.

Performance evaluation: A recent NAS/NRC report on "An Agenda for Improved Evaluation of Supercomputer Performance" remarks on the severe lack of scientific foundation, regarding our ability to evaluate the performance of advanced computers. Investigations into the definition and techniques for performance evaluation of parallel or other computer systems are encouraged as the principal subjects of proposals, or as components of other research projects in this initiative.

Distributed and Parallel Processing and Vectorization: The direction of advanced scientific computing is clearly headed toward parallelism to achieve increased capacity. Since the complexities of programming in parallel environments with optimally vectorized code place even more challenging demands on software and algorithm development, the Computational Science and Engineering Initiative will emphasize means to provide effective scientific computing in vector and highly parallel environments. For example, the initiative will consider methods for automatically parallelizing existing scientific codes or rewriting them for efficient use on machines of advanced architectures. Also, software tools for increasing productivity of the programming environment on parallel and distributed architectures will be encouraged especially, for vector and multiprocessor computers.

Advanced Technologies: The Science and Engineering Initiative welcomes proposals concerned with areas of technology that have a strong impact on the conduct of future computing. Examples include high capacity and/or high performance mass storage coupled with appropriate file and data base management systems, optical computing, neural networks, non-binary computing, or any such ideas that could influence the nature of advanced scientific computing. The CSE Initiative will cooperate with other programs on the potential application of advanced computing technologies and systems to scientific and engineering problems. Proposals of this type will be coordinated as appropriate both within and outside the Foundation.

Formulation of Novel Computational Strategies: New computer architectures, communications technologies, languages, and other software or hardware advances becoming available offer promise of greatly enhanced speed, flexibility, or cost-effectiveness in performing scientific and engineering research. However, the hope for significant increases in insight to discipline specific problems may demand a fundamental revision in the strategic approach taken toward solving problems to make effective use of these options. Investigations into alternate ways of formulating and computing important scientific and engineering problems are encouraged.

Network and Communication Systems: Recently increased accessibility of advanced computing resources opens possibilities for new, computationally-based, advances in the understanding — i.e., analysis and especially design/synthesis — of computer networks and communication systems generally. This Initiative will entertain proposals for computational research in such problem areas as: event-based, Monte Carlo, or other simulation methodology applied to very large scale computer networks with attention to realistic detail; protocol design based on computational studies of state-machine models of networks with state spaces so large as to render such studies hitherto impracticable; specialized, interdisciplinary studies of Presentation- and Application-layer protocols; knowledge-based or other expert aids for intelligent dynamic network management; and research using symbolic computation in studies of algebraic coding theory. Proposals in these and other appropriate topical areas will emphasize the innovative computational nature of the proposed investigations, and may include the use of advanced (e.g., highly parallel) architectures in the search.

For further information write or call the program director of the program most related to your area of interest or Dr. Mel Ciment, Division of Advanced Scientific Computing (202-357-9776).

FOR SALE — MODEMS, TERMINAL, TYPEWRITER

Multi-Tech MT212D, 1200 baud modem with CA211 cable, $125; Lear-Siegler ADM-3A terminal with lower case option, $100; ComData 302A2-13 300-baud acoustic coupler, $35; Olympia Electric 45 typewriter with 15-inch carriage and foreign accent characters, $350. Buyer **must** be a University Account holder. To buy (or haggle) call E. Melhado, 333-6175.

FOR SALE — NBI WORD PROCESSING SYSTEM

NBI Word Processing System 3000 with second Video

QUME 55 COS Printer

Two DS/DD Diskette Drives

Software — Math, Forms, Records Processing & Stored Keystrokes

Purchased in November, 1982 for $18,500. Excellent system and printer and is in excellent condition. Located in Grants and Contracts Office, 105 Davenport House. Call Marty Glenn at 3-2186 for additional information. Selling price is negotiable.

USER TRAINING PROGRAM

Presented here, as a brief reminder, are the short courses that will be offered during April. (NOTE: The previous issue of *Off-Line* contained full details on policy, registration, etc. For further information or registration forms, call 244-1257, or go to Room 162 DCL.)

April Short Course Listing

M27. Communicating with and Networking Microcomputers

This class will discuss: connecting a microcomputer to a host mainframe locally and remotely; long distance data communications; standard interface wiring; modems; asynchronous communications and local area networks; file transfer between microcomputers and the software available for accomplishing this (emphasizing Kermit). Prerequisite: M11 and M21 or equivalent knowledge of microcomputer fundamentals. Fee: $15.

Apr. 14,16 4pm-6pm [German and Zinzow]

M41. Using a Word Processing Package

How to use a microcomputer and word processing package to produce (create, revise and print) publication-ready manuscripts. Prerequisite: M21, M22, or consent of instructor. Enrollment limited to 12 per section. Fee: $25 (includes one diskette).

3. Microsoft Word on the Macintosh
Apr. 20,22,24 3pm-5pm [DeWan]

M43. Using a Spreadsheet Package

"Electronic spreadsheet" packages (such as VisiCalc, its successors and spinoffs) are widely considered the most impressive and useful software available for microcomputers. This course introduces participants to the analytical and "what if --" capabilities of a new generation spreadsheet package, Lotus 1-2-3 on the IBM PC. Also, glimpses of this package's database and graphics features if time permits. Prerequisite: M21, M22, or equivalent. Enrollment limited to 15. Fee: $25 (includes one diskette).

3. Microsoft Excel on the Macintosh
Apr. 20,22,24 3pm-5pm [staff]

M45. Using a Database Package

An introduction to microcomputer database management emphasizing the fundamentals of using database software. Using a leading database package, we will design and create an information file, enter, select and sort data, and use the package to write a report. If time permits, we may also write and run a simple program file. Prerequisite: M21 or equivalent. Enrollment limited to 15. Fee: $25 (includes one diskette).

3. dBASE III on the PC
Apr. 14,16,17 3pm-5pm [Knott and Keefe]

M47. Intermediate PC

This is a second course in using the IBM PC/XT/AT and PC-DOS. It covers aspects of DOS 2.x and 3.x not covered in the Introductory course (M21: Quick PC). Topics include: DOS versions, file specifications, device names, global filename characters, tree-structured directories and subdirectories, hard disk usage, redirecting

input/output, batch files, and configuring your system. Other topics that may be covered as time permits: the EDLIN line editor, batch file commands, the LINK and DEBUG utilities, and using compilers. Prerequisite: M21 or equivalent. Fee: $20 (includes one diskette). Enrollment limited to 15 per section.

2. Apr. 20,22,24 3pm-5pm [Szoke]

M51. Using A Desktop Publishing Package

Pagemaker is a popular electronic layout program that allows you to combine text and graphics created with other Macintosh applications, such as MacWrite, MacPaint, MacDraw, and Microsoft Word. It also provides built-in editing and graphics tools for correction and creation of text and simple graphics, such as boxes, lines, and shading. Prerequisite: M41 or equivalent word processing experience. Fee: $15.

Apr. 6,8 3pm-5pm [DeWan]

M55. Intermediate Database

This is a second course in use of a database management package, emphasizing hard disk usage, relational operations, simple programming (writing and debugging command files), and steps in designing and developing a database application. Prerequisite: M45 or equivalent basic knowledge of a database package. Fee: $25 (includes one diskette).

dBASE II, III and III PLUS on the PC
Apr. 7,9,10 3pm-5pm [staff]

M61. Introduction to Microcomputer Graphics

This course surveys the varieties of graphics software and hardware commonly available for microcomputers. Topics include the differences among types of software and what each is best used for, the types of input devices such as mouses and digitizers, and hard copy devices such as plotters and printers. The course is intended for newcomers to graphics who are sorting out what equipment they may need. Prerequisite: M21 or equivalent. Fee: $15.

Apr. 7,9 7pm-9pm [Smyser]

M73. Using a Statistical Package

This course demonstrates how to download a data set from the Cyber system to an IBM PC diskette file. A microcomputer statistical package (probably Microstat) is then used to obtain basic descriptive statistics and do an illustrative regression and analysis of variance. Prerequisites: M21 or equivalent and a good grasp of basic statistical analysis. Enrollment limited to 15 per section. Fee: $30 (includes one diskette).

Microstat on the PC
Apr. 14,16,17 3pm-5pm [Szoke]

M76. Using Kermit with SPSS/PC and SPSS-X

This course covers communications (including file transfers) between SPSS/PC and mainframe SPSS-X using the widely available Kermit package. Prerequisite: Experience with SPSS, and minimal familiarity with Kermit. Fee: $10.

Apr. 16 7pm-10pm [Roy]

I23. Introduction to IBM Timesharing: CMS and XEDIT

This course presents an introduction to general CMS (Conversational Monitor System) virtual machine and XEDIT concepts. The CMS portion covers standard and locally written CMS commands and utilities, sending files between the Cyber and CMS, guidelines for utilizing the available documentation, how to use ASCII terminals in full-screen mode. The XEDIT portion introduces the text editor used under CMS. The presentation covers useful commands for both "ASCII typewriter" and "full-screen" or "simulated full-screen" terminals. Recommended prior reading: *Introduction to CMS at UIUC*, available for $2.50 at the CSO Distribution Office, 1208 W. Springfield, Urbana, or the Illini Union Bookstore, 715 Wright Street. Prerequisite: course G10 or equivalent knowledge. Enrollment limited to 14 per section. Fee: $15.

5. Apr. 13,14,15,16 4pm-6pm [Mills]

I33. Intermediate CMS

This course is designed for CMS users having at least six months' experience with CMS. The course treats in more detail some topics in the introductory CMS course (I23) as well as discussing more advanced topics such as execs, efficient space utilization, an introduction to using magnetic tapes, customizing your CMS work environment, and some commands useful in advanced CMS applications. Enrollment limited to 20. Prerequisite: I23 or equivalent. Fee: $25.

Apr. 20,21,23 7pm-9pm [Roy]

I35. Using Tapes on CMS

This courses will begin with a discussion of the characteristics of magnetic tapes, then will cover the use of tapes on CMS, including the TAPE command, MOVEFILE, TBROWSE, and examples of using tapes with some application languages and packages. Prerequisite: I23 or equivalent experience using CMS. Fee: $10.

Apr. 13,15,17 2pm-3pm [Wetzel]

I51. Introduction to the VM/SP Product Interpreter

Introduction to the System Product Interpreter (SPI) under CMS. SPI allows you to write programs comprised of CP, CMS, and/or XEDIT commands using one of three languages: EXEC, EXEC2, or REXX (the Restructured Extended EXecutor language). Using SPI, you can write or tailor your own CMS commands (called "execs") or XEDIT commands (called "macros"). You can also write procedures (called "execs") which

accomplish a sequence of repeated tasks by simply entering the name of the exec. This course gives an overview of SPI with primary emphasis on the REXX language. Examples will include creating your own PROFILE EXEC and PROFILE XEDIT files. Recommended references: *The VM/SP System Product Interpreter User's Guide* and the *VM/SP System Product Editor User's Guide*, available at 1208 W. Springfield. Prerequisites: I23 or equivalent. Fee: $25.

Apr. 13,14,16 4pm-6pm [Kesner]

I79. Regression Analysis Using SPSS, SPSS-X, or SAS

After a brief review of concepts essential for comprehending standard regression outputs and related documentation, this course covers the application of various regression methods and interpretation of the output generated by SAS, SPSS-X and BMDP regression procedures. It covers: elements of simple linear, multiple, stepwise and nonlinear regression analysis; diagnosing multicollinearity; examining outliers ad influential data points; selecting the "best" model; limitations, assumptions and inferences from each procedure. Prerequisite: I72, I76, or I83 or equivalent; some knowledge of calculus, matrix algebra, and the concept of ordinary least squares. Fee: $15.

Apr. 13,15 4pm-6pm [Roy]

I97. Introduction to SPSS Graphics

Features of the new SPSS interactive graphics product will be reviewed using examples. Step by step, the process for obtaining plots will be explained, using handouts sufficient for participants to reproduce the plots. Pie charts, bar charts, line charts, maps and text will be covered. Prerequisite: I23 or equivalent and familiarity with SPSS. Fee: $10.

Apr. 1 3pm-6pm [Mills]

U41. Intermediate UNIX

An explanation of shell concepts is given: redirecting input-output, pipelines, filters, tees, background processing, shell scripts and subshells. Features specific to the C and Bourne shells are covered. The UNIX "make" utility will also be discussed. Prerequisite: U11 or equivalent. Enrollment limited to 10. Fee: $15.

Apr. 6,8 7pm-9pm [Pommert]

U73. The S Package for Data Analysis and Graphics

S is an interactive statistical environment available on UNIX machines. It comprises a high-level language for specifying computations and a support system for data management and graphics. This introductory course provides an overview of S commands and an exposure to the S environment. The flexibility and graphical

capabilities of S will be stressed. The course is divided into lecture/discussion and hands-on sessions using S. Recommended references: R.A. Becker and J.M. Chambers, *S: An Interactive Environment for Data Analysis and Graphics*; J.M. Chambers and others, *Graphical Methods for Data Analysis*. Prerequisite: U11 or equivalent, and a good grasp of basic statistical analysis. Fee: $15. Enrollment limited to 8.

Apr. 13,15 7pm-9pm [Higgins]

X76. Using SPSS-X with VMBATCH from the Cyber

VMBATCH can be used to submit SPSS-X jobs from the Cyber. This presentation will introduce the necessary job control and programming statements for this type of processing. Since VMBATCH is used under the CMS operating system, an explanation of the file naming scheme and disk management techniques will be given. Prerequisite: C11 or equivalent. Fee: none.

Apr. 8 4pm-5pm [Mills]

MANUALS

The following manuals are strongly recommended for certain short courses. The first five manuals listed may be purchased individually at the Illini Union Bookstore (Reference Section), 715 South Wright Street, or may be purchased as a set at the CSO Distribution Office, 1208 W. Springfield. The last two manuals may be purchased at either place as individual manuals.

1. Introduction to the Cyber Systems, $2.00
2. A Tutorial Guide to the ICE Text Editor, $1.25
3. ICE Reference Manual, $3.25
4. An Index to Software on the Cyber, $3.25
5. Cyber Fortran Debugging, $1.25

NOTE: The above 5 manuals may be purchased as a package at the CSO Distribution Center for $11.00.

6. RNF Documentation: Tutorial, Macros and Reference, $4.00
7. Introduction to CMS at UIUC, $2.50

The following (recommended) manuals are only available at 1208 W. Springfield:

UNIX User's Manual (2 volumes), $19.00
UNIX Programmer's Manual (2 volumes), $18.00

OFF-LINE's Mailing List

If you wish to be placed on our mailing list for future issues of *OFF-LINE*, if you wish to be removed from the list, or if you wish to enter an address correction, please complete and return this page. **(Current subscribers are kept on the mailing list until a specific request for removal is received, or until a mailing is returned as undeliverable.)**

Check one:

- ☐ Place my name on mailing list
- ☐ Make the following corrections or changes
- ☐ Delete my name from mailing list

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department

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Room - Building

Off-campus Address:

_____

Organization or Company (if applicable)

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Street Address

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City -- State -- Zip Code

If address correction, give old address and zip code below.

_____

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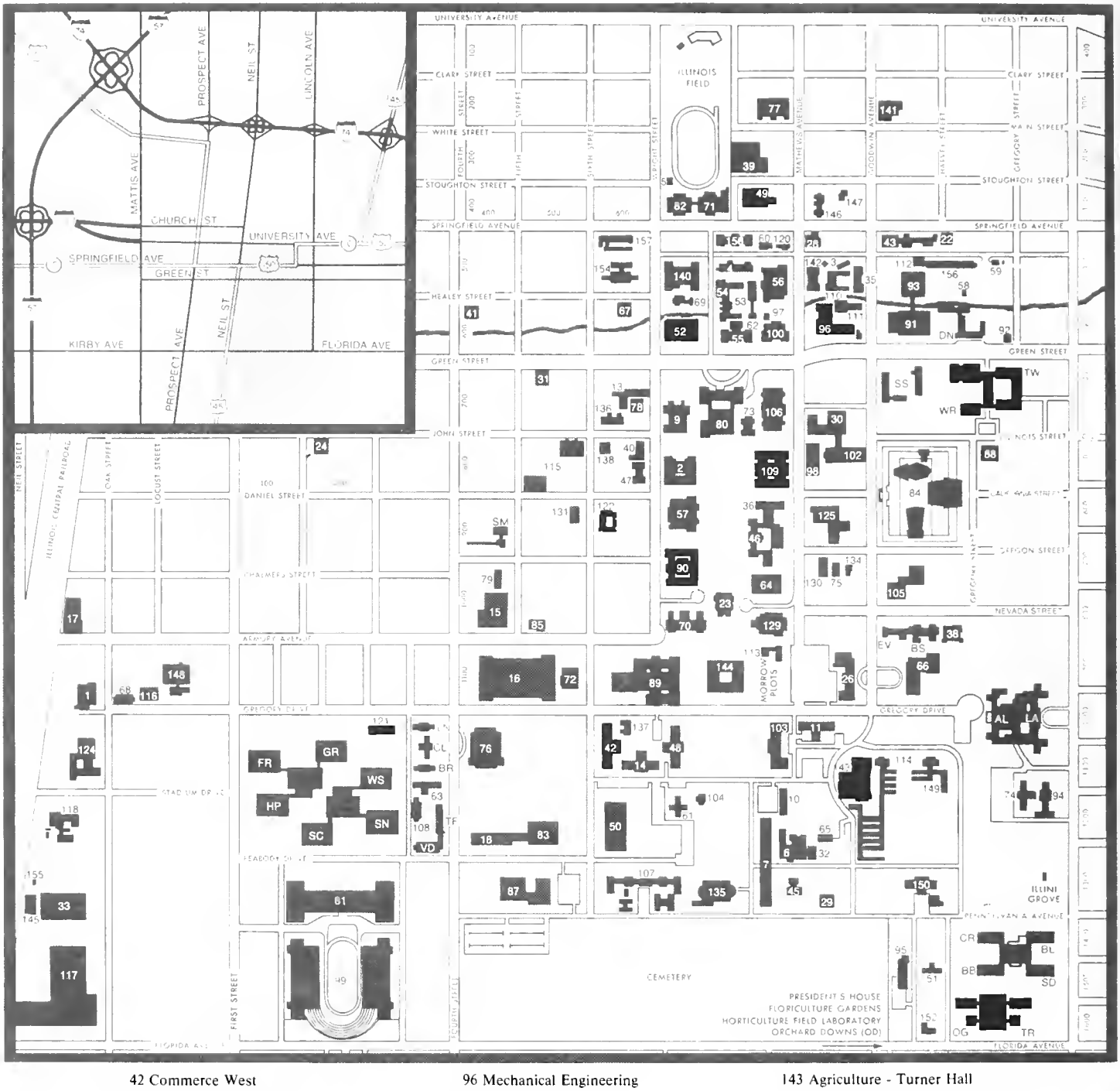
SEND TO:

OFF-LINE
150 Digital Computer Laboratory
University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH (DCL)	
14 Digital Computer Lab 333-7685	Monday-Saturday, 24 hours/day Sunday, 12 noon - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Saturday, 8 am - 12 mid. Sunday, 12 noon - 12 midnight
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, Closed
CHEMISTRY	
150-154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Daily, 12 noon - 12 midnight
ELECTRICAL ENGINEERING	
146 Electrical Engineering 333-4936	Monday-Friday, 8 am - 12 mid. Saturday, 8 am - 5 pm Sunday, Closed
FAR	
Florida Avenue Residence Halls 333-2695	Daily, 12 noon - 12 midnight
ISR	
Illinois Street Residence Halls 333-0307	Daily, 12 noon - 12 midnight
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Saturday, 8 am - 12 mid. 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-Friday, 8 am - 12 mid. Saturday, 10 am - 5 pm Sunday, 12 noon - 5 pm



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

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off line

University of Illinois at Urbana-Champaign

Director: George Badger
Editor: Lynn Bilger

Computing Services Office

CSO DIRECTORY

USER SERVICES AND HARDWARE/SOFTWARE SUPPORT

User Accounting	**1208**	**W Springfield**	**333-7752**
Documentation Center	**1208**	**W Springfield**	**333-9230**
Systems Consulting	**1208**	**W Springfield**	**333-6133**
Statistical Services Consulting	**85**	**Comm West**	**333-2170**
PC Consulting	**91**	**Comm West**	**244-0608**
Text Processing Consulting	**212**	**CSOB***	**333-7318**
Maintenance & Repair Service	**194**	**DCL**	**333-0969**
Tape Service, Special Plots, Xerox Laser Printer	**123**	**DCL**	**333-8640**

DIAL-UP NUMBERS

CYBER 175 (NOSA)	**300**	**baud**	**333-4000**
IBM 3081 GX (VMD)	**300**	**baud**	**333-4006**
Switch	**1200**	**baud**	**333-4008**
TELENET (local no.)			**384-6428**

CSO STAFF

Director	George Badger	150	DCL	333-4103
Business Manager	Stanley Rankin	150	DCL	333-6530
Secretary	Joyce McCabe	150	DCL	333-1637
Networking	Sue Greenberg	187	DCL	333-3723
Systems & User Services	Ahmed Kassem	185	DCL	333-7159
Hardware Maintenance & Communication	Mike Gardner	173	DCL	244-0914
Personal Computers/EXCEL	Robert Penka	119	CSOB*	333-4709
Supercomputer Activities	Sandra Moy	1207	W Springfield	333-9772
Maintenance	Larry Crotser	131C	DCL	333-5190
Consulting	Stan Kerr	208	CSOB*	333-4715
Statistical Services	Joan Alster	202	CSOB*	244-0937
Accounting Services	Gary Bouck	1208	W Springfield	333-7752
Microcomputer Laboratory	Jack Knott	102	CSOB*	333-6562
User Training (Short Courses, Videotapes)	Ron Szoke	108	CSOB*	333-8630
Documentation	Lynn Bilger	207	CSOB*	333-6236
CYBER-IBM-VAX Operations	Myra Williams	168	DCL	244-0186
Site Operations	Sylvia Hansen	65	ME	333-6285

*CSOB is the new CSO Office Building, 101 S. Gregory, Urbana.

Academic and research computing is done on the following machines: CDC Cyber 175 running NOS 1; IBM 3081 running VM; IBM 4341 running VM; VAX 11/780 running UNIX and driving a GSI CAT-8 phototypesetter; three Pyramids and a Sequent running UNIX. In addition CSO serves as Facility Manager for various departmental machines (e.g., other IBMs) and for the National Center for Supercomputing Application's CRAY X-MP.

Operating Hours (see HEARYE,SCHEDUL for exceptions):

	CYBER 174/175	IBM
M-F	8 am - 6 am	8 am - 6 am
SAT	8 am - Midnight	8 am - 6 am
SUN	Noon - 6 am	Noon - 6 am

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Contents

OFF-LINE is published every two months by the Computing Services Office at the University of Illinois, Urbana-Champaign. Information in this issue is current as of May 15, 1987. 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.

LARGE PRINT JOBS REROUTED

As of June 1, 1987, PRINT jobs sent to DCL that are over 30,000 lines will automatically be routed to print on the 3800 printer.

SHAZAM V.5.0 TO BE THE DEFAULT

As of September 1 1987, SHAZAM V.5.0 will be the default package accessed with the LINKTO command on the IBM or the GRAB command on the Cyber. Shazam V.4.5 can be accessed at that time as the past version as shown below:

On the IBM (VMD):

LINKTO SHAZAM (P

On the Cyber:

GRAB,SHAZAM/P

All currently available reference guides (RF-6.6 and RF-23.12) have been updated to reflect the usage of SHAZAM V.5.0. To use SHAZAM V.4.5 on either machine, please see the consultants at 1208 W. Springfield or 85 Commerce West for a copy of the old version 4.5 reference guide.

SPSS-ONLINE TO BE DISCONTINUED

SPSS-ONLINE is an interactive front-end for submitting SPSS statistical package runs on the Cyber. SPSS-ONLINE makes it possible to use SPSS without making use of the Cyber text editor (ICE) to create a program file. Due to declining use in recent years, SPSS-ONLINE will be discontinued **July 1, 1987**. If this presents a problem for you, please contact Joan Mills at the Computing Services Office; write to 150 DCL, telephone 333-2172, or bitnote (or TELL) MILLS at UIUCVMD.

SPSS Versions 8.3 and 9 will not be affected by the removal of SPSS-ONLINE.

NOTICE TO SYTEK LOCALNET USERS

CSO will be doing the SYTEK yearly access fee billing in June. If any of your billing information has changed since last year, please notify Larry Crotser, 150 DCL via campus mail or crotser@uiucuxc, or call 333-5190.

XEROX 2700 BEING FUNCTIONALLY REPLACED BY IBM 3812

Dan Pommert

The Xerox 2700 is being functionally replaced by an IBM 3812. As of **May 23**, print jobs sent to the Xerox 2700 will instead be routed via some functional translation software to an IBM 3812 in the same room (123 DCL). To most users, this change will be of minimal consequence since the most commonly used 2700 commands (UDK commands) will be transformed to equivalent functions on the IBM 3812. The fonts are also translated to very similar fonts on the 3812. The net result will be that most Xerox 2700 users will be able to continue submitting their print jobs without making any changes. The IBM 3812, as the Xerox 2700, is suitable for preparing theses and dissertations here at the University of Illinois.

There are still a few features of the Xerox 2700 printer that are not being simulated by the software running the IBM 3812 printer. It is likely that some of these features will be included in future releases of the software. The missing features are:

- Relative motion command (*r). The relative motion command has been used primarily to do subscripting. However, the subscript command (*l) works with the 3812 much better than it did with the 2700. Therefore, users doing subscripting should use the standard Xerox 2700 subscript command (*l) rather than a simulated one.
- Vertical line drawing command (*y).
- Rotated fonts. Only portrait mode fonts are currently supported.
- Justification mode (*j).

You may also find an extra sheet of paper at the beginning and end of your job, and a status sheet at the end of your job.

NOTE: Since there is the possibility that the Cyber will be replaced by another system, we strongly recommend that people who are just now beginning a large text processing project, such as a dissertation, use a different system. We recommend using Script or GML on the IBM system, or a sufficiently powerful personal computer word processor.

CHARGE TO BE MADE FOR GRAPHICS ON THE 3800

As of May 1, 1987, graphs that use DI-3000 or Zeta format GML files which are printed on the 3800 printer at DCL have been assessed charges as follows:

I. DI-3000 or Zeta format GML files printed on the 3800 are assessed a charge of 1.S SU/1000 records sent to the 3800 translator.

II. Supplemental processing required to prepare a file for the 3800 is charged at normal CSO rates; see the CMS help file HELP CSO COST for details. The standard charging formula is:

Let

T = CPUM/1000 + SIO/600

where **CPUM** = milliseconds CPU time used, and **SIO** = number of start I/Os.

Then if

T < 150, SU charge = 0.2335 x T(1 − T/600)
T > 150, SU charge = 0.2335 x (37.5 + T/2)

Charges, calculated under I and II above, apply to: Zeta GML files on the NPLOT command from the IBM; PVI DI-3000 files on the NPLOT command from the IBM; or any Zeta, PVI, or GML files on the PLOT command from the Cyber.

An article discussing more fully how to do plotting on the 3800 printer will be forthcoming in the next issue of *Off-Line* (the July/August issue).

WHAT MATHEMATICAL APPLICATIONS FOR VMD?

Stan Kerr

CSO would like to solicit your suggestions for mathematical software to be installed on VMD. A great deal of software has been accumulated on the Cyber system over the years, and some has already been installed on VMD. Limited time makes it impossible to offer everything that was offered on the Cyber, at least in the short run, so we are asking you — both as a researcher and as an instructor — what you would like to see installed, or what you would like to use in your courses.

We would like to caution instructors especially to check now what software they will need on VMD for the Fall semester. If you will need a package we do not presently have, you should allow a lead time of at least 2 months for acquisition and installation (assuming acquisition is approved).

A list of available packages can be seen by entering the CMS command **LINKTO**.

If you have comments or suggestions, please either use the SUGGEST command on VMD, or call Stan Kerr (333-4715).

CMS DISK SPACE LIMITS

Stan Kerr

It has hitherto been the policy of CSO that a CMS userid on VMD is allocated 2 cylinders of 3380 disk space (approximately one megabyte of storage) unless a hard money account is used for the userid. Many users have stated that this limit is inadequate for their work, and that users with access only to Research Board or class funds should be able to get more disk space. CSO has hesitated to increase the limit because to do so across the board would be physically impossible, given the amount of disk space we have altogether; increasing the available disk space is a very expensive matter.

We have studied the pattern of disk allocation on the Cyber, and found that about 90 percent of Cyber users are actually using an amount of disk space which is roughly equivalent to 5 cylinders of disk space on VMD's 3380 disks. CSO will therefore permit an increase to 5 cylinders for the following users:

A. Users on a Research Board account

B. Instructors and their assistants on class accounts

If you presently have a 2 cylinder allocation, you can use one of the following two procedures to request an increase.

1. Log on to VMD, and use the SUGGEST command to send a note to CSO requesting that your disk allocation be increased from 2 to 5 cylinders. CSO will verify that you are eligible, and send back an acknowledgemnt indicating that the disk space will or will not be increased.

2. Go to the CSO Accounting Office at 1208 W. Springfield, Urbana, or call 333-7752, and explain what you need, giving your CMS userid. Accounting will verify that you are eligible and process the request.

We would like you to take note of the following issues in this policy change:

A. You are charged for the new disk allocation, at the usual rates. A 2-cylinder disk costs about 1.48 Service Units per week, so a 5-cylinder disk will cost about 3.7 SU per week or a little over 14.80 SU per month.

B. Some disk space problems are caused by insufficient knowledge of how CMS handles files. You may be unaware, for instance, of temporary or work files which have accumulated on your A disk and which can safely be removed, or of various techniques for compressing files to increase the available space on the disk. The VMARCHIVE and FSF facilities can also be used to store and manipulate files on a long-time basis, without increasing one's CMS disk allocation.

For general advice on the efficient handling of CMS disk files, we advise that you talk to the CSO Systems or Statistical Consultants.

READING RAW DATA FROM TAPE IN SAS VERSION 5.16

Vicky Dingler

When reading raw data from a standard labeled or non-labeled tape in SAS Version 5.16, the DCB information must be placed both on the CMS file definition and on the INFILE statement. If the DCB information is not on both of these statements, SAS will read only 1 record per block.

Suppose the first file on a standard labeled tape had the following DCB information: LRECL 80, BLKSIZE 800, and RECFM FB. The CMS file definition would look like:

CMS FI ddname TAP1 SL 1 (LRECL 80 BLKSIZE 800 RECFM FB;

where the **ddname** is a 1 to 8 character name that is restated in the SAS INFILE statement. The SAS INFILE statement would look like:

INFILE ddname LRECL 80 BLKSIZE 800 RECFM FB;

With these two statements in your SAS program, all of the data will be properly read from the tape. If there are any questions, please refer them to the CSO South Statistical Consultants in 85 Commerce West, 333-2170.

EXAMPLE SAS PROGRAMS

Vicky Dingler

There are several example programs on the SASS16 disk which supplement the new applications manuals recently published by SAS Institute Inc. They contain the SAS DATA steps and raw data for the examples in the manuals, eliminating the need to key in this material.

The first six programs have filenames LMODCH1 - LMODCH6 (the filetype is SAS). They are examples of the concepts presented in the manual titled *The SAS System for Linear Models*, 1986 Ed.

The next six programs have filenames REGCH1 - REGCH6 (the filetype is SAS). They contain examples from the manual titled *The SAS System for Regression*, 1986 Ed.

The last six programs have filenames TIMECH1 - TIMECH6 (the filetype is SAS). They contain examples from the manual titled *The SAS System for Forecasting Time Series*, 1986 Ed.

These programs can be copied from the SAS disk to your A disk and modified. They can be used directly from the SAS disk, as well.

Note: The above-mentioned manuals may be purchased at the CSO Distribution Center, 1208 W. Springfield, Urbana.

If there are any questions, please refer them to the CSO South Statistical consultants in 85 Commerce West, 333-2170.

CMS USERS' GROUP NEWS

CMS Users' Group Steering Committee

The CMS Users' Group met on three occasions over Spring Semester. For those unfamiliar with this group, the CMS Users' Group is a loosely organized gathering of staff, faculty, and students using the IBM VM/CMS operating system, primarily on UIUCVMD. The purpose of the group is to facilitate the use of CMS, to share software tips, and to discuss the latest developments from CSO with regard to CMS. There is a steering committee that organizes and publicizes the monthly gatherings. There is also a Users' Group mailing list that is maintained online. For those who would like to be added to this list, enter CMSUSER while on VMD and fill in the appropriate information. Questions may be directed to Bruce Richardson (RICHARD@UIUCVMD) of the Department of Statistics, Charlie Smyth (CSMYTH@UIUCVMD) of the Department of Medical Information Science, or Greg Kesner (KESNER@UIUCVME) of the Computer Services Office and who serves as liaison with CSO.

Last year, the Users' Group conducted a survey of users. The results, based on 36 responses, indicated a strong desire for discussion of micro-computer interfaces, electronic mail, statistical software and productivity tools. Using this information, a monthly, afternoon

meeting format was developed that included a discussion of CSO news and developments, and the presentation and discussion of a topic of interest.

The February meeting was primarily a CSO update with topics and questions discussed by CSO staff members Stan Kerr, Joan Alster, and Greg Kesner. Topics included changes in various statistical software, some new features on VMD, and clarification of certain aspects of VMARCHive, FSF and other "news" items. Bruce Richardson discussed the results of the CMS Users' survey and plans for the future. (A table showing the results of the survey is presented at the end of this article.)

In March, Beth Engelbrecht-Wiggans (CSO), showed off VMSCHEDULE and mentioned VMSORT. Bob Shair (IBM) discussed the PROFS system, a document, calendar, and mail system package being implemented on the administration mainframes. Several users discussed useful EXECs and XEDIT macros that they have written (see for example, PRT7171 EXEC on the KERMIT disk). This led to discussion of a facility for sharing execs and other tools that is under consideration. An effort to obtain and share public domain execs and programs has been taken up by the CMS Users' Group.

The April meeting was held in the Statistical Graphics Laboratory, an EXCEL facility established by the Statistics Department. A variety of micro-mainframe communications software and hardware was demonstrated. This included the PC/DOS packages KERMIT and Procomm, and the MACINTOSH programs KERMIT and VersaTerm Pro, as well as the 3270 PC/AT graphics system that is set up in Room 113 Illini Hall. SAS/Graphics was found to run on the 3270 system, on the Macs using VersaTerm Pro, and on PCs (having a graphics card) using SAS/RTERM. Mark Zinzow (CSO) discussed the PC-SIG shareware/freeware disk and showed how to access it and download software.

The next meeting is planned for this summer and will cover electronic mail in addition to the regular "News from CSO" section.

The Users' Group Steering Committee is in need of a few more members to help with the usual mundane tasks of planning the meetings, securing space and speakers, publicity, and secretarial duties. In addition, help is needed in establishing policy and starting a Users' Forum Disk for sharing unsupported, self-documented, EXECs, Macros, and other useful productivity tools on a VMD minidisk. Please contact a member of the Steering Committee if you would like to help out.

CMS Users' Group Survey Results, February, 1987

All responses to the survey questions were assigned scores on a 1 to 5 scale, 5 being the most interesting or the greatest increase in support emphasis. The numbers below are the mean and standard deviation of the responses. Thirty-six kind individuals responded to the survey.

Topic	Interest	Emphasis
Electronic Mail	4.143 (1.06)	3.714 (0.897)
Math. Software	3.121 (1.386)	3.320 (0.690)
Script & GML	3.529 (1.376)	3.429 (1.260)
Statistical Software	4.147 (1.282)	3.889 (1.050)
Languages	3.545 (1.563)	3.593 (1.010)
Tape Usage	3.853 (1.184)	3.793 (0.819)
Productivity Tools	4.088 (0.965)	3.867 (0.973)
Databasé Management	3.500 (1.164)	3.464 (1.036)
Micro Interfaces	4.457 (0.701)	4.133 (0.860)
Graphics	3.844 (1.051)	3.556 (0.847)
Disk Storage Facilities	3.500 (1.108)	3.467 (0.900)

Meeting Time: 54.3% Day; 37.1% Night.

Frequency of Meetings: 14% Too Frequent; 80% just right; 6% not enough.

MICROCOMPUTER RESOURCE CENTER UPDATE

Cassandra Morrow

The Microcomputer Resource Center software collection has expanded largely because of the positive response of manufacturers who have made their packages available for patron evaluation. The commercial software collection is varied in nature and application. Lotus Development Corp. has offered many of its products such as spreadsheets, word processors, integrated software and utilities. We have the best selling languages, environments and word processors from Wordperfect, MicroPro, Microsoft and Borland. Packages such as dBase III Plus, R:Base System V, Genifer and dbXL enhance our collection because Ashton-Tate , MicroRim, and Wordtech believe in the concept of software resource facilities.

The Center staff thought some of the more specialized software packages might be of interest to our readers. We wanted to bring several new items in our educational collection to the attention of faculty and research staff.

Wisc-Ware is a distribution network designed by faculty software developers at the University of Wisconsin. By protecting the intellectual property rights of faculty authors, Wisc-Ware is able to function as a market for newly-developed software, without preventing publishing elsewhere. This also enables students and faculty who preview the packages the opportunity to offer critical feedback to developers. The distribution network was designed in cooperation with IBM to bring new software packages into the market place as soon as practicable.

Another package which may be of interest to faculty who teach large classes is MDT software for multi-digit testing and electronic grading. Students and faculty may find the Arborworks Co. Learning Tool useful. The Learning Tool is an outline and flow chart package for the Mac which organizes class notes and lectures. Notebook & Bibliography for the IBM-PC is a freeform text database which is ideal for bibliographic collection and footnote data, as well as mailing lists.

The Resource Center has had many requests over the last several months for Macintosh public domain software. The Macintosh Users Group has licensed their entire public domain software collection to the Center. Diskettes may be copied without charge. A catalog of the public domain software collection is available at the Center. Demonstration disks of several commercial Macintosh packages (Learning Tool, Microsoft Word 3.0, Omnis 3 Plus, and Spellswell) are on file and may be freely copied for evaluation purposes.

The PC-SIG Library has recently been uploaded to the IBM mainframe computer. All disks for the CD-ROM are on public disks 464 and 471. They may be accessed with the command LINKTO PCSIG". In order to receive instructions to utilize the CD-ROM on VMD, simply type HELP CSO PC-SIG once you have accessed VMD.

Hardware has also been added to the Microcomputer Resource Center collection. Heath/Zenith systems will soon arrive. We expect to have a ZFL-181, ZW-248 and ZW-159 shortly. The Center staff is also looking into the possibility of enhancing our IBM hardware collection with a demonstration unit of one of the IBM systems which were recently announced.

On a more serious note, we must reiterate our policy against copying any commercial software packages. Our collection of commercial software is for evaluation purposes only. Any packages which may be taken to offsite locations are subject to the agreement signed by the patron. Such an agreement is in reality a contract between the manufacturer and the patron and is subject to the manufacturer's licensing terms.

Any unauthorized copying attempted in the Center itself will be met with a loss of Center privileges, confiscation of all disks and any other penalties University authorities deem applicable in each case. We encourage patrons to abide by the copyright laws. We also encourage them to make a donation to software developers who request it for public domain or shareware packages used by them.

DIRECTORY SCANNER
A HARD DISK USER'S BEST FRIEND

T. Howard Black

(The following article was published in the Charleston Area IBM-PC Users Group newsletter of March 3, 1987. We thank them for granting permission to reprint this article for our users.)

When I first started using my hard disk (20 Meg), it seemed that I had virtually unlimited storage space. Directories, subdirectories, sub-subdirectories, etc., sprang up at an amazing rate until the disk was very quickly over half full. It was then that I realized that a hard disk is not just like a big floppy — just finding and manipulating files became a task in itself. Of course, the DOS "tree" command will graphically depict your directory structure, and certain PD utilities like vtree do a very nice job; locating files can similarly be accomplished with utilities like "loc.com" (a file-finder). Then, a directory's files can be handled with a list program.

All that was needed was a utility which combined these features, added others like inter-directory copying and single-keystroke editing or listing, was formatted in an easy-to-use fashion, and was free. Nat Martino's "Directory Scanner" is such an entity. The current version, 2.30, was released in February, 1987.

The program is initiated by simply typing "ds" from any directory (assuming that it is in your path). After about 15 seconds (depending on how full your disk is) the main display will appear. This consists of a vtree-like tree down the left side with the current directory highlighted, and a three-column listing of files in the current directory with the first one indicated by a pointer. Although the default file organization is alphabetical, sorting can also be effected by date, size, extension, and in ascending or descending order.

Movement between directories is accomplished with the F1 and F2 function keys, while F3 and F4 skip to the first and last directories, respectively. A specific directory can be located by typing in the first letter of its name. Directories are added, deleted, or (name) changed with just a few keystrokes.

The file pointer is manipulated with the arrow keys. Using single-keystroke commands, which are summarized on a well-organized, single help screen, one can perform the following commands (among others): Attribute, Copy (including to a highlighted directory), Edit, List, Tag, Erase, Print, Execute, Rename, change drive, find (a file), etc. More detailed help is

available via F10, which utilizes a split-screen help format (topic above selected with arrow keys; help info below) similar to the PC-Write word processor.

The author specifically states that he is uninterested in financial reward for his work, only a note that you find his program useful, with or without suggestions for improvement. No one with a hard disk should be without this utility, and, once you've seen it in action (or, better yet, tried it for awhile), you'll be amazed how you managed without it for so long. Copies will be freely available at User Group meetings — just bring a formatted disk. (Ed. note: Copies of this utility are available to U of I users at the Microcomputer Resource Center. Please bring a formatted disk if you wish to make a copy.)

SOME CLARIFICATIONS REGARDING THE SITE LICENSING ARRANGEMENTS FOR SPSS/PC+ AT THE U OF I

Anup Roy

It has come to our attention that there is some confusion in the general user community about the nature of the site-licensing arrangement for SPSS/PC+ as put into effect by the Statistical Services Group at CSO. We hope that this article will clear up this confusion for our users.

The "complete" SPSS/PC+ package consists of the following seven products:

SPSS/PC+ Base Package
SPSS/PC+ Advanced Statistics
SPSS/PC+ Tables
SPSS/PC+ Graphics, featuring Microsoft Chart
SPSS/PC+ Data Entry II
SPSS/PC+ Mapping, featuring Ashton-Tate's Map-Master
SPSS/PC+ Trends

At the current time, only the first two products — SPSS/PC+ Base Package and SPSS/PC+ Advanced Statistics — are included in the site-licensing agreement. If you wish to use any of the other five products, you must purchase individual copies directly from SPSS, Inc. and "authorize" them to be used with your site-licensed products.

If you have licensed SPSS/PC+ at the University, and would like us to acquire any of the other products on a site-license basis, please fill out the survey form at the end of this issue of *Off-Line* indicating which product(s) you are interested in, and return to us as soon as possible. We will then look into this matter as budget considerations permit (and if enough interest is indicated).

If you have any further questions about the licensing arrangement, or about purchasing other SPSS/PC+ products, contact the Statistical Consultants in room 85 Commerce West (333-2170), or Anup Roy at 244-1201. You may also call Ms. Lisa Dobner (312-329-3482), the Marketing Representative for the U of I at SPSS, Inc., for information on purchasing products.

The following two articles are updated versions of articles that appeared in the September 1986 issue of *Off-Line*. They are included here to refresh your memory about SPSS/PC+ and

the licensing aggreement, and to inform you of some new products and/or changes in SPSS/PC+. For example, in the following article, users should pay particular attention to the new product TRENDS, and to the major update of the product DATA ENTRY to DATA ENTRY II.

REMINDER: If you are interested in CSO obtaining site-licenses for some of the other SPSS/PC+ programs, remember to fill out the survey form at the end of this issue and return it to CSO.

SPSS/PC+ FOR THE IBM PC AND COMPATIBLES

Anup Roy

The SPSS/PC+ statistical software package from SPSS, Inc. is a group of products designed to organize/enter, analyze and display data in a relatively simple and convenient way. It can accomplish large file manipulation tasks such as matching, merging and condensing; everyday data manipulation tasks such as recoding, transforming, sampling and weighting; and state-of-the-art statistical analyses. Nearly all of the descriptive statistics, cross-tabulation, analysis of variance, t-tests, correlation and regression statistical procedures used in standard analytical research are included in SPSS/PC+ and its components. Most advanced multivariate techniques like discriminant, factor, cluster and hierarchical log-linear analyses as well as multivariate analysis of variance and covariance are supplied in the so-called "Advanced Statistics" module.

The Data Entry option and the recently released file-translation procedure in the base system facilitate the creation of SPSS/PC+ system (binary) files and data exchange with popular database management systems and spreadsheet packages.

The SPSS/PC+ report generator provides flexible formatting for producing documents, with facilities for producing customized output. SPSS/PC+ Graphics, featuring Microsoft Chart and SPSS/PC+ Tables, make presentation-quality graphs and tables from data files. SPSS/PC+ Mapping, featuring Decision Resources' Map-Master, makes the production of presentation-quality maps rather straightforward.

SPSS/PC+ runs on an IBM PC/XT or AT (or on many of the IBM compatible microcomputers such as the AT&T 6300 Plus, Compaq 286 Deskpro, ITT XTRA (Model 4), Leading Edge - Model M & D, NCR PC8, Sperry IT, Wyse 1100-2, and Zenith 241, etc.) with at least 384K available RAM (some procedures like Manova and Tables require at least 448K); a 10 megabyte hard disk (although at least 20 is recommended for complete installation of all of the modules); a S 1/4" 320/360 KB double-sided double-density floppy disk drive (or an appropriate high density 1.2 MB drive); an applicable math coprocessor (8027/80287) — optional but very strongly recommended; PC DOS (or MS DOS) Version 2.0 or higher; and either an IBM Enhanced Graphics Adapter (EGA) or an IBM Color/Graphics Monitor Adapter, or a Hercules graphics card (for the graphics features).

SPSS/PC+ comes with an excellent full-screen editor/display manager called REVIEW, which can be used to build, browse and edit datasets and execute jobs in an interactive environment. One can, of course, also do batch processing. With REVIEW, one can edit command files while viewing the pertinent output through a separate window on the same screen.

Procedures are provided for transfer of raw data or SPSS-X and portable SAS system files (binary datasets) to and from linked mainframe computers. The communications and file transfer utility, KERMIT, is provided free with the product for this purpose.

SPSS/PC+ allows processing of datasets containing up to 200 variables. The number of records, units of analysis or cases permitted is limited only by the amount of disk space and memory on one's machine.

Alphanumeric or "string" data of up to 255 characters can be entered. All computations on numeric variables (fields) are carried out in double precision arithmetic.

SPSS/PC+ has the ability to directly translate a Lotus 1-2-3, dBase II or dBase III, Symphony or Multiplan file into an SPSS/PC+ system file, and also to directly convert data from SPSS/PC+ system files into these other packages. Moreover, SPSS/PC+ can also read and write standard ASCII files; hence, one has the ability to exchange data files with many other types of popular PC software.

Unlike many other micro products, SPSS/PC+ provides full labeling capabilities for both variable names and value names — one may define up to 60-character variable labels and 60-character value labels. Once these have been entered, they can be saved to reappear whenever the pertinent variables are encountered in the analysis.

The basic components of SPSS/PC+ are as follows:

- **SPSS/PC+ Base Product** — The base system containing all data and file- handling routines; basic descriptive statistics; t-test; oneway analysis of variance (including multiple comparison tests); correlation and regression procedures; non-parametric statistics; and report writing and preliminary plotting functions.

- **SPSS/PC+ Advanced Statistics** — Advanced statistical procedures such as: factor, cluster, discriminant, and hierarchical log-linear analyses; multivariate analysis of variance and covariance (including repeated measures designs).

- **SPSS/PC+ Tables** — A supplement to the data display and analysis capabilities, it provides the means to display results of analyses or to summarize data in a tabular form. The output is publication quality and can be directed to a wide variety of printers, including laser printers.

- **SPSS/PC+ Graphics featuring Microsoft Chart** — With two main components, Microsoft Chart and SPSS' Graph procedure, SPSS/PC+ Graphics provides the ability to summarize and display data using presentation-quality graphics. One can create charts quickly and easily, insert text wherever one wants, customize charts right on the screen, and produce top quality output that is compatible with a wide variety of printers (both dot-matrix and laser) and plotters, as well as with several high-resolution film recorders and video-display devices.

- **SPSS/PC+ Data Entry II** — A set of file creation facilities and new, improved file translation procedures (this has been recently added to the SPSS/PC+ series of products as an option). The full-screen, high resolution forms that may be created with Data Entry simplify the process of entering data and creating new data files, especially for someone unfamiliar with both computers and the data. The ability to

translate quickly Lotus 1-2-3, Symphony, Multiplan, Wordstar, and dBase II & dBase III files into SPSS/PC+ system files brings powerful data-analytic tools to bear on practically all types of data stored on personal computers.

Data entry forms may be made to resemble the actual document on which the information has been recorded to reduce confusion and to make it straightforward for clerical staff to enter and edit data. As each field is filled on the screen, the cursor advances automatically to the next field, precluding the "spacing" errors extremely common to data entry.

Validity constraints may be imposed on any field to protect the data file from aberrant or errant values — both single-column and cross-column contingency checks (e.g., no "pregnant males") may be performed. After requesting that Data Entry "clean" the data, the user is presented with a report telling which cases do not meet the constraints and hence should be edited. The complete integration of Data Entry with other parts of the SPSS/PC+ system allows one to inspect and edit datasets at any moment during the analysis or the preparation of reports.

- **SPSS/PC+ Mapping featuring Ashton-Tate's Map-Master** — With two main components, viz., Map-Master from Decision Resources, Inc. and the SPSS/PC+ Map procedure, SPSS/PC+ Mapping provides the ability to produce presentation-quality maps and to display the same on the same sorts of hard-copy devices that are used with SPSS/PC+ Graphics. This procedure provides full aggregation facilities for summarizing one's data. One can define data values and geographic areas within SPSS/PC+, and then transfer them to Map-Master easily.

  Map-Master includes two different types of files:

  1. Boundary Files which draw the outlines of geographic regions (e.g., countries, states, counties, zip codes, etc.), and

  2. Statistics Files containing demographic and economic data for the regions in a Boundary File.

  Three Boundary Files are provided with the product: a) world by country, b) western Europe by region, and c) U.S. map by 3 digit zip code.

- **SPSS/PC+ Trends** — A set of comprehensive procedures for analyzing time series data and for business forecasting.

Summarized below are more details regarding SPSS/PC+:

Programs Available

SPSS/PC+ Base Product

1. Categorical and descriptive statistical procedures:

DESCRIPTIVES	Computes summary statistics on numeric variables (nearly identical to "Condescriptive" procedure in mainframe SPSS-X).
FREQUENCIES	Calculates summary statistics and displays frequency distributions on a single variable at a time.
CROSSTABS	N-way crosstabulation (contingency tables) and related calculation of various measures of association.

2. Procedures that compare groups:

MEANS	Describes subpopulations by calculating means, standard deviations, sums, etc. across groups of independent variables.
ANOVA	Factorial analysis of variance and covariance for relatively simple designs.
ONEWAY	Performs one-way analysis of variance and sundry multiple comparison tests, etc.
T-TEST	Performs independent as well as paired-sample t-tests.

3. Multi-variable statistical procedures:

CORRELATION	Computes Pearson product-moment correlations for a set of variables.
REGRESSION	Sophisticated multiple regression program with extremely powerful regression diagnostics.

4. Non-parametric statistical procedures:

NPAR TESTS	Performs various non-parametric tests, including one-sample tests, and 2-sample or k-sample (in general) tests for related or independent samples.

5. Data display procedures:

REPORT	Complete and flexible report-writer procedure.
PLOT	Draws bivariate scattergrams, contour plots, overlay plots and regression plots.

6. Data and file management procedures:

JOIN	Matches and merges the contents of multiple SPSS system files in a variety of ways, including addition of cases, parallel or non-parallel matches, and table lookups.

AGGREGATE	Creates system files with cases containing summary statistics for groups of cases for use in later analyses using other programs and/or procedures.
REVIEW	A full-screen editor and display manager to build, browse, and edit SPSS datasets and/or execute jobs in an interactive environment.

Miscellaneous procedures and commands:

Supplied for mainframe-micro link to send or receive data files, SPSS-X system-files or portable SAS datasets (Kermit is used as the file-transfer protocol to transfer SPSS-X or SPSS/PC+ portable files); or to exchange data files with other PC software packages, e.g., editors (like Wordstar), spreadsheet programs (such as Lotus 1-2-3), and PC database management system software (like dBase II or dBase III), etc.

SPSS/PC+ Advanced Statistics

FACTOR	Performs various kinds of factor and principal component analyses with a wide array of extraction and rotation methods.
CLUSTER	Carries out hierarchical cluster analyses of cases.
QUICK CLUSTER	Hierarchical cluster analysis method for faster convergence, when the number of clusters is predetermined or prespecified (used for initial screening).
DSCRIMINANT	Performs discriminant analyses with cross-validation, etc.
MANOVA	Performs general model multivariate (and univariate) analysis of variance and covariance.
HILOGLINEAR	Used for hierarchical log-linear modeling for multiway contingency tables.

SPSS/PC+ Tables

TABLES	An additional product used for customizing and producing publication-quality tables for a wide variety of dot- matrix and laser printers, etc.

SPSS/PC+ Graphics — featuring Microsoft Chart

GRAPH	Allows one to summarize and display data using presentation-quality graphics. The SPSS/PC+ Graph procedure is designed to be used primarily with the Microsoft Chart product. However, it can also be used in conjunction with Chartmaster (from Ashton-Tate, formerly Decision Resources, Inc.) and GrafTalk (from the Redding Group).

SPSS/PC+ Data Entry II and File Translation Facility

DATA ENTRY	An additional product used for customizing data entry and for data "cleaning," it also provides for easy transfer of data from other PC packages into an SPSS/PC+ systems file.

SPSS/PC+ Mapping featuring Map-Master from Decision Resources

MAP	SPSS/PC+ Mapping allows users to aggregate their data and display the same using Map-Master's mapping capabilities. SPSS/PC+ Mapping works with a variety of popular printers, slide makers and monitors, producing printouts, slides and transparencies on demand.

SPSS/PC+ Trends

TRENDS	Includes comprehensive procedures for analyzing time series data and for business forecasting.

SITE LICENSING ARRANGEMENT FOR SPSS/PC+ AT THE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Anup Roy

SPSS Inc. distributes SPSS/PC+ for the IBM personal computer and compatibles on a site-license basis. The University has made arrangements for a site license on **two** products: SPSS/PC+ Base Product and SPSS/PC+ Advanced Statistics. Please refer to the accompanying article, SPSS/PC+ for the IBM PC and Compatibles, to familiarize yourself with SPSS software for the IBM PC.

SPSS/PC+ needs to be installed from diskettes onto the hard disk before use. A 10 megabyte hard disk is generally adequate for installing and running SPSS/PC+ (Base Product & Advanced Statistics) on an IBM PC/XT or AT (or compatible). One doesn't, however, need to keep the entire SPSS/PC+ system installed on the hard disk at all times. Only the essential "central system" is required. All non-essential procedures are grouped into modules which can be installed or removed as one wishes. During the initial installation one is informed of the amount of space that such modules will occupy on the hard disk, and prompted whether or not to install these modules during the first go-around. Should one change one's mind later, one is allowed to selectively remove modules or to install modules that one may have omitted during the original installation. The installation procedure is organized in a very user-friendly menu-driven format; it is thus quite easy to master.

CSO has purchased a site license for making up to 2,000 copies of these products. Users will have to sign an end-user agreement with the University of Illinois at Urbana-Champaign, and they will have to pay an initial fee for each product as well as a yearly renewal fee.

SPSS/PC+ Distribution

In keeping with the License Agreement that the University of Illinois at Urbana-Champaign has entered into with SPSS Inc., an agreement/contract between the University and the end-user has been developed. The end-user agreement will have stipulations for compliance. It will contain a form to be filled out with questions pertaining to hardware specifications and the actual location of the hardware. The end-user agreement can be obtained from the CSO Systems Consulting Office located at 1208 West Springfield Avenue or the CSO Statistical Consulting Office in Room 85 Commerce West. The completed end-user agreement (**including both office & home addresses and phone numbers**) should be brought to the CSO Accounting/Distribution Office at 1208 W. Springfield. A photocopy may be made for personal files.

The end-user agreement will serve several purposes. First, it will be a means by which the University can uphold the stipulations in the License Agreement between SPSS Inc. and itself. Secondly, it will aid CSO in keeping accurate records of who has licensed the software. Third, the information will be added to the SPSS/PC+ Users' Mailing List which will be used to inform users about updates, etc.

The Base Product consists of diskettes numbered B1 through B9, and a Tutorial diskette. The Advanced Statistics product has diskettes numbered A1 through A6. An additional diskette containing the most recent official release of Kermit (Version 2.29) is also distributed with the rest of the software. Kermit serves in the uploading and downloading procedures. The price for obtaining all of this is $125.00, which includes the yearly license fee, copying fee, and the price of the diskettes. The license fee covers free updates. If there are any updates for this version, the user will have to pay for the diskettes and the copying fee if he/she desires to obtain them. The License between SPSS Inc. and the University will be renewed on the 1st of July every year. Similarly, the end-user agreement must also be renewed on each anniversary date (from date first signed) in successive years. The yearly renewal fee is expected to be approximately $ 80.00 to $ 100.00.

Although SPSS/PC+ documentation may be purchased by anyone, only employees of the University are entitled to "buy" the software. A valid University faculty/staff ID card (along with a valid picture ID) will suffice as proper identification. Please bring these to the office at 1208 W. Springfield. Graduate students are allowed to procure the software **if and only if** they currently have an appointment of some kind (e.g., Research and/or Teaching Assistantship or Fellowship, or Academic/Non-Academic Professional status, etc.) at the University, and are able to prove the same — **a valid University student ID alone will, therefore, not be sufficient** to obtain a copy of the SPSS/PC+ software. A University Stores Voucher with proper 11-digit University account information (viz., account number and title) can be processed by the people at the CSO Distribution Office. Individuals may also pay by check made out to the University of Illinois. Cash will not be accepted.

The software are licensed, in general, for use on a single machine only. Multiple machine use requires the purchase of multiple copies. The only exception to this stipulation is that home use by **full-time** employees is permitted, provided that the total number of copies in home use does not exceed the total number of copies in use on University premises under the terms and conditions of the pertinent end-user agreement.

Summarized below are prices for the software and documentation available for sale at the CSO Distribution Office:

Product	Price
SPSS/PC+ Base Product & Advanced Statistics (and Kermit Version 2.29) license, diskette and copying fees	$125.00
SPSS/PC+ (SPSS Inc., 1986)	29.95
SPSS/PC+ Advanced Statistics (SPSS Inc., 1986)	19.95

SPSS/PC+ Consulting

The CSO Statistical Consulting Group will provide consulting on SPSS/PC+. Their office is in Room 85 Commerce West. Their office hours are 9 a.m. to 1 p.m. Mondays and Wednesdays, 9 a.m. to 5 p.m. Tuesdays and Thursdays, and 9 - 11:45 a.m. & 1:15 - 5 p.m. on Fridays. They can be reached by phone at 333-2170. The Social Science Quantitative Laboratory (SSQL) in Lincoln Hall will also provide consulting on SPSS/PC+. The phone number to call is 333-6751.

The members of the CSO Statistical Consulting Group will be able to consult on SPSS programming techniques and statistical procedures. They will know how to install SPSS/PC+ on the PC and be able to consult on any questions regarding the installation procedure. They will consult on the uploading and downloading procedures provided by SPSS Inc. They will also be prepared to consult on ways to convert SPSS-X code for the IBM mainframe machine (UIUCVMD) into SPSS/PC+ code and vice-versa.

Anup Roy will take ultimate responsibility for all issues concerning SPSS for the PC. These issues include, but are not limited to, the following: licensing, copying, distribution, installation, consulting, use and training. All questions and/or problems may be referred to him. His office telephone number is 244-1201.

SPSS/PC+ Diskette Replacement Policy

If, for any reason, an SPSS/PC+ diskette is deemed defective and hence unusable, a replacement will be made free of charge at the PC Consulting Office in Room 91 Commerce West.

Please bring the defective diskette to Room 91 Commerce West. The PC consultant on duty will replace the defective diskette with a new floppy. The PC Consulting Office hours are 10:00 a.m. to 5:00 p.m. Monday through Friday. The phone number is 244-0608.

If you have any questions with regard to this policy, please contact the CSO Statistical Consultants in Room 85 Commerce West (333-2170), or Anup Roy at 244-1201.

SURVEY OF INTEREST IN SITE-LICENSING BMDPC FOR IBM-PC OR PC COMPATIBLES

Anup Roy

As you may be aware, the Statistical Services Group at CSO has set up site-licensing arrangements (for UIUC faculty and staff) for PC/SAS and SPSS/PC+ software under PC-DOS (and MS-DOS) on IBM PC/XT and IBM PC/AT (and compatibles). In addition to licensing the above products, the Statistical Services Group would like to site-license and support the microcomputer version of the large-scale statistical software package BMDPC, if there appears to be a demand for it. Thus, we are conducting a survey to gauge the level of interest in this package.

Please complete the survey form at the end of this issue of *Off-Line* and send it to us as soon as possible, so that we can act on an informed basis in this matter.

The rest of this article provides a description of BMDPC that should be of help to you in deciding if this package might meet your computing needs.

BMDPC is a comprehensive statistical analysis package marketed by BMDP Statistical Software, Inc. for the IBM PC and compatibles. 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 by another program.

A complete version of the 1987 release of BMDPC includes 39 programs from the mainframe 1987 version of BMDP, plus a full-screen data manager. The data manager program, called DATAMAN, provides a full-screen editor/data display manager, and allows the user to match-merge/concatenate datasets and work with hierarchical files. Data from popular spreadsheet systems like Lotus 1-2-3 and database management system packages like dBaseIII can be readily loaded into the system as well, with very little difficulty. (Also see the DATAMAN description below.)

Designed with the professional statistician in mind, BMDPC covers a broad range of statistical techniques, including several that are rarely found in other microcomputer statistical packages. Some examples of the programs available are: basic descriptive statistics, plots and histograms, t-tests, regression analysis, factor and cluster analyses, survival analysis, Box-Jenkins time series analysis, log-linear modeling, non-linear and stepwise logistic regression, discriminant analysis, repeated measures and multivariate analysis of variance, one-way analysis of variance, missing data interpolation, spectral and cross-spectral analysis, and many others.

BMDPC requires an IBM PC/XT or IBM PC/AT (or compatible) with at least a S megabyte hard disk (however, a 20 megabyte hard disk is strongly recommended), a floppy disk drive that can read double-sided, double-density diskettes, an 8087/80287 floating point math coprocessor, S12kB RAM of memory (640kB recommended), and PC-DOS 2.0 (or MS-DOS) or a later version. The entire package consists of 8S 360kB diskettes; however, only your most-used programs need to be installed on your hard disk. BMDPC programs can be executed in either batch or interactive mode. The programs are well-tested, reliable, flexible, and convenient to use.

Up to 16,000 cases can be entered and analyzed. The maximum number of allowable variables varies from program to program. The algorithms/formulae to determine the maximum number of variables for a particular application are presented in the *BMDP Statistical Software Manual*, 1985 Reprinting, Appendix B.2. Only two (2) character or alphanumeric variables are allowed per file; character variables can occupy a maximum of four columns. There is, however, no maximum limit to the number of columns that a numeric variable can take.

A complete version of the 1987 release of BMDPC (39 programs plus DATAMAN) is sold to an individual for $2,100.00. However, under BMDP's site-licensing arrangement, the University could site-license a fixed number of copies of the product. The price for an individual user would then be set on a volume-discounted sliding scale, which in turn, would depend on the total number of users who wish to purchase the package. For instance, if the University decided to site license 40 copies of the complete 1987 release, we at CSO would have to pay a $4,000.00 one-time setup charge, plus a per-user fee of $160.00. This would bring the total one-time site fee to $10,400.00 (for 40 users).

Since, unlike PC/SAS and SPSS/PC+, there is **no renewal fee**, an individual user's average cost would amount to approximately $250.00, plus $135 to $150 (to defray the University's expenses in copying and supplying the 85 360kB double-sided, double-density diskettes, in suitable containers), plus $30.00 for a complete set of documentation. In other words, the total cost to the user would be approximately $415 to $430.

BMDP releases an update about once every two years. Their most recent version is the 1987 release (available as of December 1986). Future releases are scheduled to be offered at a substantial discount for licensed sites that choose to update.

To help you decide on 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 provides all the common statistical tools — it thus offers a fairly complete set of statistical procedures that one needs to satisfy a diverse group of users. See the genral description above for a listing of some of the programs available.

- **Hard-disk Space**. Each BMDP program is independent. Therefore, although the entire product would fill up approximately all of a 20 megabyte hard-disk, users can conserve space by keeping only their favorite programs on the hard disk, with the rest on floppies.

- **Data Handling**. BMDP reads ASCII files, so users can analyze data input with either a wordprocessing or a spreadsheet package. Data can also be input and edited with the BMDP line editor. Moreover, BMDP includes a very powerful data manager program for merging files and preparing one's dataset for statistical analysis.

- **Accuracy and Mainframe Compatibility**. The 1987 PC release of BMDP is identical to the 1987 mainframe release. This lessens the probability of introducing new bugs, as has been the case with some other microcomputer versions of mainframe statistical packages. Moreover, this ensures that, if you are experienced with using BMDP on one of our mainframe machines, you already know how to use BMDP on a PC.

Programs Available

1. Data Description & Descriptive Statistics, etc.

DESCRIBE (1D)	SImple data description & univariate statistics, etc.
DETAIL (2D)	Detailed data description, including frequencies.
COLFREQ (4D)	Single column frequencies (numeric & character variables) — helpful in data screening.

2. Data in Groups.

TTEST (3D)	Comparison of 2 groups with t-tests.
ANOVA1 (7D)	Description of groups (strata) w/ histograms & analysis of variance.

3. Plots & Histograms.

HISTO (SD)	Histograms and univariate plots (normal probability plots, half-normal plots, cumulative frequency distribution plots, and cumulative histograms, etc.).
PLOT (6D)	Bivariate scatter plots w/ linear regression line, etc.
MULTGRP (9D)	Multiway description of groups.

4. Frequency Tables - Categorical Data Modeling.

FREQ (4F)	Two-way and multiway frequency tables: measures of association and the classical log-linear model (for both complete and incomplete tables).

5. Missing Values - Patterns, Estimation & Correlations.

MISSCORR (8D)	Correlations with options for incomplete data.
MISSDATA (AM)	Description & estimation of missing data.

6. Regression.

MULTREG (1R)	Multiple linear regression.
REGRESS (2R)	Stepwise regression, including very powerful regression diagnostics.
PRINREG (4R)	Regression on principal components (including "stepwise").
POLYREG (5R)	Regression using orthogonal polynomials.
ALLREG (9R)	All possible subsets regression, employing the classical Furnival-Wilson algorithm on criteria like R-squared, adjusted R-squared, and Mallow's CP.

7. Nonlinear Regression & Maximum Likelihood Estimation.

NONLIND (3R)	Nonlinear regression.
NONLIN (AR)	Derivative-free nonlinear regression.
LOGISTIC (LR)	Stepwise logistic regression.

8. Analysis of Variance & Covariance.

ANOVACOV (1V)	One-way analysis of variance & covariance.
REPEATED (2V)	Analysis of variance & covariance, including repeated measures designs.
ANOVAMIX (3V)	General mixed model analysis of variance, using the maximum likelihood (ML) and restricted maximum likelihood (REML) approaches to the fixed & random coefficients model.
ANOVABAL (8V)	General mixed model analysis of variance for complete balanced designs (viz., equal cell sizes).
ANOVAGEN (4V)	General purpose univariate & multivariate analysis of variance & covariance, including repeated measures.

9. Nonparametric Statistics.

NONPARAM (3S)	Nonparametric statistical analysis.

10. Cluster Analysis.

CLUSTER (KM)	K-means clustering of cases.
CLUSTVAR (1M)	Cluster analysis of variables.
CLUSTCAS (2M)	Cluster analysis of cases.
CLUSTBLK (3M)	Block clustering of cases.

11. Multivariate Analyses.

FACTOR (4M)	Factor analysis (including principal components analysis, maximum likelihood factor estimation, principal factor or classical common-factor-model analysis, and Kaiser's second generation "little jiffy" analysis (image factoring followed by ortho-oblique rotation).
CANCORR (6M)	Canonical correlation analysis.
DISCRIM (7M)	Stepwise discriminant analysis, including built-in (jackknife) cross-validation procedures.
PARTCORR (6R)	Partial correlation & multivariate regression.
BOOLEAN (8M)	Boolean factor analysis of dichotomous (binary) data.
PREFPAIR (9M)	Linear scoring for preference pairs.

12. Survival Analysis.

LIFE (1L)	Life tables and survival functions analysis.
SURVIVAL (2L)	Survival analysis with covariates - Cox proportional hazards regression models.

13. Time Series Analysis.

SPECTRAL (1T)	Univariate & bivariate spectral analysis (viz., spectral and cross-spectral analyses).
BOXJENK (2T)	Box-Jenkins time series analysis & forecasting.

14. Interactive Data Management System & Editor, etc.

DATAMAN	A powerful interactive data manipulation system designed to facilitate in the organization of data for future analyses, DATAMAN incorporates three procedures to merge files, close to thirty aggregate functions to extract information from sets of records varying in number, procedures for transposing values stored within one record to multiple records (and vice-versa), etc. It can read rectangular, non-rectangular and hierarchical files, and can be utilized to read and/or write either raw-data files or BMDP system files (viz., binary datasets).

Program Documentation

1. Dixon, W.J. (Chief editor), et al., *BMDP Statistical Software Manual*, 1985 Reprinting (1985). University of California Press, Berkeley, California. ($18.95)
2. *BMDPC: User's Guide to BMDP on the IBM PC* (1985). BMDP Statistical Software, Inc., Los Angeles, California. ($5.00)
3. *BMDP User's Digest* (1985). BMDP Statistical Software, Inc., Los Angeles, California. ($6.00)
4. *BMDP Data Manager Manual* (1986). BMDP Statistical Software, Inc., Los Angeles, California. ($7.00)

REMINDER: If you would be interested in CSO obtaining site-licensing for BMDPC, please fill out the survey form at the end of this issue and return it to Anup Roy, 150 DCL.

NEW CSO DOCUMENTATION AVAILABLE FOR IBM TEXT PROCESSING

Beth Engelbrecht-Wiggans

CSO is now offering four Technical Notes, a Reference Guide, and an online CSO HELP file on SCRIPT. SCRIPT is the text processor on the IBM machines. Although SCRIPT is similar to RNF on the Cyber, it is much more powerful. If you are an RNF user who has decided to do text processing on the IBM, these new handouts should be helpful to you. The new Technical Notes and Reference Guide are:

TN-300 IBM Text Formatting Using GML

TN-301 Fonts for the 3800 Page Printer

TN-302 SCRIPT Commands

TN-303 The Default PROFILE SCRIPT

RF-20.12 SCRIPT Terms for Parts of the Page

Technical Note TN-300 is a basic introduction/reference to GML (Generalized Markup Language). GML is a preset group of formatting commands that provides the user with an easy way to start text processing on the IBM. Users can use the GML package to prepare simple documents, or can combine GML with SCRIPT commands to do more complex formatting of documents. SCRIPT can format documents that include both SCRIPT control words and GML tags.

Technical Note TN-301 shows you all the fonts available for use in a scripted document. The fonts are available both to GML and to SCRIPT; however, to change fonts you must learn a few SCRIPT commands.

TN-302 provides a brief description of the most commonly used SCRIPT commands.

TN-303 describes the default PROFILE SCRIPT (developed at CSO). The script profile, like other profiles, allows you to tailor your own SCRIPT environment.

Reference Guide RF-20.12 outlines the parts of the page as defined by SCRIPT. This is very useful when you want to remember how SCRIPT refers to page parts (or change parameters for page parts; e.g., reset margins).

These handouts are currently available at the consulting offices, and should be available soon at the CSO sites (as soon as they are returned from the printers).

Last, but not least, there is now a help file for SCRIPT which can be accessed by entering **HELP CSO SCRIPT**.

FOR SALE: DEC LA-36 KSR

For sale — DEC LA-36 KSR, pedestal mount, with Data South 200 BPS Speed Conversion, documentation. Price: $200.00 (negotiable). Contact: Rob Beldon at 333-0850 or Tom Galer-Unti at 333-2350.

FOR SALE: GANDALF MODEMS

For sale — two 9600-baud Gandalf LDS 120 asynchronous modems; $500.00 for pair. (For use with dedicated 3010 circuit only.) Purchase of these items can only be made using departmental transfer. Contact: Andrew Ortony, 333-0925 or Email ortony@uiucuxc.

USER TRAINING PROGRAM

Short Courses: Summer 1987

NOTE: For ease of reference, short courses are now classified into six groups, depending on the computing system addressed:

G series: General and Introductory
M series: Microcomputers
C series: The CDC Cyber Network Operating System (NOS)
I series: The IBM VM/CMS System
U series: The UNIX System
X series: Mixed and Other Systems

Special attention is called to new courses for 1986-87, which are marked with an asterisk (*) in the list below. **NOTE: Only a very brief description of the courses is given here. To get a more detailed description of the courses, see the on-line versions of COURSES on the Cyber or the IBM, or pick up a hard-copy detailed version at 162 DCL, the consulting offices, or the CSO sites — or call 244-1257 to have one sent to you via campus mail.**

G series: General and Introductory

G10. Orientation to CSO Facilities and Services -- Equipment, software, documentation, accounts, consulting, training, etc. Prerequisite: none. No fee; no registration.

A. June 12 12N--1pm 115 DCL [Szoke]
B. June 16 4pm--5pm 168 Elect. Engr. [staff]
C. June 18 8am--9am 217 Gregory Hall [staff]
D. June 24 12N--1pm 168 Elect. Engr. [staff]

G11. Computing for Poets -- Survey of computer literacy for those in non-technical fields. Prerequisites: none. Fee: $15.

June 22,23,24,25 12N--1pm [Szoke]

M series: Microcomputers

M11. Basic Concepts in Computer Information Processing -- Essential concepts and terminology for using small computers and word processing equipment. Prerequisite: none. Fee: $15

June 22,24 3pm--5pm [Szoke]

M21. Quick PC -- A concise review of essentials of using the IBM PC and clones. Prerequisite: G10 and familiarity with basic computer terminology. Enrollment limited to 15. Fee: $10 (includes a diskette).

A. June 18 3pm--5pm [Szoke]
B. June 24 3pm--5pm [Knott]

M22. * Quick Mac -- Essentials of using the Macintosh computer. Prerequisite: G10 and familiarity with basic computer terminology. Enrollment limited to 15 per section. Fee: $10 (includes a diskette).

A. June 23 3pm--5pm [staff]
B. June 25 3pm--5pm [staff]

M27. * Communicating with Microcomputers -- Message and file transfer, emphasizing Kermit. Prerequisite: M21 or M22 or equivalent. Fee: $5.

July 21 4pm--6pm [Zinzow]

M41. Using a Word Processing Package -- Microsoft Word 3.0 on the Macintosh. Primarily hands-on work using an instructional package, with instructor available to answer questions. Prerequisite: M22 or equivalent. Enrollment limited to 12. Fee: $25.

July 6,8,9 3pm--5pm [DeWan]

M43. Using a Spreadsheet Package -- Essentials of Lotus 1-2-3 on the PC. Prerequisite: M21 or equivalent. Enrollment limited to 15. Fee: $25 (includes a diskette).

A. June 29, July 1,2 3pm--5pm [Szoke]
B. July 13,15,16 3pm--5pm [Szoke]

M45. Using a Database Package -- Database fundamentals, basic operations on records and fields, a glimpse of programming (macros). Prerequisite: M21 or equivalent. Enrollment limited to 15. Fee: $25 (includes a diskette).

D. dBASE on the PC
July 6,8,9 3pm--5pm [Szoke]
R. R:base on the PC
July 20,22,23 3pm--5pm [Szoke]

M47. * Intermediate PC -- A second course on the PC/XT/AT, emphasizing PC-DOS commands and tree-structured directories. Prerequisite: M21 or equivalent. Enrollment limited to 15. Fee: $20 (includes a diskette).

July 27,29,30 3pm--5pm [Szoke]

M51. * Using a Desktop Publishing Package: PageMaker on the Mac -- Work with PageMaker instructional materials on the Macintosh with instructor and assistant available to answer questions. Prerequisite: M22 and M41 or equivalent. Enrollment limited to 10. Fee: $25.

July 27,29,30 3pm--5pm [DeWan]

C series: The CDC Cyber Network Operating System (NOS)

C55. * Conversion from the Cyber to its Successor (tentative) -- Essentials of converting programs and data to the new machine, if it has been announced by mid-July. Prerequisite: Elementary knowledge of Cyber use. Fee: none.

July 27,28,29 4pm-6pm [Kerr]

I series: The IBM VM/CMS System

I13. * CMS Orientation -- Essentials of keyboard and terminal use; HELP files. Prerequisite: Possession of a CMS signon (userid) and the publication *Introduction to CMS at UIUC* (see MANUALS, below). Fee: none.

A. June 15 12N--1pm [staff]
B. June 19 8am--9am [staff]
C. June 25 4pm--5pm [staff]

I23. Introduction to IBM Timesharing: CMS and XEDIT -- Basics of using the VMD system and the XEDIT editor. Prerequisite: G10; I13 is strongly recommended. Fee: $15.

A. June 22,23,24,25 7pm--9pm [Mills]
B. July 6,7,8,9 4pm--6pm [Alster]

I25. * The Document Composition Facility (SCRIPT) -- An introduction to using SCRIPT/VS and IBM's Generalized Markup Language (GML), components of IBM's text formatting package. Prerequisite: I23 or equivalent. Fee: $10.

June 29,30, July 2 12N--1pm [Engelbrecht-Wiggans]

I33. * Intermediate CMS -- A second course in CMS, covering several topics and useful commands. Prerequisite: I23 or equivalent. Fee: $25.

July 14,15,16 7pm--9pm [Roy]

I35. * Using Tapes on CMS -- Basics of using the TAPE command, MOVEFILE, TBROWSE, etc. Prerequisite: I23 or equivalent. Fee: $15.

June 22,23,24,25 12N--1pm [Wetzel]

I76. Introduction to SPSS-X -- Basics, file definition, data input, and procedure specification taught by means of examples. Prerequisite: I23 or equivalent. Fee: $25.

July 13,14,15 4pm--6pm [Mills]

I79. * Regression Analysis Using SAS, SPSS-X, or BMDP -- Overview of regression concepts and the use and interpretation of regression procedures in three packages. Prerequisite: I72 or I76 or I83 or equivalent; some knowledge of the mathematical basis of ordinary least squares. Fee: $25.

June 29,30 July 1 4pm--6pm [Roy]

I83. Introduction to SAS (Statistical Analysis System) -- Interactive and batch use, the DATA and PROC steps, etc. Prerequisite: I23 or equivalent. Fee: $25.

July 7,9 4pm--6pm [Dingler]
Lab: July 11 10am--12am

I86. * Introduction to SAS/IML -- How to use SAS's interactive matrix language, successor to PROC MATRIX. Prerequisite: I83 or equivalent. Fee: $15.

July 20,21 7pm--9pm [Higgins]

I87. * Using SAS with VMBATCH from CMS -- How to use SAS with VMBATCH from CMS; necessary job control statements, etc. Prerequisites: I21 and I83 or equivalent. Fee: none.

July 16 4pm--5pm [Dingler]

I89. Repeated Measures Analysis Using SPSS, SPSS-X or SAS -- Guidance on the use and interpretation of SPSS-X MANOVA, the REPEATED option in SAS GLM, etc. Prerequisite: Some knowledge of ANOVA and experience using a statistical package. Fee: $15.

June 22,24 4pm--6pm [Alster]

I98. Introduction to CMS SAS/GRAPH -- Obtaining output, global features, map data sets, Zeta

plots, new features, etc. Prerequisites: I23 and I83 or equivalent. Fee: $15.
July 21,23 4pm--6pm [Dingler]

U series: The UNIX System

U11. Introduction to the UNIX System -- The terminal, basic commands, the "ex" and "vi" editors, mail, etc. Prerequisite: G10. Fee: $15.
July 6,7,8,9 7pm--9pm [Scheid]

U41. Intermediate UNIX -- A second course in UNIX: shells, pipes, filters, tees, the "make" utility, etc. Prerequisite: U11 or equivalent. Enrollment limited to 10. Fee: $15.
July 27,29 7pm--9pm [Pommert]

X series: Mixed and Other Systems

X31. * Internetwork Electronic Mail -- An overview of sending electronic mail to other machines on other networks. Fee: None.
July 14 12N--1pm [Pommert]

X87. * Using SAS with VMBATCH from the Cyber -- The necessary job control and programming statements, file and disk management, etc. Prerequisite: Some Cyber knowledge and I83 or equivalent. Fee: none.
July 14 4pm--5pm [Dingler]

MANUALS

We recommend several manuals to users who are unfamiliar with the CSO systems (Cyber, IBM VMD, and UNIX). The following manuals are available for purchase at the Illini Union Bookstore (Reference Section), 715 South Wright Street, Champaign:

Introduction to the Cyber Systems, $2.00
Tutorial Guide to the ICE Text Editor, $1.25
ICE Reference Manual, $3.25
RNF Documentation: Tutorial, Macros and Reference, $4.00
An Index to Software on the Cyber, $3.25
Introduction to CMS at UIUC, $2.50

The following manuals are available at the CSO Distribution Center, 1208 West Springfield Avenue, Urbana.

Introduction to CMS at UIUC, $2.50
Unix Programmer's Manual (2 vol.), $18.00
KERMIT, $4.00
Unix User's Manual (2 volumes), $19.00
Introduction to Computing Services Office, Free
Cyber Primer, Free
Introduction to Graphics, Free
CSO Utilities Manual, Free

Short Course Policy

1. CSO makes a small charge for most short courses.
2. REGISTRATION IS REQUIRED for all courses except where noted. Registration is accomplished by filling out a SEPARATE copy of the registration form and SEPARATE check or voucher for each registration and sending these documents to CSO in either campus or U.S. mail. Walk-in registrations will be accepted in room 162 DCL.
3. If fees are paid by check, each check must be dated as of the FIRST DAY the corresponding class is taught. Other checks will be returned.
4. The registration form is available on-line from the Cyber via:

   GET,REGFORM/UN=COURSES

   PRINT/AS/CC/EJ/DEST=site,REGFORM

   or from IBM VMD via:

   NPRINT COURSE REGFORM * (DEST site CC EJ

   or you may call 244-1257 and request that one be sent.
5. Each registrant will be sent a confirmation of registration on which the place of meeting is noted. This slip must be taken to all meetings of the class and shown when requested.
6. Refunds of fees are made only for canceled classes, or upon receipt of an application for refund on or before the day BEFORE the second meeting of the class. There are no refunds for classes that meet only once. Application for a refund must be made in room 162 DCL during normal office hours; no applications will be accepted by telephone. Refunds are made by means of a credit memorandum (good for one year); exceptions will be made only in extremely unusual circumstances and at the discretion of the user training coordinator.
7. A copy of the current (updated) short course listing may be examined on-line from the Cyber via:

   TYPE,COURSES/AS/UN=COURSES

   or from IBM VMD via:

   HELP COURSES MENU
8. Updates (changes) since the printed short course listing was issued may be examined on-line via:

   TYPE,UPDATES/AS/UN=COURSES.

   This file contains current information on courses and sections that have been newly opened, canceled, filled and closed, etc.
9. CSO reserves the right to cancel courses or sections with insufficient enrollment. All fees paid for these classes will automatically be returned.

Questions, comments and suggestions should be addressed to the CSO user training coordinator: Ron Szoke, 217-333-8630; or TELL,SZOKE from the Cyber; or NOTE SZOKE@UIUCVMD from CMS; or electronic mail to uiucuxc!szoke from UNIX USENET.

TRAINING PACKAGES

CSO makes available to the user community sixteen videotape training cassettes: six on the fundamentals of using SAS (Statistical Analysis System), and ten on SAS color graphics (SAS/GRAPH). The tapes may be obtained at the Media Desk in the Undergraduate Library (upper level, in back). Show your University ID to the clerk on duty there and state the title of the videotape you wish to use. If a machine is available, you will be taken to a room containing the videotape equipment and shown how to operate it. If all machines are in use you can make a reservation for a later time.

SAS Videotapes

CSO has leased the SAS Basics 100-Series video training course. The course combines video and workbook media to deliver performance-based SAS training. The information in the course is contained in six videotapes.

The videotaped instruction is not complete without the workbook, which contains exercises and illustrations to reinforce the material presented in the videotapes. A copy of the workbook is available for reference at the Media Desk. You may, however, wish to obtain a personal copy of the workbook to complete the exercises, to take notes, and to use as a reference after the course is completed. The workbook may be purchased for $17.50 at the CSO Distribution Center, 1208 West Springfield, U.

NOTE: The SAS videotapes are not available for loan.

The title of each of the videotapes is given below. Running time is about 45 to 60 minutes for each tape.

B101. Introduction to SAS.
B102. Getting Your Data Into a SAS Data Set.
B103. Program Processing.
B104. Working with SAS Data Sets.
B105. Report Writing.
B106. SAS procedures.

A Cyber terminal user may obtain more information about each via:

TYPE,SASVID/AS/UN=COURSES.

The Media Desk also has the ten tapes in the SAS color graphics (SAS/GRAPH) series and a reference copy of the student workbook. For more details:

TYPE,SASGRAF/AS/UN=COURSES.

Audio Cassettes

CSO makes available to the user community three sets of audio cassette tapes for the training of microcomputer users:

How to Operate the IBM Personal Computer (on 3 cassettes)
How to Use MultiMate (3 cassettes)
How to Use Lotus 1-2-3 (4 cassettes)

These cassettes, with accompanying printed materials, may be borrowed for up to one week by contacting Leslie, 244-1257.

MAY 1987

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3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

JUNE 1987

JULY 1987

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SUN	MON	TUE	WED	THU	FRI	SAT
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7	8	9	10	11	12 G10A: 12N-1PM	13
14	15 I13A: 12N-1PM G10B: 4PM-5PM	16	17 G10C: 8AM-9AM M21A: 3PM-5PM	18 I13B: 8AM-9AM	19	20
21	22 G11: 12N-1PM I35: 12N-1PM M11: 3PM-5PM I23A: 7PM-9PM	23 G11: 12N-1PM I35: 12N-1PM M22A: 3PM-5PM I89: 4PM-6PM I23A: 7PM-9PM	24 G11: 12N-1PM I35: 12N-1PM G10D: 12N-1PM M11: 3PM-5PM M21B: 3PM-5PM I23A: 7PM-9PM	25 G11: 12N-1PM I35: 12N-1PM M22B: 3PM-5PM I13C: 4PM-5PM I89: 4PM-6PM I23A: 7PM-9PM	26	27
28	29 I25: 12N-1PM M43A: 3PM-5PM I79: 4PM-6PM	30 I25: 12N-1PM I79: 4PM-6PM				

Week of June 7

G10A: CMS Orientation.	M	12N-1pm

Week of June 14

I13A: CMS Orientation.	M	12N-1pm
I13B: CMS Orientation.	F	8am-9am
G10B: Orientation to CSO.	Tu	4pm-5pm
G10C: Orientation to CSO.	Th	8am-9am
M21A: Quick PC.	Th	3pm-5pm

Week of June 21

G11: Computing for Poets.	M Tu W Th	12N-1pm
I35: Using Tapes on CMS.	M Tu W Th	12N-1pm
M11: Basic Concepts in Computers.	M W	3pm-5pm
I23A: Intro to IBM Timesharing.	M Tu W Th	7pm-9pm
M22A: Quick Mac.	Tu	3pm-5pm
M22B: Quick Mac.	Th	3pm-5pm
I89: Repeated Measures in SPSS-X and SAS.	Tu Th	4pm-6pm
G10D: Orientation to CSO.	W	12N-1pm
M21B: Quick PC.	W	3pm-5pm
I13C: CMS Orientation.	Th	4pm-5pm

Week of June 28

I25: Document Composition Facility (SCRIPT).	M Tu Th	12N-1pm
M43A: Spreadsheet:Lotus 1-2-3 on the PC.	M W Th	3pm-5pm
I79: Regression Using SAS, SPSS-X, BMDP.	M Tu W	7pm-9pm

JUNE

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28	29	30				

1987

JULY

1987

AUGUST

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23	24	25	26	27	28	29
30	31					

SUN	MON	TUE	WED	THU	FRI	SAT
			1 M43A: 3PM-5PM I79: 4PM-6PM	2 I25: 12N-1PM M43A: 3PM-5PM	3	4
5	6 M41: 3PM-5PM M45D: 3PM-5PM I238: 4PM-6PM U11: 7PM-9PM	7 I23B: 4PM-6PM I83: 4PM-6PM U11: 7PM-9PM	8 M41: 3PM-5PM M45D: 3PM-5PM I23B: 4PM-6PM U11: 7PM-9PM	9 M41: 3PM-5PM M45D: 3PM-5PM I83: 4PM-6PM U11: 7PM-9PM	10	11
12	13 M43B: 3PM-5PM I76: 4PM-6PM	14 X31: 12N-1PM X87: 4PM-5PM I76: 4PM-6PM I33: 7PM-9PM	15 M43B: 3PM-5PM I76: 4PM-6PM I33: 7PM-9PM	16 M43B: 3PM-5PM I87: 4PM-5PM I33: 7PM-9PM	17	18
19	20 M45R: 3PM-5PM I86: 7PM-9PM	21 M27: 4PM-6PM I98: 4PM-6PM I86: 7PM-9PM	22 M45R: 3PM-5PM	23 M45R: 3PM-5PM I98: 4PM-6PM	24	25
26	27 M47: 3PM-5PM M51: 3PM-5PM C55: 4PM-6PM U41: 7PM-9PM	28 C55: 4PM-6PM	29 M47: 3PM-5PM M51: 3PM-5PM C55: 4PM-6PM U41: 7PM-9PM	30 M47: 3PM-5PM M51: 3PM-5PM	31	

Week of July 5

M41: Word Processing: Microsoft Word on the Mac.	M W Th	3pm-5pm
M45D: Database: dBASE on the PC.	M W Th	3pm-5pm
I23B: Intro to IBM Timesharing.	M Tu W Th	4pm-6pm
U11: Intro to the UNIX System.	M Tu W Th	7pm-9pm
I83: Intro to SAS.	Tu Th	4pm-6pm

Week of July 12

M43B: Spreadsheet: Lotus 1-2-3 on the PC.	M W Th	3pm-5pm
I76: Intro to SPSS-X.	M Tu W	4pm-6pm
X31: Internetwork Electronic Mail.	Tu	12N-1pm
X87: SAS with VMBATCH from the Cyber.	Tu	4pm-5pm
I33: Intermediate CMS.	Tu W Th	7pm-9pm
I87: Using SAS with VMBATCH from CMS.	Th	4pm-5pm

Week of July 19

M45R: Database: R:base on the PC.	M W Th	3pm-5pm
I86: Intro to SAS/IML.	M Tu	7pm-9pm
M27: Communicating with micros.	Tu	4pm-6pm
I98: CMS SAS/GRAPH.	Tu Th	4pm-6pm

Week of July 26

M47: Intermediate PC.	M W Th	3pm-5pm
M51: Desktop Publishing: PageMaker on the Mac.	M W Th	3pm-5pm
CS5: Cyber Conversion.	M Tu W	4pm-6pm
U41: Intermediate UNIX.	M W	7pm-9pm

Computing Services Office -- UIUC
Short Course Registration Form, Summer 1987

Note: USE A SEPARATE SHEET FOR EACH COURSE. This form may be copied freely as needed. Fill in all blanks down to the "* * *" and send completed forms to: CSO Short Courses
150 DCL
1304 West Springfield
Urbana, IL 61801

University ID (Social Security) number (9 digits) ____-____-______

Name: (Please print clearly)
last ______________________, first ______________________

Status (circle): Undergrad Grad Faculty Ac staff Non-ac staff Other

Telephone: Work ______________________ Residence ______________________

Send receipt to: (address)

____

____

_____ CAMPUS MAIL or ZIP ______________________

Course number	Section number	Course title	Course fee enclosed
______	______	______________________	$__________

Paid by: (enclose a SEPARATE check or voucher for each course)

_____ Check dated as of the first day of the course, and made payable to the University of Illinois.

_____ University account: Attach a signed STORES / SERVICE Voucher (Form 11-48-80CO) credited to CSO, 150 DCL; Account: 1-3-10104-0798, Computer Service. The department, account number (11 digits), and title to be charged must also be filled in. NOTE: "Real money" accounts only; Research Board, SARA, and class accounts are NOT acceptable.

- -

This portion will be returned. You MUST take it to class with you.

Computing Services Office -- UIUC
Short Course Registration Receipt and Admission Slip, Summer 1987

Course Number/Section/Title ____/____/______________________

Last name ______________________, Initial ______

Date(s) and time: ____

* * *

Meets in room: ____

Validation by registrar:

Date: ____/____/____

RS 05/05/87

SURVEY OF INTEREST IN "SPSS/PC+".

If you are interested in obtaining a site-license for any of the additional SPSS/PC+ products for the PC, please complete the survey below :

Name: _____

Campus Address: _____

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

My affiliation with the University is:

_____Faculty _____Staff _____Student Other:_____
_____

I own a:

__PC/XT __PC/AT __3270 PC __XT or AT/370 __Other:_____

I have an SPSS/PC+ user site-license: ___No ___Yes

I would also like a site-license for the following: (Check all that apply)

___SPSS/PC+ Data Entry II ___SPSS/PC+ Trends ___SPSS/PC+ Tables
___SPSS/PC+ Graphics featuring Microsoft Chart
___SPSS/PC+ Mapping featuring Ashton-Tate's Map-Master

I will use the above product(s) for the following:

___Research ___Class ___Both ___Other:_____
_____

What types of analysis are you most interested in carrying out? Please check all applicable categories:

___ANOVA/Analysis of Covariance ___Regression ___Categorical Data Analysis

___Multivariate Analyses ___Time Series Analysis ___Non-Parametric Statistics

___Graphics ___Other:_____

Please return survey to:

Anup K. Roy
CSO Statistical Consultant
Room 150 Digital Computer Laboratory
1304 W. Springfield Avenue
Urbana, Illinois 61801.

SURVEY OF INTEREST IN "BMDPC" (BMDP/PC).

If you are interested in obtaining a site-license for BMDPC on your PC, please complete the survey below :

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*

My PC is a:

__*PC/XT* __*PC/AT* __*3270 PC* __*XT or AT/370* __*Other:*_____

I would like to get BMDPC on a site-license basis: ___*No* ___*Yes*

I would also like (or already have) a site-license for the following:

_____*SAS/PC* _____*SPSS/PC+*

I will use the above product(s) for the following:

___*Research* ___*Class* ___*Both* ___*Other:*_____

What types of analysis are you most interested in carrying out? Please check all applicable categories:

___*ANOVA/Analysis of Covariance* ___*Regression* ___*Categorical Data Analysis*

___*Multivariate Analyses* ___*Time Series Analysis* ___*Non-Parametric Statistics*

___*Graphics* ___*Other:*_____

Please return survey to:

Anup K. Roy
BMDP Coordinator @ UIUC
CSO - 150 DCL
1304 W. Springfield Avenue
Urbana, Illinois 61801.

OFF-LINE's Mailing List

If you wish to be placed on our mailing list for future issues of *OFF-LINE*, if you wish to be removed from the list, or if you wish to enter an address correction, please complete and return this page. **(Current subscribers are kept on the mailing list until a specific request for removal is received, or until a mailing is returned as undeliverable.)**

Check one:

- ☐ Place my name on mailing list
- ☐ Make the following corrections or changes
- ☐ Delete my name from mailing list

_____

First name -- Initial -- Last Name

Campus Address:

_____

Room - Building

_____

Department

Off-campus Address:

_____

Organization or Company (if applicable)

_____

Street Address

_____

City -- State -- Zip Code

If address correction, give old address and zip code below.

_____

_____

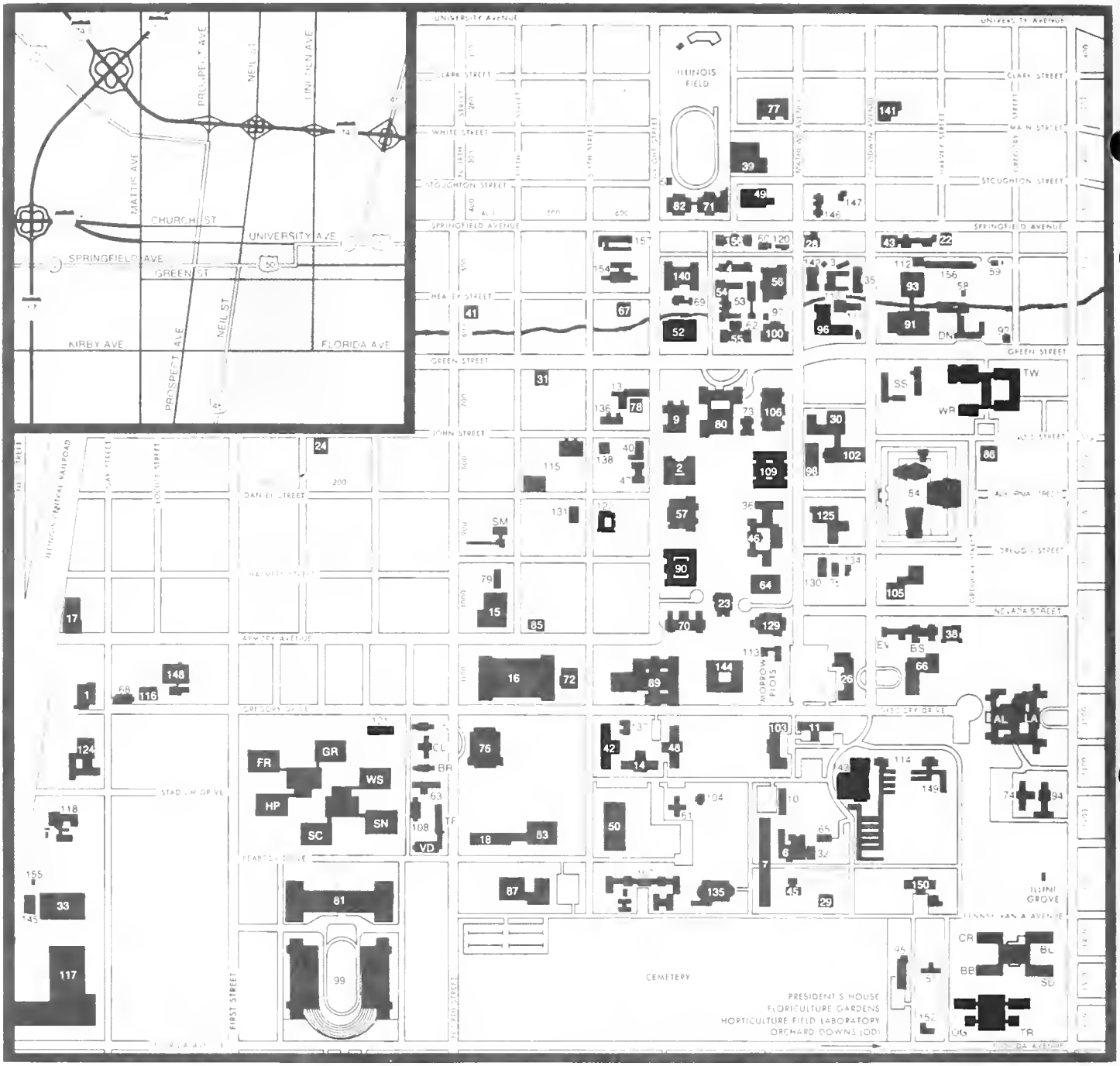
_____

SEND TO:

OFF-LINE
150 Digital Computer Laboratory
University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH (DCL)	
14 Digital Computer Lab 333-7685	Monday-Saturday, 24 hours/day Sunday, 12 noon - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Saturday, 8 am - 12 mid. Sunday, 12 noon - 12 midnight
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, Closed
CHEMISTRY	
150-154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Daily, 12 noon - 12 midnight
ELECTRICAL ENGINEERING	
146 Electrical Engineering 333-4936	Monday-Friday, 8 am - 12 mid. Saturday, 8 am - 5 pm Sunday, Closed
FAR	
Florida Avenue Residence Halls 333-2695	Daily, 12 noon - 12 midnight
ISR	
Illinois Street Residence Halls 333-0307	Daily, 12 noon - 12 midnight
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Saturday, 8 am - 12 mid. 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-Friday, 8 am - 12 mid. Saturday, 10 am - 5 pm Sunday, 12 noon - 5 pm



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

Vol. 15, No. 4: August-September 1987

off line

University of Illinois at Urbana-Champaign

Director: George Badger
Editor: Lynn Bilger

Computing Services Office

CSO DIRECTORY

USER SERVICES AND HARDWARE/SOFTWARE SUPPORT

User Accounting	**1208**	**W Springfield**	**333-7752**
Documentation Center	**1208**	**W Springfield**	**333-9230**
Systems Consulting	**1208**	**W Springfield**	**333-6133**
Statistical Services Consulting	**85**	**Comm West**	**333-2170**
PC Consulting	**91**	**Comm West**	**244-0608**
Text Processing Consulting	**212**	**CSOB***	**333-7318**
Maintenance & Repair Service	**194**	**DCL**	**333-0969**
Tape Service, Special Plots, Xerox Laser Printer	**123**	**DCL**	**333-8640**

DIAL-UP NUMBERS

CYBER 175 (NOSA)	**300 baud**	**333-4000**
IBM 3081 GX (VMD)	**300 baud**	**333-4006**
Switch	**1200 baud**	**333-4008**
TELENET (local no.)		**384-6428**

CSO STAFF

Director	George Badger	150	DCL	333-4103
Business Manager	Stanley Rankin	150	DCL	333-6530
Secretary	Joyce McCabe	150	DCL	333-1637
Networking	Sue Greenberg	187	DCL	333-3723
Systems & User Services	Ahmed Kassem	185	DCL	333-7159
Hardware Maintenance & Communication	Mike Gardner	173	DCL	244-0914
Personal Computers/EXCEL	Robert Penka	119	CSOB*	333-4709
Supercomputer Activities	Sandra Moy	1207	W Springfield	333-9772
Maintenance	Larry Crotser	131C	DCL	333-5190
Consulting	Stan Kerr	208	CSOB*	333-4715
Statistical Services	Joan Alster	202	CSOB*	244-0937
Accounting Services	Gary Bouck	1208	W Springfield	333-7752
Microcomputer Laboratory	Jack Knott	102	CSOB*	333-6562
User Training (Short Courses, Videotapes)	Ron Szoke	108	CSOB*	333-8630
Documentation	Lynn Bilger	207	CSOB*	333-6236
CYBER-IBM-VAX Operations	Myra Williams	168	DCL	244-0186
Site Operations	Sylvia Hansen	65	ME	333-6285

*CSOB is the new CSO Office Building, 101 S. Gregory, Urbana.

Academic and research computing is done on the following machines: CDC Cyber 175 running NOS 1; IBM 3081 running VM; IBM 4341 running VM; VAX 11/780 running UNIX and driving a GSI CAT-8 phototypesetter; three Pyramids and a Sequent running UNIX. In addition CSO serves as Facility Manager for various departmental machines (e.g., other IBMs) and for the National Center for Supercomputing Application's CRAY X-MP.

Operating Hours (see HEARYE,SCHEDUL for exceptions):

	CYBER 174/175	IBM
M-F	8 am - 6 am	8 am - 6 am
SAT	8 am - Midnight	8 am - 6 am
SUN	Noon - 6 am	Noon - 6 am

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Number 4
August-September, 1987

Contents

(Continued on next page)

MICROCOMPUTING

HELP WANTED - SALES

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. Information in this issue is current as of July 20, 1987. 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.

FALL SHORT COURSE SCHEDULE

At the time this issue went to press, the Fall Short Course Schedule was in the final stages of preparation. The schedule will be printed and mailed to everyone on the *Off-Line* mailing list within the next few weeks. Persons not on the *Off-Line* mailing list will be able to pick up a copy outside Room 162 (when printed).

IMPORTANT CHANGE IN TAPE POLICY

Starting this Fall, the Computing Services Office will institute a new policy on tape retention in our permanent tape library. Due to space problems, we find it necessary to remove and return all tapes that have not been accessed within a 3-year time period. Over the summer we sent out letters, to parties concerned, requesting that they come in and remove unaccessed tapes. We will be happy to provide you with a list of your tapes and also ship these tapes to your campus address. If we cannot find the owner of a tape, it will be sent to the department listed on the tape.

CSO SERVICES RATE LIST AVAILABLE

A listing of the costs CSO charges for its various services is now available on-line on the VMD, VME, and Cyber computers. To obtain a hardcopy listing, enter one of the following commands on the appropriate computer:

On VMD or VME: **WRITEUP CSO CSORATES**

On CYBER: **WRITEUP,CSORATE**

To examine the rates list on either VMD or VME while logged on, enter:

HELP CSO CSORATES

Please note that the charges list reflects rates for the date found at the beginning of the document. We will endeavor to keep this listing as up-to-date as possible, but be advised that some rate changes or additions may occur prior to their posting in the listing. If you have questions regarding the costs of CSO services, please contact our consulting office at either 85 Commerce West or 1208 West Springfield.

CHANGE TO BITNOTE ON VMD AND VME

A small change has been made to the BITNOTE exec on VMD and VME, to make it more compatible with some of the other electronic mail software in use here. When a note is addressed to someone who is not on VMD, the at-sign (@) may be used to indicate the person's mail node rather than the word "AT". For example, if you are accustomed to sending a note via the command

BITNOTE FRODO AT HOBBITON

you may now use the form

BITNOTE FRODO@HOBBITON

The "@" form of the address may be used only on the BITNOTE command line, not in the NAMES file.

PASCAL VERSION 2.2 ON CMS TO BECOME DEFAULT

Pascal Version 2.2, which has hitherto been accessed on CMS by the command

LINKTO PASCAL (F

will become the default version of Pascal on **September 1, 1987.**

At that time, Pascal 2.1 will be accessed by the command

LINKTO PASCAL (P

and will be finally removed from VMD on or about **November 1, 1987.**

CHECKING BALANCES in PS NUMBERS AND ACCOUNTS

You can receive updated information (updated on a daily basis) on PS numbers generated at CSO and/or those account numbers recognized by the CSO accounting system by entering one of the following commands.

If you are logged onto the Cyber, you can receive PS number information by entering:

PSINQ,ps# **(where ps# is a 4-digit number)**

If you are logged onto VMD, you can receive ps number information by entering:

PSINQ ps# **(where ps# is a 4-digit number)**

or Account information, by entering:

ACCTINQ acct# **(where acct# is an 11-digit number)**

At present, access to this information is being developed on UNIX.

PL/1 OPTIMIZING COMPILER VERSION 1.5.1 TO BECOME DEFAULT ON VMD

On **September 1, 1987**, Version 1.5.1 of the PL/1 Optimizing Compiler will become the default version of PL/1 on VMD. It has hitherto been accessed by the command

LINKTO PLIX (F

On September 1, the PLIOPT exec, which is used to compile a PL/1 program, will access Version 1.5.1, unless Version 1.3.1 (the current default) is first accessed by the command

LINKTO PLIX (P

Version 1.3.1 will remain available in this manner until November 1, at which time it will be removed from VMD.

Users will not notice any major differences between Release 3 (1.3.1) and Release 5 (1.5.1).

SAS USERS GROUP MEETING

A SAS Users Group meeting will be held on the UIUC campus sometime this semester. An announcement will be made as to date, time, and location.

The SAS Users Group meets each fall and spring semester to give users an opportunity to share applications and experiences. All users are welcome to participate and there is no membership fee. Meetings consist of two presentations on CMS/SAS, PC/SAS or statistics. These meetings of SAS users provide a great opportunity to meet people with similar interests and talents, to generate new ideas and to stimulate excellence among SAS users.

If you have any questions, please contact Vicky Dingler, CSO SAS Coordinator, CMS userid DINGLER, CYBER user number DINGLER, phone number 333-4668. (A message can be left with the departmental secretary at 244-1257). Hope to see you at this meeting!

GRAFSTAT ON UIUCVMD

GRAFSTAT is an APL system for interactive scientific plotting, data analysis, applied statistics, and graphics output development. GRAFSTAT has been provided for test purposes on this campus by IBM through the Department of Statistics. GRAFSTAT is menu driven and very easy to use, and no prior knowledge of APL is necessary. However, there are some hardware requirements which will limit its use mainly to the Statistical Graphics Laboratory in Illini Hall. You can access more information on GRAFSTAT through the commands: **LINKTO GRAFSTAT (SHARED** and **HELP SHARED GRAFSTAT**. Please contact Bruce Richardson (userid = RICHARD, or 244-6067) if you would like to know more about GRAFSTAT.

GOULD COMPUTER SYSTEM BEING INSTALLED

In response to the need for additional UNIX services on the campus, CSO is currently installing a Gould Computer system. The Gould system will feature the Universal Timesharing Executive (UTX/32 Rel. 2.0) based on the UNIX operating system versions implemented at AT&T Bell Laboratories. Further details on the Gould system will be forthcoming in the next issue of *Off-Line*.

THE ILLINOIS STATISTICS OFFICE (ISO) OFFERS FREE CONSULTING

The ISO provides assistance to members of the University, government, and private industry on statistical problems in their research work. Aid is available in designing experiments, constructing surveys, analyzing data, extending theoretical research, and utilizing computers in statistics.

Up to two hours of consulting is provided free of charge to members of the University Community. Problems that require a considerable amount of consulting time and effort are welcome, but it is necessary to charge clients for such extended services. Those interested in setting up long-term arrangements should contact either Dennis Cox, the 1987-88 ISO Director, or Bruce Richardson, the ISO Manager, at the Department of Statistics (333-2167).

To use the service or to set up an appointment to see a consultant, call 333-5703, or stop by the ISO office in 103 Illini Hall. The ISO hours for the academic year are 9 to 12 and 1 to 4 Monday through Friday; other times by appointment.

ANNOUNCING THE UIUC/DEC SOFTWARE LIBRARY

CSO is pleased to announce the UIUC/DEC Software Library. This program is intended to make DEC software readily available and as inexpensive as possible for VAXstation and Microvax systems. The library is a cooperative project between CSO and DEC, and will be managed by Milt Cloud of CSO.

The UIUC/DEC Library will provide yearly software licenses on 28 DEC software packages. Additionally, media updates for all products will be provided as they occur. Finally, telephone support from DEC will be available through CSO.

The following list of titles are included in the library:

Ada	VAX DEC/MMS	VAX LSE
DECnet-VAX	VAX DEC/SHELL	VAX Notes
DECnet-ULTRIX	DEC/TEST MGR	VAX OPS5
VAX Basic	VAX FMS	VAX PCA
VAX C	VAX Fortran	VAX Rdb/VMS
VAX CDD	VAX Fortran/Ultrix	VAX RSM
VAX Datatrieve	VAX GKS/2B	VAX SCAN
VAX PASCAL	VAX Lisp/VMS	ULTRIX-32m
VAX DEC/CMS	VAX Lisp/Ultrix	ULTRIX-32w
WPS-PLUS/VMS		

Media updates and telephone support are also provided on VMS and VWS.

Systems qualified to participate in the UIUC/DEC Library are Microvax I and IIs, VAXstation I and IIs, and Vaxstation 2000s. The cost of the library is $2400 per year for Microvax systems and $1250 per year for Vaxstations.

We expect to have the library operational by very early Fall. If you would like more information about the software packages or about the program, please contact Milt Cloud at 333-6264.

ELECTRONIC MAIL EXCHANGE USING CSO COMPUTER SYSTEMS

Each CSO computer system has available an electronic mail ("email") utility which allows you to exchange email with other users on that system. Advances in the area of computer networking have made available the exchange of email among users across a wide range of computer systems, both throughout the University and with non-University sites.

In order to exchange email with persons on other systems, you must know the receiver's email address and should supply your own return address. At this time, there is no "email address directory" available for you to reference; this information must be exchanged personally at the initial exchange.

To exchange email across non-University computer systems, you must know a third piece of information: The name of the computer network which is accessible to the receiver's system. CSO systems can exchange email across the following computer networks: BITNET, ARPANET, CSNET and USENET/uucp. If the receiver's system does not have access to one of these networks, email cannot be exchanged.

The information in this article assumes knowledge of the email utility on the CSO system that you use regularly. In order to make this article useful to as many CSO computer users as possible, some general terms have been used:

username	The name entered when logging-in to the computer.
host	The name of the computer that you are using to send and read email. This name is identified on all CSO systems just prior to the prompt for your username.
sitename	The name of the host computer that the receiver is using to read email. The sitename may be one word, or several words separated by a period. An atsign always precedes sitename: **@sitename** or **@sitename.name.name.name**
node@sitename	The name of a host computer that receives email via a specific sitename. A percent symbol always precedes node: **%node@sitename**

The distinction between using **@sitename** versus **%node@sitename** is needed only when specifying an address that must include both a host name and the name of the system through which email is delivered to that host. The **%node@sitename** syntax usually is not used when exchanging mail across University of Illinois systems. However, it is used to construct some email addresses when sending email to persons at other universities, and in your return addresses across ARPANET and CSNET.

The information that follows is divided among three categories: Email from the Cyber, Email from IBM/CMS, and Email from UNIX. Each section gives you some general information about sending email to users on other systems, as well as your email return address. The last section, UIUC/UIC Host System Addresses, gives specific addresses for a number of University computer systems.

Email from the Cyber

The system name for the Cyber 175 is UIUCNOSA. To send email from UICUNOSA to a user on any other computer system, you must issue the TELL command from within the MESSAGE utility. The syntax of the command is:

WHAT TO DO? tell,username{%node}@sitename

The curly braces indicate that **%node** is an identifier to be included only in certain addresses; the braces themselves are not part of the address.

Your Return Addresses from UIUCNOSA

Although a return address is automatically included on all email that you send, the information might be inadequate for the receiver to construct a valid return address for you. In order to supply complete information, include the following return addresses (for UIUCNOSA users only) at the end of your email message.

BITNET	**username@uiucnosa** **(UIUCNOSA is a BITNET MAIL-ONLY node)**
ARPANET	**username%uiucnosa@a.cs.uiuc.edu**
CSNET	**username%uiucnosa@uiuc.csnet**
USENET/uucp	**[ihnp4,pur-ee,convex]!uiucdcs!uiucuxc!username%uiucnosa**

Substitute your Cyber USERNUMBER for **username** in the above examples. The comment in parentheses following your BITNET return address should be included; it indicates to other BITNET users that "sendfile," "profs" and "rscs" messages are not supported on the UIUCNOSA system. Access to the Cyber is limited from some networks. As a result, only users on BITNET machines can send mail to UIUCNOSA. Additionally, some BITNET machines running VMS are unable to send mail to UIUCNOSA.

Email from IBM/CMS

CSO provides access to the IBM/CMS operating system on several different computer hosts. The IBM/CMS system names are: UIUCVMC, UIUCVMD and UIUCVME. The examples here refer only to the use of the CMS BITNOTE command, which is one of several different electronic mail utilities available for you to use. At this time, CSO officially supports only the BITNOTE and NOTE commands. However, we are in the process of evaluating many IBM email resources, and will eventually announce a recommended and fully-supported version.

To send email from any IBM/CMS system using the BITNOTE command to a user on any other computer system, the syntax of the command is:

bitnote username{%node}@sitename

The curly braces indicate that **%node** is an identifier to be included only in certain addresses; the braces themselves are not part of the address.

IBM NOTE users: This command can be used only when sending email to a user at another IBM-VM site. To avoid problems, you should use this command only when exchanging email with persons on the same host system that you are using.

For more information about BITNOTE, enter the CMS commands:

HELP CSO BITNOTE

Your Return Addresses from IBM

Although a return address is automatically included on all email that you send, the information might be inadequate for the receiver to construct a valid return address for you. In order to supply complete information, include the following return addresses at the end of your email message.

BITNET	**username@uiucvm{c,d,e}**
ARPANET	**username%uiucvm{c,d,e}@uxc.cso.uiuc.edu**
CSNET	**username%uiucvm{c,d,e}@uiuc.csnet**
USENET/uucp	**[ihnp4,seismo]!uiucuxc!username%uiucvm{c,d,e}**

Substitute your IBM/CMS logon name for **username** in the above examples. The name shown as **uiucvm{c,d,e}** should be replaced with the specific name of the IBM/CMS host that you use regularly; the braces themselves are not part of the return address.

The information enclosed by square brackets in the USENET/uucp example is a convention established at USENET sites to indicate multiple routing options; they should be included on the return address, but are not used when constructing a USENET/uucp email address.

Email from UNIX

CSO provides access to the UNIX operating system on several different computer hosts. The UNIX system names are: UIUCUXA, UIUCUXE and UIUCUXF. To send email from any UNIX system to a user on any other computer system, the syntax of the mail command is:

mail username{%node}@sitename

The curly braces indicate that **%node** is an identifier to be included only in certain addresses; the braces themselves are not part of the address.

Your Return Addresses from UNIX

Although a return address is automatically included on all email that you send, the information might be inadequate for the receiver to construct a valid return address for you. In order to supply complete information, include the following return addresses at the end of your email message.

BITNET	**username@uiucux{a,e,f}** **(UIUCUX{a,e,f} is a BITNET MAIL-ONLY node)**

ARPANET	**username%uiucux{a,e,f}@a.cs.uiuc.edu**
CSNET	**username%uiucux{a,e,f}@uiuc.csnet**
USENET/uucp	**[ihnp4,pur-ee,convex]!uiucdcs!uiucuxc!uiucux{a,e,f}!username**

Substitute your UNIX login name for **username** in the above examples. The name shown as **uiucux{a,e,f}** should be replaced with the specific name of the UNIX host that you use regularly; the braces themselves are not part of the return address. The comment in parentheses following your BITNET return address should be included; it indicates to other BITNET users that ''sendfile,'' ''profs'' and ''rscs'' messages are not supported on UIUCUX{a,e,f}. The information enclosed by square brackets in the USENET/uucp example is a convention established at USENET sites to indicate multiple routing options; they should be included on the return address, but are not used when constructing a USENET/uucp email address.

UIUC and UIC Host System Addresses

Descriptions and host names of many University (UIUC and UIC) computer systems are listed below. This list will be updated as more University systems become accessible for email exchange. The syntax of the command used to send email to each of these hosts is also provided. Note that the information below is specific only to sending email from a CSO system to other UIUC (Urbana-Champaign campus) and UIC (Chicago campus) systems.

In the following table for UIUC, the departmental abbreviations are: CSO - Computing Services Office; DCS - Computer Science Department; NCSA - National Center for Supercomputer Applications; CSRD - Center for Supercomputer Research and Development; CSL - Coordinated Sciences Lab.; HEPG - High Energy Physics Group.

Host Names at Urbana-Champaign Campus (UIUC)

Department	Computer - Operating System	Host Name	Command Syntax
CSO	Cyber 175 - NOS	uiucnosa	from Cyber: tell,username from IBM: bitnote username@uiucnosa from UNIX: mail username@uiucnosa
CSO	IBM 4381 - CMS IBM 4341 - CMS IBM 3081 - CMS	uiucvmc uiucvmd uiucvme	from Cyber: tell,username@uiucvm{c,d,e} from IBM: bitnote username@uiucvm{c,d,e} from UNIX: mail username@uiucvm{c,d,e}
CSO	Pyramid - UNIX[1] Sequent - UNIX[1] Pyramid - UNIX[2]	uiucuxa uiucuxf uiucuxe	from Cyber: tell,username@uiucux{a,e,f} from IBM: bitnote username@uiucux{a,e,f} from UNIX: mail username@uiucux{a,e,f}
DCS	UNIX[3]	uiucdcs	from Cyber: tell,username@uiucdcs.cs.uiuc.edu from IBM: bitnote username@uiucdcs.cs.uiuc.edu from UNIX: mail username@uiucdcs
NCSA	VAX 11/785 - VMS	ncsavmsa	from Cyber: tell,username@ncsavmsa from IBM: bitnote username@ncsavmsa from UNIX: mail username@ncsavmsa
CSRD	VAX 11/785 - UNIX	uicsrd	from Cyber: tell,username@uicsrd.csrd.uiuc.edu from IBM: bitnote username@uiucrsd.csrd.uiuc.edu from UNIX: mail username@uicsrd
	IBM 4381 - CMS	uicsrdvm	from Cyber: tell,username@uicsrdvm.csrd.uiuc.edu from IBM: bitnote username@uicsrdvm.csrd.uiuc.edu from UNIX: mail username@uicsrdvm.csrd.uiuc.edu
CSL	VAX 11/780 - UNIX[4]	uicsl	from Cyber: tell,username@uicsl.csl.uiuc.edu from IBM: bitnote username@uicsl.csl.uiuc.edu from UNIX: mail username@uicsl
	VAX 11/780 - UNIX[4]	uicsg	from Cyber: tell,username@uicsg.csl.uiuc.edu from IBM: bitnote username@uicsg.csl.uiuc.edu from UNIX: mail username@uicsg

1. Student machine.
2. Public machine.
3. DCS has several different UNIX systems. Use the host name specified above unless the email receiver has given you another name for a specific DCS host.
4. CSL has several different systems as well as the two listed above. Use one of the host names specified above or the host name specified by the email receiver.

Host Names at Urbana-Champaign Campus (UIUC) -- continued			
Department	**Computer-Operating System**	**Host Name**	**Command Syntax**
HEPG	VAX 11/780 - VMS	uiuchepa	from Cyber: tell,username@uiuchepa from IBM: bitnote username@uiuchepa from UNIX: mail username@uiuchepa
PSYCH	Harris	uiucpsy	from Cyber: tell,username@uiucpsy from IBM: bitnote username@uiucpsy from UNIX: mail username@uiucpsy

1. Student machine.
2. Public machine.
3. DCS has several different UNIX systems. Use the host name specified above unless the email receiver has given you another name for a specific DCS host.
4. CSL has several different systems as well as the two listed above. Use one of the host names specified above or the host name specified by the email receiver.

In the following table for UIC, the departmental abbreviations are: ACC - Academic Computing Center; CS/EE - Computer Science/Electrical Engineering.

Host Names at the Chicago Campus (UIC)			
Department	Computer - Operating System	Host Name	Command Syntax
ACC	IBM 3081 - VM	uicvm	from Cyber: tell,username@uicvm from IBM: bitnote username@uicvm from UNIX: mail username@uicvm
	IBM 3081 - MVS	uicmvsa	from Cyber: tell,username@uicmvsa from IBM: bitnote username@uicmvsa from UNIX: mail username@uicmvsa
CS/EE	VAX 11/780 - UNIX	uicbert	from Cyber: tell, username%uicbert@uiucuxc from IBM: bitnote username%uicbert@uiucuxc from UNIX: mail username@uicbert

PLOTTING ON THE IBM 3800-3 PRINTER

Michael Grady

The IBM 3800-3 Printing Subsystem, operating in Page mode, is an all-points addressable, high-speed laser printer. It can produce low-cost, high-quality monochrome graphics. It supports filled polygons (in half-tones and a variety of fill patterns), a variety of linetypes and widths, several markers, and a selection of different fonts for text. It is a raster output device, which means that a page is represented as a matrix of points which are either on (black) or off (white). It has a resolution of 240 by 240 points per inch. Thus an 11 by 7.5 inch picture (normal usable size of paper in the 3800) would have a resolution of 2640 (across) by 1800 (down) *pixels* (or *pel*). Note: The usual terminology for a single point of an image is a *pixel*. IBM uses the term *pel* instead. Pel will be used throughout the rest of this article.

File Format for 3800 Page Mode (Graphics) Output

The 3800 will only output graphics images stored in a special type of format referred to as a Composed Page Data Stream (CPDS). This is a relatively complex file format that can be produced by such packages as IBM's Graphical Data Display Manager (GDDM) and Document Composition Facility (SCRIPT). Users can utilize either of these packages to prepare output for the 3800. This article will not address the details of using these two packages to produce CPDS files.

CSO has written two programs which will translate Zeta plot files (often called GML files) and Precision Visual's DI-3000 Metafiles (also referred to as PVI files) into the required CPDS format for output on the 3800. Both of these programs are interpreters which read the plot file and call IBM's GDDM subroutines to produce an equivalent 3800 graphics image.

The plot commands for queuing a Zeta plot file, a PVI Metafile, or a SCRIPT or GDDM produced CPDS file for output on the 3800 are described below.

Special Considerations When Using the File Translators

The following points should be kept in mind when using the Zeta and PVI Metafile translators.

1. Zeta Plot File to 3800 Translator (ZV3800)

   - Many users already produce Zeta plot files. This is a quick way for users to access the 3800 for graphics output. Any Zeta plot file should produce an acceptable picture on the 3800 with no effort.

   - ZV3800 has its roots in ZETAVU (the interactive Zeta plot file previewer). It uses the same character set as a Zeta plotter. The only unique aspect of this translator is the interpretation of pen number. Pen number is translated into a linewidth on the 3800. The following chart shows the correspondence of pen number to linewidth:

     pen 1 - 1 pel line (pel = 1/240 inch)
     pen 2 - 3 pel line
     pen 3 - 6 pel line
     pen 4 - 9 pel line

- The size of the plot may be a problem. The Zeta plotters can handle plots up to 100 feet long. Since there is no mechanism for the user to pass size information, we have to settle on one size: 8 1/2" by 11". A window of the plot file extending 8 1/2" by 11" from the origin is mapped into a slightly smaller area on the printer page (the printer requires a 1/2" margin at both top and bottom of the page, so the maximum usable area on a page is 7 1/2" vertical and 11" horizontal).

  Note that the orientation of a Zeta plot on the 3800 has the x-axis corresponding to the vertical direction and the y-axis corresponding to the horizontal direction, just as on a Zeta plotter.

- Multiple independent plots contained in the same Zeta plot file will be handled correctly (i.e. each will be plotted on a separate page, sized as described above). There will be a blank page between each plot. This blank page is a result of the way in which GDDM constructs the CPDS file, and cannot be removed.

  The recommended maximum number of pictures in a single plot file is 25. More pictures than this might cause the CPDS file being built to exceed the amount of disk space allocated to it. In this case, you will receive nothing back but an error message in the log (see next item) that indicates that the program ran out of space.

- Following your plots, there will always be a short set of log messages produced by the translator program. These messages will occur on a separate page, and indicate the number of plotted pictures and any error conditions that were encountered by ZV3800 while translating your file.

2. Precision Visual's (PVI) Metafile to 3800 Translator (PVM3800)

   - This translator allows greater functionality than ZV3800. The PVI Metafile format supports a much wider set of features than does the Zeta plot format, and the PVM3800 program takes full advantage of most of these options. The features supported include area fill, diverse fonts, and a large range of linewidths.

   - There is a document (Technical Note TN-107) which describes the mapping of DI-3000 functions and attributes into 3800-3 output. This is similar to the TN-10x series for other DI-3000 graphics devices. This document will soon be available at the various CSO sites which stock the Technical Note series.

   - A PVI Metafile has no physical size associated with it, so sizing should not be a problem. The Metafile is translated to fill the largest possible area on a single page of 3800 output (11" horizontal by 7 1/2" vertical).

     Note that for a PVI Metafile, the orientation of the plot on the 3800 printer is opposite that of a Zeta plot file. The x-axis corresponds to the horizontal direction, and the y-axis corresponds to the vertical direction.

   - Each picture contained in a PVI Metafile will be handled correctly (i.e. each will be plotted on a separate page, sized as described above). There will be a blank page between each plot. This blank page is a result of the way in which GDDM constructs the CPDS file, and cannot be removed.

     The recommended maximum number of pictures in a single plot file is 25. More pictures than this might cause the CPDS file being built to exceed the amount of disk space allocated to it. In this

case, you will receive nothing back but an error message in the log (see next item) that indicates that the program ran out of space.

- Following your plots, there will always be a short set of log messages produced by the translator program. These messages will occur on a separate page, and provide information on each plotted picture and any error conditions that were encountered by PVM3800 while translating your file.

- This PVM3800 translator program will soon also be available for interactive use from a CMS session. A **LINKTO PVM3800** will be provided, with appropriate help information and written documentation. The user will have more control over the translation of his file when run this way. In addition to scaling and sizing the plot for the 3800, a user could also output to an IBM graphics terminal or create a page segment which can be included into a SCRIPT document. This should be available in several months.

The various PLOT Commands and Parameters

For plotting from any host the concepts are the same, but the syntax and parameter names are slightly different. Files are queued for plotting using the following commands and parameters.

- VM/CMS (VMD) NPLOT command --

  NPLOT fn ft fm (DEST 3800 TYPE type

  where **type** has one of the four following values:

  1. ZETA - Zeta plot file (default)
  2. PVI - Precision Visual's (DI-3000) Metafile
  3. SCRIPT - SCRIPT (DCF) output file for the 3800
  4. GDDM - A CPDS file (usually with a filetype of ADMIMAGE) created by using IBM's GDDM.

- NOS 1 (NOSA - Cyber) PLOT command --

  PLOT,file/DEST=3800/TYPE=type

  type may be either ZETA or PVI. If you do not specify, the PLOT command tries to determine the format by reading the file.

- VMS (NCSAVMSA and NCSAVMSB) NPLOT command --

  NPLOT filename/DEST=3800/FORMAT=format

  where **format** has one of the following values:

  1. ZETA or GML - Zeta plot file (default)
  2. PVI or PVM - Precision Visual's (DI-3000) Metafile

Help is available on each of the above systems to describe these commands and parameters. The necessary parameters are a DESTINATION (DEST) of 3800, and a TYPE or FORMAT parameter which specifies

the plot file format. In addition, the usual plot parameters of BIN, BANNER, and COPIES are all applicable. You can also use the FORMS parameter (except on the Cyber), but note that this does not change the size of your plot, only the size of the paper it is plotted on.

Note: The plot parameters for pen color, style and size ***are not*** supported by the 3800, and ***should not*** be specified. (There is one exception to this which involves pen size and only applies when plotting a PVI Metafile. See TN-107 for more information.)

Cost of Plotting on the 3800

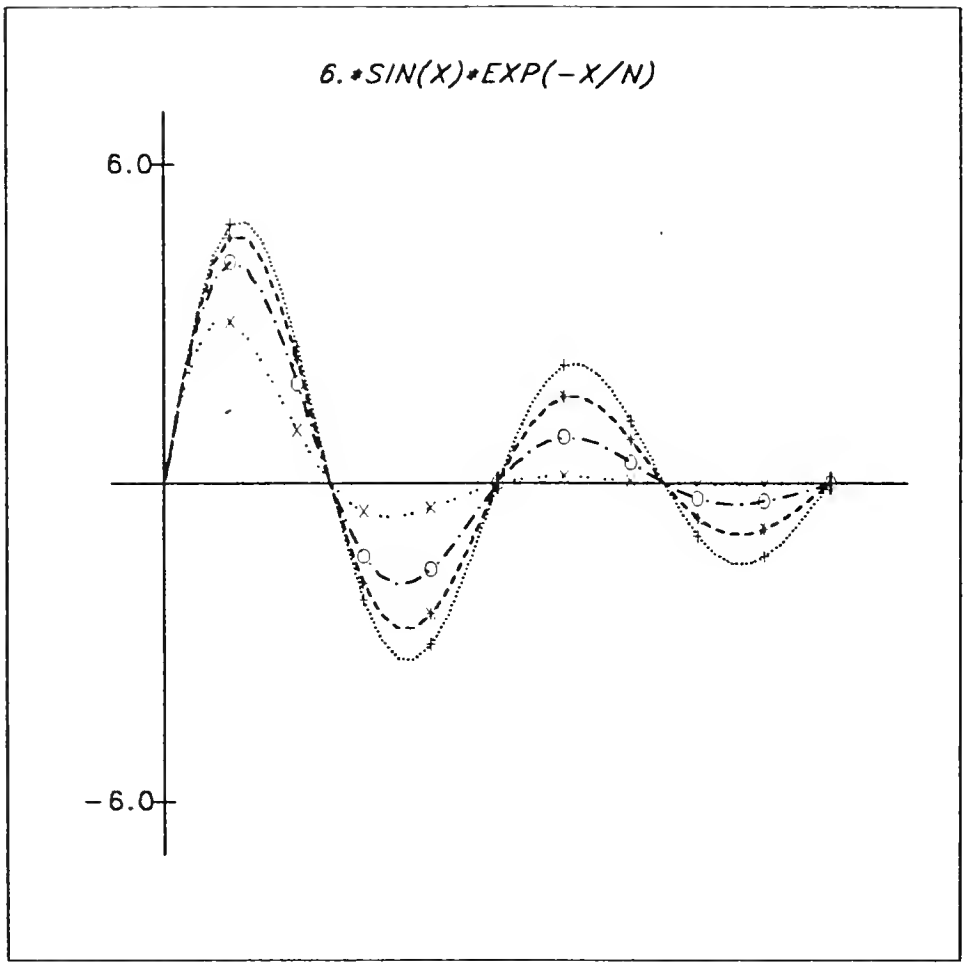
Charges for this service were discussed in the last *Off-Line* (May-June 1987). Basically, for Zeta and PVI Metafile plots, you are charged for the cost of translating your file into a format acceptable to the 3800 printer (i.e. CPDS format).

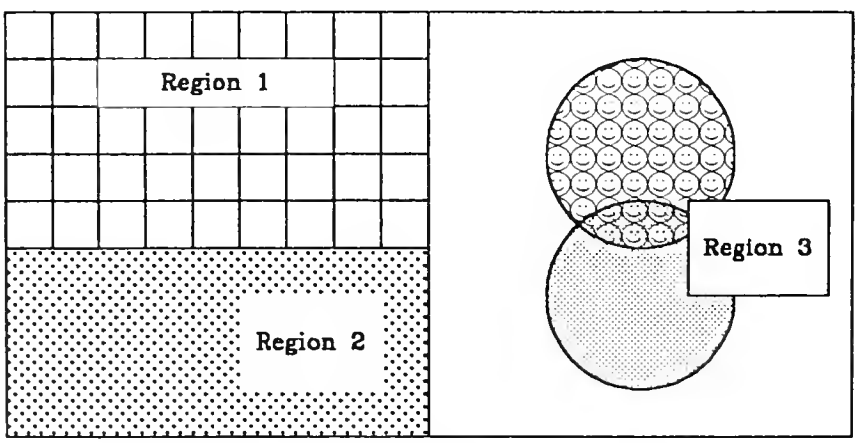
Looking at a charging formula, however, is a difficult way to get a feel for how much a "typical" plot might cost you. So to provide a concrete example, the picture on the following page was plotted on the 3800 from a PVI Metafile.

Four curves are plotted, each with 40 points and with a marker at every fourth point. This plot cost about $0.85 to produce. The same basic plot was also done using a Zeta plot file as the source, and this cost about $0.65 to plot. The PVI Metafile for this picture contained 96 records, while the Zeta plot file for the same picture contained 48 records.

This brings up another interesting point. If you are using a Precision Visual's product such as DI-3000, it is often just as easy to produce an output graphics file in either Zeta format or Metafile format. If you want filled polygons and lots of control over fonts, character sizes, linewidths, etc., then the Metafile format is generally more appropriate. But for a relatively simple x-y plot, as in this example, both formats can yield an acceptable plot. In this case, because the Zeta format is more compact and has less options, the Zeta format may be slightly cheaper to plot.

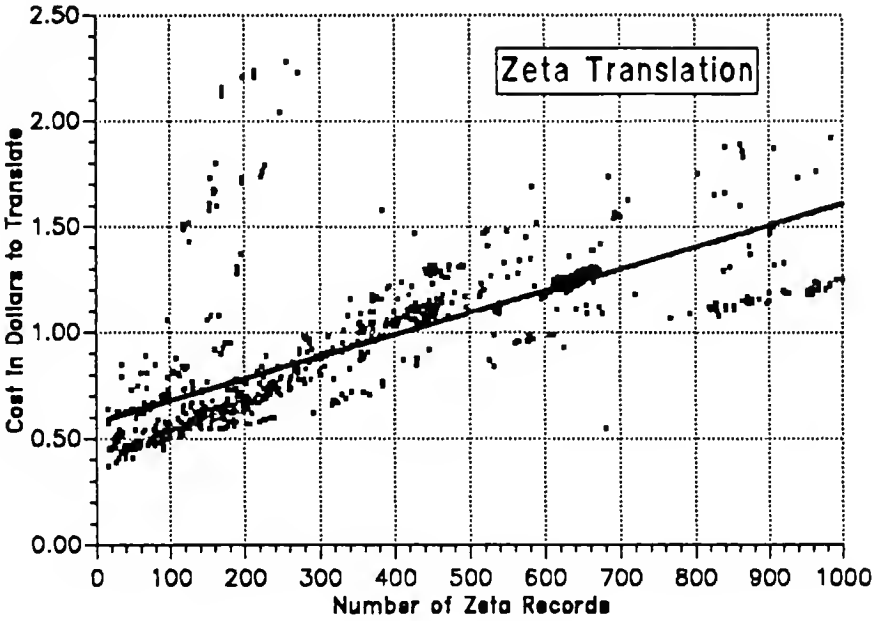
The second picture which follows was created using DI-3000 to output a PVI Metafile (80 record file). It is a simple example of using polygon fill, "hardware" fonts, and shielding regions with PVM3800. This picture cost $0.78 to produce on the 3800.

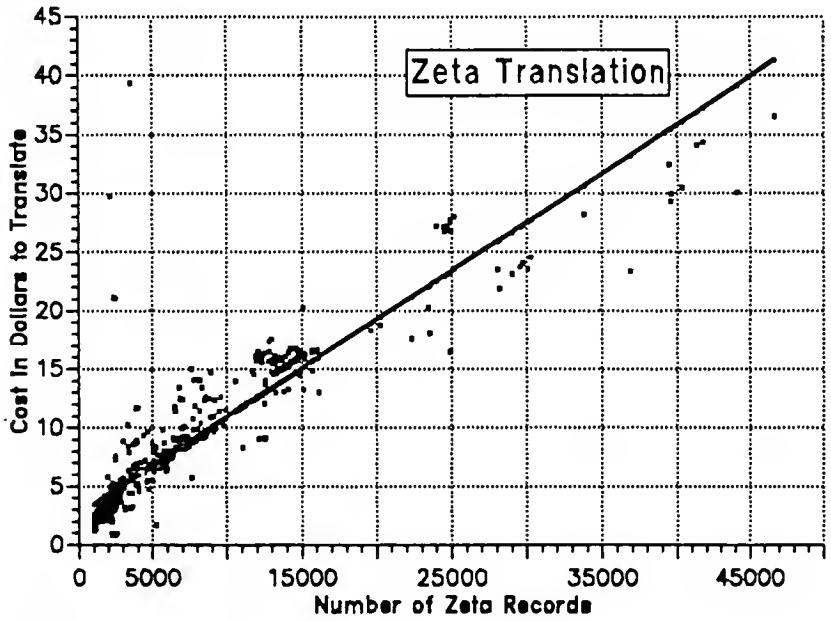




Example of Shielding Region Use

The following two graphs provide more data on the cost to plot a Zeta file on the 3800. Both graphs are scatter plots showing the cost of translating a Zeta plot file versus the number of records in the Zeta file. The first graph covers Zeta files up to 1000 records in length (contains about 1000 points). The second graph covers Zeta files of 1000 records or more (contains about 700 points). These graphs are based on data collected over the last two months on all files translated for the 3800. There haven't been enough PVI Metafiles processed to produce a useful graph at this time.





Note that there is a fitted line in the scatter plots, but that there is considerable deviation from this line. Examining these charts will give you a feel for the "average" cost of translating a Zeta file of a given size for output on the 3800, and some idea of the possible minimum and maximum costs that could be encountered.

The Link Between Linewidth and Cost

One factor which affects the cost of translating either a Zeta file or a Metafile for the 3800 is the linewidth used for all vectors. The default linewidth for both Zeta plot files and PVI Metafiles is 1 pel (1/240 inch). You can get thicker lines by specifying a pen number greater than 1 in the program which generates your plot file. The linewidth associated with each pen number was shown above. (Note that this is specified as a setting in your program when you are generating your plot file, and cannot be specified on the PLOT/NPLOT command.) In a Metafile there are a variety of ways to control linewidth (see TN-107).

The IBM GDDM software which creates a CPDS format raster file for the 3800 takes a longer time to process lines which are thicker than 1 pel than those which are 1 pel in thickness. This is at least partly because the software considers vectors which are more than 1 pel thick to be areas, and not simple lines.

The effect of this on the cost of translating your file depends on the number of vectors (line segments) in your plot file. If your plot file contains a small number of vectors, the difference in cost between plotting your graph with 3 pel thick lines instead of 1 pel thick lines is minimal. But if you have a large plot file, the difference in cost can be dramatic.

Several examples will help illustrate the possible cost variations. The following chart shows the cost of translating 5 plot files, alternately using 1 pel lines and 3 pel lines.

Filetype	Number of Records	Line Width (pels)	Cost to Translate (dollars)	Comment
Zeta	48	1	$0.52	4 pictures, simple box and a little text.
		3	0.67	
Zeta	13000	1	12.03	Very complex scatter plot.
		3	56.95	
Metafile	96	1	0.81	The above sine wave graph.
		3	0.85	
Metafile	112	1	1.68	Variety of fonts; all hardware characters.
		3	4.89	
Metafile	13000	1	8.05	Large metafile; graph with multitude of vectors.
		3	85.86	

The cost differential is obviously significant when the plot file is very large.

The moral is to use thicker lines only when necessary. Your plot is "darker" when you use thicker lines,

but you pay for it both in the amount which you are charged for the plot and because the effective maximum resolution of your plot is potentially reduced. (If you use 3 pel lines, 3 points are ''used up'' in the raster image being built for every single point in your plot.)

Error Messages

The software which actually drives the 3800 printer is Print Services Facility (PSF). Certain errors are detected only at print time. One cause of such an error is attempting to plot an ''empty'' Zeta plot picture (i.e. a picture which contains no vectors). Other errors may indicate that there has been a paper jam and a page may be reprinted, that the printer is out of memory because too many fonts were requested, or that there was a printer storage problem and a page was printed again.

In any case, PSF will issue a message describing the problem. PSF errors are usually printed in a separate dataset at the end of a user's job, but may print in the midst of a job. A recovery from a paper jam that may result in some pages printing twice may have the PSF message printed in-line (on a separate page) at the point where pages were duplicated.

A copy of the PSF messages manual is available at the Consulting Offices, to help diagnose problems. Some problems, like "page too complex" or "not enough font storage in the printer", simply can't be solved, only explained. They reflect hardware limitations. However, such unsolvable problems should not occur frequently.

INTRODUCTION TO IP NETWORKS AT UIUC

Ross Veach

The proliferation of computers of all makes and sizes has greatly expanded the need to communicate information between different computers at different locations. Advanced technology has enabled this communication to take place electronically over a shared set of resources called a network. In order for any two computers to communicate over a network, they, along with some components of the network, must agree to speak the same language. Such languages are called protocols. The University of Illinois has decided to participate in a worldwide network called the Internet, which uses the Internet Protocol (IP) to route information between computers. The purpose of this document is to provide the newcomer with an introduction to general Internet concepts and terminology and an introduction to the Internet configuration at UIUC.

The Internet is actually composed of a large number of separate physical networks. A common example of a physical network is an Ethernet, where many computers are attached to the same coaxial cable. When a computer (the source) wishes to send a message packet to another computer (the destination) attached to the same physical network, it sends the packet directly. Thus, all computers attached to the same physical network can communicate with each other directly.

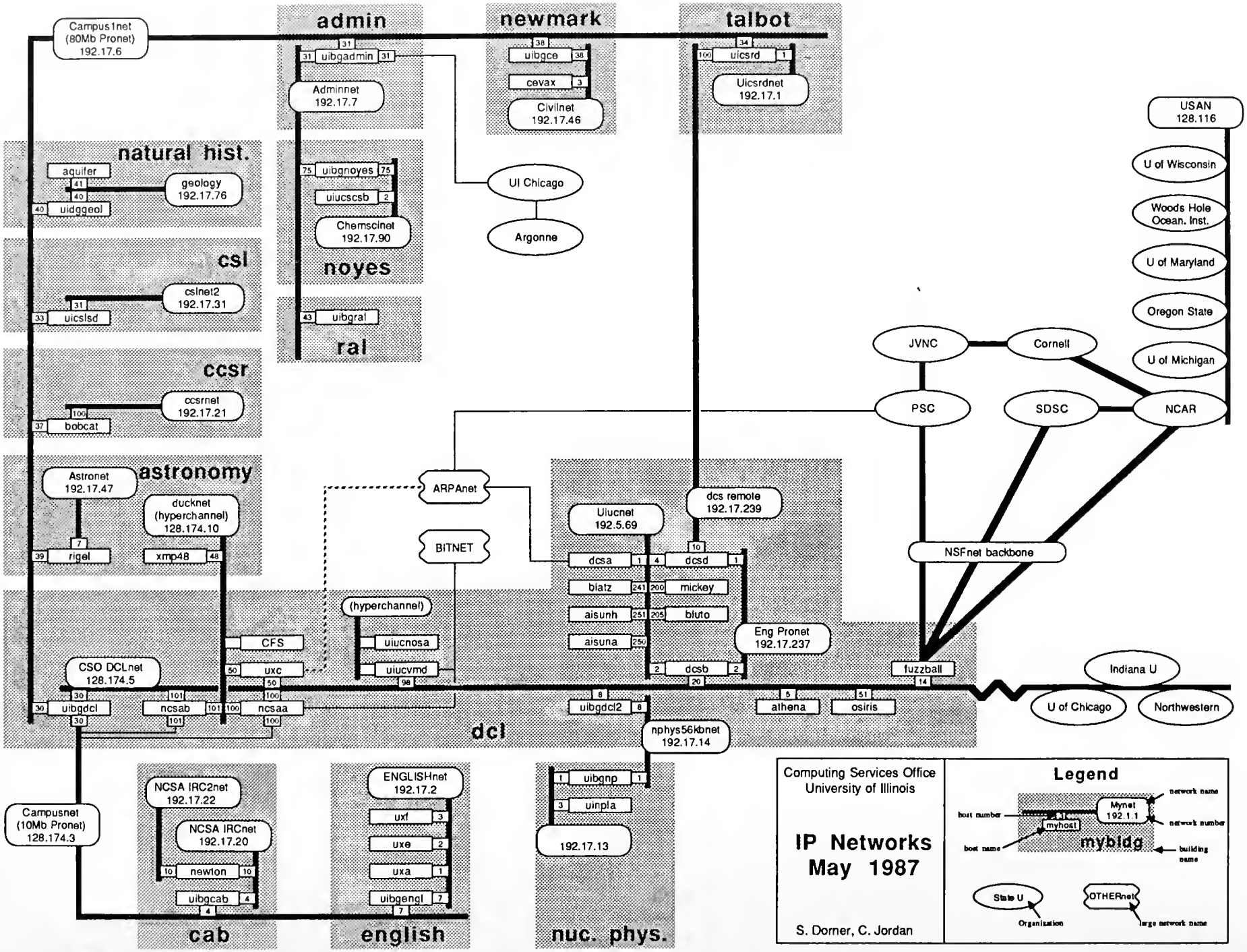
Physical networks can be interconnected by network components called gateways. A gateway is a computer that forwards selected message packets from one physical network to another. One gateway can be attached to two or more physical networks. Several gateways can be attached to the same physical network. When a source wishes to send a packet to a destination on a different physical network, it sends the packet to a gateway on the source's physical network. If that gateway is also on the destination's physical network, the gateway sends the packet directly to the destination, otherwise the gateway forwards the packet to yet another gateway which is "closer" to the destination. The forwarding process is repeated until the packet reaches a gateway on the destination's physical network. Thus, all computers attached to the Internet can communicate with each other with the aid of gateways.

A computer on the Internet is identified by an address. An Internet address is usually represented as a series of four base-ten numbers between one and 254 separated by periods. Each of these four numbers represents one 8-bit byte (known as an octet in Internet lingo) of the 32-bit address. A computer has a unique address for each physical network to which it is attached. As implemented at UIUC, the first three octets of an address correspond to the physical network and are cumulatively called the network number. The fourth octet refers to the individual computer on that physical network and is called the host number. For example, UXC (one of the CSO hosts) has two addresses, 128.174.5.50 and 128.174.10.50, one for each of the physical networks to which it is attached.

A computer on the Internet may also be referred to by a name, which can be translated into an address either by using a host lookup table or by using a network component called a name server. Names are divided into hierarchical levels called domains, with the lowest level being the name of the computer itself within its parent domain. Domain names represent organizational or administrative boundaries and as such bear no relationship to the physical networks. Full names are represented as a series of names separated by periods, with the lowest level (host) name on the left. For example, UXC has the full name UXC.CSO.UIUC.EDU and one of the machines belonging to the Department of Computer Science has the full name DCSA.CS.UIUC.EDU. Although names within different domains (e.g., CSO.UIUC.EDU and CS.UIUC.EDU) do not have to be unique, at UIUC an attempt will be made to keep the names of network components and publicly accessible computers unique within the UIUC.EDU domain.

The Internet configuration at UIUC is based on high-speed fiber optic physical networks attached to gateways in many buildings on campus. These high-speed networks are called backbone networks, the gateways are called building gateways. The buildings have their own internal physical networks, which are attached to the building gateways. These internal networks are called building networks. Some building networks extend between buildings (or even off-campus), some buildings have more than one building network, some buildings have more than one building gateway, and some buildings are not attached to the network at all. The configuration is constantly changing, and will continue to do so for some time.

The following diagram depicts the current Internet configuration at UIUC. This diagram shows the significant physical networks, the gateways between these physical networks, the gateways to networks outside of UIUC, and the significant publicly accessible computers at UIUC. Each physical network is annotated with its network number. Each gateway and publicly accessible computer is annotated with its name. Connections between gateways or publicly accessible computers and physical networks are annotated with the host number on the physical network.


Campus1net
(80Mb Pronet)
192.17.6
admin
31
31 uibgadmin 31
Adminnet
192.17.7
newmark
38
uibgce 38
cevax 3
Civilnet
192.17.46
talbot
34
100 uicsrd 1
Uicsrdnet
192.17.1
natural hist.
aquifer
41
40
geology
192.17.76
40 uidggeol
75 uibgnoyes 75
uiucscsb 2
Chemscinet
192.17.90
noyes
UI Chicago
Argonne
csl
31
33 uicslsd
cslnet2
192.17.31
43 uibgral
ral
ccsr
100
37 bobcat
ccsrnet
192.17.21
USAN
128.116
U of Wisconsin
Woods Hole
Ocean. Inst.
U of Maryland
Oregon State
U of Michigan
JVNC
Cornell
PSC
SDSC
NCAR
astronomy
Astronet
192.17.47
ducknet
(hyperchannel)
128.174.10
7
39 rigel
xmp48 48
ARPAnet
BITNET
Uiucnet
192.5.69
dcs remote
192.17.239
10
dcsa 1 4 dcsd 1
blatz 241 200 mickey
aisunh 251 205 bluto
aisuna 254
2 dcsb 2
20
NSFnet backbone
Eng Pronet
192.17.237
(hyperchannel)
uiucnosa
uiucvmd
98
CFS
50 uxc 50
100
CSO DCLnet
128.174.5
30 101
30 uibgdcl 30
ncsab 101 100 ncsaa
101 100
dcl
8
uibgdcl2 8
athena
5
osiris
51
fuzzball
14
Indiana U
U of Chicago
Northwestern
nphys56kbnet
192.17.14
Campusnet
(10Mb Pronet)
128.174.3
NCSA IRC2net
192.17.22
NCSA IRCnet
192.17.20
10 newton 10
uibgcab 4
4
cab
ENGLISHnet
192.17.2
uxf 3
uxe 2
uxa 1
uibgengl 7
7
english
1 uibgnp 1
3 uinpla
192.17.13
nuc. phys.
Computing Services Office
University of Illinois
IP Networks
May 1987
S. Dorner, C. Jordan
Legend
network name
host number
Mynet
192.1.1
network number
myhost
mybldg
host name
building
name
State U
Organization
OTHERnet
large network name

EDITION 10 OF THE IMSL LIBRARY

Stan Kerr

CSO has received materials for Edition 10 of the IMSL Library for the CDC and IBM systems. Edition 10 represents a very radical reorganization of the IMSL Library; this article explains essentials of the new library, how to access it and how to get documentation for it.

Because the new library is so radically different from the old, IMSL has promised to continue supporting the old (edition 9.2) library for another 2 years, until June 1989. CSO will continue to support the old version until that time as well.

Structure of IMSL Edition 10

With Edition 10, IMSL has split the Library into three separate libraries, all independent and separately licensed:

- MATH/LIBRARY -- this contains general mathematical subroutines, in areas such as linear equations, eigenvalue analysis, differential equations, etc.
- SFUN/LIBRARY -- this contains a variety of special functions, such as bessel functions, elliptic integrals, gamma functions, and various probability distribution functions.
- STAT/LIBRARY -- this contains general statistical subroutines, in areas such as basic statistics, correlation, analysis of variance, regression etc.

CSO has licensed all three libraries for both the Cyber and the IBM systems.

Accessing IMSL Edition 10

The new library can be accessed on the Cyber by the command

GRAB,IMSL/F

This accesses several files, named IMSLM, IMSLS, IMSLF, and IMSLINT. The first three comprise the library itself, and the fourth is an "interface library", explained later.

Because the Cyber is not at this time expected to remain longer than another year, IMSL Edition 10 will be accessed in this manner for the remaining life of the Cyber. For convenience, the alternate GRAB command,

GRAB,IMSL10

has also been created to access the new libraries.

On the VMD system, the new IMSL can be accessed by the command

LINKTO IMSL (F

This command will be necessary until Edition 10 becomes the default version of IMSL on **January 4,** 1988. At that time, the command

LINKTO IMSL

will be used to access Edition 10, and

LINKTO IMSL (P

will be necessary to access the old, Edition 9.2, library. The Edition 9.2 library will be retained until IMSL drops support for it in June 1989.

Documentation for IMSL Edition 10

In addition to the on-line documentation described later, IMSL sells manuals for the new library in three forms.

- Manuals can be purchased in ringbound form, as before -- there are 3 volumes for MATH ($45), 3 volumes for STAT ($45) and I volume for SFUN ($15).
- IMSL now also sells paperbound forms of the manuals for much less than the ringbound form; each library is covered in a single paperbound volume ($15 for MATH, $15 for STAT, $7 for SFUN).
- Finally, each library has a small quick reference manual which sells for $1 if ordered directly from IMSL; these quick references are excellent summaries of the routines and list all the formal parameters of the subroutines, though there is of course no room for explanations of the routines.

CSO is now stocking the quick reference manuals at the Distribution Center at 1208 W. Springfield at a charge of $2 each; if there is sufficient demand for the paperbound manuals, CSO will consider stocking them as well.

Some supplementary documentation, describing Edition 10 in more detail than can be covered here, can be found in the CSO Systems and Statistical Consulting offices. This supplementary documentation provides further details on the new features in Edition 10, and on the Interface Library described below.

Writeups for the new IMSL can be obtained on the Cyber through the MATH procedure, by first entering

GRAB,MATH

to access MATH, and then entering one of the following:

1. MATH,IMSL10

   This retrieves a catalog of all the routines in the library. The catalog is placed in local file DOC. As the catalog is long, we recommend printing it on the IBM 3800 laser printer at DCL, using the following options:

PRINT,DOC/DEST=3800/PAGEDEF=LR60/FONT=GT12

This prints it in a book format convenient for filing.

2. **MATH,IMSL10,xxx**

   This is used if you want a writeup for subroutine xxx in the library. The writeup is placed into local file DOC.

On VMD, once the Edition 10 library has been linked by the LINKTO IMSL (F command, a set of help files may be viewed by entering the command

HELP IMSL MENU

This displays a menu of help files, containing descriptions of all the major Edition 10 routines. Help files may be selected from this menu, or directly from CMS command level by entering

HELP IMSL xxxxxx

where xxxxx is the name of an IMSL routine or help file. In particular,

HELP IMSL SUMMARY

provides detailed summary information on Edition 10.

The IMSL Interface Library

To ease the transition from the old routines to the new, IMSL has provided an "interface library." This is accessed, as file IMSLINT, when the GRAB,IMSL/F command (or GRAB,IMSL10) is entered. On VMD, it is provided as an additional library file, called INTIMSL TXTLIB, when the IMSL Edition 10 disk is linked. (We apologize for the inconsistency of names; it was dictated by circumstances.)

The interface library contains routines which correspond to most of the old Edition 9.2 routines (except for some, such as the Basic Linear Algebra Subroutines, which have not changed); these routines then call the correct routines of the new libraries, or print messages explaining how to convert to some equivalent routine of the new library.

Source code for the interface routines is freely available via the MATH utility on the Cyber and via HELP on VMD. As described earlier, MATH is accessed by entering the command

GRAB,MATH

Following this, the command

MATH,IMSLINT,xxx

can be used to retrieve source of routine xxx in the interface library. For example, if one commonly uses routine LEQT1F to solve a system of linear equations using the old library, then

MATH,IMSLINT,LEQT1F

will provide source of the interface routine LEQT1F, which can be studied to see how to convert the call to LEQT1F.

On VMD, the command

HELP INTIMSL MENU

can be used to view a menu of help files for the interface routines, or

HELP INTIMSL xxxxxx

may be used to view the help file for routine xxxxxx. The help files for the interface library are in fact the complete Fortran source code for the respective routines. The help file for LEQT1F could be viewed, for instance, by entering

HELP INTIMSL LEQT1F

or it could be copied into a file on the A disk by entering

COPY LEQT1F HELPINTI * = FORTRAN A (RECFM F LRECL 80

This copies the help file (LEQT1F HELPINTI) into file LEQT1F FORTRAN on the A disk, ensuring that it is converted to fixed length records of length 80, as required by VS Fortran 1.4.1 (but not by VS Fortran 2.1.1, announced elsewhere in this issue).

Access to Source Code for Edition 10

In the past, CSO has obliged researchers who needed source of IMSL routines for transport to other systems so a particular program could be run in an environment where the IMSL library was not licensed. The source has been provided as a courtesy, even though IMSL prefers that their proprietary software not be used in such a fashion. We are pleased that no one to date has abused this courtesy by accumulating bits and pieces of IMSL in order to build a computing library on another system.

With Edition 10, however, the structure of the routines has changed in ways that will make it very difficult to transport some codes to other environments; in particular, there are large numbers of low-level utility routines used. As a result, CSO cannot continue to provide source in the same fashion as before. In the future, if source of a routine is requested, only the routine itself, and any primary routines it calls, will be provided. Internal storage management and error management routines will not be provided.

Please note that source is provided so that an existing program can be run in another environment, not because a routine is desired for general use in the alternate environment.

Users who need to transport a research code to another campus system where IMSL is not licensed must provide a compelling reason for acquiring the source of the IMSL routine (with all its attendant utilities); they are encouraged to find an equivalent routine on their chosen system, or to acquire routines which are in the public domain and present no licensing problems. CSO can help locate alternate codes to use.

Those interested in access to source for IMSL Edition 10 should call Stan Kerr at 333-4715, or send him electronic mail from any CSO computer system to userid STANKERR on UIUCVMD: From the Cyber, use TELL,STANKERR@UIUCVMD From the IBM systems, use BITNOTE STANKERR at UIUCVMD

Contents of the Edition 10 Libraries

The main chapter headings of the new libraries are listed below to show the scope of the libraries. The alphabetical organization of the old library is not used for the new libraries; the new routines are named as mnemonically as possible, however, and many fall in groups with related names, thus making them easier to remember and recognize.

MATH/LIBRARY --

Chapter 1 : Linear Systems
Chapter 2 : Eigensystem Analysis
Chapter 3 : Interpolation and Approximation
Chapter 4 : Integration and Differentiation
Chapter 5 : Differential Equations
Chapter 6 : Transforms
Chapter 7 : Nonlinear Equations
Chapter 8 : Optimization
Chapter 9 : Basic Matrix/Vector Operations
Chapter 10 : Utilities
Chapter 11 : Reference Material

SFUN/LIBRARY --

Elementary Functions
Trigonometric and Hyperbolic Functions
Exponential Integrals and Related Functions
Gamma Function and Related Functions
Error Function and Related Functions
Bessel Functions
Kelvin Functions
Bessel Functions of Fractional Order
Elliptic Integrals
Weierstrass Elliptic and Related Functions
Probability Distribution Functions and Inverses
Miscellaneous Functions

STAT/LIBRARY --

Chapter 1 : Basic Statistics
Chapter 2 : Regression
Chapter 3 : Correlation
Chapter 4 : Analysis of Variance
Chapter 5 : Categorical and Discrete Data Analysis
Chapter 6 : Nonparametric Statistics
Chapter 7 : Tests of Goodness of Fit and Randomness
Chapter 8 : Time Series Analysis and Forecasting

Chapter 9 : Covariance Structures and Factor Analysis
Chapter 10 : Discriminant Analysis
Chapter 11 : Cluster Analysis
Chapter 12 : Sampling
Chapter 13 : Survival Analysis, Life Testing, and Reliability
Chapter 14 : Multidimensional Scaling
Chapter 15 : Density and Hazard Estimation
Chapter 16 : Line Printer Graphics
Chapter 17 : Probability Distribution Functions
Chapter 18 : Random Number Generation
Chapter 19 : Utilities
Chapter 20 : Mathematical Support

Differences from Edition 9.2

Below are listed some notable differences of the new edition from the old, aside from those already mentioned.

1. Routines are usually supplied in single and double precision.

   In the Edition 9.2 library, a routine is generally provided in only one precision (single or double), and may be in different precisions on different systems. For example, routine LEQT1F for solving linear systems is provided in single precision on the Cyber, and in double precision on VMD. In Edition 10, there are usually both single and double precision versions of each routine. A particular routine name represents the same precision of computation across all systems on which it is available. For example, routine LSARG for solution of linear systems is single precision on both the Cyber and VMD. (Single precision on the Cyber represents about 14 decimal digits of significance, where single precision on VMD represents about 6 decimal digits of significance, so there is still a difference in interpretation.) The double precision version of a routine generally has the letter D prefixed to the name of the single precision routine. The double precision version of LSARG is DLSARG.

2. Work arrays are handled differently.

   Many routines of the old library require the user to create and dimension one or more arrays which the routine needs to work with, but whose contents the user can ignore when the routine is done. With Edition 10, the user has the option of calling routines without having to dimension extraneous arrays; all the work space required by the routine is taken from a large common block called WORKSP. The default size of this common block is 5000 words on the Cyber, but the user can easily increase its size by declaring the common block in the main program with the desired size and then informing IMSL of the size of the work common by calling a special routine (IWKIN). The main program might look like the following:

```
PROGRAM MAIN
COMMON/WORKSP/ WORK(6000)
CALL IWKIN(6000)
.
.
.
END
```

In this instance, the work array is declared with 6000 words. IWKIN is called to inform the IMSL routines of this. On VMD, the common is assumed to be dimensioned in units of REAL*4 or single precision real numbers; the number of REAL*4's is given to IWKIN as the size of the common block. If WORK above had been declared REAL*8, then IWKIN would be called with 12000 as the parameter; otherwise, IMSL would allow itself to use only half the workspace.

This method of handling work space can relieve the user of the burden of calculating sizes of additional arrays and placing them in the subroutine calls, but it has some drawbacks. In particular, if the workspace common block, WORKSP, is not large enough, the IMSL routines may fail and stop the program. To alleviate such problems, IMSL has provided alternate versions of all routines which use the workspace common; with the alternate version, the user can explicitly provide all the work arrays needed by the routine. The name of the alternate version is always obtained by replacing the second letter of the original routine with the numeral 2. For example, for routine LSARG the alternate version is L2ARG, and for routine DLSARG the alternate version is DL2ARG.

3. Error handling is different in Edition 10.

   With many of the old routines, the last parameter of the routine was an error flag, denoted IER, used to communicate to the user some error condition from the routine. Most errors also caused a message to be printed. "Fatal" errors caused the program to stop. The handling of errors, including whether messages were printed or the program was stopped, could be controlled by calling a utility routine, UERSET.

   In Edition 10, there is no explicit error flag parameter for each routine. Instead, an integer-valued function, IERCD, can be called by the user's program to find the error code set by the most-recently-called routine.

   For example, the statement

   ```
   J = IERCD()
   ```

   sets J to the value of the error code most recently set by an IMSL routine.

   A utility routine, ERSET, is provided which can be used, as before, to determine whether error messages should be printed or the program stopped, and for which classes of errors this should be done. One type of error, however, permits no recourse; this is called a "terminal" error and usually indicates that some parameter of the routine was specified incorrectly, such as a dimension. The program is always stopped for a terminal error.

4. Symmetric storage mode for matrices has been dropped, and band storage mode has changed.

   Edition 10 routines which use symmetric matrices require that a full matrix be passed to the routine, but they use only the upper triangle of the matrix. Band storage mode has changed to a form in which the co-diagonals of the matrix are pushed vertically to become rows; elements remain in their original columns.

Questions about IMSL Edition 10 should be taken to Stan Kerr on the CSO Systems Consulting staff.

ANNOUNCING A NEW SECURITY FEATURE ON VMD

Beth Engelbrecht-Wiggans

When the latest release of VMSECURE was installed, we also installed the VMSECURE RULES Facility. With RULES, you can control access to your virtual machine, its minidisks and your tapes by putting rules in the RULES database. Each time one of the commands which RULES controls is issued, CP passes the request to VMSECURE. VMSECURE then checks its RULES database to find the rule that applies to the request. The rule is then examined in the following way:

- If the rule begins with ACCEPT, the command is executed as requested.
- If the rule begins with REJECT, the command is not executed and a message is sent to the user.
- If no rule is found, the command is accepted.

Creating RULES

You can use the RULES subcommand of VMSECURE to create, modify or delete a rules file that affects how virtual machines, minidisks and tapes can be accessed by others. To access VMSECURE type:

LINKTO VMSECURE

To edit your rules file after VMSECURE is linked, issue the following command:

VMSECURE RULES

The RULES subcommand invokes XEDIT on your own rules file. Your default rules file contains the rules syntax. After updating your rules file, enter FILE on the XEDIT command line. If VMSECURE detects any syntax errors, a diagnostic message is displayed and you are asked if you want to correct the error or view a HELP screen. If you choose not to correct the error, the rules file is restored to its original form. When you complete and file your changes and VMSECURE determines that all rules have the correct syntax, the modified rules file is sent to the VMSECURE RULES database.

RULES Authorization Structure

There are three levels of authorization for RULES: general users, security group managers, and VMSECURE system administrators. The general user can create and change rules that pertain to their own userids, minidisks and tapes. Security group managers can create and change rules for their own userids and for userids in their security groups. The VMSECURE system administrator can create and change rules for any userid. The VMSECURE system administrator also determines which userids are to be assigned to each security group manager.

Since there are a number of rules files in the RULES database, the search for the rule that applies to a particular request starts at the system level. System rules are created by the VMSECURE system administrator and take precedence over all other rules in the database. If a rule that applies to a particular request is found at the system level, that rule is used and no more levels are searched.

If a rule is not found at the system level, the target userid's security group rules are searched. Rules for a particular security group are created by the security group manager or the system administrator. If a rule is found in the security group rules file, no more levels are searched. If a rule is not found, the target user's rules files are searched next. If a rule is not found, the security group and the system defaults are checked. If no rule is found, then the command is accepted.

A warning message is displayed when you create a rule that is overridden by a rule at a higher level. For example, suppose user GEORGEW creates a rule that allows JAMES to link to his 191 minidisk. However, GEORGEW's security group manager forbids such links. The following message would be displayed when GEORGEW updates his rules file:

```
GROUP RULE: REJECT * LINK 191 *
OVERRIDES USER RULE: ACCEPT JAMES LINK 191
USER 'GEORGEW' RULES UPDATED
R;
```

These messages would be displayed every time GEORGEW makes a change to his rules file. The user rule or the group rule must be deleted or changed for user GEORGEW's link rule to become effective.

Example Rules

Conditional Access to Minidisk With Your Minidisk Password

The following rule would give JANE conditional access to your 191 minidisk:

```
ACCEPT JANE LINK 191 RR
```

Now, when JANE links to your 191, she must enter the read password associated with your minidisk. To reject the same request from all other userids, you add a REJECT rule:

```
REJECT * LINK 191 RR
```

Now only JANE could link your 191 in read mode. Even if JANE tells JOHN your read password, JOHN cannot link to your 191 minidisk with read-only access.

Conditional Access With the Requester's Password

Another way to specify a conditional access requires the requesting users to supply their own logon passwords. This approach frees you from establishing minidisk passwords and from making sure the appropriate people know your current minidisk password. The following rules specify that JANE is allowed to link to your 191 minidisk in read mode if JANE supplies her own logon password. All other users are restricted from linking in read-only mode to your 191 minidisk:

```
ACCEPT JANE LINK 191 RR (LOGPASS
REJECT * LINK 191 RR
```

Unconditional Access

To allow Jane to get a read link to your 191 minidisk without specifying a password, add the NOPASS option to JANE's rule:

```
ACCEPT JANE LINK 191 RR (NOPASS
REJECT * LINK 191 RR
```

Controlling Tape Access

Use the VMTAPE MOUNT rule to control who can mount one of your tapes. Tape rules have a rigid structure. First the tape **must** be referred to by its rack number, and secondly the option NOPASS must appear in the options list. The NOPASS option is required for CSO's tape handling routines to work properly. For a list of the other tape options, see the *VMSECURE RULES Facility* manual.

If you would like to allow ANDY to mount your tape SCRAEW-X158 in read/write mode you would use the following command:

```
ACCEPT ANDY VMTAPE MOUNT VOLUME X158 * (NOPASS
```

This rule would allow ANDY to mount your tape in read or write mode (*). In addition, you may wish to reject all other attempts to mount your tape by adding:

```
REJECT * VMTAPE MOUNT VOLUME X158 * (NOPASS
```

To allow SUSAN to mount your tape in read-only mode, you would add the following rule:

```
ACCEPT SUSAN VMTAPE MOUNT VOLUME X158 READ (NOPASS
```

For more information on the VMSECURE RULES Facility, please get the manual, *VMSECURE RULES Facility*, at the CSO Distribution Center, 1208 W. Springfield, Urbana.

VMTAPE: TAPE MANAGEMENT FACILITY FOR VMD

Scott LeBaron

Beginning **September 15, 1987** all tapes used on the VMD system will be incorporated into a new facility that will give security to tape mounts and keep timely and orderly statistics on tape usage. The facility is from VM Software and is called VMTAPE.

As a user, you will not have to alter any commands. The MOUNT command remains the same. VMTAPE will be there, however, to give you more security in several ways.

Security

The first security check is done at the MOUNT command level. Your requested volser (tape name or label) and rack number pair are checked for consistency; that is, that the rack number you requested does indeed have the stated volser. This information is kept by VMTAPE in its "Tape Management Catalog" or TMC. If the pair do not match, you are issued an error message and your request is not processed.

Once you issue a valid mount request, the operator physically mounts your tape on a drive, as usual. VMTAPE will then make further security checks. It checks the status of the write ring to be sure your tape is mounted in the requested mode. If you ask for read-only (RING OUT), but VMTAPE sees that the tape

has a write ring in, it will dismount the tape and prompt the operator to correct the situation. Your request is NOT canceled and you need not take any further action.

Also, if your tape is standard labeled, VMTAPE checks the tape label on the drive and compares this to the label (volser) is has in the TMC. On a mismatch, the tape is again dismounted, and a message sent to the operator. And again, you will not have to take any further action.

This is the ideal situation for VMTAPE. CSO recommends labeling your tapes so this security feature can be performed.

*** Once you have a labeled tape, do not alter the label in any way. If you do so, the label will no longer match what VMTAPE has in its TMC, your tape will not pass the label-checking feature, and the tape will not be mounted until you come to 123 DCL to let CSO know what change you made to your label. ASCII labels CANNOT be read by VMTAPE and are therefore regarded as non-labeled tapes.

Allowing Others Access

VMTAPE keeps ownership information on tapes and, by default, this owner is the only one allowed to mount the tape. With VMSECURE RULES, however, you can control who gets access to your tapes and in what mode (READ or WRITE).

For example, to let user ERNIE mount your tape on rack X158 in read-only mode, you would add the following line to your RULES file:

```
ACCEPT ERNIE VMTAPE MOUNT VOLUME X158 READ (NOPASS
```

The (NOPASS is required for CSO's installation of VMTAPE.

For VMBATCH users, you must use this method to give the batch machines access to your tapes. You can use the GROUP parameter to give ALL batch machines access to ALL of your tapes if you add the following line:

```
ACCEPT BATCH VMTAPE MOUNT * WRITE (NOPASS GROUP
```

BATCH is the group name given to the group whose members are the VMBATCH machines. The asterisk (*) is used to specify that any tape of yours can be mounted.

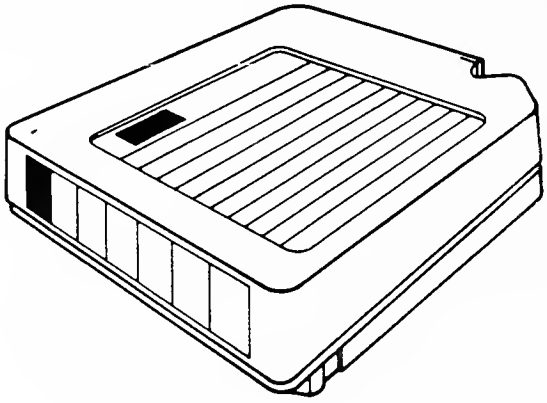
For further information on VMSECURE RULES, refer to the *VMSECURE RULES Facility Guide*, or the VMSECURE RULES articles in this issue of *Off-Line* (article before this one).

INTRODUCING THE AVAILABILITY OF THE 3480 TAPE SUBSYSTEM ON VMD SYSTEM

Scott LeBaron

The Computing Services Office is pleased to announce the availability of a new generation of tapes for the 3081-VMD system. These are the 3480 tape cartridges. Software commands and hardware interface are identical to the existing tape system, while an improvement in price and productivity is obtained.

The cartridge itself is about the same size as an 8-track tape cartridge you used to play on your stereo. The plastic casing is about 4 inches by 5 inches by 1 inch (100mm X 125mm X 25mm). See the figure below. The casing encloses the actual tape, which is 1/2-inch wide and has a chromium dioxide coating, rather than iron oxide, which has been used on conventional reel tapes. This chromium dioxide coating permits higher bit densities and better signal output. Identifying labels can be placed on recessed areas on the front edge of the tape or on the top.



What about comparisons to the current reel tapes? The 3480 cartridge offers many advantages over the conventional reel tapes. Some of these advantages are discussed here.

HANDLING

The 3480 cartridge is much smaller than a reel tapes and its rectangular shape makes it very easy to stack up and store or carry. The smaller size also permits you to store more tapes now in the same amount of space.

DATA CAPACITY

Although it's smaller, the 3480 cartridge can hold about 20% MORE data than the typical reel tape. The approximate capacity of the 3480 cartridge, written in 24 K-byte blocks, is 200 megabytes. A standard 3420-type, 10-1/2 inch, 2400 foot reel, at 6250 bpi with 24 K-byte blocks, has a capacity of approximately 165 megabytes.

PRICE

3480 cartridges are cheaper to purchase than standard 3420-type tapes. A reel tape purchased through the CSO Accounting Office would cost you $24. The 3480 cartridge will cost you just 1/2 that...$12! These tapes will also be available at the CSO Accounting Office.

SPEED

Processes using the 3480 subsystem are faster. The tape drives have a head that reads and writes data on 18 tracks with an instantaneous data rate of 3.0 megabytes per second. The rewind time for an entire cartridge is 48 seconds. The transfer of data uses buffering to lessen the time a process has to wait to retrieve data from the tape, or the time the tape drive is waiting for the data to be written. This is detailed further below.

BUFFERING

The 3480 control unit contains a 512 K-byte buffer that stores the data being transferred between the tape drive and the controlling processor. This buffer reduces delays in processor operation

caused by the start and stop action of tape drives. Blocks of data to be written are transferred to the control unit before the tape drive is ready to accept them. The channel is then released to do other work while the data transfers from the control unit to the tape drive. When reading, the process reverses, with the data waiting in the buffer until the processor requests it.

OPERATIONS

From an operations standpoint, there are also advantages. The read/write protect mechanism is a built-in thumbwheel selector rather than the plastic rings that had to be placed into a slot on the back of the reel tapes. Also, the size of the tape makes it easier to store many more 3480 cartridges than reel tapes. Space limitations are therefore cut down. The tape drive itself contains a mechanical assembly which threads the tape through the read/write heads. Vacuum columns are no longer needed to perform this function. The cartridge is simply placed in the drive and it's all set to go.

Using the 3480 Tape Cartridge

In order to use a 3480 tape cartridge, you will use basically the same procedures as you have in the past. You must first bring the tape in to Room 123 DCL to check it in. When you issue your mount request, however, you must specify a density of 38K, instead of 800, 1600, or 6250, as was the case for reel tapes. For example:

```
MOUNT MYTAPE-K123 RING IN DEN 38K
```

The density option is the only one to change. Once the tape drive is attached to you, use the same TAPE or MOVEFILE commands that you've used before. Since the commands are the same, you could mount a reel tape in read mode and a 3480 cartridge in write mode, and transfer your data from reel to cartridge easily with the MOVEFILE command.

For further information or assistance, contact the CSO Systems Consultants at 1208 W. Springfield, Urbana (333-6133).

INDEX FOR ACM COLLECTED ALGORITHMS ON VMD

Stan Kerr

A CMS help file has been created containing information on all algorithms published in *Communications of the ACM* from 1960 to 1975, and all algorithms published in *Transactions on Mathematical Software* from 1975 to the present. This help file can be viewed by entering the command

```
HELP CSO CALGO
```

Each algorithm is listed with its number, title, and the volume, issue and page number where it was published. Algorithms from 1 to 492 appear in Communications, and from 493 upward in Transactions. Algorithms from Transactions are distributed on a magnetic tape; for an index of this tape and instructions for reading it, see the help file

HELP CSO TOMS

To obtain a good printed copy of the CALGO help file, use the WRITEUP exec, as follows

WRITEUP CSO CALGO (DEST 3800 PDEF LR66

This prints the help file on the 3800 laser printer at DCL, oriented in a book format. A similar WRITEUP command could be used to print the TOMS help file.

VS FORTRAN VERSION 2.1.1 on VMD

Stan Kerr

CSO has installed Version 2.1.1 of VS Fortran on the VMD system. It can be accessed by the command

LINKTO FORTRAN (F

following which the FORTVS exec can be used as usual to compile a program (see HELP CSO FORTRAN). The disk containing the new Fortran is accessed with a mode letter lower than that containing the old Fortran, and contains an alternate version of FORTVS EXEC which invokes the new Fortran.

IBM has recently announced version 2.2.0 of VS Fortran It is probable that this will have replaced 2.1.1 by the time this article appears in print. Some of the new features of 2.2.0 are described later in the article.

The manuals can be ordered through the local IBM office. Copies of these manuals can be viewed at the CSO Systems and Statistical consulting offices, and at the DCL terminal site.

CSO has written an extensive set of help files for the new Fortran. The menu for these can be viewed by entering the command

HELP FORTRAN MENU

after first accessing the new Fortran as above. The new help files include extensive information on all library procedures supplied by IBM for Fortran, error handling, conventions for doing I/O with files and tapes, and descriptions of all Fortran error numbers. Many errors which occur at run time are identified by a number, such as 208 (which designates underflow). For each such error there is a help file which describes what the error is and what can be done about it; the information is usually derived from the Language and Library Reference, and so, is as complete (or incomplete) as the Reference. For instance,

HELP FORTRAN 208

provides information about Fortran error 208.

New Features of VS Fortran Version 2

The important new features of VS Fortran Version 2 are described below.

1. Support for vectorization.

   Version 2 will attempt to create vector code on systems which support vectorizing capability (i.e. IBM 3090's). (It is not known at this writing if this will be important for CSO.)

2. Interactive Debug is integrated into Fortran, and provided in a full-screen mode.

   More information about Interactive Debug can be obtained by reading the help file

   HELP FORTRAN IAD

   or by consulting the VS Fortran Version 2 Interactive Debug Guide and Reference.

3. Improved mathematical library routines

   A number of the library routines for standard elementary functions have been considerably improved in accuracy. These new versions are the default with VS Fortran Version 2, and may not supply precisely the same values (for the same arguments) as the old routines. The Language and Library Reference contains information on the accuracy of the new routines.

4. Variable length source records and lower case source are now permitted.

   With Version 1, a Fortran source file had to consist of fixed length records of length 80 (RECFM=F,LRECL=80); with Version 2, variable length records are allowed, which means that Fortran source files can consume significantly less space. Fortran Version 1 also required that all Fortran statements be entered in upper case; with Version 2, statements may be entered in lower or upper case (or mixed case). The case is ignored in interpreting a statement, except of course for character string data, in which case is honored.

Compatibility of Version 2 with Version 1

Programs compiled with VS Fortran version 1.4.1 (the current default compiler) may be run in the presence of the VS Fortran Version 2 libraries. If VS Fortran Version 2 has been linked and the FORTVS exec has been invoked, then the CMS global library set (GLOBAL TXTLIB) is altered to remove the Version 1 libraries from the set and add the Version 2 libraries. If a program which was compiled under Version 1 is then run, the Version 2 libraries are used, but the program should run correctly. There may be some observable numerical differences in the behavior of the program, however, due to the different versions of the elementary mathematical functions in Version 2.

Features of VS Fortran Version 2.2.0

Some of the features of Version 2.2 (which we believe will have replaced 2.1.1 when this appears) are as follows:

1. Variable names may be up to 31 characters in length in Version 2.2; the underscore character may be used to separate parts of a variable name.

2. An intercompilation analyzer, which provides a global analysis, across subroutines, of variables, common block, and argument consistency among subroutines.

3. The IMPLICIT NONE statement is allowed, to force the program to explicitly declare all variables.

4. The semantics of the OPEN, CLOSE, and INQUIRE statements have been changed to assist in verification of file existence.

SPSSX HAS TABLES ADD-ON

Joan Mills

The SPSSX add-on product TABLES has been added to SPSSX Release 2.2 (the current release) on the VMD system under IBM CMS.

TABLES enables one to put out means, percentages, and counts using various subsets of subjects and labeling. TABLES produces presentation- or publication-quality output and is easy to use.

TABLES is briefly described in the *SPSSX User's Guides* (page 431ff), as well as in a separate manual called *SPSSX TABLES*, which may be purchased at the CSO Distribution Center, 1208 W. Springfield, Urbana. It is also available for inspection at the CSO Statistical Consulting Office, 85 Commerce West, and in the Closed Reserves section of the Undergraduate Library (lower level). In addition, there is a free manual supplement available on the shelf at 85 Commerce West and on-line using the command INFO TABLES in your SPSSX program.

To access TABLES, simply LINKTO SPSSX as usual and add a TABLES procedure call to your SPSSX program, as described in the above-mentioned documents.

CMSL REMOVED FROM VMD

Stan Kerr

On July 7, the system on VMD was reconfigured so that IPL CMS can be used for problems requiring large memory. Prior to this time, IPL CMSL was required if your memory size needed to be increased beyond the default size of 1600 kilobytes. Now, if you need to increase memory, you can change the storage size (as before) with the commands

```
CP DEFINE STORAGE 3M        (e.g., to get 3 megabytes)
IPL CMS
```

Please note that, when you do this, it is as though you logged on again, in that your PROFILE EXEC is rerun. However, any temporary disks you had defined are still present, but are not accessed with a mode letter. To recover these temporary disks, you can use the command

TD ACCESS *(or just* **TD A)**

which finds any temporary disks which are linked but not accessed, and assigns them mode letters. (The new mode letter may not be the same as the original mode letter when you first created the temporary disk. You can use the SWAP exec to change the mode to some other mode letter, if desired; for example SWAP B C switches modes B and C.)

An attempt to enter the IPL CMSL command now gives an error message. You can ignore this message and continue by entering the IPL CMS command.

CMS USERS' GROUP NEWS

CMSUG Steering Committee

For those unfamiliar with this group, the CMS Users' Group is a loosely organized gathering of staff, faculty, and students using the IBM VM/CMS operating system, primarily on UIUCVMD. The purpose of the group is to facilitate the use of CMS, to share software tips, and to discuss the latest developments from CSO with regards to CMS. There is a steering committee that organizes and publicizes the monthly gatherings. There is also a Users' Group mailing list that is maintained on-line. For those who would like to be added to this list, enter the command **CMSUSER** while logged onto UIUCVMD.

The Users' Group has concentrated on three activities since the end of Spring semester — (i) creation of a mail based discussion facility; (ii) holding a summer meeting which concentrated on electronic mail and Bitnet services; and (iii) collecting software for a shared user facility. The first two activities are discussed below in some detail and the third is being handled by Charlie Smyth (userid=CSMYTH) and Dave Lyle (userid=IFNXDML@UICVMC) of the Steering Committee. Further information about the facility will be announced in the fall.

Announcing the CMS Users' Group Mail-Based Discussion Facility

The CMSUG Steering Committee has created a Listserv list, CMSUG-L, for the members of our group who would like to have a way to address questions, problems and complaints in a public forum. The facility we have chosen, Listserv, is a Bitnet related product; it essentially keeps a list of subscribers who are sent all messages that come in to the facility. We hope that you will find the CMSUG-L a convenient way to keep abreast of changes and communicate with others who will be able to share ideas and experiences. Please subscribe to the CMSUG-L; the more individuals sharing information in this way the better. Note that you may take your name off the subscription list at any time. Also note that there are many lists, covering a wide range of topics, on other Bitnet machines (especially, BITNIC) in which you might be interested — exploring is allowed!

Below are some commands which will help you in using Listserv.

To subscribe to the CMS Users' Group List, CMSUG-L:

TELL LISTSERV SUB CMSUG-L your_full_name

To send a note to all of the subscribers of CMSUG-L:

BITNOTE CMSUG-L

To subscribe to some other list:

TELL LISTSERV AT host SUB listname your_full_name

where **host** is the BITNET machine name where LISTSERV resides (e.g., BITNIC or CUNYVM) and **listname** is the name of the list to which you wish to subscribe.

To obtain a quick review of Listserv commands:

TELL LISTSERV AT host HELP

To obtain more details on the use of Listserv:

TELL LISTSERV AT host INFO GENINTRO

To obtain a complete print out of the lists available:

TELL LISTSERV AT host LIST

We hope that Listserv discussions will prove educational, provocative and fun for all. Please feel free to BITNOTE CMSUG-L or contact Bruce Richardson (RICHARD@UIUCVMD), Charlie Smyth (CSMYTH@UIUCVMD) OR Greg Kesner (KESNER@UIUCVME) if you have questions.

Hope to hear from you through CMSUG-L!!!!

CMSUG Summer Meeting

At the Summer meeting in early July we discussed electronic mail.

Bruce Richardson discussed sending mail to computer users at other sites. He suggested the following items as good background information on the subject.

1. The HELP CSO BITNOTE file from UIUCVMD (always check the help files first!).
2. The CSO *Off-Line* article in this issue on Campus Mail Exchange (start off at home).
3. The HELP BITNET ABUSES file concerning use and abuse of BITNET (how to stay out of trouble; may have to LINKTO BITNET).
4. J.S. Quarterman and J.C. Hoskins, "Notable Computer Networks," *Communications of the ACM*, October 86, V29 ,#10 (packed with information; try the Computer Science library for a copy).

Bruce presented the following information concerning cross-machine mail: In order to communicate with someone off-campus via electronic mail you must know at least two things — your network address and the other person's address. A network address usually consists of a userid or login name, a host or machine name, a domain, and a network. A domain is a hierarchical description of a machines location within the world network; for example, all of the machines on campus are part of the UIUC.EDU domain. Furthermore, CSO machines can be described as part of the CSO.UIUC.EDU domain. Possible networks (collections of machines which regularly exchange mail under network specific protocols) are BITNET, ARPAnet, UUCP and CSNET.

1. Know your own machine name, domain and network. UIUCVMD is part of BITNET and a user (with userid = myname) can be reached by most other users at one of the following addresses:

myname@uiucvmd.bitnet	(assuming an intelligent mailer)
myname@uiucvmd	(from Bitnet)
myname%uiucvmd.bitnet@wiscvm.wisc.edu	(from ARPA)
myname%uiucvmd.bitnet@relay.cs.net	(from CSNET)

2. Find out the userid or logon name, host computer, domain and network of the person you would like to communicate with. (Ask for all of these even though some may not be applicable.) Most of the networks to which you should be able to send mail are described in the ACM article (4); which contains the format of the network addresses which you would use to send a note to a user on these networks.

Greg Kesner gave us a great deal of information on using network servers — list servers, such as the one used by CMSUG-L, file servers such as NICSERVE at BITNIC, and database servers. The amount of information presented is too great to deal with here, but it suffices to say that these servers can put you in touch with vast quantities of information and in communication with thousands of users throughout the world, most of which are sharing insights and experiences on subjects ranging from AIDS to zoology. The quickest way to get started is to send for the informative document USING SERVERS. The command to do so is

TELL NICSERVE AT BITNIC SEND USING SERVERS

The file will be sent to you over the network; it should arrive within an hour. The file has information on the use and contents/topics of various servers and will be a great help as you start using the network.

Dave Swofford demonstrated the use of MITMAIL which is currently a test product on UIUCVMD. MITMAIL may be used as an alternative to BITNOTE and may be linked via the command **LINKTO MITMAIL (T.** Even though it is a test product and is therefore not supported by CSO, MITMAIL provides a very good set of help files and the user base is growing daily. Some of the advantages to MITMAIL are the use of an UNREAD NOTEBOOK, which protects you from lost reader files; especially nice facilities for reconstructing network addresses for replies; extensive searching, sorting, and manipulating commands for notebooks; and a simple forwarding of mail system. To use MITMAIL, link to it as above, then type **MAIL.** PF key 1 will then provide help on MITMAIL.

This Fall we intend to again hold informative meetings approximately once a month. If you are interested in presenting something at a meeting or have an idea for one, just send a note to CMSUG-L.

NEAT STUFF FROM PUBLIC DOMAIN SOURCES

Mark Zinzow and Declan Fleming

Part of the function of the Microcomputer Resource Center is to maintain a library of useful public domain utilities. Many of the programs we have picked up through Public Domain sources would be hard to give up. Through daily use they have become invaluable. Recently we have received updates on a couple of the best. As detailed in the last *Off-Line*, Directory Scanner is one example of the programs available in public domain software, and is typical of Public Domain products. We already have a new version (3.0) since the last article. We have had quite a few requests for the program and are glad to distribute it.

LIST 6.2a

LIST 6.2a is an update on a shareware product that we use frequently, especially in accessing the index to the PC-SIG collection of public domain software on our CD-ROM. The documentation modestly lists its purpose as simply to display files on your monitor, line by line with the aid of scrolling, positioning, and filtering commands. It is essentially a text editor without the ability to change data. This is quite useful when viewing document files or text listings.

LIST 6.2a can handle a file up to 16Mb. It can replace non-text and control characters with blanks, expand TAB characters, display line drawing characters, and display the hexadecimal values for each character. It includes provisions for printing either by the screen or line by line. LIST can keep track of multiple files at once, allowing the user to jump from one to the next with a keystroke. It supports wildcards for viewing groups of files (e.g., **list *.upp** will keep track of all **.upp** files). All of these features are great for viewing any type of file.

The two best functions of the program are the searching and the selective saving of a text file. The search options include backward and forward case and non-case sensitive searching with next and previous occurrence searching. On a large file this can nearly become a database application. The new version of the program features the option of saving user-definable portions of the file to another file. Suppose you are browsing the instruction file of an application that contains all the control codes in a handy table. You don't want to print the whole file, throwing away the pages that you really don't need. Simply define the top and bottom lines of the table and save it to another file. You can then just print it out and hang it on the wall.

Many text editors won't accept very large files. LIST allows you to take a large file and extract usable chunks that your text editor can read without difficulty. There are two other public domain programs called CHOP and SPLIT that are good for fragmenting any file; LIST is great for specifically extracting those parts of a file that are needed in a smaller file.

The program requires 66K of memory minimum; if there is more memory, more text can be stored. At least 96K is required to use the DOS shell, and add 9K to that if the screen saving option is enabled. LIST requires PC DOS 2.0 or later, and 3.0 or later is required for file sharing. ANSI.SYS is not required. At the $15 suggested contribution, this is a very useful and inexpensive program.

PKARC and PKXARC

Two other programs we use daily are PKARC and PKXARC. They are archival and retrieval programs that are really very fast. Mainframes and BBS's are using them as the standard for data storage. Recently we received Version 3.5 that is supposed to run even 50% faster than before.

The programs are indispensable for their space saving capabilities. Nearly all of our downloaded programs from public domain sources are in this format. For the day-to-day user, they can save hard disk space by compacting files that aren't used every day. Also, if you visit the Microcomputer Resource Center and copy some of our public domain programs, you can get more programs per disk. At over 700 disks in the PCSIG collection alone, saving space becomes mandatory.

Public domain, Freeware, and other shared software is typically distributed in archived format, i.e., files with an extension of .ARC. There are many good reasons for this. The two most important are that ARC files are about as small as they can be, and that they keep all the files for a given software package together.

File size matters most when software is shared on electronic bulletin boards where the longer the file, the longer it takes to transmit via a modem. This translates directly into money when the BBS is a long distance from the caller, but it can also save charges on pay services like Compuserve, BIX, or the Source. Shorter files also mean that more files may be transmitted in a given period of time, and that there is less waiting around. Finally, shorter files also save money by occupying less disk storage space. Since ARC files are typically as small as one half or one quarter of the size of the original file(s), they offer quite a savings.

I often find that a quick way to make room on my hard disk is to archive a large subdirectory full of files into one small archive and then delete all the files (from that directory) but that one archive. Then, when I need them again, I don't have to go digging for the right floppy. Other times, when I want to copy some files to a single floppy, the only way to fit them all is to use an archive file.

Since software usually comes as a package of several files, usually at least a program in executable form (binary) and a human-readable document or set of instructions (text), it is important that anyone who receives this software gets all of the files. Nothing is more frustrating than running software and then finding out that you are missing the file or help information needed for your particular use or system configuration. A good example of this would be word processing software with a separate file for every printer it supported. Most users of the software are likely to only be careful about keeping the file needed for their own printer.

Just like the old game where a message is passed by whispering from one person to another and then compared with the original message, files are often lost in transit after passing through many hands. Archives tend to prevent this.

Arc files also provide a means of verifying that files have not been corrupted in transit. Although rare, this is possible even with so called error-free protocols.

There are a number of programs available that allow the creation of ARC format files, and the extraction (or unarcing) of the original files from the archive. The best for the PC are those written by Phil Katz (now PKWARE, Inc.), although the format originates with a company known as System Enhancement Associates (SEAWare). Both programs are self-documenting in that they provide a command, or use, summary when run with no arguments (files or options). Both programs are also distributed with excellent and detailed documentation, and satisfied users are encouraged to send a reasonable contribution to the authors for the use of these utilities.

Mr. Katz distributes his software as a self-extracting archive which is a program (currently PKX35A35.EXE) that extracts files from itself. When run, PKX35A35.EXE writes the following files to the current directory of the default drive:

makesfx.com	(allows you to create self-extracting archive files)
pkarc.com	(forms and updates .arc files)
pkarc.doc	(documentation for above)
pksfx.doc	(documentation for makesfx.com)
pkxarc.com	(extracts .arc files)
pkxarc.doc	(documentation for above)
pkxarcjr.com	(a version of pkxarc for machines with limited memory)
readme.doc	(tells how to perform self-extraction on PKX35A35.EXE)

Examples:

To place the PK utilities in a utility directory (called, for instance, "ut") to be used on a hard disk one would use some commands from the root directory like:

md \ut	(to create the "ut" directory)
cd \ut	(to change directories to the new "ut" directory)
a:PKX35A35.EXE	(assuming PKX35A35.EXE is in drive a:)
path c:\ut	(to allow your computer to find the files in the "ut" directory from another directory)

To make an archive from all the files in the current directory on a floppy in drive a: (where the archive file will be called **myarc**):

pkarc a a:myarc *.* (**a** is the option for making an archive)

To list the files in **a:myarc**:

pkxarc /v a:myarc

To extract, expand, and copy all the files from an archive (myarc) to the current drive and directory:

pkxarc a:myarc (note that no option letter is specified)

This new version includes the ability to create your own self-extracting archives. The included program **makesfx** will guide the user through converting an archive to a .exe file. Instead of de-archiving a program such as **myarc.arc** with the command **pkxarc myarc**, typing just **myarc** will automatically take it apart for you.

The options with this version include the ability to add files to an archive, update or freshen files in an archive, delete or move files to or from an archive, and fully comment each archive. DOS wild cards are supported, allowing tidy archiving of related files. Archiving can also be performed over a network. These utilities are very versatile and more powerful than these examples show. Please refer to the program documentation for more details.

PKARC and PKXARC will run on any IBM PC/XT/AT/RT/jr/Portable/Convertible or DOS compatible running PC/MS-DOS 2.0 or higher with a minimum of 128K free RAM. The author asks for a $20 contribution only if you find the program useful. With every contribution of $45 or more you will be registered to receive a disk with the next version when available.

All of the programs mentioned above are available at the Microcomputer Resource Center during our regular hours (M,T,Th 1-5; W,F 10-2).

LEARNING TOOL™, AN "ELECTRONIC NOTEBOOK".

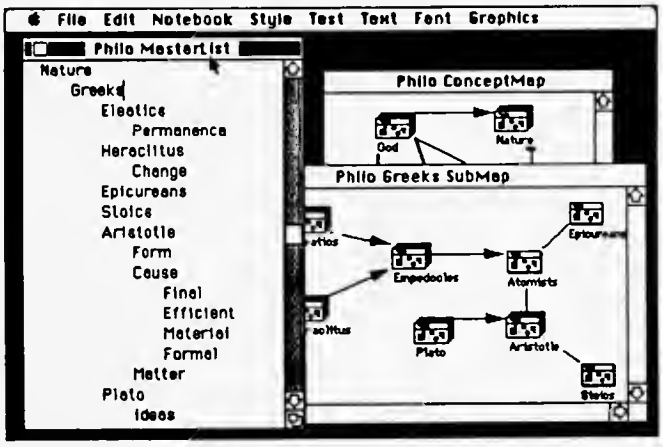
Gail E. Kampmeier

(This article is a reprint of an article appearing in the November 1986 edition of the Champaign-Urbana Macintosh Users Group Newsletter #17. We wish to thank C-U M.U.G. for permission to reprint this article for our users.)

On Tuesday, October 14th IMS (Instructional and Media Services, at the University of Illinois) sponsored a demonstration by Dr. Robert Kozma and John Van Roekel (Arborworks, Inc.), the designers of **Learning Tool**™, an "electronic notebook" and study aid application aimed particularly at students and persons writing research papers. Although the group taking advantage of this demonstration was modest in size, they represented many areas of interest on campus. Refreshingly, the two gentlemen giving the demo constructed an example using chemistry.

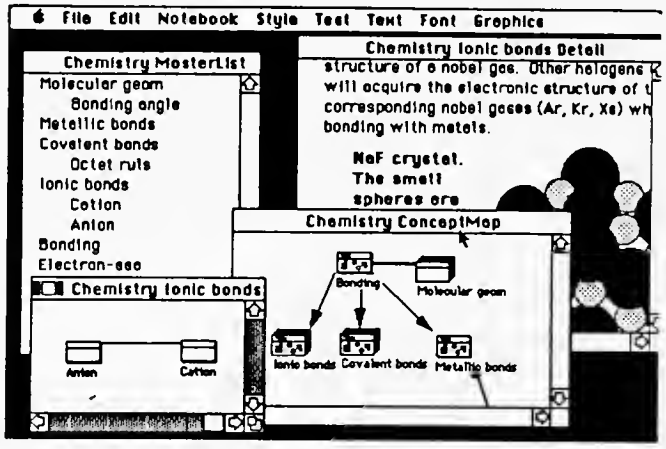
Learning Tool is ideal for the student. Obviously it is not taken to class (who can think while furiously scribbling notes anyway?) but is a way for subsequently organizing one's thoughts coherently, while at the same time etching the pathways for recalling the information (whether for exams or to combine in other relationships). The application consists of three interrelated levels in each **Notebook** and an extensive **Help Notebook.**

At the first level of each **Notebook**, you enter keyword categories in outline form on a **MasterList** which is hierarchical in nature (see *Philo MasterList*). You have control over font and size (Princeton font comes



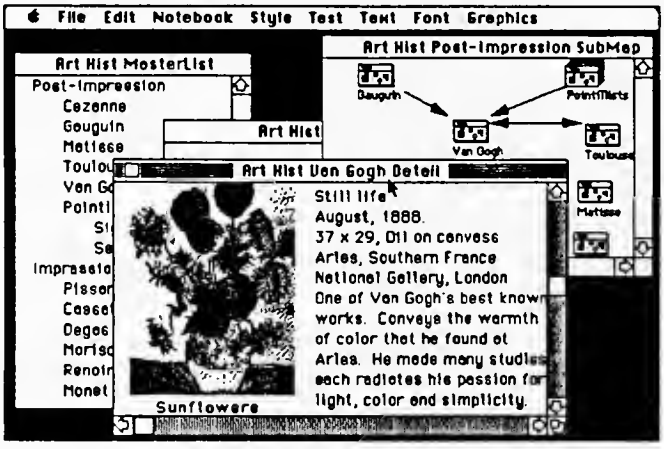
with the system for scientific symbols) but cannot do superscripting, subscripting or other style changes. Each category then generates a notecard in the next level known as the **ConceptMap**. Triple clicking on any keyword category in the MasterList opens up the notecard attached to it on the third level referred to as **Detail.**

The **ConceptMap** level consists of windows depicting relationships of keywords on a particular level (see *Chemistry ConceptMap*).



The Chemistry ConceptMap window reveals a wealth of information. Icons can be arranged spatially with the mouse and linked to indicate the strength and direction of relationships between keywords by adding pointed or nonpointed lines of varying widths (3 available). Information about these relationships can also appear on top of the lines (not shown in figure). The keyword icons give information about what is contained in the other two levels. The icons for "Bonding" and "Metallic bonds" appear as single index cards, indicating that there are no subcategories in the MasterList for those keywords as there are for the stacked card icons for *Ionic bonds, Covalent bonds*, and *Molecular geom.* Furthermore, additional information appears at the **Detail** level in all categories except *Molecular geom* which has a blank notecard icon. Double clicking on the *Molecular geom* icon leads the way to the **Detail** level.

At the **Detail** level, information is entered on "notecards," much the same as you would on a 3 x 5 card, about a particular keyword. This may include imported text or graphics (see *Art History Van Gogh Detail*) or you can create your own graphics in a paint-like environment and add or modify whatever text you desire. More importantly perhaps, is the ability to export this information to other applications via the Cut, Copy, Paste functions available under the **Edit** menu for integration into a paper or presentation. Also, according to Learning Tool's creators, there is no known limit on the number of notecards able to be created (provided you do not run out of memory, that is!).



But what makes **Learning Tool** so powerful, besides providing you with a new way to reorganize your thoughts? It has a searching function which not only searches for a particular word but can search for two words at once or look for card containing either word. It will Find All, Print, even Auto Open the results of a search. You can also use the application to test your understanding and memory by entering questions and answers both on the **ConceptMap** level and **Detail** levels. When you choose to make the answer visible, it allows you to evaluate your answer against that given as "correct." This method removes the limitations of having to use a limited vocabulary or answer in a multiple choice type of manner. You can also replace the "correct answer with your "current answer," should you have found out more information since the first time this was entered.

One drawback for some users may be the lack of calculating functions. Perhaps this will be incorporated in future versions if the creators are given feedback encouraging them to do so.

Printing functions are wide and flexible. Not only can you print the results of searches as mentioned above but you can print the contents of a particular window, notecard or an entire notebook (including an automatically generated table of contents!).

The University of Michigan is currently using **Learning Tool** in their Introductory Psychology course and it is available to students at Drexel University where everyone is required to buy a Mac upon enrolling in the university. Why is **Learning Tool** an important application for students? First of all it's more interesting and absorbing than the notebook paper or 3 x 5 cards (regardless of the pink or blue colors) which usually occupied a place in the diligent student's endless recopying of notes. It is more likely that a student will therefore have the incentive to start early to organize thoughts and find it easier to modify them on a computer (this of course assumes that the student can type faster than write, which in any case will happen with practice) as the semester progresses. **Learning Tool** encourages active student participation not only in the organization and explanation of concepts and terms but by enabling self testing. Instructors could take advantage of the self testing aspect by making up a workbook. It would also be interesting to evaluate a student's grasp of concepts in a class by examining her notebook periodically throughout the semester. Surely we can all remember grade school classes that required that we turn in notes we had taken (to make sure that we had taken some!). This might be used in high school or even in college as a method to analyze how students take notes and formulate concepts, training them to think critically and rationally about what is being presented to them. It could also provide feedback to the instructor on how coherently material was presented and received, enabling them to modify presentations and become more effective learning facilitators.

Learning Tool takes excellent advantage of the Macintosh environment making liberal use of windows, icons, menus and dialog boxes, and its own and imported graphics. It is ImageWriter and LaserWriter compatible and works with a minimum 512K Mac with two drives, RAM disk or 800K disk. The program has been shipping for about a month and a half for $50 per individual copy. Site licenses are available as well as bulk purchases (for which they do the reproduction). The latter discounts on 10, 25, or 75 copies are 5%, 10% and 20% respectively. The application is not copy protected and comes with a 32 page manual. Upgrades may be obtained at 50% of the original purchase price (free to site licenses) and technical support is available via telephone to one person designated with each bulk order. Information can be obtained directly from

Arborworks, Inc.
2540 Pittsfield Blvd.
Ann Arbor, MI 48104
tel. (313) 973-0612

RESEARCH PROGRAMMER

Dept. of Agricultural Economics

Position: Research Programmer

Available: Aug. 21, 1987. Closing date: Sept. 7, 1987.

Qualifications: Knowledge of FORTRAN, Pascal or C and SAS, SPSS, SHAZAM, LOTUS or DBASE III; familiarity with IBM PCs and compatibles. Experience with tapes and mainframes desirable. BS or BA with strong programming skills. Communication skills are essential.

Responsibilities: Consult with faculty, staff and students in developing programs and using computer software and equipment. Oversee maintenance of microcomputers.

Send resume to:

Dr. Wesley D. Seitz, Head
Dept. of Agricultural Economics
1301 W. Gregory Dr.
Urbana, IL 61801

Phone: 217/333-1810

The University of Illinois is an Affirmative Action, Equal Opportunity Employer.

STATISTICAL COMPUTING: MEDICAL INFORMATION SCIENCE

Statistician with computing skills needed to play major role in management and analysis of data from nutrition and cancer experiments, and potentially other biomedical and biostatistical research projects. Position will be for 50%-100% subject to availability of funds. M.S. in statistics, biostatistics, or equivalent, with substantial experience in statistical package computing, SAS preferred. Salary negotiable based on qualifications. The position may be filled at an Academic Professional, Research Assistant or Associate level, or as a visiting appointment, subject to agreement and existing constraints. Resume, references and inquiries to Prof. Peter B. Imrey, 190 Medical Sciences, 506 S. Mathews Ave., Urbana, IL 61801, 333-2427.

EQUIPMENT FOR SALE

The State Natural History Survey has the following equipment for sale:

Tektronix 4051 Terminal (32K)
Hard Copy Unit, 4631
Plotter with felt tip pens, 4662
Telephone cradle for data communication

Backpacks:	4051R06 Editor
	4051R05 Binary Program Loader
Software:	Plot 50 Graph

Plot 50 Statistics
Data Communication Interface
Reference Manuals
Data Tapes: 130 300K
30 450K

Price: Negotiable; can use internal Stores Voucher
Contact: Steve Havera
Illinois Natural History Survey
P.O. Box 599
Havana, IL 62644
(309) 543-3105/3950

EQUIPMENT FOR SALE

2 ea. Compupro 816 S-100 bus system computers: 8085/88 dual CPU, 128 RAM, Micro Angelo MA-512 graphics board, 8" DSDD floppy controller, keytronics serial keyboard, one each mouse, 12" mono monitors, Software: CPM-86 DOS, Whitesmith and C86 computers, Final Word word processor. Hardware and software manuals. Price Negotiable. Contact: Vera V. Mainz, 244-0564.

OFF-LINE's Mailing List

If you wish to be placed on our mailing list for future issues of *OFF-LINE*, if you wish to be removed from the list, or if you wish to enter an address correction, please complete and return this page. **(Current subscribers are kept on the mailing list until a specific request for removal is received, or until a mailing is returned as undeliverable.)**

Check one:

- ☐ Place my name on mailing list
- ☐ Make the following corrections or changes
- ☐ Delete my name from mailing list

_____

First name -- Initial -- Last Name

Campus Address:

_____

department

_____

Room - Building

Off-campus Address:

_____

Organization or Company (if applicable)

_____

Street Address

_____

City -- State -- Zip Code

If address correction, give old address and zip code below.

_____

_____

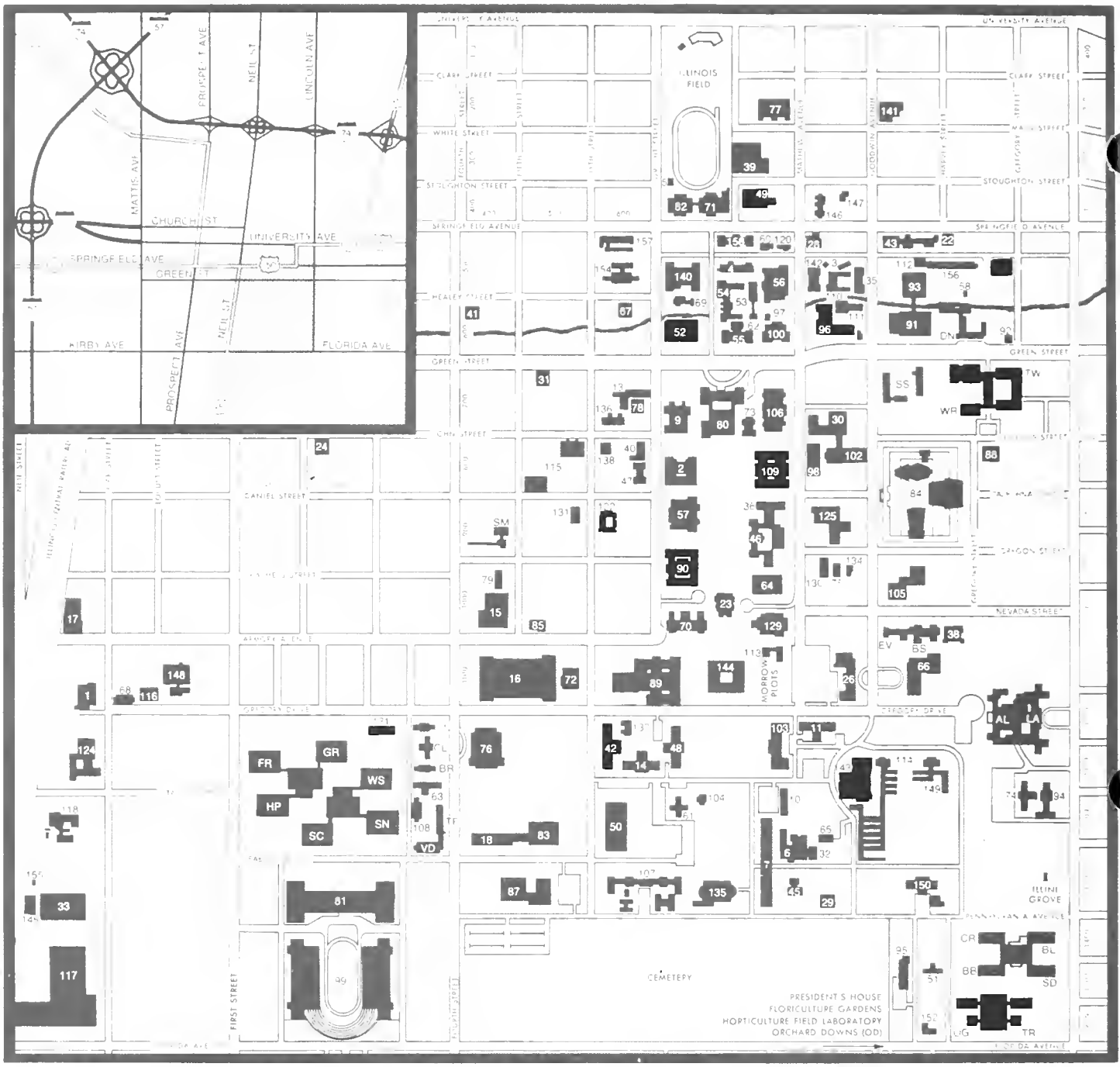
_____

SEND TO:

OFF-LINE
150 Digital Computer Laboratory
University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH (DCL)	
14 Digital Computer Lab	Monday-Saturday, 24 hours/day
333-7685	Sunday, 12 noon - 12 midnight
CSO SOUTH	
70 Commerce West	Monday-Saturday, 8 am - 12 mid.
333-4500	Sunday, 12 noon - 12 midnight
AGRICULTURE	
N-120 Turner Hall	Monday-Thursday, 8 am - 10 pm
333-8170	Friday, 8 am - 5 pm
	Saturday-Sunday, Closed
CHEMISTRY	
150-154 Noyes Lab	Monday-Friday, 9 am - 5 pm
333-1728	Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar	Daily, 12 noon - 12 midnight
333-1851	
ELECTRICAL ENGINEERING	
146 Electrical Engineering	Monday-Friday, 8 am - 12 mid.
333-4936	Saturday, 8 am - 5 pm
	Sunday, Closed
FAR	
Florida Avenue Residence Halls	Daily, 12 noon - 12 midnight
333-2695	
ISR	
Illinois Street Residence Halls	Daily, 12 noon - 12 midnight
333-0307	
MECHANICAL ENGINEERING	
65 Mechanical Engineering	Monday-Saturday, 8 am - 12 mid.
333-1430	Sunday, 12 noon - 12 midnight
PSYCHOLOGY	
453 Psychology	Monday-Friday, 8 am - 5 pm
333-7815	Saturday-Sunday, Closed
SOCIAL SCIENCE	
202 Lincoln Hall	Monday-Friday, 8 am - 12 mid.
333-0309	Saturday, 10 am - 5 pm
	Sunday, 12 noon - 5 pm



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)

ol. 15, No. 5: October-November 1987

off line

niversity of Illinois at Urbana-Champaign

irector: George Badger
ditor: Lynn Bilger

omputing Services Office

CSO DIRECTORY

USER SERVICES AND HARDWARE/SOFTWARE SUPPORT

User Accounting	**1208**	**W Springfield**	**333-7752**
Documentation Center	**1208**	**W Springfield**	**333-9230**
Systems Consulting	**1208**	**W Springfield**	**333-6133**
Statistical Services Consulting	**85**	**Comm West**	**333-2170**
PC Consulting	**91**	**Comm West**	**244-0608**
Text Processing Consulting	**212**	**CSOB***	**333-7318**
Maintenance & Repair Service	**194**	**DCL**	**333-0969**
Tape Service, Special Plots, Xerox Laser Printer	**123**	**DCL**	**333-8640**

DIAL-UP NUMBERS

CYBER 175 (NOSA)	**300**	**baud**	**333-4000**
IBM 3081 GX (VMD)	**300**	**baud**	**333-4006**
Switch	**1200**	**baud**	**333-4008**
TELENET (local no.)			**384-6428**

CSO STAFF

Director	George Badger	150	DCL	333-4103
Business Manager	Stanley Rankin	150	DCL	333-6530
Secretary	Joyce McCabe	150	DCL	333-1637
Networking	Sue Greenberg	187	DCL	333-3723
Systems & User Services	Ahmed Kassem	185	DCL	333-7159
Hardware Maintenance & Communication	Mike Gardner	173	DCL	244-0914
Personal Computers/EXCEL	Robert Penka	119	CSOB*	333-4709
Supercomputer Activities	Sandra Moy	1207	W Springfield	333-9772
Maintenance	Larry Crotser	131C	DCL	333-5190
Consulting	Stan Kerr	208	CSOB*	333-4715
Statistical Services	Joan Alster	202	CSOB*	244-0937
Accounting Services	Gary Bouck	1208	W Springfield	333-7752
Microcomputer Laboratory	Jack Knott	102	CSOB*	333-6562
User Training (Short Courses, Videotapes)	Ron Szoke	108	CSOB*	333-8630
Documentation	Lynn Bilger	207	CSOB*	333-6236
CYBER-IBM-VAX Operations	Myra Williams	168	DCL	244-0186
Site Operations	Sylvia Hansen	65	ME	333-6285

*CSOB is the new CSO Office Building, 101 S. Gregory, Urbana.

Academic and research computing is done on the following machines: CDC Cyber 175 running NOS 1; IBM 3081 running VM; IBM 4341 running VM; VAX 11/780 running UNIX and driving a GSI CAT-8 phototypesetter; three Pyramids and a Sequent running UNIX. In addition CSO serves as Facility Manager for various departmental machines (e.g., other IBMs) and for the National Center for Supercomputing Application's CRAY X-MP.

Operating Hours (see HEARYE,SCHEDUL for exceptions):

	CYBER 174/175	IBM
M-F	8 am - 6 am	8 am - 6 am
SAT	8 am - Midnight	8 am - 6 am
SUN	Noon - 6 am	Noon - 6 am

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Number 5
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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. Information in this issue is current as of October 1, 1987. 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.

CHANGES IN THE DCL USER AREA

Room 14 DCL, the user terminal room and print output room, will be reduced in size and closed from Midnight to 6 am. There are two main reasons for this change. One reason is that usage patterns have been changing with the advent of cheaper timesharing equipment. People are not burning the midnight oil at DCL as much as they did — they are now phoning from home. Also, availability of terminals in student housing units have made the cross-campus trek no longer necessary. The other reason is that the construction of an addition to DCL will make access to the building more difficult. (The only building access will be from the north side and the street on that side will be closed to traffic).

Another change being caused by construction will be the moving of room 123 DCL, tape handling and special output area, into 14 DCL. The number of terminal positions will be reduced by about seven to make space for the combined facilities. This move will also cause some delay in the retrieval of tapes (which are normally stored on the first floor). This delay will be no longer than 30 minutes and can be alleviated by calling 333-8640 with your request 30 minutes before your trip to DCL. We will have your tapes waiting for you when you arrive.

NEW TERMINALS AT LINCOLN HALL SITE

Many of the ASCII Sytek-connected terminals at the Lincoln Hall site (Room 208) have been replaced with 14 new IBM terminals. All of the new terminals are directly connected to UIUCVMD (IBM/VM), operate in a full-screen mode, and can access all of CSO's VM machines. Seven of these terminals are monochrome IBM 3191s and the other seven are color graphics 3192s. The terminals communicate with VMD at a speed of 56 Kilobits per second. Anyone wishing to use UIUCVMD may use these terminals. Some of the ASCII Sytek terminals were moved to the room next door, for those persons still needing access to the Cyber (NOSA) and to the UNIX machines.

SHARED NEWS -- SIR BEING DROPPED

SIR, the Scientific Information Retrieval System, was added to the SHARED space in May 1986. Since the SIR system very rarely is used, the decision has been made to drop SIR from the system by the end of this year (1987). **Any users who have SIR data on the system or stored on tapes should use the SIR X_PORT facility to rewrite this data into a format acceptable to other computer systems.**

Every effort has been made to contact users who we know have used SIR; however, we are aware that we may not know of users who have SIR data stored on tape. If you have not been contacted and the removal of SIR will impact you, or you wish more information on the SIR X_PORT facility, please contact the ISIS-Database Manager, Rani Kindra, Department of Urban & Regional Planning, 1003 W. Nevada, (333-0178), or CSO's SHARE Coordinator, Joan Mills (333-2172) at MILLS on VMD.

CYBER BMDP TO BE REMOVED IN MAY 1988

CSO has decided not to renew BMDP for the Cyber 175 (UIUCNOSA). The current license expires on May 14, 1988. The Cyber version of BMDP is rather archaic, quite incomplete and not officially supported by the vendor. More up-to-date and improved versions of BMDP have been available on the IBM system for quite some time. These facts, coupled with the strong possibility of the replacement of the Cyber, have led CSO to the decision of not renewing the Cyber BMDP license.

Users who are still running BMDP on the Cyber are STRONGLY encouraged to begin transferring their work to the IBM as soon as possible. The CSO Statistical Consultants in 85 Commerce West (333-2170) will provide assistance in this transfer process, if needed. If the removal of BMDP from the Cyber causes major problems for you, or if you wish more information, contact Anup Roy at 244-1201, or the Statistical Consultants in Room 85 Commerce West.

CYBER 800 BPI TAPE DRIVE TO BE REMOVED FROM SERVICE

There has been an increased demand for tape drives on all of our systems except the Cyber. More tape drives are being added to the other systems to meet this need. However, we have run out of space in the area where the tape drives can be observed by the operators. To create more space in this area to meet demand, we have looked at ways to reduce the number of Cyber tape drives that will have the least impact on our users. We currently have four 1600/6250 bpi tape drives and one 800/1600 bpi drive. The 800 bpi drive is used only a few times per month — typically to bring tapes from strange devices (e.g., data acquisition lab equipment) for copying to other tapes of a more standard format or to disk. There are 800 bpi tape drives on our IBM and UNIX machines that can be used for this purpose.

The System Consultants at 1304 W. Springfield, Urbana (333-6133), can answer questions or help current Cyber 800 bpi tape drive users convert to either the IBM or the UNIX 800 bpi tape drive. The removal of this drive is currently scheduled for **November 15, 1987.**

CMS USERS' GROUP

For those unfamiliar with this group, the CMS Users' Group is a loosely organized gathering of staff, faculty, and students using the IBM VM/CMS operating system, primarily on UIUCVMD. The purpose of the group is to facilitate the use of CMS, to share software tips, and to discuss the latest developments from CSO with regards to CMS. There is a steering committee that organizes and publicizes the monthly gatherings. There is also a Users' Group mailing list that is maintained on-line. For those who would like to be added to this list, enter the command **CMSUSER** while logged onto UIUCVMD. For more information about the CMS Users' Group, see the last issue (Vol. 4) of *Off-Line*.

SITE LICENSE OFFERED FOR LEARNING TOOL (TM)

Arborworks has offered the U. of I. a good site license plan for Learning Tool (TM) which was reviewed in the last issue of *Off-Line*. If you are interested in this package please leave your name with someone at the Microcomputer Resource Center (244-6261),or send email to MARKZ@UIUCVMD.BITNET, or drop by the MRC and jot your name down on our suggestion form.

If there is sufficient interest we can make this available to the campus at a very nominal cost, possibly $8 per copy or less.

SPSS/PC+ END-USER LICENSE RENEWAL FEE SET

Users who have licensed SPSS/PC+ for their PCs or compatibles will need to pay $80.00 to renew their end-user agreement for a second year. This fee will cover the cost of license renewal, copying and diskette fees, and the cost of administering the University's Site License Agreement with SPSS Inc. (new users will still have to pay the $125.00 initial licensing/royalty fee). Current licensed users will receive end-user license renewal notices close to their anniversary date (date SPSS/PC+ was purchased).

Users may renew the product for another year by paying the $80.00 fee and signing a license renewal form. If a user decides NOT to renew, his/her end-user agreement with the University will be abrogated. Such users will then have to abide by the terms and conditions outlined in their original end-user agreements, lest they become liable to the University for violation of their contracts.

Please refer to the articles on SPSS/PC+ in this issue of *Off-Line* for further information. If you then have further questions relating to SPSS/PC+ or the license renewal, contact Anup Roy at 244-1201.

ECONOMETRIC CONSULTING

This note is to remind users that CSO and the Economics Department jointly support a half-time consultant to assist students and faculty with econometric problems relating to their class work and research. The consultant, Matt Higgins, is a graduate student in economics, writing his doctoral dissertation in econometrics. He will be consulting on SAS/ETS, SAS/IML, RATS, SHAZAM, S and GLIM. He is also knowledgeable in the economic data bases maintained by the Illinois Bureau of Business and Economic Research. Consulting hours for this fall are:

Mon.	1:00 pm - 3:00 pm
Wed.	10:00 am - 12:00 noon
Fri.	10:00 am - 12:00 noon

in room 73 Commerce West (244-7189). Matt is also happy to meet by appointment. Messages can be left at HIGGINS on VMD or higgins on UXE.

HIGH PERFORMANCE IMAGE PROCESSING

James Bozek

Recently, the opportunity has arisen for the campus to acquire a Model 7350 Image Processing System from IBM. Computing Services Office (CSO) is giving consideration to supporting this equipment.

The IBM 7350 is a High Performance Image Processing workstation that is channel connected to and hosted by the IBM 3081 (VMD). It is capable of vary fast interactive 2-dimensional image processing as well as 3-dimensional reconstruction and volumetric display. It has a reconfigurable display buffer that is capable of displaying 2D images at a spatial resolution as high as 1024(h) by 1024(v) and an intensity resolution of 8 bits (i.e., it has the ability to display 256 simultaneous gray levels or pseudo colors contained in user-definable output lookup tables.

The IBM 7350 has no image acquisition capability; hence, digitized images must be loaded onto a host system disk from the network or magnetic media. Images are then loaded into the 7350 image processor from the host system disk. Native IBM 7350 image format is a pure binary file consisting of m rows of n columns of 8 bit bytes. Although problems may exist with respect to inconsistencies between the image format used by the image acquisition system and that which is expected by the IBM 7350, they are not necessarily insurmountable.

One possible use of the IBM 7350 on the campus is that of a centrally-supported, high performance extension to medium- or low-performance local (i.e., departmental) image acquisition, processing, and analysis systems. In the past, the 7350 has been used in applications including medical research, archeology, and display of complex scientific data (e.g., pg. 174, Vol. 26, No. 2, the IBM Systems Journal). Other potential applications are geology, microbiology, and computational science.

There are several issues and costs to be considered before commitment to support this facility is made:

- facilities and operations: space, power, cooling, interconnection, and cost of transportation;
- human resources: consulting and technical support;
- computer resources: (host) computation and on-line disk storage;
- on-going maintenance and support costs.

However, the most important consideration is whether or not there is a sufficient number of individuals on campus who would make use of this facility. If there is sufficient interest, it is possible that CSO would install and support the use of this facility.

If you are interested in using this system, please send a letter describing your interest and your application to:

Jin Bozek, Manager of Graphics and Imaging
Computing Services Office
169 DCL
MC-256

Deadline for letters is **October 30, 1987**. Questions, interest, and concerns requiring immediate attention can be directed to Jim Bozek at 333-2048.

COMPUTER IMAGE RECORDING AT THE CSO VIDEO RECORDING FACILITY

Randy Cetin and James Bozek

Since March 1987, the Graphics Group of the Computing Services Office (CSO) has been operating a computer image video recording service. This service enables a user to record a series of digitized or synthesized computer images on industrial quality 3/4" U-matic and/or consumer grade 1/2" VHS/Beta video tape. It is applicable to all disciplines, including Art, Education, Engineering, Humanities, and Science where dynamic animation of computer synthesized or digitized images is desired.

Files containing computer image data are accepted in a number of data formats including the following:

- binary images consisting of 8 bits (1 byte) or 24 bits (3 bytes) per pixel;
- Multihalo (Media Cybernetics, Inc.) format; or,
- other formats as discussed with the technical staff.

Although images delivered to the video facility may be subject to certain constraints in aspect ratio, they can vary in size. Once recorded, however, images will be bound to a format which can display approximately 512(H) pixels x 512(V) pixels.

In addition to image data, 256 x 24 color map data, typically used with 8 bit images, can be specified and used. It is suggested that the color maps be organized as 768 bytes of information (i.e., 256 bytes of red component data followed by 256 bytes of green component data followed by 256 bytes of blue component data). The use of other image and color map formats can be discussed with the technical staff.

Computer image data is accepted on the following media:

- 5 1/4" floppy disk written in an MS-DOS or PC-DOS format; or,
- TECMAR QIC60 (1/4 Inch Cassette) written in an MS-DOS or PC-DOS format.

The facility is based upon microcomputer technology (i.e., an IBM PC/AT). This PC is connected to the campus network. If pre-production arrangements are made with the technical staff, it is possible that image data can be transferred from a remote (e.g., departmental) computing machine that is also operationally connected to the campus network.

If the reader is unfamiliar with any of the terms or products mentioned earlier (e.g., color map, pixel, scan line, pure binary image, ASCII, Multihalo Format, MS-DOS, PC-DOS, or TECMAR QIC60, etc.), or if general information is desired, contact CSO personnel at the locations listed below:

Randy Cetin
Computing Services Office
1304 W. Springfield Ave.
Urbana, IL 61801
(217) 244-3224 - 131 DCL
(217) 244-6292 - 129 DCL

Ken Fortenberry
Computing Services Office
1304 W. Springfield Ave.
Urbana, IL 61801
(217) 333-8640 - 123 DCL
(217) 244-6292 - 129 DCL

Since it is difficult to assess the exact cost of a video production without knowing its specific goals and constraints, those who may be interested in using this service are encouraged to inquire.

CAMPUS DISTRIBUTION OF COMPUTER GRAPHIC SOFTWARE

James Bozek

The Graphics Group of the Computing Services Office (CSO), in an effort to better support the computer graphic needs of the campus, has secured a site license agreement with Precision Visuals, Inc. (PVI), a prominent graphic software vendor. The agreement allows CSO to redistribute computer graphic software at a substantially reduced cost to those on campus wishing to obtain it.

Among a number of computer graphic software vendors, PVI was selected for the following reasons:

- PVI has consistently concentrated on software supporting a science and engineering market, while maintaining a substantial presence in the business and presentation graphics software market;
- PVI has the largest customer base of all graphic software vendors whose products are currently on campus;
- The list of specific machines on which PVI software currently runs includes most mainframes, minicomputers, and workstations; and,
- PVI offered the most attractive deal.

Graphic software from PVI consists largely of FORTRAN callable subroutine libraries which enable the user to display information in a variety of graphic formats independent of a specific physical graphic device. The following six software packages are currently available through the agreement:

- **DI-3000** - A modular package of FORTRAN callable subroutines containing standard primitives and attributes used in building and displaying 2D/3D graphic models.
- **GK-2000** - A package of FORTRAN callable subroutines supporting a level 2b implementation of the Graphic Kernel System (GKS).
- **Contouring System** - A set of FORTRAN callable subroutines that create, from regularly or randomly spaced data, surfaces which can be later displayed as contour maps or meshed surfaces.
- **Grafmaker** - A system of FORTRAN callable subroutines used for generating bar graphs, line graphs, and pie charts.

- **DI-Textpro** - A high quality, polygonal 2D/3D text option that was designed to be used in conjunction with other PVI products.

- **Metafile System** - An interactive translator that can interpret device independent graphic data files created with DI-3000, edit them, and display their contents on a physical graphic device.

Device independent graphic software from PVI requires the use of special software for each physical graphic device on which data is to be displayed. This special software is referred to by PVI as a device driver. Although many different types of device drivers are available from PVI, the following is a list of device drivers available under the current site license agreement:

Tektronix 4105	Zeta	HP 2623A
Tektronix 4113	HP 2627	HP 7580
Tektronix 4010	HP 7475A	HP 7221
Tektronix 4027	VT 240	VT 100
Tektronix 4662	Imagen 12/300	Printronix
Tektronix 4014	Calcomp	Seiko
Tektronix 4107/9	IBM 3179G	Skeleton
Tektronix 4510		

CSO plays a major role as administrator of the site license agreement and as the liaison between PVI and the end user. Within the context of the agreement, CSO will perform the following:

- CSO will serve as a single point of contact for ordering the software and for obtaining technical information with respect to installing the software;

- CSO will provide consultation with respect to the use of the software; and,

- CSO will receive payment for software and maintenance through campus accounting.

An extremely attractive pricing structure in both the initial cost as well as the cost of maintenance makes this software accessible to many of those wishing to support baseline scientific and engineering graphics capability, especially those operating a multi-computer or network environment. Questions, requests, and general inquiries can be directed to:

Jim Bozek
Computing Services Office - 110 CSOB
1304 W. Springfield Ave.
Urbana, IL 61801
(217) 333-2048

NEW VMBATCH CLASS ON VMD FOR LARGE-MEMORY JOBS

Joan Alster

CSO has established a new VMBATCH job class, class M, for jobs requiring up to 12 megabytes of memory. Class M ("M" is for memory) jobs have all the same limits as class E jobs except that Class M provides a 12 MB machine, rather than a 4 MB machine. Thus, the class M VMBATCH machine has 12 MB of memory, 5 cylinders of A-disk space, a time limit of one hour, runs jobs 24 hours/day, and has a default of 50K lines for printing or punching.

With the class M VMBATCH machine, users requiring more than 4 MB of memory can now obtain daytime turnaround of VMBATCH jobs. Users of SAS or SPSSX should note, further, that jobs executed in 12 MB or smaller virtual machines use the "discontiguous saved segment" versions of the products. Jobs executed in virtual machines with more than 12 MB of memory (for example, in 16 MB VMBATCH machines) use the "module" forms of the products. In many cases there may be little difference in cost for jobs run using modules rather than saved segments. However, in general, the saved segment versions execute more efficiently than the module versions, so SAS or SPSSX users requiring large amounts of memory should use VMBATCH class M, rather than classes F or G, if possible.

IBM VM/SP AND CMS RELEASE 5 INSTALLED ON VME COMPUTER

Greg Kesner

Recently, the newest release of the CMS operating system was installed on the VME computer located in room 70 Commerce West. Since most of the enhancements to the system under Release 5 of CMS are not visible unless you specifically invoke them, the migration to the new release will be quite transparent to most users of the VME computer.

The first and obvious indication of Release 5 is the new logo screen you will see displayed on your terminal connected to VME. At the bottom of the screen you will notice that there are fields for entering your CMS userid and password, or a CP or CMS command. In earlier releases of CMS, you were required to press the ENTER key to clear the logo-screen in order to logon onto the system. If you still prefer this method, simply press the ENTER key and the Release 5 logo-screen will clear.

Another enhancement you will notice is an improved on-line CMS Help Facility. New commands and options have been added to enable you to utilize it more effectively. Many help categories have been reorganized to present a brief help-description for a feature and then present more or all of the help available using PF-keys.

However, the most noticeable new feature in Release 5 is a full-screen CMS environment utilizing a limited "windows" capability that somewhat resembles similar environments found in PC applications. The full-screen CMS environment must be invoked via the CP SET FULLSCREEN ON command; therefore, you need not be concerned with learning how to work in the environment unless you wish to do so.

The lighter summer load facilitated migrating to Release 5 on the VME computer. Presently no date has been set for VMD migrating to Release 5.

VMSECURE ON VMD

Beth Engelbrecht-Wiggans

VMSECURE is an interactive system for updating and maintaining your VM user directory. In addition VMSECURE allows you to write rules permitting access to your signon, disks and tapes. VMSECURE subcommands allow users to:

- Change their logon and minidisk passwords
- Change logon storage size (up to maximum for account)
- Alter the logical line editing symbols (line end, line delete, character delete and escape character).
- Select screen colors and highlighting for IBM 3279 terminals
- Monitor directory links to and from other users
- Change their account number (PS #) if they have made prior arrangements with the accounting office.
- Review their directory entry.
- Write rules

VMSECURE supports two systems for updating a user's directory entry; USER and MAINT. USER is a menu driven subcommand which requires a full-screen terminal. MAINT is for line oriented terminals. The user directory being modified looks something like the following.

```
USER userid   passwor  1600K 2M G
*PW= 86/04/16
*ED=
*
* User T. Name     333-0000  150 University Building
ACCOUNT acct.num dist.code
IPL CMS
CONSOLE 009 3215
LINK MAINT 190 190 RR
LINK SAS   192 192 RR
*mini disk specification
MDISK 191 3380 200 002 VM8009 WR read.pass write.pass mult.pass
```

To use VMSECURE's USER, MAINT or RULES command first you must access VMSECURE by typing

```
LINKTO VMSECURE
```

and then use the USER, MAINT, or RULES commands as described below. (Some users and batch machines are not allowed to use the USER, MAINT, or RULES command).

VMSECURE USER	<selection <vaddr>>

where:

selection — is an optional parameter which specifies one of the nine selections available from the User Selection Menu. If no value is selected, the User Selection Menu is displayed.

vaddr — is an optional parameter which specifies an existing minidisk. The default is 191. If **vaddr** is specified, **selection** must be specified also.

Examples:

```
VMSECURE  USER            *gets the User Selection Menu*
VMSECURE  USER  2  191    *gets Minidisk Link Mode and Passwords Screen*
```

The Nine User Subcommand Functions:

- Selection 1: Logon Storage Size and Password

  Use Selection 1 to change your logon password.

  Use Selection 1 to change the amount of virtual storage your userid has at logon. The maximum storage available for your virtual machine is listed on the first line (user card) of your directory entry (last number listed). (For more information use HELP CP DEFINE and look at DEFINE STORAGE).

- Selection 2: Minidisk Link Mode and Passwords

  Use Selection 2 to modify the link mode and read, write, or multiple passwords for your minidisks. If you wish to modify the link mode and passwords for another minidisk that you own, specify the virtual address in the FOR DEVICE field on the menu. (Use HELP CP LINK for more information.)

- Selection 3: **Not Available**

- Selection 4: Logical Line Editing Symbols

  Use Selection 4 to modify the terminal logical line editing symbols set for your userid at logon. The symbols that can be modified are: line end, line delete, character delete, and escape character. (Use HELP CP TERMINAL for an explanation of these symbols.)

- Selection 5: **Not Available**

- Selection 6: Screen Colors and Highlighting

  Use Selection 6 to modify the color and highlighting features set for your userid at logon. Color and highlighting settings only affect IBM 3279 color display terminals. (Use HELP CP SCREEN for more information.)

- Selection 7: Define a Link to Another User's Minidisk

  Use Selection 7 to set up a directory link to another user's minidisk. Directory links are performed for you at logon; you need only perform the CMS ACCESS command. To define a directory link, you must know the appropriate minidisk password for the other user's minidisk and specify a virtual address not used by your virtual machine. Since the Rules facility has now been installed, a rule must exist that allows you to link to the other user's minidisk. (Use HELP CP LINK and HELP VMSECURE RULES for more information.)

- Selection 8: Review/Remove Links By Other Users

  Use Selection 8 to review and optionally remove any directory links that other users may have defined to one of your minidisks. This selection is particularly useful when you determine that data on your minidisk should no longer be shared with other users. You should review any existing directory links to determine if any users should still have access to your minidisk. If you wish to review directory links for a minidisk other than your 191, specify that address in the FOR DEVICE field on the menu. (Use HELP CP LINK for more information.)

- Selection 9: Account Number and Distribution Code

  Use Selection 9 to change the account number to which your usage is charged or to change the distribution code (which is not used by CSO at this time). You can change your account number (PS number) only if prior arrangements have been made through the accounting office.

- Selection 10: Delete a Link to Another User's Minidisk

  Use Selection 10 to delete your directory link to another user's minidisk. In the FOR DEVICE field on the menu, you must specify the virtual address associated with the directory link you wish to remove. (Use HELP CP LINK for more information.)

- Selection 11: Review the Directory Entry

  Use Selection 11 to review all directory control statements in your directory entry. Selection 11 provides information about existing directory links and all virtual addresses associated with your virtual machine. This information is needed for Selections 2, 7, 8, and 10.

VMSECURE MAInt	Account newacct <NEXTLOG | TEMP | IMMED> DEFine vaddr1 vaddr2 Delete vaddr <Help | ?> Link ownerid ownervaddr yourvaddr <mode> MGrid MInidisk vaddr MDpw <vaddr> Password Review RLink vaddr SCratch vaddr STorage sizeK | sizeM Terminal keyword ON | OFF | char | hex

where:

ACCOUNT newacct <NEXTLOG | TEMP | IMMED>
: changes the account number to which your usage is charged. You can change your account number (PS number) only if prior arrangements have been made through the CSO accounting office.

DEFINE vaddr1 vaddr2
: changes the virtual address of one of your minidisks. Directory links to this minidisk are updated to reflect the new virtual address. Minidisk passwords for the minidisk remain unchanged. (Use HELP CP LINK for more information.)

DELETE vaddr
: deletes your directory link to another user's minidisk. **vaddr** specifies the virtual address of the directory link you wish to remove.

HELP | ?
: displays a brief list of the MAINT subcommand functions and their operands.

LINK ownerid ownervaddr yourvaddr <mode>
: sets up a directory link to another user's minidisk. Directory links are performed for you at logon. To define a directory link, you must know the appropriate minidisk password for the other user's minidisk and specify a virtual address not used by your virtual machine. Since the Rules facility has now been installed, a rule must exist that allows you to link to another user's minidisk. (Use HELP CP LINK for more information.)

MGRID
: determines who is your directory manager.

MINIDISK <vaddr>
: modifies the link mode and read, write, or multiple passwords for your minidisks. **vaddr** specifies the virtual address of a minidisk. (Use HELP CP LINK for more information.)

MDPW <vaddr>
displays the passwords for your minidisks. If a virtual address is not specified, passwords for all your minidisks are displayed.

PASSWORD
changes your logon password. VMSECURE prompts for password.

REVIEW
reviews all directory control statements in your directory entry. The REVIEW function provides information about existing directory links and all virtual addresses associated with your userid. This information is needed for the DELETE, LINK, MINIDISK, MDPW, and RLINK functions.

RLINK vaddr
reviews and optionally removes any directory links that other users may have defined to one of your minidisks. This function is particularly useful when you determine that data on your minidisk should no longer be shared with other users. You should review any existing directory links to determine if any users should still have access to your minidisk. You must specify the virtual address for your minidisk.

SCRATCH vaddr
Permanently deletes one of your minidisks. When you SCRATCH a minidisk, VMSECURE automatically formats the scratched minidisk. The space occupied by the formatted minidisk is returned to the system and your files are lost. Directory links to the minidisk being scratched are automatically removed from other user's directory entries.

STORAGE sizeK | sizeM
changes the amount of virtual storage your userid is set up with at logon. The maximum storage available for your virtual machine is listed on the first line (user card) of your directory entry (last number listed) (For more information use HELP CP DEFINE and look at DEFINE STORAGE).

TERMINAL keyword ON | OFF | char | hex
modifies the terminal logical line editing symbols set for your userid at logon. The symbols that can be modified are: line end, line delete, character delete, and escape character. (Use HELP CP TERMINAL for more information.)

Examples:

```
vmsecure maint password
VMXSYS321R Enter your logon password:

VMXSYS372R Enter a new logon password:

VMXSYS373R Reenter your new logon password for verification:

VMXSYS317I Directory updated on-line.
R; T=0.01/0.03 10:06:39
```

RULES Command

To create, edit or delete a file in the rules database, use the VMSECURE RULES command:

```
VMSECURE RULES
```

This puts you in XEDIT in your rules file. There are example rules in this file. The following are examples of rules you may wish to add to your rules file.

Example Rules

Conditional Access to Minidisk With Your Minidisk Password

The following rule would give JANE conditional access to your 191 minidisk:

```
ACCEPT JANE LINK 191 RR
```

Now, when JANE links to your 191, she must enter the read password associated with your minidisk. To reject the same request from all other userids, you add a REJECT rule:

```
REJECT * LINK 191 RR
```

Now only JANE could link your 191 in read mode. Even if JANE tells JOHN your read password, JOHN cannot link to your 191 minidisk with read-only access.

Conditional Access With the Requester's Password

Another way to specify a conditional access requires the requesting users to supply their own logon passwords. This approach frees you from establishing minidisk passwords and from making sure the appropriate people know your current minidisk password. The following rules specify that JANE is allowed to link to your 191 minidisk in read mode if JANE supplies her own logon password. All other users are restricted from linking in read-only mode to your 191 minidisk:

```
ACCEPT JANE LINK 191 RR (LOGPASS
REJECT * LINK 191 RR
```

Unconditional Access

To allow Jane to get a read link to your 191 minidisk without specifying a password, add the NOPASS option to JANE's rule:

```
ACCEPT JANE LINK 191 RR (NOPASS
REJECT * LINK 191 RR
```

Controlling Tape Access

Use the VMTAPE MOUNT rule to control who can mount one of your tapes. Tape rules have a rigid structure. First the tape **must** be referred to by its rack number, and secondly the option NOPASS must appear in the options list. The NOPASS option is required for CSO's tape handling routines to work properly. For a list of the other tape options, see the *VMSECURE RULES Facility* manual.

To allow userid CAROL to mount tape DATA on rack X158 in read mode, the rule to insert would be

ACCEPT carol VMTAPE MOUNT VOLUME x158 read (NOPASS

Note: A tape is specified in the rule by its rack number, not by its name. Also, the items that are in upper case in these examples are required in every ACCEPT rule for VMTAPE; the items in lower case are optional, or will vary from case to case.

To allow userid CAROL to mount the tape in read or write mode, the rule to insert would be

ACCEPT carol VMTAPE MOUNT VOLUME x158 write (NOPASS

VMBATCH users will want to add a rule to their rules file to allow the batch machines to have access to their tapes. The following rule will allow all batch machines to mount any of your tapes:

ACCEPT BATCH VMTAPE MOUNT VOLUME * WRITE (NOPASS GROUP

Batch is a group name defined by the system to be the group whose members are the VMBATCH machines. The asterisk (*) is used to specify that this rule applies to all of your tapes. WRITE says that the mounts can be in read or write mode. To restrict the BATCH usage to a specific tape, replace the asterisk (*) with the tape's rack number. To allow the mounts in read mode only, change WRITE t READ in the rule.

TEMP rack users need to be careful when writing rules for their temp tapes. The accept rule requires that you list the rack number of the tape, but you specify the tape by its label — TEMP. Actually there is a T rack which is referred to as the TEMP rack. Each of the tapes on this rack have a rack number (Tnnn) which must be used when writing a rule. Use the VMTAPE LIST command to determine the rack number of a particular temp tape and then use a specific rule, like the following,

ACCEPT alice VMTAPE MOUNT VOLUME t123 write (NOPASS

to give a more selective authorization.

For more details on rules for VMATPE, see the *VMSECURE Rules Facility* manual.

CONSERVING YOUR MINIDISK SPACE USING VMARCHIVE ON IBM/CMS

Greg Kesner

The VMARCHIVE software product on our VMD computer enables you to move some of your CMS files off of your 191 minidisk into a system storage area. This software system operates under the CMS userid VMARCH and enables you to keep accessible the files you less frequently use while also freeing your

minidisk storage space for other files. You may find this especially helpful if you have a small 191 minidisk.

To use VMARCHIVE, you must first link to it using the command:

LINKTO VMARCH

and then issue VMARCHIVE instructions via the VMARCH command. The VMARCH command enables you to archive files from any minidisk to which you have read/write access. You may also use the command to display the files you have already archived and to recall any of those files to your virtual reader or your minidisk.

For the present, we have implemented locally only the STAGE form of VMARCHIVE storage. In this case, when you archive one or more files, the files are stored in an on-line STAGE storage area. Each day after midnight, the files archived over the last 24 hours are copied to magnetic tapes in the archive tape pool. At this point, the files reside both in the on-line STAGE storage and in the archive tape pool. You then receive a file in your virtual reader from the userid VMARCH containing a list of the files copied to tape belonging to you. At this point, you may use the CMS ERASE command to remove the files from your minidisk to free space for other work. Whenever you need a file you have archived, you use the RECALL instruction on the VMARCH command to recall the file to either your virtual reader or minidisk. You need not be concerned with where you archived files are stored as this is managed by the VMARCHIVE system. We will regularly remove files from the on-line storage area when the on-line storage becomes filled. Please note though that the files will still be available for recall from the archive tape storage until their expiration date is reached.

The general policy for retention of files stored in the VMARCHIVE system is 366 days from the date of archive. At the time when the file is archived, an expiration date for the file is set based on the retention period. You may change this date at any time prior to the expiration date using the VMARCH CHANGE command with the EXPDT parameter. However, the latest expiration date you may set is no more than 366 days from the current date. This means a file is retained either in the on-line STAGE area or in the archive tape pool for one year from the date you archived or recalled the file, or the last date you issued a VMARCH CHANGE command for the expiration date of the file. Each time you issue a VMARCH RECALL command for a file, the expiration date of the file is updated to be 366 days from the current date. Files remain in the on-line STAGE area according to three criteria: the amount of on-line STAGE space available, the size of the file, and the file expiration date. When the on-line STAGE becomes full, the largest and oldest files will be removed from the on-line space. However, they will still remain in the archive tape pool for a year from the date of last access and may be recalled in the same manner as files from on-line STAGE. The major advantage of files remaining in on-line STAGE is a faster response time for recalls since no operator intervention is required to mount an archive tape.

Important Note: The on-line STAGE file storage is limited in size and used by many computer users. You are urged to assist in the management of the file space by using the VMARCH PURGE instruction to purge files you no longer need to have in archive storage. Also note that a policy has been established limiting the number of copies of a specific file in the VMARCHIVE system to one.

HOW TO ACCESS VMARCHIVE AND OBTAIN DOCUMENTATION

To access the VMARCHIVE software, use the CMS command:

LINKTO VMARCH

Onced linked to VMARCHIVE, you may issue instructions to archive, recall, or query VMARCH about your archived files via the VMARCH command. You may view on-line help about VMARCH instructions by issuing the CMS command:

HELP VMARCH MENU

You may also use the CSO WRITEUP command to obtain hard-copy listings for these help files. (Enter the CMS command: HELP CSO WRITEUP, for more details.)

A user's guide is also available in the CMS file: VMAUSER LISTING which is located on the VMARCH minidisk linked when you issue the **LINKTO VMARCH** command. To print this file on the IBM 3800 printer, use the command:

NPRINT VMAUSER LISTING * (DEST 3800 EJ CC BIN xx PDEF LR66 CHARS GT15

where **xx** is the two-digit bin number where you wish the output stored in room 14 Digital Computer Lab (DCL).

Please note that *VMARCHIVE User's Guide* contains complete information on the VMARCHIVE system and serves both as a guide to features and a VMARCH subcommand reference. When referring to it, remember that only the STAGE form of archive storage is implemented locally. The on-line help files provide concise explanations of the instructions (subcommands) you may use with the VMARCH command.

Using VMARCHIVE Subcommands

The VMARCH command is used to submit instructions to the VMARCHIVE system. These instructions are termed "subcommands." Several useful VMARCH subcommands will be discussed here. The entire set of subcommands is documented in the VMARCH help files and the *VMARCHIVE User's Guide*. The ARCHIVE and QUERY subcommands may be used in either a line mode or a full-screen mode which closely resembles the RDRLIST or FILELIST CMS environments. From within the full-screen listing created by the QUERY subcommand with the MENU option, you may enter the RECALL, CHANGE, PURGE, or CANCEL subcommands to recall a file to your reader, change a file expiration date, purge a file from archive storage after it has "aged" 24 hours in STAGE storage, or cancel the archiving of a file if the request is less than 24 hours old.

Using the ARCHIVE Subcommand to Archive Your Files

You may archive to STAGE storage any files that are less than 10 megabytes in size and that are located on any disk to which you have READ/WRITE access. Typically, you will be archiving files from your 191 A disk or perhaps a temporary minidisk which you created via the CSO TD (temporary disk) command or a disk you have rented from the CMS FSF system (File Storage Facility; see an accompanying article in this issue for more details). Since the temporary disk will "vanish" when you log off CMS and the rental minidisk is available for only two days, you may find VMARCHIVE very helpful in managing the files you are using that are too large for your 191 disk. For the purpose of examples in the following subcommand descriptions, let's assume we have issued a TD command and that the temporary disk is at virtual address 120 and mode B. Also, in the discussion **fn** refers to the filename of a CMS file, **ft** refers to its filetype, and **fm** refers to its filemode. Let's also assume our CMS userid is MOZART.

To archive a single file from your 191 A minidisk, issue the command:

VMARCH ARCHIVE fn ft

Example: VMARCH ARCHIVE CENSUS DATA1

archives the file CENSUS DATA1 from the 191 disk. Notice that a filemode is not specified and therefore defaults to A.

To archive a single file from your temporary 120 B minidisk, issue the command:

VMARCH ARCHIVE fn ft fm

Example: VMARCH ARCHIVE CENSUS DATA1 B

archives the file CENSUS DATA1 from the temporary disk at mode B. The file is associated with virtual address 120 for future file recalls or queries (the implications of this will be explained with the RECALL and QUERY subcommands).

To archive multiple files, you could issue individual ARCHIVE subcommands for each file, or you may use an asterisk as a pattern matching character in the filename or filetype to specify a group of files with similar filenames or filetypes. For example, if you have multiple SAS data sets all having the filetype SASDS1, you could use an asterisk for the filename.

Example: VMARCH ARCHIVE * SASDS1

archives all files on the 191 A disk with a filetype of SASDS1.

An easier way to archive multiple files from a particular minidisk is by using the MENU option to have VMARCHIVE display a full-screen listing of the files specified by the **fn**, **ft**, and **fm** fields of the ARCHIVE subcommand. The pattern-matching for the fileids specified by these fields is like that of the CMS FILELIST command. If none are specified, VMARCHIVE will construct a list of all files on your 191 minidisk.

Example: VMARCH ARCHIVE (MENU

displays a full-screen list of all files on the 191 disk. (See Figure 1 for an example.)

Within the full-screen listing, you may enter subcommands next to the file identifiers on the far left of the screen. By entering the subcommand ARCHIVE (which can be abbreviated to **ar**) next to one or more file identifiers and then pressing the ENTER-key, an ARCHIVE subcommand is executed for each file. In Figure 1, the THESIS2 SCRIPT and THESIS3 SCRIPT files will be archived once PF10 is pressed (notice the legend at the bottom of the full-screen listing which indicates PF-key definitions). When you are finished archiving files, press PF3 or enter the QUIT command on the command line at the bottom of the screen.

```
+-------------------------------------------------------------------------+
|                                                                         |
|  28MAR86 Release 4.0        V M A R C H I V E    (c) 1986, VM Software, Inc. |
|                                                                         |
|                    CMS Files Available For Archival For: MOZART         |
|  Cmd   Filename Filetype Fm Format Lrecl  Records  Blocks   Date     Time |
|                                                                         |
|        ALL      NOTEBOOK A0 V         74      220      10  9/26/85 16:36:07 |
|        PT1      EXEC     A1 V         60       15       1  9/24/85 12:31:12 |
|        THESIS1  SCRIPT   A1 V         68      156       3  9/17/85 17:23:09 |
|  ar    THESIS2  SCRIPT   A1 V         76      800      35  9/17/85 17:23:09 |
|  ar    THESIS3  SCRIPT   A1 V         76      801      35  9/17/85 17:23:09 |
|        PROFILE  EXEC     A0 F         80       18       2  7/06/86 14:19:11 |
|        PROFILE  XEDIT    A1 V         70      123       3  7/19/86 17:11:45 |
|                                                                         |
|                                                                         |
|  1= Help       2= Refresh   3= Quit     4= Stype     5= Sdate    6= Sname |
|  7= Backward   8= Forward   9= Ssize   10= Archive  11= Xedit   12= Cursor |
|                                                                         |
|  ====>                                                                  |
|                                                                         |
+-------------------------------------------------------------------------+
```

Figure 1. Archiving Multiple Files from a Full-Screen Listing

Remember that archived files remain in on-line STAGE until storage is full and some files must be removed to free space. All files are copied to the archive tape pool storage within 24 hours. If you wish to remove a file from the VMARCHIVE system before it has been copied to the archive tape pool, you must use the VMARCH CANCEL subcommand. If the file has "aged" 24 hours and has been copied to the archive tape pool, you must use the VMARCH PURGE subcommand to remove the file. See the *VMARCHIVE User's Guide* or the CMS VMARCH help files for further details on using CANCEL versus PURGE.

Using the QUERY Subcommand for Archived File Information

The VMARCH QUERY FILES subcommand displays information about the files you have archived. By default, it lists information about files archived from your 191 A minidisk. The **FOR *** option lists all the files you have archived from all minidisks. This is certainly the easiest form of the subcommand to get the most extensive information, though sometimes the list may be quite long. The **MENU** option instructs VMARCHIVE to prepare a full-screen listing of the files, which is similar in format and functionality to the CMS FILELIST command.

Example: VMARCH QUERY FILES (MENU FOR *

lists on the screen all files archived from all minidisks.

```
 28MAR86 Release 4.0        V M A R C H I V E    (c) 1986, VM Software, Inc.

                      CMS Files Previously Archived For: MOZART
Cmd   Filename Filetype Cuu   Date   Time  Refnm   Recs  Expdt   Status

      REG1     SASDS1   120 06/20/86  9:15    50    147 06/23/87 OFF STG
      REG1     SAS      120 06/23/86 12:15    56    147 06/23/87 OFF STG
      REG1     LISTING  120 06/23/86 12:32    57   3789 06/23/87 OFF STG
      REG1     SASLOG   120 06/23/86 12:32    58    177 06/23/87 OFF STG
      THESIS2  SCRIPT   191 04/18/86 11:11    10    801 06/10/87 OFF STG
      THESIS3  SCRIPT   191 04/06/86 21:03    11    800 06/10/87 OFF STG
      COMM     SCRIPT   191 09/10/86 13:20    37    105 09/11/87 OFF STG
      GETFS    EXEC     191 08/15/84 12:31    40     17 09/01/87 OFF STG
      MSG      PROB     191 09/26/86 15:12    43     15 09/01/87 STG

 1= Help       2= Refresh   3= Quit      4= Stype     5= Sdate    6= Sname
 7= Backward   8= Forward   9= Q F /n   10= Recall   11= Sexpdt  12= Cursor

 ====>
```

Figure 2. Full-Screen Listing of Archived Files from 191 & 120 Disks (Disk 120 was a temp-disk)

Using the RECALL Subcommand to Restore Files from Archive Storage

From the QUERY FILES full-screen listing, you may enter one or more subcommands (**recall** may be abbreviated to **rec**) next to file identifiers to request that files be recalled from archive storage and placed in your virtual reader for you to restore to your minidisk using the CMS RECEIVE command. For each file to be recalled, enter the RECALL subcommand next to the file identifier (on left of screen) and then press the ENTER-key. Recall requests will be submitted for those files and they will be placed in your virtual reader. In Figure 3, the files REG1 SASDS1 and COMM SCRIPT will be recalled from archive storage and placed in the virtual reader of userid MOZART.

```
 28MAR86 Release 4.0        V M A R C H I V E    (c) 1986, VM Software, Inc.

                      CMS Files Previously Archived For: MOZART
Cmd   Filename Filetype Cuu   Date   Time  Refnm   Recs  Expdt   Status

rec   REG1     SASDS1   120 06/20/86  9:15    50    147 06/23/87 OFF STG
      REG1     SAS      120 06/23/86 12:15    56    147 06/23/87 OFF STG
      REG1     LISTING  120 06/23/86 12:32    57   3789 06/23/87 OFF STG
      REG1     SASLOG   120 06/23/86 12:32    58    177 06/23/87 OFF STG
      THESIS2  SCRIPT   191 04/18/86 11:11    10    801 06/10/87 OFF STG
      THESIS3  SCRIPT   191 04/06/86 21:03    11    800 06/10/87 OFF STG
rec   COMM     SCRIPT   191 09/10/86 13:20    37    105 09/11/87 OFF STG
      GETFS    EXEC     191 08/15/84 12:31    40     17 09/01/87 OFF STG
      MSG      PROB     191 09/26/86 15:12    43     15 09/01/87 STG

 1= Help       2= Refresh   3= Quit      4= Stype     5= Sdate    6= Sname
 7= Backward   8= Forward   9= Q F /n   10= Recall   11= Sexpdt  12= Cursor

 ====>
```

Figure 3. Recalling Files from Archive Storage

Using the PURGE Subcommand to Purge Files from Archive Storage

At times you will no longer need to keep a file in VMARCHIVE storage. If a file has been in on-line STAGE storage for more than 24 hours (and has therefore been copied to the STAGE tape pool), it may be purged from archive storage using the VMARCH PURGE subcommand (abbreviated PUR). Notice in Figure 4 how such a file has a status of OFF STG. You enter the PURGE subcommand in the same manner as the RECALL subcommand from the QUERY FILES subcommand full-screen listing. If the file has a status of STG, the PURGE subcommand will not remove the file. Instead, you must use the CANCEL subcommand (abbreviated CAN) to remove the file. In Figure 4, the file GETFS EXEC will be purged from the archive storage area. The CANCEL subcommand is used to remove the file MSG PROB.

```
28MAR86 Release 4.0        V M A R C H I V E    (c) 1986, VM Software, Inc.

                    CMS Files Previously Archived For: MOZART
Cmd   Filename Filetype Cuu   Date     Time  Refnm   Recs  Expdt    Status
      REG1     SASDS1   120 06/20/86  9:15    50    147 06/23/87 OFF STG
      REG1     SAS      120 06/23/86 12:15    56    147 06/23/87 OFF STG
      REG1     LISTING  120 06/23/86 12:32    57   3789 06/23/87 OFF STG
      REG1     SASLOG   120 06/23/86 12:32    58    177 06/23/87 OFF STG
      THESIS2  SCRIPT   191 04/18/86 11:11    10    801 06/10/87 OFF STG
      THESIS3  SCRIPT   191 04/06/86 21:03    11    800 06/10/87 OFF STG
      COMM     SCRIPT   191 09/10/86 13:20    37    105 09/11/87 OFF STG
pur   GETFS    EXEC     191 08/15/84 12:31    40     17 09/01/87 OFF STG
can   MSG      PROB     191 09/26/86 15:12    43     15 09/01/87 STG

1= Help       2= Refresh   3= Quit      4= Stype     5= Sdate    6= Sname
7= Backward   8= Forward   9= Q F /n   10= Recall   11= Sexpdt  12= Cursor

====>
```

Figure 4. Purging a File from Archive Storage

Summary

This introduction to VMARCHIVE has covered some of the basic uses of the file archival system. Other features are described in the *VMARCHIVE User's Guide*. One of the most common applications of VMARCHIVE will be with the use of temp-disks to either archive files from your temp-disk prior to logging off, or to recall files from VMARCHIVE storage to a temp-disk during a new CMS session to continue your work.

Another CMS utility, FSF (File Storage Facility) allows you to "rent" a minidisk for a period of two days or less. VMARCHIVE in conjunction with FSF provide you with significant resources to accomplish your work in CMS.

OBTAINING PRINTED OUTPUT ON OUR UNIX SYSTEMS

Esther Edwards-Iwe

In an attempt to streamline all our printing services on the UNIX system, we have tentatively installed the program *ibmprint* on all our UNIX machines to enable you get a hard copy of your job. To use the program, simply type

ibmprint [opt1 opt2 opt3 ...] filename

where

opt1 opt2 opt3 is any available option (see below)

The commonly used options are:

- **–d** specifies the destination where you want your output
- **–b** specifies the bin number for your output
- **–c** specifies the number of copies you want printed
- **–p** specifies pagedef
- **–ft** specifies font type

For example,

ibmprint –d 3800 –b 34 –p lr66 –ft gt12 myprog.f

This will send a copy of the file **myprog.f** to the 3800 printer at DCL using the **lr66** pagedef and **gt12** font to bin **34.**

For more information on *ibmprint*, see the on-line man pages by typing

man ibmprint

UNIX SERVICES AND THE GOULD COMPUTER SYSTEM

Esther Edwards-Iwe

UNIX is a general purpose time-sharing operating system available on most computer systems, ranging from microcomputers to the largest mainframes. As part of our on-going commitment to better serve our user community, we are expanding our UNIX services to include all our traditional offerings such as

- Consulting
- Software installation and maintenance

- Accounting services
- User documentation

Our levels of UNIX support are targeted at both students and researchers. We currently support UNIX on the following computer systems:

- Pyramid 90x (uxa.cso.uiuc.edu)
- Sequent Balance 8000 (uxf.cso.uiuc.edu)
- Pyramid 90x (uxe.cso.uiuc.edu)
- Gould PN9050 (uxg.cso.uiuc.edu)

In response to the need for expanded UNIX services, we have recently installed the Gould computer system. Gould is the latest computer system added to CSO's UNIX family. Gould features the Universal Time-sharing Executive (UTX/32 release 2.0) based on the UNIX operating system versions implemented at AT&T Bell Laboratories (System V), the University of California at Berkeley (4.3 BSD), and Sun Microsystems. UTX/32 offers two environments which contain enhancements from Gould and Sun Microsystems. The user can select between these environments when logging in and can dynamically switch between them during the session if desired.

The Gould computer system consists of the following hardware:

- a Gould PN9050 processor with 12MB of memory
- four 340MB disk drives
- One 800/1600/6250 bpi tri-density tape drive
- an Ethernet connection to other CSO systems

We expect to upgrade the existing system with a second processor and an additional 4MB of memory, and an additional Ethernet card. This upgrade is expected to take place later this year.

Available Software under UTX/32

All standard UNIX commands are available on uxg. In addition, several public-domain and locally-written programs are also available. The /usr/local/bin directory contains a rich collection of these commands, plus a few useful programs such as

emacs	GNU project Emacs
clisp	Common Lisp
prolog	A symbolic logic programming language
xlisp	An experimental object-oriented language

Help is available via the man pages for all commands. Just type

man cmd

where

cmd is the name of the command you want help information on.

Available Compilers

UTX/32 includes Fortran 77, C and Pascal compilers. Fortran 77 and its run-time libraries implement a superset of standard Fortran approved by the American National Standards Institute (ANSI) X3.9-1978. The C compiler is based on the current release of Bell Lab's Portable CC compiler (*pcc*). The Pascal compiler is based on the BSD compiler with changes allowing conformance to ANSI and ISO Pascal standards. ADA and common Fortran compilers are expected to be available on the system shortly.

Getting an Account on any CSO UNIX System

To get an account on any CSO UNIX system, you need to apply through the CSO Accounting Office located at 1208 W. Springfield, Urbana. Research Board and class account users are particularly encouraged to use the Gould machine (uxg).

Accessing the Gould (uxg)

Terminal access to uxg is available through LocalNet (Sytek) and the Gandalf switch (which includes dial-up switch). At the time of this writing, we have 8 switch ports and 8 LocalNet ports connected to the uxg system. Remote login is also available to users with a connection to the campus Ethernet.

Dial-up switch ports can be reached by calling 333-4008 for 1200 baud and 333-4007 for 2400 baud.

Once connected to a dial-in port, enter one or more carriage returns to get the switch prompt.

From a non-dial-in port connected to the switch, enter a break followed by a carriage return to get the switch prompt.

When the switch responds with the message,

enter class or help:

simply type

uxg

From the LocalNet ports, type

CALL 1000

at the # prompt.

Alternatively, you may use the rlogin (remote login) command from any of our UNIX systems to connect to uxg. For example, if you are currently logged on to uxe, you may use the command

rlogin uxg

to remotely log in to uxg. This command assumes your login name is the same on both systems.

If you have any questions about the Gould machine (uxg), or any of CSO's other UNIX systems, contact the Systems Consultants, 1208 W. Springfield, Urbana (333-6133).

ANNOUNCING THE FORMATION OF A PC USER'S GROUP ON THE UIUC CAMPUS

Greg Kesner

CSO is interested in sponsoring a PC User's Group on the UIUC campus to facilitate the sharing of knowledge and experience among campus PC/PS users. With the great proliferation of IBM PC's, IBM PS's, and compatibles on campus, it seems very appropriate to create such a forum to enable us all to grow in our ability to use this technology in our research, creative endeavors, information/data management, and own "personal" computing.

Initially, we would like to form a Steering Committee to formulate a framework for the group and its activities. Greg Kesner will be coordinating the formation of the Steering Committee and User's Group for CSO. Greg is very interested in hearing from you as this project evolves and we encourage you to become involved. If you would like to know more about the local PC User's Group or would like to serve on the Steering Committee, please contact Greg via one of the following means:

- Electronic Mail: Send your e-mail to the following network address: KESNER AT UIUCVME
- Campus Mail: Greg Kesner, 150 DCL, Campus

We are also accumulating a database of names/addresses of campus PC users who wish to be informed of the activities, seminars, and services of the UIUC PC User's Group. We anticipate this database will also serve as a resource list of local expertise for the user's group. If you would like to be included in the database, complete the form at the end of this issue and send it to Greg Kesner's campus address listed above. Or if you have an account on the VMD or VME computers, enter the command:

PC-UG

on the CMS command line and then follow the instructions displayed to enter information in a file that will be automatically sent to KESNER AT UIUCVME.

We expect the UIUC PC User's Group to be an excellent forum for PC users to share their expertise and its applications, as well as join together to improve the availability of hardware, software, and utilities to enhance our use of IBM PC/PS's and compatibles. We hope you'll be able to take the opportunity to become involved!

PC TEX SITE LICENSE ACQUIRED

Ed DeWan

CSO has acquired a site license for the mathematical text formatting program, PC TEX, from Personal TEX, Inc. We are now selling this program on the Urbana campus to individuals who are affiliated with the University of Illinois.

What is PC TEX?

TEX — pronounced "tech", rhymes with "blech", or "tek", if you prefer a crisper pronunciation, but NOT "tex", as in "teks" and similar variants — is a typesetting/formatting system, developed by Donald E. Knuth at Stanford University. It provides textbook-quality formatting of printed material, especially material involving scientific and mathematical notation.

Initially most implementations were for large computers and powerful workstations. Personal TEX, Inc. now provides a PC-based implementation. Also, there is a very similar implementation sold by Addison-Wesley, called Micro-TEX. Our choice of PC TEX was based on some very marginal considerations, since the two packages are approximately equal in capabilities.

The PC TEX Program

PC TEX is a text *formatter*, and not an editor; nor is it a word processor, in the usual sense of the term. 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 chewing on it" You might well ask, why bother? and this is a good question. The answer is simply that good formatters stand head and shoulders above even the best word processors, when it comes to complicated formatting operations; they offer power and flexibility, and give you almost complete control over your document. 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 PC TEX is that it offers a complete mathematical typesetting capability, in addition to its normal text formatting, and this is a feature offered by very few word processors.

To use TEX, you create a file containing TEX commands, using any file editor or word processor, and then, when you are done editing, you run the program to get formatted output. For example, your file might contain the following line of input text:

```
\it This is italic type, \rm and this is Roman.
```

The output from this line of text would be:

This is italic type, and this is Roman.

PC TEX 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.

PC TEX 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 PC TEX 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.

Readers who wish to find out more about the language can examine a copy of the documentation at the Microcomputer Resource Center.[1]

[1]The CSO Microcomputer Resource Center is currently located in Room 106 at 101 S. Gregory St., Urbana, phone 244-6261. Their hours are 10am - 6pm, Monday through Friday. 101 S. Gregory St. is one block west of Lincoln Ave., and midway between Springfield Ave. and Green St.

Device Drivers

When you run PC TEX, 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. PC TEX comes with three device drivers, for dot-matrix printers. These are (1) Epson FX, RX, and IBM Graphics Printer, (2) Epson LQ, and (3) Toshiba 1340, 1341, 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

PC TEX 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 (uses 475K), (4) 10 MB hard disk (uses 1-2 MB — Note: TEX device drivers may require as much as 1 to 3 MB additional 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 METAFONT font-design program. Two versions of these fonts are available: the AM fonts, which most people use, and the CM fonts, the latest version of the Computer Modern fonts. Because most hardware manufacturers don't yet support the CM fonts, we have purchased the AM fonts with the PCDOT drivers.

Prices

The software and the manual are being handled separately. The software is $45.00, which includes three PCDOT printer drivers (for the EPSON FX, EPSON LQ, and Toshiba dot-matrix printers). The manual is $15.00.

Distribution

The manuals are being sold and distributed at the CSO Distribution Center[2], independently of the software. The software is being sold, but not distributed, at the Distribution Center; after paying your fee, you will receive a purchase certificate, which you will then take to the CSO Microcomputer Resource Center. At the Resource Center, upon receipt of your proof of ownership, the appropriate disks will be checked out to you for copying, using one of the Center machines. You will then return the master disks to the attendant. *Note that you will be required to bring your own diskettes.* Do not bother to format them, since copying will be done with the DISKCOPY command.

[2]The CSO Distribution Center is located at 1208 W. Springfield Ave., Urbana, phone 333-9230. Their normal working hours are from 8-12am and 1-5pm Monday through Friday.

Diskettes

The software comes on 5 low-density diskettes. In addition, there are two sets of PCDOT printer drivers, each set consisting of 5 low-density diskettes. The one set is for EPSON FX dot-matrix printers, and the other set covers both EPSON LQ and Toshiba dot-matrix printers. Thus, if you wish to have the full package, you will need 15 low-density diskettes If you need only one printer set, you will need 10 low-density diskettes, and if you don't want any printer support, you will need 5 low-density diskettes for the software. (Low-density diskettes hold approximately 362,000 bytes, and high-density diskettes hold approximately 1,200,000 bytes. The Microcomputer Resource Center is equipped to handle both low- and high-density diskettes. They can also convert to the new 3 1/2 inch format.)

IBM Proprinter and 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, Inc. sells laser printer drivers at prices ranging from $195.00 to $225.00. Printers supported are Cordata LP-300/LP-300X, Canon LPB-CX (HP LaserJet and others), HP LaserJet Plus, QMS Lasergrafix 800 and 1200, and PostScript (e.g., Apple LaserWriter). For further information on laser printer support and other items, see the Personal TEX, Inc. Product Catalog, which can be examined at the Microcomputer Resource Center. (Note: A new catalog is under production, and will be available some time after this article goes to print. It will feature upgrades to the existing laser writer drivers.)

Screen Previewers

Screen previewers present a similar difficulty, in that there are three available from Personal TEX, Inc. — Preview, MAXview, and DVISCRN — hence, we have opted to leave this up to the purchaser as well. Further, it is believed by some experienced users that they are too slow to be worth the expense, especially if you have access to a laser printer, which gives reasonably quick results. You can get further information on the three previewers by consulting the Product Catalog mentioned above.

Support

Support is strictly through the Text Processing Consulting Office representative (333-7318), and consists primarily of help with installation, since Personal TEX, Inc. 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. Also, our consultant maintains a list of local PC-TEX purchasers through the site license program, and will put out bulletins requesting help on particularly difficult problems.

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.

NEW RELEASE OF SPSS/PC+ READIED FOR DISTRIBUTION

Anup Roy

CSO has readied a new release of SPSS/PC+ for licensed users at the University. The various changes made to SPSS/PC+, since the initial publication of the SPSS/PC+ manuals, are documented in a brochure entitled *Update: SPSS/PC+ for the IBM PC/XT/AT, 1987*, by SPSS Inc., Chicago, Illinois.

Currently licensed users of SPSS/PC+ at the U. of I. will have received notification of the availability of the new release by the time this issue of *Off-Line* is in print. Users will have the option to trade in their original diskettes for the newly prepared disks (free). Users who decide to use the new release will have to erase their old copy of SPSS/PC+ from their hard disks and completely reinstall the new version from scratch. However, any SPSS/PC+ system file created using the old release will be directly readable by the new version.

SPSS has instituted a more streamlined installation procedure for this new release. All products, including separately purchased (non-site-licensed) copies of additional modules (i.e., Data Entry II, Graphics, Tables, Trends, etc.), can be installed using the same identical command. The new installation instructions are included with the new release.

Because of the new installation procedure, the number of diskettes supplied with each option of SPSS/PC+ has changed drastically. The Base Product now consists of only four (4) diskettes (numbered B1 through B4), plus a tutorial disk. (Please note that once again there is no key diskette.) The Advanced Statistics option has only three (3) diskettes (numbered A1 through A3). A Kermit disk is still supplied for micro-mainframe communications. In addition, there are two new diskettes labeled U1 and U2 — these are the so-called "universal set" disks and contain software and utilities that are required to install or run any part of SPSS/PC+. The "universal set" diskettes are essential if the end-user plans to use any separately-purchased, additional products/options (such as Trends, etc.) with the site-licensed version of the Base Product.

Higlighted below are some of the major changes and enhancements in the new release of SPSS/PC+:

Changes to the Base Product System

- Review, the SPSS/PC+ full-screen editor, has been enhanced in several ways:

  it can edit much larger files,

  vertical cursor movement has been significantly improved,

  the way in which Review prompts one for information on the status line is enhanced, and

  three entirely new commands are available for working with blocks of text.

- The way SPSS/PC+ prompts after the detection of a syntax error is modified.
- The processing, during data input and transformation passes, is speeded up slightly.

Changes to SPSS/PC+ Advanced Statistics

Two changes have been made to the "Hiloglinear" procedure to alleviate the computational problems that occur when empty cells are present.

SPSS/PC+ "Translate" procedure Made Available as Part of the Base Product

The SPSS/PC+ "Translate" procedure has been released as a part of the Base Product system. This procedure converts files from popular spreadsheet and database management packages into SPSS/PC+ files and vice-versa. Supported packages are: Microsoft Multiplan, Lotus 1-2-3 and Symphony spreadsheet packages; and the dBase II, dBase III and dBase III Plus database packages. The user's guide for the "Translate" procedure is included as part of the update documentation.

If you have any general questions about SPSS/PC+, please contact the CSO Statistical Consultants, 85 Commerce West (333-2170). More specific questions about SPSS/PC+ can be directed to Anup Roy at 244-1201.

SOME CLARIFICATIONS REGARDING THE SITE LICENSING ARRANGEMENTS FOR SPSS/PC+ AT THE U OF I

Anup Roy

It has come to our attention that there is some confusion in the general user community about the nature of the site-licensing arrangement for SPSS/PC+ as put into effect by the Statistical Services Group at CSO. We hope that this article will clear up this confusion for our users.

The "complete" SPSS/PC+ package consists of the following eight products:

SPSS/PC+ Base Package
SPSS/PC+ Advanced Statistics
SPSS/PC+ Tables
SPSS/PC+ Graphics (featuring Microsoft Chart)
SPSS/PC+ Data Entry II
SPSS/PC+ Mapping (featuring Ashton Tate's Map-Master)
SPSS/PC+ Trends
SPSS/PC+ Graph-in-the-Box

At the current time, only the first two products — SPSS/PC+ Base Package and SPSS/PC+ Advanced Statistics — are included in the site-licensing agreement. If you wish to use any of the other six products, you must purchase individual copies directly from SPSS, Inc. and "authorize" them to be used with your site-licensed products.

The Basic Package and Advanced Statistics modules are available for your perusal and trial at the CSO Microcomputer Resource Center (see footnote on page 22 for location and hours of Center).

If you would like to try out any of the other products/modules, please call the Social Science Quantitative Laboratory (SSQL) in Lincoln Hall at 333-6750.

If you have licensed SPSS/PC+ at the University, and would like us to acquire any of the other products on a site-license basis, please fill out the survey form at the end of this issue of *Off-Line* indicating which product(s) you are interested in, and return it to us as soon as possible. We will then look into this matter as budget considerations permit (and if enough interest is indicated).

If you have any further questions about the licensing arrangement, or about purchasing other SPSS/PC+ products, contact the Statistical Consultants in Room 85 Commerce West (333-2170), or Anup Roy at 244-1201. You may also call Ms. Lisa Dobner (312-329-3482), the Marketing Representative for the U of I at SPSS, Inc., for information on purchasing products.

The following two articles are updated versions of articles that appeared in the May-June 1987 issue of *Off-Line*. They are included here to refresh your memory about SPSS/PC+ and the licensing agreement, and to inform you of some new products and/or changes in SPSS/PC+. For example, in the following article, users should pay particular attention to the new products Trends and Graph-in-the-Box, and to the major update of the product Data Entry to Data Entry II.

REMINDER: If you are interested in CSO obtaining site-licenses for some of the other SPSS/PC+ products, remember to fill out the survey form at the end of this issue and return it to CSO.

SPSS/PC+ FOR THE IBM PC AND COMPATIBLES

Anup Roy

The SPSS/PC+ statistical software package from SPSS, Inc. is a group of products designed to organize/enter, analyze and display data in a relatively simple and convenient way. It can accomplish large file manipulation tasks such as matching, merging and condensing; everyday data manipulation tasks such as recoding, transforming, sampling and weighting; and state-of-the-art statistical analyses. Nearly all of the descriptive statistics, cross-tabulation, analysis of variance, t-tests, correlation and regression statistical procedures used in standard analytical research are included in SPSS/PC+ and its components. Most advanced multivariate techniques like discriminant, factor, cluster and hierarchical log-linear analyses as well as multivariate analysis of variance and covariance are supplied in the so-called "Advanced Statistics" module.

The Data Entry II option and the recently released file-translation procedure in the base system facilitate the creation of SPSS/PC+ system (binary) files and data exchange with popular database management system and spreadsheet packages.

The SPSS/PC+ report generator provides flexible formatting for producing documents, with facilities for producing customized output. SPSS/PC+ Graphics (featuring Microsoft Chart) and SPSS/PC+ Tables make presentation-quality graphs and tables from data files. SPSS/PC+ Mapping (featuring Ashton Tate's Map-Master) makes the production of presentation-quality maps rather straightforward.

SPSS/PC+ Trends provides the user with one of the most comprehensive time series analysis and forecasting packages available on the PC. SPSS/PC+ Graph-in-the-Box is a "snapshot" graphics product which gives one the power to instantly visualize one or more screens of data during the interactive data analysis process.

SPSS/PC+ runs on an IBM PC/XT or AT (or on many of the IBM compatible microcomputers such as the AT&T 6300 Plus, Compaq Deskpro 286, ITT XTRA (Model 4), Leading Edge - Models M & D, NCR PC8, Sperry IT, Wyse 1100-2, and Zenith 241, etc.) with at least 384K available RAM (some procedures like Manova and Tables require at least 448K); a 10 megabyte hard disk (although at least 20-30 is recommended for complete installation of all of the modules); a 5 1/4" 320/360 KB double-sided double-density floppy disk drive (or an appropriate high density 1.2 MB drive); an applicable math coprocessor (8087/80287) — optional but very strongly recommended; PC DOS (or MS DOS) Version 2.0 or higher; and either an IBM Enhanced Graphics Adapter (EGA) or an IBM Color/Graphics Monitor Adapter, or a Hercules graphics card (for the graphics features).

SPSS/PC+ comes with an excellent full-screen editor/display manager called REVIEW, which can be used to build, browse and edit datasets and execute jobs in an interactive environment. One can, of course, also do batch processing. With REVIEW, one can edit command files while viewing the pertinent output through a separate window on the same screen.

Procedures are provided for transfer of raw data or SPSS-X and portable SAS system files (binary datasets) to and from linked mainframe computers. The communications and file transfer utility, KERMIT, is provided free with the product for this purpose.

SPSS/PC+ allows processing of datasets containing up to 200 variables. The number of records, units of analysis or cases permitted is limited only by the amount of disk space and memory on one's machine.

Alphanumeric or "string" data of up to 255 characters can be entered. All computations on numeric variables (fields) are carried out in double precision arithmetic.

SPSS/PC+ has the ability to directly translate a Lotus 1-2-3, dBase II or dBase III, Symphony or Multiplan file into an SPSS/PC+ system file, and also to directly convert data from SPSS/PC+ system files into these other packages. Moreover, SPSS/PC+ can also read and write standard ASCII files; hence, one has the ability to exchange data files with many other types of popular PC software.

Unlike many other micro products, SPSS/PC+ provides full labeling capabilities for both variable names and value names — one may define up to 60-character variable labels and 60-character value labels. Once these have been entered, they can be saved to reappear whenever the pertinent variables are encountered in the analysis.

The basic components of SPSS/PC+ are as follows:

- **SPSS/PC+ Base Product** — The base system containing all data and file-handling routines; basic descriptive statistics; t-test; oneway analysis of variance (including multiple comparison tests); correlation and regression procedures; non-parametric statistics; and report writing and preliminary plotting functions.

- **SPSS/PC+ Advanced Statistics** — Advanced statistical procedures such as: factor, cluster, discriminant, and hierarchical log-linear analyses; multivariate analysis of variance and covariance (including repeated measures designs).

- **SPSS/PC+ Tables** — A supplement to the data display and analysis capabilities, it provides the means to display results of analyses and to summarize data in a tabular form. The output is publication quality and can be directed to a wide variety of printers, including laser printers.

- **SPSS/PC+ Graphics (featuring Microsoft Chart)** — With two main components, Microsoft Chart and SPSS' Graph procedure, SPSS/PC+ Graphics provides the ability to summarize and display data using presentation-quality graphics. One can create charts quickly and easily, insert text wherever one wants, customize charts right on the screen, and produce top quality output that is compatible with a wide variety of printers (both dot-matrix and laser) and plotters, as well as with several high-resolution film recorders and video-display devices.

- **SPSS/PC+ Data Entry II** — A set of file creation facilities and newly improved file translation procedures. The full-screen, high resolution forms that may be created with Data Entry II simplify the process of entering data and creating new data files, especially for someone unfamiliar with both computers and the data. The ability to translate quickly ASCII, Lotus 1-2-3, Symphony, Multiplan, Wordstar, and dBase II & dBase III files, as well as portable SPSS-X files, into SPSS/PC+ system files (and vice-versa) brings powerful data-analytic tools to bear on practically all types of data stored on personal computers.

  Data entry forms may be made to resemble the actual document on which the information has been recorded to reduce confusion and to make it straightforward for clerical staff to enter and edit data. As each field is filled on the screen, the cursor advances automatically to the next field, precluding the "spacing" errors extremely common to data entry. The newly designed skip logic capabilities automatically bypass those fields that aren't applicable on a screen and jump directly to the next appropriate field. For example, one can have it skip all survey questions dealing with females, once the sex of the respondent has been entered as "male."

  Data Entry II allows one to check incoming data for conformity to the rules one chooses, ensuring the integrity of one's files. Validity constraints may be imposed on any field to protect the data file from aberrant or errant values — both single-column and cross-column contingency checks (e.g., no "pregnant males") may be performed. After requesting that Data Entry II "clean" the data, the user is presented with a report telling which cases do not meet the constraints and hence should be edited. The complete integration of Data Entry II with other parts of the SPSS/PC+ system allows one to inspect and edit datasets at any moment during the analysis or the preparation of reports.

- **SPSS/PC+ Mapping (featuring Ashton Tate's Map-Master)** — With two main components, viz., Map-Master from Ashton Tate, and the SPSS/PC+ Map procedure, SPSS/PC+ Mapping provides the ability to produce presentation-quality maps and to display the same on the same sorts of hard-copy devices that are used with SPSS/PC+ Graphics. This procedure provides full aggregation facilities for summarizing one's data. One can define data values and geographic areas within SPSS/PC+, and then transfer them to Map-Master easily.

  Map-Master includes two different types of files:

  1. Boundary Files which draw the outlines of geographic regions (e.g., countries, states, counties, zip codes, etc.), and

  2. Statistics Files containing demographic and economic data for the regions in a Boundary File.

  Three Boundary Files are provided with the product: a) world by country, b) western Europe by region, and c) U.S. map by 3 digit zip code.

- **SPSS/PC+ Trends** — A set of comprehensive procedures for analyzing time series data and for business forecasting, SPSS/PC+ Trends incorporates techniques like two-stage least squares and weighted least squares regression, three different methods for estimating autoregressive models,

curve-fitting algorithms with over ten choices of models, more then a dozen smoothing models, univariate and bivariate spectral analysis methods, and Box-Jenkins analysis based on state-of-the-art ARIMA algorithms.

SPSSPC+ Trends is a perfect complement to the Base Product and Advanced Statistics modules. The documentation comes packed with the "how-to" examples. Trends' model naming conventions are those used in all the leading textbooks; thus, one can use the syntax with which one is already familiar. Models can be readily saved and reused. One can change and modify validation and forecasting periods, test and compare fits among alternative models, make instant revisions "on the fly," and correctly estimate missing values using the latest statistical algorithms. Trends includes full diagnostic plots, graphics and statistics.

- **SPSS/PC+ Graph-in-the-Box** — This is a "snapshot" graphics product for instantaneous and interactive data visualization. One can visually represent one's data even if the hardware doesn't include a graphics display and/or a graphics card. Fast printer output may be used in lieu of or in concert with either a monochrome or a color screen display.

  One keystroke takes the user into a line, bar, stacked bar, pie chart, or mixed chart representation of his/her data. One can:

  see what one's data is beginning to reveal without alternating between various software programs;

  interactively play with the data to see effects visually, identify patterns, and play "what if";

  easily flip among chart types to get the best picture; or

  store any graph for later access, or print out to review.

  This product offering is useful with many other programs such as Lotus 1-2-3, but is specially optimized for use with SPSS/PC+. It comes with the standard Graph-in-the-Box manual and a tailored booklet on getting the most out of using it with SPSS/PC+.

Summarized below are more details regarding SPSS/PC+:

Programs Available

SPSS/PC+ Base Product

Categorical and descriptive statistical procedures:

DESCRIPTIVES	Computes summary statistics on numeric variables (nearly identical to "Condescriptive" procedure in mainframe SPSS-X).
FREQUENCIES	Calculates summary statistics and displays frequency distributions on a single variable at a time.
CROSSTABS	N-way crosstabulation (contingency tables) and related calculation of various measures of association.

Procedures that compare groups:

MEANS	Describes subpopulations by calculating means, standard deviations, sums, etc. across groups of independent variables.
ANOVA	Factorial analysis of variance and covariance for relatively simple designs.
ONEWAY	Performs one-way analysis of variance and sundry multiple comparison tests, etc.
T-TEST	Performs independent as well as paired-sample t-tests.

Multi-variable statistical procedures:

CORRELATION	Computes Pearson product-moment correlations for a set of variables.
REGRESSION	Sophisticated multiple regression program with extremely powerful regression diagnostics.

Non-parametric statistical procedures:

NPAR TESTS	Performs various non-parametric tests, including one-sample tests, and 2-sample or k-sample (in general) tests for related or independent samples.

Data display procedures:

REPORT	Complete and flexible report-writer procedure.
PLOT	Draws bivariate scattergrams, contour plots, overlay plots and regression plots.

Data and file management procedures:

JOIN	Matches and merges the contents of multiple SPSS system files in a variety of ways, including addition of cases, parallel or non-parallel matches, and table lookups.
AGGREGATE	Creates system files with cases containing summary statistics for groups of cases for use in later analyses using other programs and/or procedures.
REVIEW	A full-screen editor and display manager to build, browse, and edit SPSS datasets and/or execute jobs in an interactive environment.

Miscellaneous procedures and commands:

Supplied for mainframe-micro link to send or receive data files, SPSS-X system-files or portable SAS datasets (Kermit is used as the file-transfer protocol to transfer SPSS-X or SPSS/PC+ portable files); or to exchange data files with other PC software packages, e.g., editors (like Wordstar), spreadsheet programs (such as Lotus 1-2-3), and PC database management system software (like dBase II or dBase III), etc.

SPSS/PC+ Advanced Statistics

FACTOR	Performs various kinds of factor and principal component analyses with a wide array of extraction and rotation methods.

CLUSTER	Carries out hierarchical cluster analyses of cases.
QUICK CLUSTER	Hierarchical cluster analysis method for faster convergence, when the number of clusters is predetermined or prespecified (used for initial screening).
DSCRIMINANT	Performs discriminant analyses with cross-validation, etc.
MANOVA	Performs general model multivariate (and univariate) analysis of variance and covariance.
HILOGLINEAR	Used for hierarchical log-linear modeling for multiway contingency tables.

SPSS/PC+ Tables

TABLES	An additional product used for customizing and producing publication-quality tables for a wide variety of dot- matrix and laser printers, etc.

SPSS/PC+ Graphics (featuring Microsoft Chart)

GRAPH	Allows one to summarize and display data using presentation-quality graphics. The SPSS/PC+ Graph procedure is designed to be used primarily with the Microsoft Chart product. However, it can also be used in conjunction with Chartmaster (from Ashton Tate, formerly Decision Resources, Inc.) and GrafTalk (from the Redding Group).

SPSS/PC+ Data Entry II Facility

DATA ENTRY II	An additional product used for customizing data entry and for data "cleaning," it also provides for easy transfer of data from other PC packages into an SPSS/PC+ system file.

SPSS/PC+ Mapping (featuring Map-Master from Ashton Tate)

MAP	SPSS/PC+ Mapping allows users to aggregate their data and display the same using Map-Master's mapping capabilities. SPSS/PC+ Mapping works with a variety of popular printers, slide makers and monitors, producing printouts, slides and transparencies on demand.

SPSS/PC+ Trends

Trends	Includes comprehensive procedures for analyzing time series data and for business forecasting.

SPSS/PC+ Graph-in-the-Box

Graph-in-the-Box	This is useful for fast and interactive data visualization.

SITE LICENSING ARRANGEMENT FOR SPSS/PC+ AT THE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Anup Roy

SPSS Inc. distributes SPSS/PC+ for the IBM personal computer and compatibles on a site-license basis. The University has made arrangements for a site license on two products: **SPSS/PC+ Base Product and SPSS/PC+ Advanced Statistics.** Please refer to the accompanying article, SPSS/PC+ for the IBM PC and Compatibles, to familiarize yourself with SPSS software for the IBM PC.

SPSS/PC+ needs to be installed from diskettes onto the hard disk before use. A 10 megabyte hard disk is generally adequate for installing and running SPSS/PC+ (Base Product & Advanced Statistics) on an IBM PC/XT or AT (or compatible). One doesn't, however, need to keep the entire SPSS/PC+ system installed on the hard disk at all times. Only the essential "central system" is required. All non-essential procedures are grouped into modules which can be installed or removed as one wishes. During the initial installation one is informed of the amount of space that such modules will occupy on the hard disk, and prompted whether or not to install these modules during the first go-around. Should one change one's mind later, one is allowed to selectively remove modules or to install modules that one may have omitted during the original installation. The installation procedure is organized in a very user-friendly menu-driven format; it is thus quite easy to master.

CSO has purchased a site license for making up to 2,000 copies of these products. **Users will have to sign an end-user agreement with the University of Illinois at Urbana-Champaign, and they will have to pay an initial fee for each product as well as a yearly renewal fee.**

SPSS/PC+ Distribution

In keeping with the License Agreement that the University of Illinois at Urbana-Champaign has entered into with SPSS Inc., an agreement/contract between the University and the end-user has been developed. The end-user agreement will have stipulations for compliance. It will contain a form to be filled out with questions pertaining to hardware specifications and the actual location of the hardware. The end-user agreement can be obtained from the CSO Systems Consulting Office located at 1208 West Springfield Avenue or the CSO Statistical Consulting Office in Room 85 Commerce West. The completed end-user agreement **(including both office & home addresses and phone numbers)** should be brought to the CSO Accounting/Distribution Office at 1208 W. Springfield. A photocopy may be made for personal files.

The end-user agreement will serve several purposes. First, it will be a means by which the University can uphold the stipulations in the License Agreement between SPSS Inc. and itself. Secondly, it will aid CSO in keeping accurate records of who has licensed the software. Third, the information will be added to the SPSS/PC+ Users' Mailing List which will be used to inform users about updates, etc.

The **Base Product** consists of four diskettes numbered B1 through B4, and a Tutorial diskette. The **Advanced Statistics Product** has three diskettes numbered A1 through A3. In addition there are two "universal"diskettes, U1 and U2, containing software and utilities that are required to install or run any part of SPSS/PC+. These disks are essential if you plan to use any of the additional products/options (such as Trends, etc.). An additional diskette containing the most recent official release of **Kermit** (Version 2.29B) is also distributed with the rest of the software. Kermit serves in the uploading and downloading procedures. **The price for obtaining all of this is $125.00, which includes the initial license fee, copying fee, and the price of the diskettes.** The license fee covers free updates. If there are any updates for this version, the user will have to pay for the diskettes and the copying fee if he/she desires to obtain them. The

License between SPSS Inc. and the University will be renewed on the 1st of July every year. Similarly, the **end-user agreement must also be renewed on each anniversary date (from date first signed) in successive years. The 1987-88 renewal fee is $80.00** (this cost may vary slightly in the future).

Although SPSS/PC+ documentation may be purchased by anyone, only employees of the University are entitled to "buy" the software. A valid University faculty/staff ID card (along with a valid picture ID) will suffice as proper identification. Please bring these to the office at 1208 W. Springfield. Graduate students are allowed to procure the software **if and only if** they currently have an appointment of some kind (e.g., Research and/or Teaching Assistantship or Fellowship, or Academic/Non-Academic Professional status, etc.) at the University, and are able to prove the same — **a valid University student ID alone will, therefore, not be sufficient** to obtain a copy of the SPSS/PC+ software. A University Stores Voucher with proper 11-digit University account information (viz., account number and title) can be processed by the people at the CSO Distribution Office. Individuals may also pay by check made out to the University of Illinois. Cash will not be accepted.

The software is licensed, in general, for use on a single machine only. Multiple machine use requires the purchase of multiple copies. The only exception to this stipulation is that home use by **full-time** employees is permitted, provided that the total number of copies in home use does not exceed the total number of copies in use on University premises under the terms and conditions of the pertinent end-user agreement.

Summarized below are prices for the software and documentation available for sale at the CSO Distribution Office:

Product	Price
SPSS/PC+ Base Product & Advanced Statistics (and Kermit Version 2.29B) initial license, diskette and copying fees	$125.00
SPSS/PC+ Base Product & Advanced Statistics 1987-88 renewal fee	$80.00
SPSS/PC+ Manual (SPSS Inc., 1986)	$29.95
SPSS/PC+ Advanced Statistics Manual (SPSS Inc., 1986)	$19.95

SPSS/PC+ Consulting

The CSO Statistical Consulting Group will provide consulting on SPSS/PC+. Their office is in Room 85 Commerce West. Their office hours are 9 a.m. to 1 p.m. Mondays and Wednesdays, 9 a.m. to 5 p.m. Tuesdays and Thursdays, and 9 - 11:45 a.m. & 1:15 - 5 p.m. on Fridays. They can be reached by phone at 333-2170. The Social Science Quantitative Laboratory (SSQL) in Lincoln Hall will also provide consulting on SPSS/PC+. The phone number to call is 333-6750.

The members of the CSO Statistical Consulting Group will be able to consult on SPSS programming techniques and statistical procedures. They will know how to install SPSS/PC+ on the PC and be able to

consult on any questions regarding the installation procedure. They will consult on the uploading and downloading procedures provided by SPSS Inc. They will also be prepared to consult on ways to convert SPSS-X code for the IBM mainframe machine (UIUCVMD) into SPSS/PC+ code and vice-versa.

Anup Roy will take ultimate responsibility for all issues concerning SPSS for the PC. These issues include, but are not limited to, the following: licensing, copying, distribution, installation, consulting, use and training. All questions and/or problems may be referred to him. His office telephone number is 244-1201.

SPSS/PC+ Diskette Replacement Policy

If, for any reason, an SPSS/PC+ diskette is deemed defective and hence unusable, a replacement will be made free of charge at the PC Consulting Office in Room 91 Commerce West.

Please bring the defective diskette to Room 91 Commerce West. The PC consultant on duty will replace the defective diskette with a new floppy. The PC Consulting Office hours are 9 am to 5 pm Monday through Friday, and 7 pm to 10 pm Sunday through Thursday. The phone number is 244-0608.

If you have any questions with regard to this policy, please contact the CSO Statistical Consultants in Room 85 Commerce West (333-2170), or Anup Roy at 244-1201.

SURVEY OF INTEREST IN SITE-LICENSING BMDP PC FOR IBM-PC OR PC COMPATIBLES

Anup Roy

As you may be aware, the Statistical Services Group at CSO has set up site-licensing arrangements (for UIUC faculty and staff) for PC/SAS and SPSS/PC+ software under PC-DOS (and MS-DOS) on IBM PC/XT and IBM PC/AT (and compatibles). In addition to licensing the above products, the Statistical Services Group would like to site-license and support the microcomputer version of the large-scale statistical software package BMDP, if there appears to be a demand for it. Thus, we are conducting a survey to gauge the level of interest in this package.

Please complete the survey form at the end of this issue of *Off-Line* and send it to us as soon as possible, so that we can act on an informed basis in this matter. (Note: If you completed the BMDP PC interest survey, which was in the May-June 1987 issue, you do not need to send in another copy.)

The rest of this article provides a description of BMDP PC that should be of help to you in deciding if this package might meet your computing needs.

BMDP PC is a comprehensive statistical analysis package marketed by BMDP Statistical Software, Inc. for the IBM PC and compatibles. 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 by another program.

A complete version of the 1987 release of BMDP PC includes 39 programs from the mainframe 1987 version of BMDP, plus a full-screen data manager. The data manager program, called DATAMAN, provides a full-screen editor/data display manager, and allows the user to match-merge/concatenate datasets and work with hierarchical files. Data from popular spreadsheet systems like Lotus 1-2-3 and database

management system packages like dBaseIII can be readily loaded into the system as well, with very little difficulty. (Also see the DATAMAN description below.)

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. Some examples of the programs available are: basic descriptive statistics, plots and histograms, t-tests, regression analysis, factor and cluster analyses, survival analysis, Box-Jenkins time series analysis, log-linear modeling, nonlinear and stepwise logistic regression, discriminant analysis, repeated measures and multivariate analysis of variance, one-way analysis of variance, missing data interpolation, spectral and cross-spectral analysis, and many others.

BMDP PC requires an IBM PC/XT or IBM PC/AT (or compatible) with at least a 5 megabyte hard disk (however, a 20-30 megabyte hard disk is strongly recommended), a floppy disk drive that can read double-sided, double-density diskettes, an 8087/80287 floating-point math coprocessor, 512kB RAM of memory (640kB recommended), and PC-DOS 2.0 (or MS-DOS) or a later version. The entire package consists of 85 360kB diskettes; however, only your most-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.

Up to 16,000 cases can be entered and analyzed. The maximum number of allowable variables varies from program to program. The algorithms/formulae to determine the maximum number of variables for a particular application are presented in the *BMDP Statistical Software Manual*, 1985 Reprinting, Appendix B.2. Only two (2) character or alphanumeric variables are allowed per file; character variables can occupy a maximum of four columns. There is, however, no maximum limit to the number of columns that a numeric variable can take.

A complete version of the 1987 release of BMDP PC (39 programs plus DATAMAN) is sold to an individual for $2,100.00. However, under BMDP's site-licensing arrangement, the University could site-license a fixed number of copies of the product. The price for an individual user would then be set on a volume-discounted sliding scale, which in turn, would depend on the total number of users who wish to purchase the package. For instance, if the University decided to site license 40 copies of the complete 1987 release, we would have to pay a $4,000.00 one-time setup charge, plus a per-user fee of $160.00. This would bring the total one-time site fee to $10,400.00 (for 40 users).

Since, unlike PC SAS and SPSS/PC+, there is **no renewal fee**, an individual user's average cost would amount to approximately $250.00, plus $135 to $150 (to defray the University's expenses in copying and supplying the 85 360kB double-sided, double-density diskettes, in suitable containers), plus $30.00 for a complete set of documentation. In other words, the total cost to each user would be approximately $415 to $430, if there were 40 interested users.

BMDP releases an update about once every two years. Their most recent version is the 1987 release (available as of December 1986). Future releases are scheduled to be offered at a substantial discount for licensed sites that choose to update.

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 — it thus offers a fairly complete set of statistical procedures that one needs to satisfy a diverse group of users. See the description below for a listing of some of the programs available.

- **Hard-disk Space.** Each BMDP PC program is independent. Therefore, although the entire product would fill up approximately all of a 20 megabyte hard-disk, users can conserve space by keeping only their favorite programs on the hard disk, with the rest on floppies.

- **Data Handling.** BMDP PC reads ASCII files, so users can analyze data input with either a wordprocessing or a spreadsheet package. Data can also be input and edited with the BMDP PC line editor. Moreover, BMDP PC includes a very powerful data manager program for merging files and preparing one's dataset for statistical analysis.

- **Accuracy and Mainframe Compatibility.** The 1987 PC release of BMDP is identical to the 1987 mainframe release. This lessens the probability of introducing new bugs, as has been the case with some other microcomputer versions of mainframe statistical packages. Moreover, this ensures that, if you are experienced with using BMDP on one of our mainframe machines, you already know how to use BMDP on a PC.

Programs Available

Data Description & Descriptive Statistics, etc.

DESCRIBE (1D)	Simple data description & univariate statistics, etc.
DETAIL (2D)	Detailed data description, including frequencies.
COLFREQ (4D)	Single column frequencies (numeric & character variables) — helpful in data screening.

Data in Groups.

TTEST (3D)	Comparison of 2 groups with t-tests.
ANOVA1 (7D)	Description of groups (strata) with histograms & analysis of variance.

Plots & Histograms.

HISTO (5D)	Histograms and univariate plots (normal probability plots, half-normal plots, cumulative frequency distribution plots, and cumulative histograms, etc.).
PLOT (6D)	Bivariate scatter plots with linear regression line, etc.
MULTGRP (9D)	Multiway description of groups.

Frequency Tables - Categorical Data Modeling.

FREQ (4F)	Two-way and multiway frequency tables: measures of association and the classical log-linear model (for both complete and incomplete tables).

Missing Values - Patterns, Estimation & Correlations.

MISSCORR (8D)	Correlations with options for incomplete data.
MISSDATA (AM)	Description & estimation of missing data.

Regression.

MULTREG (1R)	Multiple linear regression.
REGRESS (2R)	Stepwise regression, including very powerful regression diagnostics.
PRINREG (4R)	Regression on principal components (including "stepwise").
POLYREG (5R)	Regression using orthogonal polynomials.
ALLREG (9R)	All possible subsets regression, employing the classical Furnival-Wilson algorithm on criteria like R-squared, adjusted R-squared, and Mallow's C_P.

Nonlinear Regression & Maximum Likelihood Estimation.

NONLIND (3R)	Nonlinear regression.
NONLIN (AR)	Derivative-free nonlinear regression.
LOGISTIC (LR)	Stepwise logistic regression.

Analysis of Variance & Covariance.

ANOVACOV (1V)	One-way analysis of variance & covariance.
REPEATED (2V)	Analysis of variance & covariance, including repeated measures designs.
ANOVAMIX (3V)	General mixed model analysis of variance, using the maximum likelihood (ML) and restricted maximum likelihood (REML) approaches to the fixed & random coefficients model.
ANOVABAL (8V)	General mixed model analysis of variance for complete balanced designs (viz., equal cell sizes).
ANOVAGEN (4V)	General purpose univariate & multivariate analysis of variance & covariance, including repeated measures.

Nonparametric Statistics.

NONPARAM (3S)	Nonparametric statistical analysis.

Cluster Analysis.

CLUSTER (KM)	k-means clustering of cases.
CLUSTVAR (1M)	Cluster analysis of variables.
CLUSTCAS (2M)	Cluster analysis of cases.
CLUSTBLK (3M)	Block clustering of cases.

Multivariate Analyses.

FACTOR (4M)	Factor analysis (including principal components analysis, maximum likelihood factor estimation, principal factor or classical common-factor-model analysis, and Kaiser's second generation "little jiffy" analysis (image factoring followed by ortho-oblique rotation)).
CANCORR (6M)	Canonical correlation analysis.
DISCRIM (7M)	Stepwise discriminant analysis, including built-in (jackknife) cross-validation procedures.
PARTCORR (6R)	Partial correlation & multivariate regression.
BOOLEAN (8M)	Boolean factor analysis of dichotomous (binary) data.
PREFPAIR (9M)	Linear scoring for preference pairs.

Survival Analysis.

LIFE (1L)	Life tables and survival functions analysis.
SURVIVAL (2L)	Survival analysis with covariates - Cox proportional hazards regression models.

Time Series Analysis.

SPECTRAL (1T)	Univariate & bivariate spectral analysis (viz., spectral and cross-spectral analyses).
BOXJENK (2T)	Box-Jenkins time series analysis & forecasting.

Interactive Data Management System & Editor, etc.

DATAMAN	A powerful interactive data manipulation system designed to facilitate in the organization of data for future analyses, DATAMAN incorporates three procedures to merge files, close to thirty aggregate functions to extract information from sets of records varying in number, procedures for transposing values stored within one record to multiple records (and vice-versa), etc. It can read rectangular, non-rectangular and hierarchical files, and can be utilized to read and/or write either raw-data files or BMDP system files (viz., binary datasets).

Program Documentation

1. Dixon, W.J. (Chief editor), et al., *BMDP Statistical Software Manual*, 1985 Reprinting (1985). University of California Press, Berkeley, California. ($18.95)
2. *BMDP PC: User's Guide to BMDP on the IBM PC* (1987). BMDP Statistical Software, Inc., Los Angeles, California. ($5.00)
3. *BMDP User's Digest*, 4th Edition (1987). BMDP Statistical Software, Inc., Los Angeles, California. ($8.00)
4. *BMDP Data Manager Manual* (1986). BMDP Statistical Software, Inc., Los Angeles, California. ($7.00)

REMINDER: If you would be interested in CSO obtaining site-licensing for BMDP PC, please fill out the survey form at the end of this issue and return it to Anup Roy, 150 DCL.

SURVEY OF INTEREST IN SITE-LICENSING SYSTAT FOR IBM PC, PC-COMPATIBLES, AND MACINTOSH

Anup Roy

The Statistical Services group at CSO has set up site-licensing arrangements (for UIUC faculty and staff) for PC SAS and SPSS/PC+ software under PC-DOS (and MS-DOS) on IBM PC/XT and PC/AT (and compatibles). If there appears to be sufficient demand, CSO will site-license and support another large-scale statistical software package called Systat. We are carrying out a survey to gauge the level of interest in this package for both DOS and Macintosh systems.

Please complete the questionnaire at the end of this issue of *Off-Line* and send it to us as soon as possible.

The remainder of this article gives a brief description of Systat to help you decide if this package might be of use to you.

Systat (The System for Statistics) is a comprehensive statistical, graphics and data management package. It is available on a variety of machines/operating systems, including IBM PC, PC/XT and PC/AT and PC-compatibles under MS-DOS (or PC-DOS), and the Apple Macintosh. It is marketed by Systat. Inc., Evanston, Illinois.

Systat on the IBM PC (or compatibles) requires DOS 2.0 (or a later version) on a machine that can read standard 5 1/4" diskettes. It requires 256K RAM of memory, and two double-sided floppy disk drives or a hard disk. Systat operates with or without the 8087 or 80287 math coprocessor. Compatible machines include, but are not limited to: AT&T, Burroughs, Columbia, Compaq, Corona, HP Vectra, Leading Edge, Sperry, Tandy, Televideo, TI Professional, Wang, and Zenith.

Three versions of Systat are available for the Apple Macintosh: (1) a version for 512K machines, (2) a version for machines with 1 megabyte of RAM, and (3) a version for machines with 1 megabyte of RAM memory and the 68020/68881 coprocessor.

Systat is easy to use, flexible and very powerful. Its broad range of statistical capabilities includes the full array of univariate and multivariate analyses. Extensive graphics and a full-screen editor allow easy visual displays of data. Optional statistical modules offer state-of-the-art procedures not available in most general purpose statistical packages.

Systat was not written for any particular computer. It was designed, instead, to provide a modular working environment which can easily adapt to new machine architecture and user interfaces. On MS-DOS machines, Systat takes advantage of coprocessors and RAM-disks as well as code optimizers to achieve extraordinary speed. On the Apple Macintosh, Systat uses windows, scroll bars, menus and dialog boxes to simplify learning. On any given machine, you'll appreciate the tailored feel of the package. If you use more than one machine, you'll avoid having to learn new program syntax.

Systat is highly portable. Special care was taken to ensure that Systat prints exactly the same results

regardless of the computer installation. For instance, the random number generator produces the exact same sequence of numbers for the same starting seed on every machine.

Getting started with Systat is easy. The commands are familiar to users of SAS, SPSS-X, and BMDP. Systat uses a combination of commands and menus which allow new users to learn the system in small steps and experienced users to perform complex operations in a few keystrokes. Systat avoids complicated options, semicolons, special symbols and jargon, and rigid command syntax.

Systat allows processing of datasets containing up to 200 variables. Character or alphanumeric variables are allowed. The maximum number of columns permitted for a single variable is 12. Any one data file can contain up to 32,000 cases.

Many companies claim that their programs are interactive. That's because they are comparing the way their programs work on the PC to the rigid way they operate on a mainframe. However, porting a package to a PC and dressing it up with windows and menus does not make it interactive. In a truly interactive program, the order of commands should not matter. An interactive package is not littered with numbered options, duplicated procedures, and error logs. Systat truly operates as an interactive package. When you make an error with Systat, you can correct it immediately and continue with your work. If one doesn't want to work interactively, Systat can be used in a "batch-processing" mode as well.

Systat claims to be the most accurate comprehensive statistical package available on any computer. Numerous academic reviews have demonstrated Systat's regression routine, for instance, to be more accurate than SAS Proc GLM and SPSS-X Regression, and other widely used programs.

Systat is written in Fortran and translated with optimizing compilers. It is optimized to take advantage of numeric coprocessors and other special features of different machines. Systat is alleged to be faster on microcomputer versions than the average mainframe time-sharing system running statistics under moderate loads. On a standard IBM PC, Systat computes a 25 by 25 Pearson product-moment correlation matrix as fast as the data can be read into the system. A multiple regression of a single dependent variable, regressed on these 25 continuous variables, can be computed in less than 15 clock seconds.

Systat has a full-screen editor which looks like a spreadsheet. Unlike most spreadsheets, however, this editor is capable of handling a file as large as one's disk can hold. One can enter data into a Systat file by moving the cursor anywhere on the screen. Cursor controls include up, down, left, right, page-up, page-down, home, and end. Files from mainframe and other micro spreadsheet and database packages can be imported and edited in much the same fashion.

Like most statistical packages, Systat can input new data and transform variables. In addition, Systat includes a comprehensive database manager. Systat's data module can merge files with different numbers of records, match different files on key variables, and select subsets of files for analysis with a single command.

In addition to file management commands, Systat includes simple commands to sort, rank and standardize single variables or whole files. You may create value labels or recode values with a single command. There is even a command to transpose a whole file.

Systat includes an extended precision programming language with advanced statistical functions. Thus, if one needs to program complicated data transformations, one has access to the appropriate programming tools.

The graphics module in Systat (yet to be released for the MS-DOS version; but, scheduled for January 1988 availability) offers more types of statistical graphics than most mainframe packages. In addition to the usual histograms, bar charts and scatter plots, it produces stem-and-leaf diagrams, single and grouped box plots, detrended probability plots, contour plots and quantile plots. All standard graphics fit on a single screen or 80-column computer printout. These displays will print on any type of system printer — daisy wheel, dot matrix, or laser. On IBM PC-compatible machines, Systat can use the extended graphics character set for continuous lines and special symbols. Of course, graphics can be saved into disk files so that one may use them in concert with word processing and other text documents. The Apple Macintosh version contains high resolution statistical graphics. Two- and three-dimensional plots allow one to display more complex data, and specialized graphics, such as scatterplot matrices, providing unique analytic displays.

Highlighted below are some of the statistical capabilities of Systat:

Basic Statistics

- Descriptive statistics
- t-tests (dependent and independent)
- Bartlett's test for homogeneity of variance
- Duncan, Tukey and Newman-Keuls post-hoc tests for one-way and factorial designs

Tables

- Multiway crosstabulations
- Multinomial confidence intervals
- Hierarchical loglinear modeling (including structural zeros)
- Numerous coefficients/measures of association and their asymptotic standard errors

Correlations

- Pearson
- Spearman
- Gamma
- Sum of product
- Covariance
- Kendall's tau
- Euclidean distances with pairwise or listwise deletion of missing data

- Saving of output matrices for direct analyses using other statistical modules

Nonparametrics

- Nonparametric coefficients including Spearman's rho, Kendall's tau-b, Goodman-Kruskal's gamma, and Kendall's coefficient of concordance
- Sign test
- Wilcoxon signed ranks test
- Runs test
- Friedman's two-way analysis of variance
- Kruskal-Wallis one-way analysis of variance
- Mann-Whitney U
- Kolmogorov-Smirnov one- and two-sample tests
- Lilliefor's test

Canonical correlation analysis

- Includes ability to save canonical scores into a Systat file

Discriminant analysis

- Fisher's two-group and multi-group discriminant analyses
- Save discriminant scores
- Classification of new observations into groups
- Rotation of discriminant function axes

Cluster analysis

- Single, complete, average, median and centroid linkage
- Hierarchical clustering
- Labeling of cases on dendrograms/tree displays
- Tukey's gapping method for identifying unidimensional clusters
- k-means clustering

Analysis of variance and covariance

- Factorial designs including fixed and random effects, balanced and unbalanced designs
- True least-squares estimation, with custom selection of error terms
- Repeated measures analysis via univariate and multivariate models
- Analysis of covariance, with homogeneity of slopes test
- MANOVA (including repeated measures)
- True general linear model tests including: arbitrary contrasts on dependent variables, and arbitrary contrasts on independent variables
- More accurate effects matrices than in SAS Proc GLM and other widely-used analysis of variance programs

Multidimensional scaling

- Kruskal or Guttman methods
- Monotonic or linear models in up to 5 dimensions
- Input starting configuration specification
- Minkowski metric
- Saved computed distances, configurations or residuals
- Shepherd diagrams

Time series analysis

- Time domain methods including linear and nonlinear smoothing
- Lowess scatterplot smoothing
- Box-Jenkins seasonal and nonseasonal ARIMA models
- Identification and diagnosis via autocorrelation plots, partial autocorrelation plots and error correlation plots
- Differencing, logging, squaring, demeaning and detrending
- cosine tapering transformations
- Frequency domain methods including regular and inverse fast Fourier transform

- Periodograms
- Residuals and forecasts from all routines can be saved into Systat files

Regression

- Simple, multiple linear and polynomial regression
- Stepwise estimation option
- Extensive regression diagnostics including colinearity measures, condition indices, variance proportions, residuals, leverage statistics, Cook's D, externally studentised residuals, Durbin-Watson statistic, Mahalanobis distances
- Multivariate regression routines including multivariate F-tests, canonical variates
- More accurate regression estimates than SAS "Proc Reg" and other widely-used regression packages

Principal components and factor analyses

- Principal components or classical common factor analyses or image factoring, with optional rotation, factor scores and plots
- Can save loadings, component/factor scores or coefficients into a file
- Three types of rotation: varimax, equimax and quartimax
- Correlation and covariance matrices accepted as input

Systat has additional products available that are not included in the site-licensed package, but may be purchased separately. Some of these products are listed below:

Design — provides three distinct capabilities:

- Sample size estimation to obtain desired statistical power given an effect size and significance levels (can also be used to estimate statistical power at specific sample sizes)
- Tables of expected mean squares for balanced experiments using the Cornfield and Tukey algorithm (1956)
- Randomization plans generated by specifying details of an experiment through a series of commands

Logit

- Logistic regression for binary and multinomial dependent variables estimated by maximum likelihood

- Interactions entered directly on the model statement
- Dummy variables generated automatically using one command

Probit

- Method for estimating multiple regression or analysis of covariance model when the dependent variable is categorical (and more specifically binary)
- Produces parameter estimates and standard errors by the method of maximum likelihood; also variance-covariance matrices, z-scores, and Mill's ratios
- Automatic generation of dummy variables and interactions

Report writer

- For scientific presentations and business reports

Testat

- Provides test summary statistics, reliability coefficients, standard errors of measurement for selected score intervals, and item analysis statistics for multiple item tests
- Summary statistics for individual respondents
- Graphic displays of test and item/scale cumulative histograms

Tobit

- Designed for regression analysis with any form of one-sided censored data
- Produces parameter estimates and standard errors by the method of maximum likelihood; also variance-covariance matrices, predicted values, residuals and Mill's ratios

2SLS

- Estimates two-stage least-squares regression models
- Computes heteroscedasticity consistent (robust) standard errors for both OLS and 2SLS
- Can optionally test ordinary regression models for heteroscedasticity and neglected nonlinearity

Lazerte editor

- High-speed data editor for use with numeric coprocessors

Stat/transfer

- Provides an easy method for transporting data between Systat and Lotus 1-2-3, SPSS/PC+, STATA, Gauss, dBase II and dBase III, and SPSS-X export files (via Kermit)

Large 512K version (DOS version only)

- This "large-memory" version works exactly like the regular 256K version of DOS Systat, but allows one to work on much larger scale problems. This version of Systat is not any faster — just larger.

Mystat (the "personal version" of Systat)

- Mystat is a condensed version of Systat which is designed for educational use on a DOS-based system. It can work with 256K RAM bytes of memory and a system containing two floppy disk drives or a hard disk. Mystat can handle up to 32,000 cases and 50 variables. It provides a full-screen data editor and has extensive statistical capabilities. Mystat enables one to perform full algebraic transformations and to sort and rank variables. The entire program functions under a single menu, with extensive on-line help and an interactive tutorial to demonstrate its use. The manual also comes on the disk.

  Because Mystat is completely self-contained and is a proper subset of Systat (with identical routines as those used in Systat), it is **ideal for instructional purposes. There is no charge for the program. Although the disk is copyrighted, it may be duplicated in unlimited quantities for non-commercial teaching purposes. It may not, however, be resold.**

  Mystat is available from the CSO Microcomputer Resource Center (101 S. Gregory, Urbana). Please bring a formatted 360KB double-sided double-density diskette to make your copy of Mystat.

Program Documentation

Leland Wilkinson, *SYSTAT: The System for Statistics (1987)*, Systat, Inc., Evanston, Illinois [($40.00). Must be purchased with the site-licensed version of the product].

REMINDER: If you would be interested in CSO obtaining a site license for Systat, please fill out the survey form at the end of this issue and return to Anup Roy, 150 DCL.

MICROCOMPUTER SOFTWARE PACKAGES AVAILABLE FOR PURCHASE AT THE CSO DISTRIBUTION CENTER

Daniel Pommert and Jack Knott

CSO has made quantity purchases of a number of software packages for the IBM PC and the Apple Macintosh. They are offering these packages for sale at prices which are typically below list prices. These packages are being sold at the CSO Distribution Center, 1208 W. Springfield, Urbana. (NOTE: Some of the packages are available via site licensing, so purchasers must sign license agreements for those particular packages, and may have to renew some license agreements yearly.)

The products currently available are:

Software Package	System	Price
Notebook II and Bibliography	IBM PC	$25.00
SAS	IBM PC	$63.80 for BASE software $40.50 for STAT software $17.45 for IML software $19.25 for RTERM software (see below for manuals)
SPSS/PC+	IBM PC	$125.00 for software $49.90 for manuals
PC TeX	IBM PC	$45.00 for software $15.00 for manual
XYWrite	IBM PC	$91.00
MockPackage	Macintosh	$21.00
Qued	Macintosh	$ 8.00 departmental $25.00 individual

There are eight (8) manuals available for PC SAS. Three manuals recommended for use with the Base software are (1) SAS Intro. Guide at $13.15, (2) SAS Language Guide at $17.45, and (3) SAS Procedures Guide at $17.45. The SAS/STAT Guide is $17.45; the SAS/IML Guide is $17.45; the SAS/RTERM User's Guide is $9.85.

CSO has multiple purchase agreements with many software vendors for various microcomputer software. If you are interested in purchasing software, please contact Jack Knott at 333-6562 and leave a message.

NEW MICROCOMPUTER PACKAGES AVAILABLE

Mark Zinzow

The Microcomputer Resource Center is pleased to announce that they have received a copy of **STAT-GRAPHICS** from the Office for Information Management. Any user who wishes to make a copy of this package must present a current, valid University staff or student ID, and must fill out and sign an agreement form. Six (6) diskettes are needed to copy the package.

The Center also has **MINIX** available. MINIX is an educational implementation of UNIX for PCs. Users should bring five (5) disks to the Center to copy this program.

As this issue goes to press, we are returning out current edition of the PC-SIG CD-ROM for an update which should contain at least a hundred additional disks worth of free IBM PC compatible software! We expect to have the new disk by the time this issue actually reaches you.

The Microcomputer Resources Center (MRC) is located at 101 S. Gregory, Urbana. 101 S. Gregory is one block west of Lincoln Avenue and approximately midway between Springfield and Green. The telephone number is 244-6261. The hours are 10 am to 6 pm Monday through Friday.

OLD, UNUSED MICROCOMPUTERS SOUGHT

The U of I College of Agriculture's Cooperative Extension Service is interested in obtaining microcomputers for 4-H members to use at the various 4-H camps they operate.

The computers can be old, outdated machines that departments or individuals no longer use and want to get out of the way. For individuals who would be interested in donating equipment, the 4-H Foundation will supply a tax exempt letter for the "contribution in kind."

Approximately 72,000 youths per year attend the five Illinois 4-H camps. Having computers available at the camps will help the 4-H'ers develop valuable computer skills.

Anyone needing more information or wishing to contribute some equipment may contact:

Amanda Coyle
Extension Asst. 4-H/Youth
Computer Programs
State 4-H Office
302 E. John St. #1901
Champaign, IL 61820
(217) 333-0910

FOR SALE

For sale — an Intel 8087 Math Coprocessor for an IBM PC. Price: $80.00. If interested, please contact: Kyle Chan at 333-2111 or 328-5401.

SURVEY OF INTEREST IN "SPSS/PC+".

If you are interested in obtaining a site-license for any of the additional SPSS/PC+ products for the PC, please complete the survey below :

Name: _____

Campus Address: _____

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

My affiliation with the University is:

_____Faculty _____Staff _____Student Other:_____
_____

I own a:

__PC/XT __PC/AT __XT or AT/370 __PS/2 __Other:_____

I currently have an SPSS/PC+ user site-license: ___No ___Yes

I would also like a site-license for the following: (Check all that apply)

__SPSS/PC+ Data Entry II __SPSS/PC+ Trends __SPSS/PC+ Tables
__SPSS/PC+ Graphics (featuring Microsoft Chart) __"Graph in the Box"
__SPSS/PC+ Mapping (featuring Ashton-Tate's Map-Master)

I will use the above product(s) for the following:

___Research ___Class ___Both ___Other:_____
_____

What types of analysis are you most interested in carrying out? Please check all applicable categories:

___ANOVA/Analysis of Covariance ___Regression ___Categorical Data Analysis

___Multivariate Analyses ___Time Series Analysis ___Non-Parametric Statistics

___Graphics ___Other:_____

Please return survey to:

Anup K. Roy
CSO Statistical Consultant
Room 150 Digital Computer Laboratory
1304 W. Springfield Avenue
Urbana, Illinois 61801.

SURVEY OF INTEREST IN "BMDP PC".

If you are interested in obtaining a site-license for BMDP PC on your PC, please complete the survey below :

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*

My PC is a:

__*PC/XT* __*PC/AT* __*XT or AT/370* __*PS/2* __*Other:*_____

I would like to get BMDP PC on a site-license basis: ___*No* ___*Yes*

I already have a user site-license for the following:

_____*PC SAS* _____*SPSS/PC+*

I will use the above product(s) for the following:

___*Research* ___*Class* ___*Both* ___*Other:*_____

What types of analysis are you most interested in carrying out? Please check all applicable categories:

___*ANOVA/Analysis of Covariance* ___*Regression* ___*Categorical Data Analysis*

___*Multivariate Analyses* ___*Time Series Analysis* ___*Non-Parametric Statistics*

___*Graphics* ___*Other:*_____

Please return survey to:

Anup K. Roy
BMDP Coordinator @ UIUC
CSO - 150 DCL
1304 W. Springfield Avenue
Urbana, Illinois 61801.

Survey of Interest in "Systat".

If you are interested in obtaining a site-license for Systat for your PC or your Macintosh, please complete the survey below :

Name: _____

Campus Address: _____

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

My affiliation with the University is:

_____Faculty _____Staff _____Student Other:_____

I own an: ___IBM PC (or compatible) ___Apple Macintosh

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

I would like to obtain a Systat site-license for:

___IBM PC (or compatible) ___Macintosh ___Both

I already have a user site-license for the following (for the PC):

_____PC SAS _____SPSS/PC+

I will use the above product(s) for the following:

___Research ___Class ___Both ___Other:_____

What types of analysis are you most interested in carrying out? Please check all applicable categories:

___ANOVA/Analysis of Covariance ___Regression ___Categorical Data Analysis

___Multivariate Analyses ___Time Series Analysis ___Non-Parametric Statistics

___Graphics ___Other:_____

Please return survey to:

Anup K. Roy
Statistical Consultant
Computing Services Office - 150 DCL
1304 W. Springfield Avenue
Urbana, Illinois 61801.

OFF-LINE's Mailing List

If you wish to be placed on our mailing list for future issues of *OFF-LINE*, if you wish to be removed from the list, or if you wish to enter an address correction, please complete and return this page. **(Current subscribers are kept on the mailing list until a specific request for removal is received, or until a mailing is returned as undeliverable.)**

Check one:
- ☐ Place my name on mailing list
- ☐ Make the following corrections or changes
- ☐ Delete my name from mailing list

_____

First name -- Initial -- Last Name

Campus Address:

_____

department

_____

Room - Building

Off-campus Address:

_____

Organization or Company (if applicable)

_____

Street Address

_____

City -- State -- Zip Code

If address correction, give old address and zip code below.

_____

_____

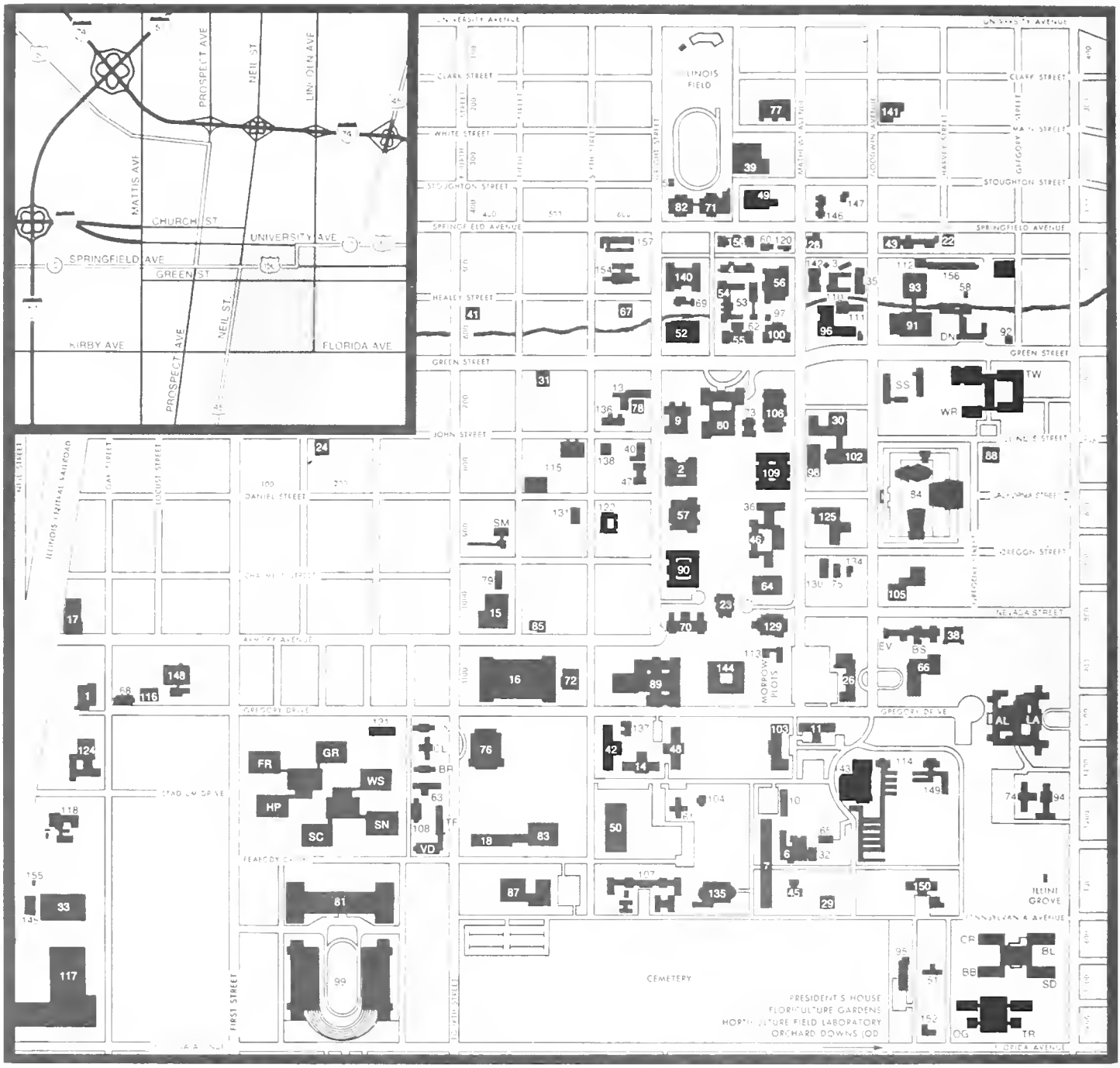
_____

SEND TO:

OFF-LINE
150 Digital Computer Laboratory
University of Illinois at Urbana-Champaign
1304 West Springfield Avenue
Urbana, Illinois 61801

CSO SITES

CSO NORTH (DCL)	
14 Digital Computer Lab 333-7685	Monday-Saturday, 24 hours/day Sunday, 12 noon - 12 midnight
CSO SOUTH	
70 Commerce West 333-4500	Monday-Saturday, 8 am - 12 mid. Sunday, 12 noon - 12 midnight
AGRICULTURE	
N-120 Turner Hall 333-8170	Monday-Thursday, 8 am - 10 pm Friday, 8 am - 5 pm Saturday-Sunday, Closed
CHEMISTRY	
150-154 Noyes Lab 333-1728	Monday-Friday, 9 am - 5 pm Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar 333-1851	Daily, 12 noon - 12 midnight
ELECTRICAL ENGINEERING	
146 Electrical Engineering 333-4936	Monday-Friday, 8 am - 12 mid. Saturday, 8 am - 5 pm Sunday, Closed
FAR	
Florida Avenue Residence Halls 333-2695	Daily, 12 noon - 12 midnight
ISR	
Illinois Street Residence Halls 333-0307	Daily, 12 noon - 12 midnight
MECHANICAL ENGINEERING	
65 Mechanical Engineering 333-1430	Monday-Saturday, 8 am - 12 mid. 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-Friday, 8 am - 12 mid. Saturday, 10 am - 5 pm Sunday, 12 noon - 5 pm



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

CSO

Computing Services Office

CSO DIRECTORY

USER SERVICES AND HARDWARE/SOFTWARE SUPPORT

User Accounting	**1208**	**W Springfield**	**333-7752**
Documentation Center	**1208**	**W Springfield**	**333-9230**
Systems Consulting	**1208**	**W Springfield**	**333-6133**
Statistical Services Consulting	**85**	**Comm West**	**333-2170**
PC Consulting	**91**	**Comm West**	**244-0608**
Text Processing Consulting	**212**	**CSOB***	**333-7318**
Maintenance & Repair Service	**194**	**DCL**	**333-0969**
Tape Service, Special Plots, Xerox Laser Printer	**123**	**DCL**	**333-8640**

DIAL-UP NUMBERS

CYBER 175 (NOSA)	**300**	**baud**	**333-4000**
IBM 3081 GX (VMD)	**300**	**baud**	**333-4006**
Switch	**1200**	**baud**	**333-4008**
TELENET (local no.)			**384-6428**

CSO STAFF

Director	George Badger	150	DCL	333-4103
Business Manager	Stanley Rankin	150	DCL	333-6530
Secretary	Joyce McCabe	150	DCL	333-1637
Networking	Sue Greenberg	187	DCL	333-3723
Systems & User Services	Ahmed Kassem	185	DCL	333-7159
Hardware Maintenance & Communication	Mike Gardner	173	DCL	244-0914
Personal Computers/EXCEL	Robert Penka	119	CSOB*	333-4709
Supercomputer Activities	Sandra Moy	1207	W Springfield	333-9772
Maintenance	Larry Crotser	131C	DCL	333-5190
Consulting	Stan Kerr	208	CSOB*	333-4715
Statistical Services	Joan Alster	202	CSOB*	244-0937
Accounting Services	Gary Bouck	1208	W Springfield	333-7752
Microcomputer Laboratory	Jack Knott	102	CSOB*	333-6562
User Training (Short Courses, Videotapes)	Ron Szoke	108	CSOB*	333-8630
Documentation	Lynn Bilger	207	CSOB*	333-6236
CYBER-IBM-VAX Operations	Myra Williams	168	DCL	244-0186
Site Operations	Sylvia Hansen	65	ME	333-6285

*CSOB is the new CSO Office Building, 101 S. Gregory, Urbana.

Academic and research computing is done on the following machines: CDC Cyber 175 running NOS 1; IBM 3081 running VM; IBM 4341 running VM; VAX 11/780 running UNIX and driving a GSI CAT-8 phototypesetter; three Pyramids and a Sequent running UNIX. In addition CSO serves as Facility Manager for various departmental machines (e.g., other IBMs) and for the National Center for Supercomputing Application's CRAY X-MP.

Operating Hours (see HEARYE,SCHEDUL for exceptions):

	CYBER 174/175	IBM
M-F	8 am - 6 am	8 am - 6 am
SAT	8 am - Midnight	8 am - 6 am
SUN	Noon - 6 am	Noon - 6 am

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MICROCOMPUTING

OFF-LINE is published every two months by the Computing Services Office at the University of Illinois, Urbana-Champaign. Information in this issue is current as of November 19, 1987. 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.

CSO INVOICE ACCOUNT BILLING POLICY

Effective January 1, 1988, CSO will adopt the following Invoice Account Billing Policy:

1. All accounts generating charges of $50.00 or more will be billed at the end of that calendar month.

2. At the end of each quarter year, based on the University Fiscal Year, all Invoice Accounts will be billed for the actual charges incurred less any previous billing in the quarter year.

3. The minimum charge for account administration will be $10.00 per quarter. There will be no minimum charge for Invoice Accounts generating at least $10.00 in charges for each quarter year.

The minimum account billing allowed by the University Business Office is $10.00. CSO must recover a charge for account administration to cover mailing, printing and usage.

ATTENTION INSTRUCTORS WHOSE CLASSES USE THE CYBER

An examination of our Cyber database indicates that numerous classes still use the Cyber computer. Since Cyber service will be discontinued in December, 1988, it will be necessary for instructors to place their classes on other computers.

It is our intention at CSO to accommodate your teaching needs by providing, on other machines, software which is equivalent or similar to that which you have been using on the Cyber. In addition, the CSO consulting staff can assist you if you have questions regarding converting your own software to run on another computer. We encourage you to begin now to plan the move of your classes from the Cyber to another machine. To assist you, we have written a document which provides an overview of conversion issues. This Cyber conversion document is available in the Systems Consulting Office (1208 W. Springfield, Urbana) and in the Statistical Consulting Office (85 Commerce West).

Joan Alster of CSO will coordinate the conversion of Cyber instructional applications. If you have concerns, comments, or questions regarding your conversion needs, please contact her at 244-0937, or via electronic mail with the Cyber command TELL,ALSTER@UIUCVMD. We at CSO are anxious to help make your transition to another computer as smooth as possible. Please evaluate your needs now and let us know of special requirements you may have, so we can begin to address your concerns.

ANNOUNCING THE CORNELL CONNECTION

Cornell, like the University of Illinois, hosts an NSF-funded supercomputer operation. The Cornell facility uses an IBM 3090-600 mainframe computer, along with several attached processors and a couple of auxiliary machines. The 3090 runs CMS (the same operating system that VMD uses).

Cornell makes remote usage easier by providing consulting help at remote locations called "Smart Nodes." The University of Illinois is a "Smart Node" for Cornell. At each Smart Node there is a consultant who will try to assist users wishing to use the Cornell facility. Beth Engelbrecht-Wiggans is the consultant at the University of Illinois. (Beth is a Systems Consultant at CSO.)

Cornell provides the Smart Node Consultant with start-up accounts which are designed to allow a user to become familiar with the system. The start-up accounts have five (5) hours of computer time (approximately equal to one hour of CPU time on a Cray X-MP), which is sufficient for training or trial purposes. These accounts give you computer access while you are making an application either to Cornell or NSF for a research account. Cornell has also provided the U of I with a complete set of manuals for the IBM 3090 system. If you are interested in becoming a Cornell supercomputer user, please contact Beth (333-8627 or ENGWIG@UIUCVMD) for more information.

CYBER 175 TO BE REMOVED DECEMBER 1988

Over the past year CSO has gone through a review of potential replacements for the Cyber 175. During this time, the CSO Staff has held several open meetings and interviewed approximately 20 groups of users. With the diversity of the Campus, we received a very diverse set of requirements for the Cyber replacement. The original plan, which was predicated on major infusions of funding, addressed most of these requirements. In choosing the Convex (see the following article) "without the infusions of funding," emphasis was placed on the continuity of income to the center, the continuity of services to existing users, and the incorporation of early phases of future technology (in particular, a wide range of power in compatible services which are network connectable, both to themselves and to the user environment of personally-owned machines).

The Computing Services Office is scheduling the removal of the Cyber 175 in **December 1988.** In recent years more and more people have moved their computing from the Cyber to other systems. Nonetheless, there is a large number of users still using the Cyber. These users are encouraged to consider whether their current computing projects can be completed on the Cyber before December 1988, or whether their work should be moved to another system. CSO's central services are being structured around the dual offering of CMS and UNIX. Our efforts are to continuously improve the services on both operating systems.

In deciding which system is best as a target for conversion, we suggest the following:

- Obtain a document entitled "Cyber Conversion -- An Overview" from the Systems Consulting Office (1208 W. Springfield, Urbana) or the Statistical Consulting Office (85 Commerce West). This document describes the options currently available to users wishing to convert from the Cyber, and CSO's policies governing assistance available to users undergoing a conversion.

- Attend one of the several Short Courses we will be offering with regard to the conversion.

- Questions requiring a **short** answer may be asked via email directed to CSO at UIUCVMD.

CONVEX-C1 COMPUTER INSTALLED AT CSO

Ahmed Kassem

On November 16, 1987, the Computing Services Office made a dual Convex-C1 computer available to our users. The Convex-C1 architecture is based on supercomputer design principles which feature 64-bit integrated scalar and vector processing. The following is a description of the Convex configuration:

- Two Convex-C1 computers, each possessing an integrated vector processor
- 128 megabytes of main memory per machine, plus virtual memory
- A total of 5 gigabytes of on-line disk storage
- Two 800/1600/6250 125 ips tape drives
- 48 terminal connections for each CPU
- An Ethernet Controller

With 128 megabytes of real memory, and advanced vectorizing and optimizing software, a computational power not available on previous machines will serve the UIUC research and instructional community.

The Convex-C1 operates under the control of a multi-user UNIX BSD operating system. In addition to the rich set of standard features such as virtual memory, networking with the industry standards protocols, the vi editor (to name a few), a number of extensions such as batch queues, tape handling utilities, disk striping and accounting are also included.

The vectorizing Fortran compiler exploits the C1 integrated Vector processor. This improves performance by replacing a whole series of machine instructions with fewer, more powerful vector instructions that manipulate up to 128 operands with a single instruction.

The Fortran compiler meets ANSI standards (Fortran 77) and provides switch-selectable support for the previous standard (Fortran 66). No special vector syntax is required to utilize this automatic vectorizing compiler. Source level extensions make the compiler compatible with DEC, VAX and Fortran-27. Thus, Fortran code can readily be ported to the C1.

A vectorizing C compiler is also available on the Convex UNIX operating system.

To keep you informed, information relating to Convex services and new products will be published in future issues of *Off-Line*. Following is a partial list of software applications for various disciplines; use this list to let CSO know which software applications are appropriate to your department.

APPLICATION SOFTWARE FOR THE CONVEX-C1

Product	*Vendor*	*Application*
	Structural Analysis Software	
ABAQUS	HKS	Finite Element
ANSYS	SASI	Finite Element

DYNA 2D/3D	Sparta	Finite Element
EASY5	BCS	System Simulation
MAGNUM	A.O. Smith	Electromagnetics
MSC/NASTRAN	MSC	Finite Element
MARC	MARC Analysis	Finite Element
NIKE 2D/3D	Sparta	Finite Element
SLAM II	Pritsker & Assoc.	Simulation
STAAD-III	Research Eng. Inc.	Structural Analysis
STARDYNE	S D C	Finite Element

Computational Fluid Dynamics Applications

FIDAP	Fluid Dynamics	Fluid Dynamics
FLO 52	Princeton	Fluid Dynamics
FLO 57	Princeton	Fluid Dynamics
FLUENT	Creare	Fluid Dynamics
PHOENICS	Cham	Fluid Dynamics

Electronics Applications

DRACULA	Ecad Inc.	Electronics
ENDOT	Endot Inc.	Simulation
HSPICE	Meta-Software	Circuit Simulation
PISCES	TMA	Device Simulation
RADSPICE	Meta-Software	Circuit Simulation
SUPRA	TMA	Process Simulation
SUPREM	Stanford	Process Simulation

Chemical Applications

AMPAC	QCPE	Quantum Chemistry
MOPAC	QCPE	Quantum Chemistry
GAUSSIAN 82	Carnegie-Mellon	Molecular Modeling

Miscellaneous Applications

AIPS	NRAO	Astrophysics
DIDSIM	Sparta	Defense
HCR/PASCAL	Human-Comp.	Pascal Compiler
MOVIE.BYU	BYU	Graphics
pc-LINK	Pacer Software	Communications
RIM	BCS	Relational Data Base

Application Libraries

BCSLIB	BCS	Numerical Analysis
IMSL	IMSL	Math/Stat Library
NAG	NAG	Numerical Analysis
MATH-AD.	Convex	Numerical Analysis
VECLIB	Convex	Numerical Analysis
VECTORPAK	BCS	Numerical Analysis

Petroleum Software

AIMS III	Geoquest	Seismic Interpretation
CPIMAGE	CISI Petrole	Image Processing
DISCO	Digicon	Seismic Processing
MERLIN	Merlin Profilers	Seismic Processing
PETROS	McCord-Lewis	Well-Long Analysis
SIERRA GEO.	Sierra Geo.	Seismic Interpretation
VIP	J.S. Nolen	Reservoir Modeling
ZMAP	Zycor Inc.	Mapping

THE UNIVERSITY OF ILLINOIS NAMESERVICE, PHASE 0

Steve Dorner

Introduction

A vast amount of information is kept about people, computers, and services on campus. Unfortunately, much of this information is scattered in many different places, and not readily available to people or programs needing it. The campus **nameservice** will eventually serve as a centralized, machine-accessible repository for a large part of this information.

What Kinds of Information Will Go Into the Nameservice?

The nameservice is being designed to easily handle changes to information it keeps. This will allow CSO to add data to it as need arises. Some anticipated kinds of information are:

- the campus phone book
- electronic mail addresses
- operational information on computers, printers, networks, etc.
- user preferences and defaults

How Will the Nameservice Be Used?

The nameservice will be used by humans, much like phone books are currently used. Software will be provided to query (and in certain cases, to modify) the database.

Also, CSO and non-CSO services will be able to use the nameservice to discover important information about people and machines. For example, a printing program will be able to find out where a user likes to have his jobs printed, and what account to charge. It will also be able to find printers with particular characteristics (for example, it could query the nameservice to find a printer with a resolution of 300 dots per inch that understands PostScript™).

One of the most important services we intend to offer is an email forwarding service. This would allow a campus user to specify a single mail address to the world (e.g., dorner@uiuc.edu). Mail software would then be able to ask the nameservice where mail for this user should go, and direct it to its destination. This would give easily remembered email addresses to the outside world, as well as allowing people to move their email "homes" from machine to machine without having to inform their correspondents of the fact.

The nameservice most emphatically will not be used for the generation of mailing lists.

What Parts Do We Have Now?

Right now, we have a modified version of the CSNET nameservice running. For a database, we have the University Phone Book, augmented with some email addresses. CSO also provides software to query this database (ph). This software is installed on CSO's Unix machines, as well as on VMD. Systems administrators wishing to acquire the software may do so by anonymous ftp to uxc.cso.uiuc.edu; source for the client (ph.c) and a manual page (ph.l) are available.

As there is not currently a central repository for email addresses, CSO will be relying on individual users to supply us with their email addresses.

How Does It Work?

The nameservice consists of a central database and server (currently running on uxg, CSO's Gould), and client software capable of querying the central server and database. **ph** makes a TCP connection to the central server, and requests the entries that match the names given it. The server regurgitates the entries, which are passed on to the user. For example:

```
18% ph steven dorner
-----------------------------
dorner steven c.
dorner@uxc.cso.uiuc.edu
(W) 333-3339, (H) 356-8892
189 dcl 1201 w washington, c
res programmer
computing services office
cynthia
19%
```

Names may be partially specified; for example, it is possible to say "ph s* dorner," and get all dorner(s) whose first names begin with "s.*(rq There are, however, upper limits on the number of entries that will be returned; currently, these limits are 9 for full entries, and 20 for just email addresses. These limits are imposed in order to prevent the use of the nameservice as a mailing-list generator.

Registering Email Addresses

To register your email address, users should send mail to registrar@uxg.cso.uiuc.edu. The mail should be a single line of the form:

email phone name

For example,

joey@uxc.cso.uiuc.edu 3-9999 joseph kangaroo

It is important that the name be the user's name **as it appears in the phone book**. No nicknames, please.

If systems administrators or departments would like to register their users' email address en masse, arrangements can be made; send mail to dorner@uxc.cso.uiuc.edu.

CAMPUS DISTRIBUTION OF COMPUTER GRAPHIC SOFTWARE

James Bozek

(Editor's Note: This article has been reprinted from the last issue of Off-Line to remind people that this agreement expires December 31, 1987. Interested parties should contact Jim Bozek immediately!)

The Graphics Group of the Computing Services Office (CSO), in an effort to better support the computer graphic needs of the campus, has secured a site license agreement with Precision Visuals, Inc. (PVI), a prominent graphic software vendor. The agreement allows CSO to redistribute computer graphic software at a substantially reduced cost to those on campus wishing to obtain it.

Among a number of computer graphic software vendors, PVI was selected for the following reasons:

- PVI has consistently concentrated on software supporting a science and engineering market, while maintaining a substantial presence in the business and presentation graphics software market;
- PVI has the largest customer base of all graphic software vendors whose products are currently on campus;
- The list of specific machines on which PVI software currently runs includes most mainframes, minicomputers, and workstations; and,
- PVI offered the most attractive deal.

Graphic software from PVI consists largely of FORTRAN callable subroutine libraries which enable the user to display information in a variety of graphic formats independent of a specific physical graphic device. The following six software packages are currently available through the agreement:

- **DI-3000** - A modular package of FORTRAN callable subroutines containing standard primitives and attributes used in building and displaying 2D/3D graphic models.
- **GK-2000** - A package of FORTRAN callable subroutines supporting a level 2b implementation of the Graphic Kernel System (GKS).
- **Contouring System** - A set of FORTRAN callable subroutines that create, from regularly or randomly spaced data, surfaces which can be later displayed as contour maps or meshed surfaces.
- **Grafmaker** - A system of FORTRAN callable subroutines used for generating bar graphs, line graphs, and pie charts.
- **DI-Textpro** - A high quality, polygonal 2D/3D text option that was designed to be used in conjunction with other PVI products.
- **Metafile System** - An interactive translator that can interpret device independent graphic data files created with DI-3000, edit them, and display their contents on a physical graphic device.

Device independent graphic software from PVI requires the use of special software for each physical graphic device on which data is to be displayed. This special software is referred to by PVI as a device driver. Although many different types of device drivers are available from PVI, the following is a list of device drivers available under the current site license agreement:

Tektronix 4105	Zeta	HP 2623A
Tektronix 4113	HP 2627	HP 7580
Tektronix 4010	HP 7475A	HP 7221
Tektronix 4027	VT 240	VT 100
Tektronix 4662	Imagen 12/300	Printronix
Tektronix 4014	Calcomp	Seiko
Tektronix 4107/9	IBM 3179G	Skeleton
Tektronix 4510		

CSO plays a major role as administrator of the site license agreement and as the liaison between PVI and the end user. Within the context of the agreement, CSO will perform the following:

- CSO will serve as a single point of contact for ordering the software and for obtaining technical information with respect to installing the software;
- CSO will provide consultation with respect to the use of the software; and,
- CSO will receive payment for software and maintenance through campus accounting.

An extremely attractive pricing structure in both the initial cost as well as the cost of maintenance makes this software accessible to many of those wishing to support baseline scientific and engineering graphics capability, especially those operating a multi-computer or network environment. Questions, requests, and general inquiries can be directed to:

Jim Bozek
Computing Services Office - 110 CSOB
1304 W. Springfield Ave.
Urbana, IL 61801
(217) 333-2048

ELECTRONIC MAIL EXCHANGE USING CSO COMPUTER SYSTEMS

(Revised 5 November 1987)

Each CSO computer system has available an electronic mail (''email'') utility which allows you to exchange email with other users on that system. Advances in the area of computer networking have made available the exchange of email among users across a wide range of computer systems, both throughout the University and with non-University sites.

In order to exchange email with persons on other systems, you must know the receiver's email address and should supply your own return address. At this time, there is no ''email address directory'' available for you to reference; this information must be exchanged personally at the initial exchange.

CSO is developing a variant of the CSNet Nameserver to provide electronic phone book information as well as email addresses for UIUC users. The phone book portion is now available on several CSO machines as the ''ph'' command. The source for ph is available via anonymous FTP in uxc.cso.uiuc.edu:net/ph.

To exchange email across non-University computer systems, you must know a third piece of information: The name of the computer network which is accessible to the receiver's system or the fully qualified domain name of the receiver's machine. CSO systems can exchange email across the following computer networks: Bitnet, the DDN Internet (Arpanet/Milnet), CSNet and USENET/uucp. If the receiver's system does not have access to one of these networks, either directly or through a cooperating relay machine, email cannot be exchanged.

A domain name for a machine may be as simple as the hostname and the network name joined together with a ''.'', e.g., SIMTEL20.ARPA where SIMTEL20 is the hostname of a machine with an Arpanet connection. By and large these simple names are being replaced with more specific domain names that identify institutions rather than network connections. Within the UIUC community, domain names end in .uiuc.edu to indicate that UIUC belongs to the set of US educational institutions. Hosts operated by CSO belong to the .cso.uiuc.edu domain. Examples of domain names for CSO hosts would be uxc.cso.uiuc.edu, or vmd.cso.uiuc.edu. A fully qualified domain name begins with a hostname (or a shortened form of it) and ends with one of the standard high level domains (EDU, MIL, COM, ORG, NET); for example: athena.mit.edu; thor.trw.com, etc.

The information in this article assumes knowledge of the email utility on the CSO system that you use regularly. In order to make this article useful to as many CSO computer users as possible, some general terms have been used:

username	The name entered when logging-in to the computer.
host	The name of the computer that you are using to send and read email. This name is identified on all CSO systems just prior to the prompt for your username.
sitename	The name of the host computer that the receiver is using to read email. The sitename may be one word or a full qualified domain name. An atsign always precedes sitename: **@sitename** or **@sitename.name.name.name**

node@sitename	The name of a host computer that receives email via a relay machine. A percent symbol always precedes node: **%node@sitename**

The distinction between using **@sitename** versus **%node@sitename** is needed only when specifying an address that must include both a host name and the name of the system through which email is delivered to that host. The **%node@sitename** syntax usually is not used when exchanging mail across University of Illinois systems. However, it is used to construct some email addresses when sending email to persons at other universities, and in some return addresses across the Internet and CSNet.

The information that follows is divided among three categories: Email from the Cyber, Email from IBM/CMS, and Email from UNIX. Each section gives you some general information about sending email to users on other systems, as well as your email return address. The last section, UIUC/UIC Host System Addresses, gives specific addresses for a number of University computer systems.

Email from the Cyber

The system name for the Cyber 175 is UIUCNOSA. To send email from UICUNOSA to a user on any other computer system, you must issue the TELL command from **within** the MESSAGE utility to preserve case distinctions. The syntax of the command is:

WHAT TO DO? tell,username{%node}@sitename

The curly braces indicate that **%node** is an identifier to be included only in certain addresses; the braces themselves are not part of the address.

Your Return Addresses from UIUCNOSA

Although a return address is automatically included on all email that you send, the information might be inadequate for the receiver to construct a valid return address for you. In order to supply complete information, include the following return addresses (for UIUCNOSA users only) at the end of your email message.

Bitnet	**username@uiucnosa** **(UIUCNOSA is a Bitnet MAIL-ONLY node)**
Internet	**username@uiucnosa.cso.uiuc.edu**
CSNet	**username%uiucnosa@uiuc.csnet**
USENET/uucp	**[ihnp4,uunet]!uiucuxc!username@uiucnosa**

Substitute your Cyber USERNUMBER for **username** in the above examples. The comment in parentheses following your Bitnet return address should be included; it indicates to other Bitnet users that "sendfile," "profs" and "rscs" messages are not supported on the UIUCNOSA system. Access to the Cyber is limited from some networks. As a result, only users on Bitnet machines can send mail to UIUCNOSA. Additionally, some Bitnet machines running VMS are unable to send mail to UIUCNOSA.

Email from IBM/CMS

CSO provides access to the IBM/CMS operating system on several different computer hosts. The IBM/CMS system names are: UIUCVMC, UIUCVMD and UIUCVME. The examples here refer only to the use of the CMS BITNOTE command, which is one of several different electronic mail utilities available for you to use. At this time, CSO officially supports only the BITNOTE and NOTE commands. However, we are in the process of evaluating many IBM email resources, and will eventually announce a recommended and fully-supported version.

To send email from any IBM/CMS system using the BITNOTE command to a user on any other computer system, the syntax of the command is:

bitnote username{%node}@sitename

The curly braces indicate that **%node** is an identifier to be included only in certain addresses; the braces themselves are not part of the address.

IBM NOTE users: The NOTE command can be used only when sending email to a user at another IBM-VM site. To avoid problems, you should use this command only when exchanging email with persons on the same host system that you are using.

For more information about BITNOTE, enter the CMS commands:

HELP CSO BITNOTE

Your Return Addresses from IBM

Although a return address is automatically included on all email that you send, the information might be inadequate for the receiver to construct a valid return address for you. In order to supply complete information, include the following return addresses at the end of your email message.

Bitnet	**username@uiucvm{c,d,e}**
Internet	**username@vm{c,d,e}.cso.uiuc.edu**
CSNet	**username%vm{c,d,e}@uiuc.csnet**
USENET/uucp	**[ihnp4,uunet]!uiucuxc!username@vm{c,d,e}**

Substitute your IBM/CMS logon name for **username** in the above examples. The name shown as **vm{c,d,e}** or **uiucvm{c,d,e}** should be replaced with the specific name of the IBM/CMS host that you use regularly; the braces themselves are not part of the return address.

The information enclosed by square brackets in the USENET/uucp example is a convention established at USENET sites to indicate multiple routing options; they should be included on the return address, but are not used when constructing a USENET/uucp email address.

Email from UNIX

CSO provides access to the UNIX operating system on several different computer hosts. The UNIX system names are: UIUCUXA, UIUCUXE and UIUCUXF. Their domain names are ux{a,e,f}.cso.uiuc.edu . To send email from any UNIX system to a user on any other computer system, the syntax of the mail command is:

mail username{%node}@sitename

The curly braces indicate that **%node** is an identifier to be included only in certain addresses; the braces themselves are not part of the address.

Your Return Addresses from UNIX

Although a return address is automatically included on all email that you send, the information might be inadequate for the receiver to construct a valid return address for you. In order to supply complete information, include the following return addresses at the end of your email message.

Bitnet	**username@ux{a,e,f}.cso.uiuc.edu** **(UX{a,e,f} is a Bitnet MAIL-ONLY node)**
Internet	**username@ux{a,e,f}.cso.uiuc.edu**
CSNet	**username%ux{a,e,f}@uiuc.csnet**
USENET/uucp	**[ihnp4,uunet]!uiucuxc!uiucux{a,e,f}!username**

Substitute your UNIX login name for **username** in the above examples. The name shown as **ux{a,e,f}** or **uiucux{a,e,f}** should be replaced with the specific name of the UNIX host that you use regularly; the braces themselves are not part of the return address. The comment in parentheses following your Bitnet return address should be included; it indicates to other Bitnet users that "sendfile," "profs" and "rscs" messages are not supported on UIUCUX{a,e,f}. The information enclosed by square brackets in the USENET/uucp example is a convention established at USENET sites to indicate multiple routing options; they should be included on the return address, but are not used when constructing a USENET/uucp email address.

UIUC and UIC Host System Addresses

Descriptions and host names of many University (UIUC and UIC) computer systems are listed below. This list will be updated as more University systems become accessible for email exchange. The syntax of the command used to send email to each of these hosts is also provided. Note that the information below is specific only to sending email from a CSO system to other UIUC (Urbana-Champaign campus) and UIC (Chicago campus) systems.

In the following table for UIUC, the departmental abbreviations are: CSO - Computing Services Office; DCS - Computer Science Department; NCSA - National Center for Supercomputer Applications; CSRD - Center for Supercomputer Research and Development; CSL - Coordinated Sciences Lab.; HEPG - High Energy Physics Group.

Host Names at Urbana-Champaign Campus (UIUC)

Department	Computer - Operating System	Host Name	Command Syntax
CSO	Cyber 175 - NOS	uiucnosa	from Cyber: tell,username from IBM: bitnote username@uiucnosa from UNIX: mail username@uiucnosa
CSO	IBM 4381 - CMS IBM 3081 - CMS IBM 4341 - CMS	uiucvmc uiucvmd uiucvme	from Cyber: tell,username@vmc.cso.uiuc.edu from IBM: bitnote username@uiucvmd from UNIX: mail username@vme.cso.uiuc.edu
CSO	Pyramid - UNIX[1] Sequent - UNIX[1] Pyramid - UNIX[2]	uiucuxa uiucuxf uiucuxe	from Cyber: tell,username@uxa.cso.uiuc.edu from IBM: bitnote username@uxf.cso.uiuc.edu from UNIX: mail username@uxe.cso.uiuc.edu
DCS	UNIX[3]	uiucdcsm	from Cyber: tell,username@m.cs.uiuc.edu from IBM: bitnote username@m.cs.uiuc.edu from UNIX: mail username@m.cs.uiuc.edu
NCSA	VAX 11/785 - VMS	ncsaa[4]	from Cyber: tell,username@ncsaa.cso.uiuc.edu from IBM: bitnote username@ncsaa.cso.uiuc.edu from UNIX: mail username@ncsaa.cso.uiuc.edu
CSRD	VAX 11/785 - UNIX	uicsrd	from Cyber: tell,username@uicsrd.csrd.uiuc.edu from IBM: bitnote username@uicrsd.csrd.uiuc.edu from UNIX: mail username@uicsrd.csrd.uiuc.edu
	IBM 4381 - CMS	uicsrdvm	from Cyber: tell,username@vm.csrd.uiuc.edu from IBM: bitnote username@vm.csrd.uiuc.edu from UNIX: mail username@vm.csrd.uiuc.edu
CSL	VAX 11/780 - UNIX[5]	uicsl	from Cyber: tell,username@uicsl.csl.uiuc.edu from IBM: bitnote username@uicsl.csl.uiuc.edu from UNIX: mail username@uicsl.csl.uiuc.edu
	VAX 11/780 - UNIX[5]	bach	from Cyber: tell,username@bach.csg.uiuc.edu from IBM: bitnote username@bach.csg.uiuc.edu from UNIX: mail username@bach.csg.uiuc.edu

1. Student machine.
2. Public machine.
3. DCS has several different UNIX systems. Use the host name specified above unless the email receiver has given you another name for a specific DCS host.
4. Logically the NCSA front-end VAXes should be in the .ncsa.uiuc.edu domain. When the machines were first installed, CSO administered the machines and they were put into the .cso.uiuc.edu domain. NCSAA and NCSAB will be suitably renamed when they are moved to the Astronomy Building.
5. CSL has several different systems and domains as well as the two listed above. Use one of the domain names specified above or the domain name specified by the email receiver.

Host Names at Urbana-Champaign Campus (UIUC) -- continued			
Department	**Computer-Operating System**	**Host Name**	**Command Syntax**
HEPG	VAX 11/780 - VMS	uiuchepa	from Cyber: tell,username@uiuchepa from IBM: bitnote username@uiuchepa from UNIX: mail username@uiuchepa
PSYCH	Harris	uiucpsy	from Cyber: tell,username@uiucpsy from IBM: bitnote username@uiucpsy from UNIX: mail username@uiucpsy

In the following table for UIC, the departmental abbreviations are: ACC - Academic Computing Center; CS/EE - Computer Science/Electrical Engineering.

Host Names at the Chicago Campus (UIC)			
Department	Computer - Operating System	Host Name	Command Syntax
ACC	IBM 3081 - VM	uicvm	from Cyber: tell,username@uicvm from IBM: bitnote username@uicvm from UNIX: mail username@uicvm
	IBM 3081 - MVS	uicmvsa	from Cyber: tell,username@uicmvsa from IBM: bitnote username@uicmvsa from UNIX: mail username@uicmvsa
CS/EE	VAX 11/780 - UNIX	uicbert	from Cyber: tell, username%uicbert@uiucuxc from IBM: bitnote username%uicbert@uiucuxc from UNIX: mail username@uicbert

FORTRAN 8X PUBLIC COMMENT PERIOD

Kurt Hirchert (NCSA)

A draft of the proposed revision of the ANSI Fortran Standard has been released for public comment during the period October 23, 1987 to February 23, 1988. There has been some controversy surrounding this revision, with proponents and opponents in both the user and vendor communities, so the number and nature of comments received could have a significant effect on the standard finally produced. That standard, in turn, should have a major impact on scientific computing in the 1990's. All Fortran users having opinions on this subject are strongly encouraged to submit official comments during the comment period.

The draft revision itself can be obtained at a cost of $50 from Global Engineering Documents (1-800-248-0084 East Coast and 1-800-854-7179 West Coast). The document is a large one, so it is recommended that you order early in order to give yourself as much time as possible to digest and comment on the document.

Written comments should be sent to

> Public Comments for Dpans Fortran Revision
> X3 Secretariat
> Attn: Gwendy Phillips
> Computer and Business Equipment Manufacturers Association
> Suite 300
> 311 First Street, N.W.
> Washington, DC 20001-2178

and to

> Public Comment for Dpans Fortran Revision
> Board of Standards Review
> American National Standards Institute
> 1430 Broadway
> New York, NY 10018

Your comments will be formally acknowledged and you will eventually receive a formal written response from X3J3, the committee that developed the draft.

If you need explanations, clarifications, or other information about the draft, you may wish to contact Kurt Hirchert (hirchert@newton.ncsa.uiuc.edu) of the National Center for Supercomputing Applications. Kurt has been the University of Illinois's member of X3J3 since 1979 and should be able to answer your questions.

NEW VERSIONS OF SLAM ON CYBER AND VMD

Stan Kerr

Version 3.2 of SLAM has been installed on the Cyber and version 4.0 has been installed on VMD. Version 4.0 for the Cyber is available and will be installed as time permits. The Cyber version can be accessed by the command

GRAB,SLAM/F

and the VMD version can be accessed by the command

LINKTO SLAM

The Cyber version will become the default SLAM after the Fall semester is complete, around January 1, 1988.

Documents describing the new features of SLAM can be viewed in the Systems Consulting Office at 1208 W. Springfield, Urbana.

These new versions of SLAM were ordered with a new feature, called the Material Handling Extension (MHEX). This new extension of SLAM is described in the latest edition of *Introduction to Simulation and SLAM* by Pritsker. Version 2.1 of the MHEX has been installed on VMD, and version 2.0 on the Cyber. (Version 2.1 is available for the Cyber and will be installed as time permits.)

Note: Another new feature of SLAM in version 4.0, the Interactive Execution System (IEE) has not yet been installed on VMD.

In the Cyber version of SLAM, the SLAMRUN procedure has a new parameter, MHE, to indicate that one is running a model which uses the Material Handling Extension. This must be coded as **MHE=YES** to indicate that the model uses the MHEX.

On VMD, there is a help file describing usage of SLAM. This help file can be viewed by entering

HELP CSO SLAM

There is an exec called SLAM which is used to run a SLAM model. This exec is called by entering

SLAM name (options

where **name** is replaced with the name of the SLAM model file. If the model file is named MOD, for example, then SLAM expects that CMS file "MOD SLAM" contains the SLAM model specification. If there are associated Fortran routines which are to be compiled, then the SLAM exec assumes these are stored in file "MOD FORTRAN" unless a special option is included. The SLAM output report is stored in file "MOD SLAMOUT" on the A disk.

TRANSACTIONS ON MATHEMATICAL SOFTWARE

Stan Kerr

We now have on tape all algorithms published in Transactions on Mathematical Software up to December 1986 (from algorithm 493 published in the first issue of March 1975, up to algorithm 647). Algorithms from the March and June issues for 1987 have been ordered but have not yet arrived; the September 1987 issue has not been received yet (at this writing).

All TOMS algorithms are kept on a public tape; a document describing how to access this tape and summarizing the algorithms it contains can be obtained by entering the following commands:

On the Cyber:

WRITEUP,TOMS
PRINT,TOMSDOC/AS/CC/EJ

On VMD (CMS):

HELP CSO TOMS or WRITEUP CSO TOMS

Algorithms published in TOMS in September and December 1986:

In the September 1986 issue:

644: A Portable Package for Bessel Functions of a Complex Argument and Nonnegative Order

645: Subroutines for Testing Programs that Compute the Generalized Inverse of a Matrix

646: PDFIND: A Routine to Find a Positive Definite Linear Combination of Two Real Symmetric Matrices

In the December 1986 issue:

647: Implementation and Relative Efficiency of Quasirandom Sequence Generators

If you are looking for software, Transactions on Mathematical Software is one of the journals to check, along with *Numerische Mathematik, BIT*, the *Computer Journal*, and various publications of ACM (the Association for Computing Machinery) and SIAM (the Society for Industrial and Applied Mathematics).

In the Systems Consulting Office, 1208 W. Springfield, we have bound volumes containing all the algorithms published in Communications of the ACM from 1960 to 1975 (when the algorithms department of CACM became Transactions on Mathematical Software).

ATTENTION CYBER SPSS USERS!

Joan Mills

It is time to consider a move. Since the CDC Cyber computer will be removed from service by the end of 1988, now is the time to be moving your programs and converting your data to run on another computer system.

The IBM CMS system running on the VMD computer is an ideal system for SPSS users because:

1) SPSS updates are written first for the IBM systems and then converted to run on other systems, so you can keep up with the latest revisions and updates by running IBM SPSS products.

2) The CSO South Statistical Consultants have had considerable experience with the software running on VMD and can discuss your conversion with you and advise you.

3) SPSS Release 9 and SPSS-X Release 2.2 (the latest revision of the SPSS package) have been running for some time on VMD and several pieces of introductory documentation are on the shelves at 85 Commerce West to help you convert. For example, there are documents on "Using SPSS" or "Using SPSS-X" on the IBM system. In addition shortened versions of the above two documents are available at all CSO sites in the form of Reference Guides, namely, RF-23.6 SPSS Under CMS and RF-23.8 SPSS-X Under CMS.

4) CSO is just announcing its conversion policies so now is the time to "convert early and avoid the last minute rush," but still get the help with conversion CSO can provide.

Since SPSS Release 9 on the IBM is very similar to SPSS on the Cyber (they use the same users manuals), and programs can be sent to the IBM using a Cyber PRINT command, the only problem in converting from Cyber to CMS SPSS is the conversion of system files. Since CDC binary and IBM binary are not compatible, these files must be rewritten in generic, card image format using the WRITE CASES command in SPSS and sent to CMS with PRINT; or put on a tape, preferably using the TBLOCK utility, if they are long.

This time required for rewriting data files and converting programs also would be an ideal time to make the transition to SPSS-X. SPSS Release 9 is no longer effectively supported by SPSS, Inc. and the time will come when CSO will no longer support it. One beauty of SPSS-X, which helps in transition, is that many SPSS commands still work in SPSS-X (although they may not be mentioned in the *SPSS-X Users Guide*). These parallels can be discovered in the document "Getting Started with SPSS-X" on the shelf at 85 Commerce West. The most obvious change is the merging of the INPUT FORMAT and VARIABLE LIST commands to form the DATA LIST command. Simple forms of the merge can be found in the conversion documents mentioned in this article. Also a section in the back of the *SPSS-X User's Guide*, called "Help for Old Friends," gives valuable conversion information.

SPSS/PC+ is also an option for modest-sized projects. The syntax for SPSS/PC+ resembles that of SPSS-X. A handout is available describing available features, PC configuration and start-up software and manual costs at the South Consulting Office. A public domain program is available for transferring data and programs from Cyber mainframe to PC diskette.

If you anticipate or encounter a problem with your SPSS or other conversion, come by and discuss it with the CSO Statistical Consultants at 85 Commerce West. We want your conversion to be as smooth and timely as possible.

ANNOUNCING NEW VM PRODUCT: VMSCHED

Beth Engelbrecht-Wiggans

VMSCHED is a batch system that runs jobs on your own virtual machine at a later time (to be specified by you). The job that you run can be as simple as a message to yourself about an upcoming meeting, or an application program, etc. You can schedule your virtual machine to "wake up" and do processing when you wish. There are many timing options available; for example, you can have your machine autologged every other Monday at 6:02 am. An example application might be for VMSCHED to fire up an exec every weekday to transfer your mail messages to another signon.

To access VMSCHED type:

LINKTO VMSCHED

For more information on how to use the scheduling facility, type:

HELP VMSCHED MENU

The following example shows how you can schedule a Fortran job using VMSCHED.

First, you must write an exec to specify what you want to do. The following exec (called RUN EXEC) compiles a Fortran program, issues the needed filedefs, and runs the program. In addition, it creates an echo of the job that will come to your reader.

```
/*  exec to run fortran program test */
'spool console *  start'
say 'type out fortran program'
say ' '
'type run fortran'
say ' '
'fortvs run'
say ' '
say 'list out run files'
say ' '
'l run * '
'filedef 1 disk tmp data a'
'filedef 2 disk outtmp data a'
say ' '
say 'show file definitions'
say ' '
'query filedef'
say ' '
say 'type out input file'
say ' '
'type tmp data a'
'load run (start '
say ' '
say 'type out output file'
say ' '
```

```
'type outtmp data a'
'exec cost '
'logoff'
```

To schedule this exec you have two options: (1) you can have VMSCHED prompt you using it's menu driven scheduler, or (2) you can use the line oriented command. The following example shows you how to schedule using the line oriented command.

To schedule the exec RUN to execute starting at 11:55 on Nov. 6, type:

```
LINKTO VMSCHED
VMSCHED SCHEDULE MYJOB RUN (at 11:55 from 11/6
```

where MYJOB is the name of the job you wish to have executed and RUN is the name of your exec. VMSCHED will respond with

```
VMDSCH050I Request 'MYJOB' ONLY run scheduled: FRI 11/06/87 at 11:55:00.
```

WARNING: The job will not run if you are logged in at the time VMSCHED tries to autolog your machine. In such a case, VMSCHED will send you a warning telling you that VMSCHED is attempting to initiate your job. The warning is as follows:

```
WNG FROM VMSCHED; VMDAUT062W Attempting to initiate request 'MYJOB'
```

At this point you can: log off, delay the execution of the job, cancel the job, or skip the current execution. For more information on these options please see the help files on VMSCHED (HELP VMSCHED MENU).

When the job has completed you will receive conformation in your reader. For the previous example I received two reader files: the console file and a file from VMSCHED telling me that the job had run. The file from VMSCHED had a name MYJOB VMSCHED and it looked like this:

```
VMDAUT060I Request 'MYJOB' started normally on 11/06/87 11:55:39.
VMDAUT069I Request 'MYJOB' not rescheduled.
```

The console file looked like this:

```
type out fortran program


      PROGRAM MAIN                                  RUN00010
      INTEGER I,J,K                                 RUN00020
      REAL A(10),B,C                                RUN00030
      READ(1,*) B                                   RUN00040
      DO 10 I = 1,10                                RUN00050
      C = B*FLOAT(I)                                RUN00060
10    A (I) = SQRT(C)                               RUN00070
      WRITE (2,20010) (A(I),I=1,10)                 RUN00080
```

```
20010     FORMAT (2(5(F10.2,2X)/))                          RUN00090
          STOP                                              RUN00100
          END                                               RUN00110

Fortran Release 4.1 is being used.
VS FORTRAN COMPILER ENTERED.   11:55:49

**MAIN** END OF COMPILATION  1 ******
VS FORTRAN COMPILER EXITED.    11:55:52

list out run files

RUN       EXEC      A1
RUN       FORTRAN   A1
RUN       OUT       A1
RUN       LISTING   A1
RUN       TEXT      A1

show file definitions

FT06F001  TERMINAL
FT05F001  TERMINAL
FT01F001  DISK      TMP       DATA
FT02F001  DISK      OUTTMP    DATA

type out input file

23.4

EXECUTION BEGINS...

type out output file

     4.84        6.84        8.38        9.67       10.82
    11.85       12.80       13.68       14.51       15.30


6 Nov 1987  11:55:55
Connect time                    0 minutes
CPU/SIO/Memory                0.38 service units
Total service units used              0.38
Total cost                    $       0.22
    (Cost calculated at internal rate of $.59 per service
     unit.  Weekend reduced rates not reflected.)
CONNECT= 00:00:15 VIRTCPU= 000:00.45 TOTCPU= 000:01.01
LOGOFF AT 11:55:55 CDT FRIDAY 11/06/87
```

For further information about VMSCHED see the help files, or contact Beth Engelbrecht-Wiggans (333-6827 or ENGWIG@UIUCVMD).

NEW CSO MICROCONSULTING SERVICE
Room 94 Commerce West

For those users on campus who have just purchased an IBM Personal System/2 Computer, we are now able to transfer files between the old 5-1/4" disk format and the new 3-1/2" disk format.

We have installed an internal 3-1/2" drive on one of our IBM-ATs which is able to read and write to 720K 3-1/2" disks. If your machine normally formats for 1.44M, please format your disks with the following command (to make them 720 disks) before bringing them over:

FORMAT A:N:9/T:80

The transfer is a simple copy from drive A to drive E (the internal drive). Incidentally, if any readers have attempted to install this type of drive on an AT without success, be sure that you install it as drive D or E in CONFIG.SYS, rather than drive B. Drive B on an AT can only be a 360K drive.

The Microcomputer Resource Center (101 S. Gregory, Urbana) is also equipped with a 3-1/2" external disk drive attached to an IBM-XT which could be used for the same purpose.

Just as a reminder, we are also able to do file transfers between the IBM and Apple Macintosh, and file conversions between several popular word processors on the IBM PC.

All of our services are free, and are provided on a first-come, first-served, walk-in basis. Our hours are from 9am-5pm Monday through Friday, and 7pm-10pm Sunday through Thursday.

WHAT'S NEW IN THE MRC?

Mark S. Zinzow

Since its start in January 1987 the MRC (Microcomputer Resource Center) has been growing steadily. All of our collections are also growing. We now have over 800 disks of public domain IBM PC software, about 200 disks from the Champaign-Urbana Macintosh Users Group, and have added to our commercial software collection. In addition, we have added a few magazine subscriptions.

We acquire new software packages every week in the MRC. Your suggestions determine what we make available. If you would like to see something we do not have, please take the time to fill out a suggestion form. These forms are always available at the MRC, 101 S. Gregory, Urbana. For your convenience, we have included a copy of the form at the end of this issue that you may fill out and return to us via campus mail.

Please note that while our public domain software is free (may be copied at no charge), you are morally obligated to send money to shareware authors for software you use regularly. Our commercial software library is intended for evaluation only; it is not intended for production use and therefore, may not be copied.

To give you some idea of what we have, here are some lists of available software:

Recent Demonstration Packages
(these demo versions may be copied)

Title	*Publisher*	*Application*
LabVIEW	National Instruments, Corp.	Data Acquisition
MathCAD	MathSoft, Inc.	Equation Solver
Microsoft Chart 3.0	Microsoft Corp.	Graphics
Microsoft Project 4.0	Microsoft Corp.	Project Management
Microsoft Works[1]	Microsoft Corp.	Integrated Software
Mystat	Systat	Statistics
TK Solver Plus[2]	Universal Technical, Inc.	Equation Solver
WordPerfect 4.2	WordPerfect Corp.	Word Processor

[1] Four applications in one: word processing, spreadsheet, database management, and communications.

[2] This vendor has offered to come to our campus and demonstrate this product. Please use our suggestion form to indicate your desire to attend and if enough people respond, we will arrange it.

Recent Commercial Packages
(These may not be copied, but may be evaluated)

Title	*Publisher*	*Application*
Adobe Illustrator	Adobe Systems, Inc.	Graphics
AusDataEntry	AusData/USA, Ltd.	Data Entry
BetterBasic 2.0	Summit Software Technology, Inc.	Language
Demo-Graphics	COMpress	Demographic Charting
Diagraph 2000	Computer Support Corp.	Business Graphics
Experlogo for the Macintosh	Expertelligence Inc.	Language
Intro. to General Chemistry	COMpress	General Chemistry
MAC3D 2.1	Challenger Support Corp.	Business Graphics
Tom Throop's Bridge Baron	Great Game Products, Inc.	Game
The Scientific Desk[1]	C. Abaci, Inc.	Equation Solver
Expert Series: dBase III/III+	Intellisance-Cdex Corp.[2]	Tutorial/training
Expert Series: DisplayWrite 3	Intellisance-Cdex Corp.[2]	Tutorial/training
Concurrent WordStar	Intellisance-Cdex Corp.[2]	Tutorial/training
Expert Series: WordPerfect	Intellisance-Cdex Corp.[2]	Tutorial/Training
Teach yourself Basic	Intellisance-Cdex Corp.[2]	Tutorial/training
Smart Eyes	Addison-Wesley	Speed Reading Training

[1] Jack Knott is looking for evaluation of this package from users to ascertain the desirability of purchasing a campus site license for it.

[2] Note these packages from Cdex are on a temporary loan and will not be permanent additions to our collection.

IBM Updates

We also have a number of items that are not part of any major collection, such as miscellaneous BBS or ARPANET downloads, minix disks, etc. One of the most important of these items is our box of IBM update disks. Periodically IBM makes patch and update disks available to distributors and technical support coordinators.

The most recent update is a must for all owners of IBM's new PS/2 models 50, 60, and 80. It is DASDDRVR.SYS version 1.20 which corrects about five "bugs" with reading and writing diskettes on these systems. You can determine which version of DASDDRVR.SYS you have on your system by it's size. Version 1.10, which should be replaced and discarded, is 648 bytes long and version 1.20 is 698 bytes long.

To get an update, simply bring in your original disks or proof of license for the package you own, and blank formatted disks and we will let you copy the updates on one of our systems. Note, you may only copy updates for the same version. For example if you have DOS 3.2 you may copy the Dos 3.2 updates, but we do not provide an upgrade to version 3.3 as that must be purchased. If you have IBM Professional FORTRAN version 1.0 or 1.18 you are encouraged to pick up a copy of version 1.22!

Here is the list of our currently available IBM update disks. If you need an update we do not have, please let us know and we will order it immediately. Usually we receive updates within a week of ordering them. Of course, it takes longer if you find a bug they haven't already fixed!

Product	*Disk Identification*	*Disk or File Date*
DOS 3.3 DASD FIX	913MN	10/8/87
DOS 3.2 Updates	142MH	3/6/87
IBM Professional Fortran Version 1.22	200MC	10/23/86
Basic Compiler Update V2.0		4/4/86
DOS 3.0 and 3.1 Backup command	266MC	11/11/85
DOS 3.1 Mode command		12/20/85
Pascal 2.0 Update (3 disks)		8/15/85
Graphics Development Toolkit Update (2 disks)	191MC	12/5/86

Macintosh Update

As this article was going to press, we received our first update for Macintosh users. **Learning Works** is an 800K disk included with Microsoft Works 1.1, but not in the 1.1 upgrade kits for owners of 1.0. If you have or are planning to upgrade your copy of Works 1.0, please bring in your original software and a blank formatted disk on which to copy the new disk.

Several lists appear on the following pages. The first three lists include products which may be examined only at the MRC; the last three lists include products which may be checked out.

IBM COMPATIBLE PRODUCTS TO BE EXAMINED ONLY AT MRC

Accounting Library
Accounts Payable
Accounts Receivable
AusDataEntry
AutoCAD
AutoCAD AEC
AutoSketch
Aztec C for PC/DOS
Back-It
Basic 2.0
Basic Compiler 2.00
BetterBasic 2.0
C Compiler & Language Ref.
C Trace
CAD Camera
CrossTalk XVI 4.5
DataEase
dBase III Plus
DBXL
Demo-Graphics
Dflow
Diagraph 2000
DisplayWrite 3 v1.10 Vol 1 & 2
DOS 2.10, 3.10, 3.20, 3.30
DOS v3.30 Tech. Ref.
Easy Extra
Enable
Eureka: The Solver
EXSYS Version 3
Framework II
General Ledger
Generic CADD 2.0
Generic Dot Plot
Genifer
GW Basic v3 for the Zenith
Harmony System Manager
IBM 7372 Color Plotter Op. Guide
IBM-PC Local Area Netwk 1.10
IBM-PC Technical Ref.
IBM-PC Hardware,Maint,Serv
Intro. to General Chemistry
Lotus 1-2-3 v2.01
Lotus Freelance Plus
Lotus Hal
Lotus Manuscript
Lotus Measure
Lotus Metro
Macro Assembler & Ref. Guide
Master Control: The Masters Touch
MathPlan
Microsoft Basic Compiler
Microsoft Basic v3 (5.25")
Microsoft C Compiler 4.0
Microsoft Chart
Microsoft Fortran 4.0
Microsoft GW-Basic 2.0
Microsoft Lisp
Microsoft Macro Assembler 4
Microsoft Multiplan
Microsoft Optimizing Fortran Comp.
Microsoft QuickBasic Compiler
Microsoft Windows
Microsoft Word 3.0 for Zenith
Microsoft Word 3.0 & 3.1
MS-DOS 3.2
Multimate Advantage
Multimate Professional Word Proc.
Norton Utilities Manual
Nota Bene (documentation only)
Notebook II
OfficeWriter 5.0
Pascal Compiler 2.0 Vol 1 & 2
Payroll 3.1
PC Network Tech Ref
PC TeX
PC-Write 2.6
Prime Time
Professional Fortran
Q-DOS II
Quicksilver
R:Base System V
Ready to Run General Ledger
Reflex Workshop
Resource Manager
SAS/BASE,STAT,IML,RTERM
Silk
Split Screen Text Editor
SPSS/PC+ Base Pac., Adv. Stat.
Statgraphics
Symphony
Teach Yourself Basic
The Twin
Tom Throop's Bridge Baron
TOPS for the PC
Training for WordStar Prog.
Training for dBase III/III+
Training for DisplayWrite 3
Training for WordPerfect
Turbo Basic
Turbo Editor Toolbox
Turbo Lightning
Turbo Pascal 3.0
Turbo Pascal Graphix Toolbox
Turbo Pascal Numerical Methods
Turbo Prolog
Turbo Tutor
V Cache
V Feature
V Opt
Ventura Publisher 1.4
Volkswriter 3
Volkswriter Scientific
VP-Expert
VP-Planner
WordPerfect
WordPerfect Library
WordStar 2000 Plus
WordStar Professional 4.0
XYWrite

MAC PRODUCTS TO BE EXAMINED ONLY AT MRC

Adobe Illustrator
Aztec C for the Mac
Cricket Draw
Experlogo for the Mac
Factfinder
Filemaker
Helix
Lotus Jazz
MAC3D 2.1
MacDraw
Mac 6800 Develop. Sys.
Macintosh Pascal
MacPaint
MacProject
MacServe
MacWrite
Microsoft Basic Compiler
Microsoft Basic Interpreter 3.0
Microsoft Excel
Microsoft Fortran 2.2
Microsoft Word
Microsoft Word 3.0
Microsoft Works
MockPackage Plus
Pagemaker
Ready, Set Go! (Three)
Red Ryder 10.3
Reflex for the Mac
Sidekick: Desktop Organizer
Super Paint
Tops for the Mac
Turbo Pascal for the Mac

MISCELLANEOUS PRODUCTS TO BE EXAMINED ONLY AT MRC

Firstcadd -- Atari
Turbo Pascal Database Toolbox -- CP/M-86
Interleaf Workstation Pub. Software -- AIX
WordPerfect for Apple IIC & IIE -- proDOS

IBM COMPATIBLE PRODUCTS WHICH CAN BE CHECKED OUT

APL
Basic 2.0
Basic Compiler 2.00
C Compiler
C Trace
CrossTalk XVI 4.6
DataEase
DataPass
Diagraph 2000
Disk Op. Sys. v3.10
DisplayWrite 3 v1.10 Vol 1,2
DOS 2.10
Enable
Eureka: The Solver
Graphics Development Toolkit
Graphics Terminal Emulator
GW Basic v3.0 for the Zenith
Harmony Accounts Payable
Harmony Accounts Receivable
Harmony General Ledger
Harmony Information Manager
Harmony Payroll/Govt. Rep. Data
Harmony Spreadsheet
Harmony Word Processor
IBM Document Retrieval Asst.
IBM-PC Technical Ref
IBM Drawing Assistant
IBM Graphical File Sys.
IBM Graphical Kernal Sys. Vol 1,2,3
IBM Graphing Assistant
IBM Writing Assistant
IBM-AT 3270 Hardware,Maint,Serv
IBM-AT Guide to Operations
IBM-AT Hardware,Maint,Serv
IBM-AT Installation & Setup Guide
IBM-AT Technical Reference
IBM-AT/370 Technical Reference
IBM-PC Acquisition & Control Adapt.
IBM-PC Guide to Operations
IBM-XT Hardware,Maint,Serv
Lotus 1-2-3 2.01
Lotus Freelance Plus
Lotus Hal
Lotus Manuscript
Lotus Measure
Lotus Metro
Macro Assembler
Microsoft Optimizing Fortran Comp.
Microsoft QuickBasic Compiler
Microsoft Word 3.0 for Zenith
MS-DOS 3.2
IBM-PC Hardware,Maint,Serv
Norton Utilities
Notebook II
Pascal Compiler 2.0 Vol 1,2
PC-Write 2.6 & 2.7
PC/VI
Personal Editor
Plotting System Vol 1,2
Prime Time
Professional Editor
Professional Fortran
R:Base System V
Ready to Run General Ledger
Report Writer
Silk
Split Screen Text Editor
Symphony
The Scientific Desk
Topview
Topview Programmer's Toolkit
Turbo C
Turbo Pascal 3.0
VP-Expert
Word Proof
XYWrite III Demo Disk

MAC PRODUCTS WHICH MAY BE CHECKED OUT

Design
Experlogo for Macintosh
MacDraw
Macintosh Pascal
MacPaint
MacTerminal
MacWrite
Microsoft Fortran 2.2
Microsoft Word 3.0

AIX IBM-RT PRODUCTS WHICH MAY BE CHECKED OUT

AIX Command Reference Manual
AIX Communications Guide
AIX Diskettes
AIX Messages Reference Manual
AIX Operating Systems Ref.
AIX Using & Managing Manual
Coprocessor Services
AIX Usability Services Reference
PC 3278/79 Emulation
PC AIX Assembler Language Ref.
PC AIX C Language & Ref.
PC AIX DOS Services
PC AIX Prog. Tools & Interfaces
PC Basic Interpreter & Compiler
PC Fortran 77
PC INED
PC Pascal
PC Virtual Resource Manager
Problem Determination Guide
SQL/RT Data Base
User Setup Guide & Options Inst

THE TOP SIX WordPerfect TRAPS

Joan Schraith and Edmund DeWan

This article documents six of the most common problems encountered by WordPerfect users, based on the experience of the PC Consulting staff at Commerce West.

Trap #1. Directory In Use

You type WP at the DOS prompt to start up WordPerfect, and get a screen like the one below (variants due to different versions are shown emboldened and in square brackets):

```
                              WordPerfect

                           Version [4.1 or 4.2]

                      (C)Copyright 1982,1983,1984,1985
                            All Rights Reserved
                   SSI -- Satellite Software International
                            Orem, Utah  USA


NOTE: The WP System is using C:\WP\WORDPERF


[WordPerfect 4.1]
ERROR: Overflow File already exists
Directory is in use! 1 Exit; 2 Use Another Directory;
(line continued)                              3 Overwrite Files: 1

[WordPerfect 4.2]
Are other copies of WordPerfect currently running? (Y/N)
```

These are not error messages to be alarmed about. They are triggered because temporary files still remain on the WordPerfect system disk. These files are always erased when WordPerfect is exited using F7, but if the last person who used WordPerfect used CTRL-ALT-DEL or turned off the machine to exit (instead of pressing F7), these files will not be deleted. When you get this message, unless you are on a network and someone else is using WordPerfect at the same time, simply tell WordPerfect to Overwrite Files (type 3, for Version 4.1) or that other copies of WordPerfect are not currently running (type N, for Version 4.2)

Trap #2: The Disappearing Document

You are typing away merrily, and SUDDENLY everything disappears! You're still in WordPerfect, but HOURS OF WORK have vanished into thin air.

Relax! You have probably stumbled across WordPerfect's Switch Documents function; i.e., you pressed Shift-F3 by mistake. Check the bottom of the screen, and see if your status line resembles this one:

```
                                    Doc 2  Pg 1  Ln 1      Pos 7
                                      ^ look here!
```

If you are in Doc 2, and you didn't purposely get there, then you probably pressed Shift-F3 by mistake. To get back to Document 1, simply press Shift-F3 again, and your document will re-appear as if by magic. If it doesn't, well... By the way, this is a good time to point out that you really should do periodic Saves of your work (F10), say every 15 minutes or so, or at whatever interval represents the most amount of work you are willling to re-type from scratch in case something goes wrong. (See remarks in the next section on retrieving documents.)

Trap #3: The Mysterious Duplicating Document

The following quotation, taken directly from the WordPerfect Reference Manual, says it best: "If you see more than one copy of your document on the screen while scrolling through the text, or if more than one copy is printed, then you retrieved a second copy of the document while the original was on the screen." For example, you might see the following on your printout:

My Paper on Greece

Greece has a very **warm** climate...
[several pages of text]

My Paper on Greece

Greece has a very **nice** climate...
[several pages of text]

Note that the two sets of text may or may not be identical, depending on circumstances. The problem here is that the Retrieve function (Shift-F10) has the *sole* purpose of copying text from a WordPerfect document to the current screen, and it does nothing else. The new text is inserted at the cursor, which can be anywhere on the screen; usually, it is at the end of the document being edited, but it is possible to place the imported text right in the middle of whatever you were doing. Furthermore, the retrieve function brings in the version of the document that was created at the last save operation, so if you haven't saved your text since you began, or if you have made some changes since the last save, then the imported text will be different from the text that was on the screen when you did the retrieve.

How does the condition described above come about? We can think of at least three ways. One is that you made some changes that you didn't like, and then decided to revert to the original form of the document, or to a previously-saved version, and just went ahead and did a retrieve. Another, perhaps more likely one, is that you scrolled the document off the screen and thought it was "gone", so you retireved it again. A third possibility is that you finished with one document, and then retrieved another. In these three cases, and some others as well, you have to dispose of the document already on the screen before you do a retrieve. This is properly done using the Exit (F7) function.

> Note: Of course, the retrieve function can also be used quite legitimately to append and merge text in your document. In these cases you do not want to dispose of anything. If you accidentally retrieve some text in the wrong place, you can abandon all edits since the last save, and use F7 as described next. On the other hand, if you know the exact boundaries of the imported text, you can highlight it and then cut-and-paste it to the correct location, as noted a little further on in this section.

The Exit function, F7, asks you if you want to save the document before exiting. You reply Yes or No to this depending on your intentions (Yes in most circumstances, but No if you want to abandon a disaster, for example). Next, WordPerfect asks you if you wish to exit to DOS. If you answer No to this prompt, you will be returned to the editor WITH AN EMPTY SCREEN. Now you can retrieve the next document that you want to edit, whether it be the same one or a different one.

If you decide you do not want to abandon your current edit (say, in a case where you have made several important changes since the last save, and you do not want to lose them), then you must delete the unwanted text. You can delete contiguous blocks of text using the Define Block function (Alt-F4). First, place the cursor at the beginning of a block of text to be deleted, and press Alt-F4. You can start at either end of the block of text. Next, move to the other end of the block of text, using any standard cursor-moving technique, such as PgDn, PgUp (to go a screen at a time), the arrow keys, or Home-Home-Downarrow to jump to the end of the document (Home-Home-Uparrow to jump to the beginning of the document). The entire block of text, starting at the place where you pressed Alt-F4, down or up to the place you stop, will be highlighted. After you have moved to the appropriate place, then press Del to delete the block. After you have done this, do some scrolling about the document to make sure you did it right, and when you are satisfied, press F10 to save what you have.

Note: This, too, can be dangerous. A good safeguard to use whenever doing some drastic operation, such as a massive delete, is to make a backup beforehand. Therefore, you will be in better shape if you made a backup of your file before beginning. However, that's another story, beyond the scope of this article. What you can do at this point is, as soon as you have realised that something is wrong, do a Go To DOS as described in the reference manual (press the Shell key, Ctrl-F1, and then press the "1" key to exit to DOS). You will immediately be placed at the DOS level, where you can make a copy of the document you were editing, in its version as of the last Save you did. For example, if you were editing a file called THESIS, you can do COPY THESIS THESIS.BCK (or THESIS2, etc.; avoid using the extension BAK, since it is used by many programs.) Now type the DOS command EXIT, and you will be returned to WordPerfect where you left off. If anything goes wrong with your re-construction effort, you will have the backup copy to restore from. This technique is a bit cumbersome for general use, but it can prevent a major disaster in some cases. You have to use your own judgement, but sound backup policies never hurt!

Trap #4: Troubleshooting With Reveal Codes

If you plan to make WordPerfect your word processor of choice, it is a good idea to learn the Reveal Codes function (Alt-F3). Whenever anything bizarre comes out of the printer (and assuming you have chosen the correct printer), your first instinct should be to go into Reveal Codes, by pressing Alt F3, and see if you have any duplicate settings, as in the example below:

```
         Some bold text

C:\WORDPERF\TESTB                          Doc 1  Pg 1  Ln 1      Pos 10
Δ   Δ   {   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   ]Δ
[Margin Set:0,80][Margin Set:10,74]_Some [B]bold[b] text
```

The cursor was under the letter S in "Some **bold** text". When Reveal Codes was executed, the stuff at the bottom of the illustration appeared, showing the name of the file, the current screen configuration (Document 1, Page 1, Line 1, cursor Position 10), a tab ruler, and finally the displayed codes.

On the tab ruler, tab stops are normally indicated by the diamond symbol Δ, and the left and right margins are indicated by left square bracket [and right square bracket], respectively. Whenever a margin coincides with a tab stop, however, a left curly brace { or a right curly brace } is used. In the illustration, the left margin is indicated at position 10 by {, and the right margin is indicated at position 74 by].

The revealed codes at the bottom show that two Margin Settings have been implemented. WordPerfect never erases old settings when you make a change. If your cursor is in the right place, it won't matter. However, if your cursor is to the left of the old setting, the new setting will go in "front" of it (i.e., to the left of it), and it will have no effect. If you want to delete the old setting, place the cursor to the right of the old setting and then press the Backspace key. Alternatively, you can place the cursor to the left of the old setting, and then press the Delete key.

It is interesting to note what happens in the above illustration when the cursor is moved. The revealed codes are automatically updated to show the new cursor position. The following illustration shows the new display after the cursor has been moved one space to the left:

```
_        Some bold text

C:\WORDPERF\TESTB                          Doc 1  Pg 1  Ln 1      Pos 0
{   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   ]Δ
[Margin Set:0,80]_[Margin Set:10,74]Some [B]bold[b] text
```

Several things have happened all at once. The cursor at the top, in the plain text part, has moved to the left edge of the diagram. The Position indicator has changed to 0. The { indicating the left margin has shifted to the left edge, and, finally, the cursor indicator in the revealed codes part has moved between the two margin settings. At this point, you could delete the rightmost margin setting by pressing the Delete key, or you could delete the leftmost margin setting by pressing the Backspace key. Now, if you use the Leftarrow key to move the cursor one more space to the left, the following configuration results:

```
          Some bold text

C:\WORDPERF\TESTB                          Doc 1  Pg 1  Ln 1      Pos 10
Δ   Δ    {   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ   Δ  ]Δ
[Margin Set:0,80][Margin Set:10,74]Some [B]bold[b] text
```

This is almost identical to the first illustration, the only difference being the position of the cursor in the revealed codes section. The reason for this is that WordPerfect is now using the default margin settings, which happen to be identical to the user-imposed settings of 10 and 74 in the example. The defaults can be changed by using the Set-up Menu, when you start up WordPerfect. This is done by typing "WP/S" instead of just "WP". See "Set-up Menu" in the reference manual for more details.

Trap #5: Installing Printers

The greatest number of WordPerfect questions we receive in the consulting office relate to printer problems. This is hardly surprising, since WordPerfect has a rather inconvenient, and confusing, method of handling printers. We hope the following discussion helps to sort out some of this confusion.

At the document level, all print operations in WordPerfect are accessed through two print commands, Print (Shift-F7) and Print Format (Ctrl-F8). This in itself is awkward, since it only adds to the confusion. However, Print Format controls various aspects of the print job which do not concern us here, such as pitch, font, justification, underline style, line numbering, etc., so we consider only the Print command, Shift-F7.

Shift-F7 is the entry point for several different print operations, as shown in the following illustration, which depicts the menu that results from pressing Shift-F7. This menu appears at the bottom of the screen:

```
1 Full Text; 2 Page; 3 Change Options; 4 Printer Control;
(line continued)                                    5 Type-thru: 0
```

Of these choices, we are interested only in number 4. When you select Printer Control by typing "4", the following menu will appear:

```
Printer Control
                                        C - Cancel Print Job(s)
1 - Select Print Options                D - Display All Print Jobs
2 - Display Printers and Fonts          G - "Go" (Resume Printing)
3 - Select Printers                     P - Print a Document
                                        R - Rush Print Job
Selection: 0                            S - Stop Printing

Current Job

Job Number: n/a                         Page Number:  n/a
Job Status: n/a                         Current Copy: n/a
Message:    The print queue is empty

Job List

Job  Document    Destination            Forms and Print Options
Additional jobs not shown: 0
```

There are two options in this menu that we will be talking about, displayed in the illustration in boldface: **2 - Display Printers and Fonts**, and **3 - Select Printers.** Before actually pushing any buttons, however, let us consider the general way in which WordPerfect organises printer support. Your WordPerfect program comes with disks on which are stored files containing support for many different printers (over 250 for version 4.2). These support files are rather large, and contain much more material than would normally be needed in any given installation. Therefore, WordPerfect installs in your working directory (i.e., the directory containing the program file WP.EXE) a file named WPRINTER.FIL, which may contain up to 32 printer definitions. This installation process in done through the use of the Select Printers option.

You can add new printer definitions to WPRINTER.FIL at any time, or change existing ones, simply by putting the appropriate printer support disk in drive A or drive B and then going through the Select Printers option again, as described below. Deleting a printer from the list, however, is slightly more complicated, but not difficult. In version 4.2, there is a file called PRINTER.EXE on printer support disk #2. To delete a printer definition from your list (or to perform some other printer tasks, such as renaming or modifying printer definitions), execute this program by placing the disk in drive B and typing B:PRINTER.

This all seems pretty reasonable and straightforward. However, WordPerfect places an additional condition on your use of printers, and this is where most of the confusion arises. That is, you are allowed a maximum of six "logical" printers, numbered 1 through 6. These logical printers are assigned printer definitions from your list of up to 32 defined printers. The logical assignments can be switched at any time, again using the Select Printers option. In the documentation, the logical printers are referred to as "printer 1", "printer 2", and so forth. (Note that WordPerfect automatically sends a print job to printer 1 unless another printer (2-6) is specified from either the Change Options or Select Print Options menus.)

Now that we have a general idea of how printer support is structured, we are ready to see how it works in practise. The description here is potentially tricky, since it depends on the writer and the reader both operating from the same assumption, namely, that the installation process is being described from the beginning, as if WordPerfect were being installed for the first time. If you are trying these things out on a program that has already had the printer support installed, then the results will not agree exactly with our illustrations, but a little experimentation will clarify matters. (Note to the technically oriented: If you want to try it from scratch, all you have to do is delete the file {WP}SYS.FIL from your program directory, and copy the files WPFONT.FIL and WPRINTER.FIL to your program directory from the WordPerfect program disk. {WP}SYS.FIL is created the first time you install printers, and modified thereafter, and WPFONT.FIL and WPRINTER.FIL on the program disk contain the initial printer definitions.)

Now, we are ready to select option 2, Display Printers and Fonts. The following screen is presented to the user:

```
1: Standard Printer                    Continuous

      1 ASCII/Line Ptr                 2 ASCII/Line Ptr
      3 ASCII/Line Ptr                 4 ASCII/Line Ptr
      5 ASCII/Line Ptr                 6 ASCII/Line Ptr
      7 ASCII/Line Ptr                 8 IBM Graphics

2: Standard Printer                    Continuous

      1 ASCII/Line Ptr                 2 ASCII/Line Ptr
      3 ASCII/Line Ptr                 4 ASCII/Line Ptr
      5 ASCII/Line Ptr                 6 ASCII/Line Ptr
      7 ASCII/Line Ptr                 8 IBM Graphics

3: Standard Printer                    Continuous

      1 ASCII/Line Ptr                 2 ASCII/Line Ptr
      3 ASCII/Line Ptr                 4 ASCII/Line Ptr
      5 ASCII/Line Ptr                 6 ASCII/Line Ptr
      7 ASCII/Line Ptr                 8 IBM Graphics

Press any key to continue
```

This screen displays the descriptions of logical printers 1-3. When you press "any" key (say, the spacebar), you get another screen showing logical printers 4-6:

```
(4 and 5 same as 1-3)

6: DOS Text Printer                    Continuous

      1 Standard ASCII                 2 Standard ASCII
      3 Standard ASCII                 4 Standard ASCII
      5 Standard ASCII                 6 Standard ASCII
      7 Standard ASCII                 8 Standard ASCII

Press any key to continue
```

The next key you press will return you to the Printer Control menu. What does all this mean? First, there are eight items shown for each printer. These are the fonts. WordPerfect allows you to have eight different fonts for each printer. For example, in printer 1 (Standard Printer), the first 7 fonts are ASCII/Line Printer, which is standard stuff. Font 8 is IBM Graphics, which is used to print special symbols. Printers 2 through 5 are all the same as printer 1, but printer 6, DOS Text Printer, uses the Standard ASCII font for all font numbers. After you have re-assigned some of your printers, go back to this menu and examine how the fonts have changed. Also, any time you are not sure just what your printer assignments are, go to this menu and it will show you exactly what printer definitions are assigned to each of the logical printers, and what fonts are associated with each printer. (Font building is a whole different story, and we will not go into it here.)

Now back to Printer Control option 3, Select Printers! When this button is pushed, Versions 4.1 and 4.2 show different screens. However, their functions are roughly the same; the text of Version 4.2 has been slightly modified by WordPerfect to eliminate some (but not all) of the confusion. Here are the menus for the two versions, slightly shortened to save space:

Version 4.1 Select Printers Menu

```
Select Printer Number 1

     1  Standard Printer            2  DOS Text Printer

                            Press PgDn to Add New Printers

                            Press Exit when Done; Press Cancel to Ignore
Changes
Selection: 1                Press the Arrow Keys To Change Printer Number
```

Version 4.2 Select Printers Menu

```
Printer Definitions in C:\WORDPERF\WPRINTER.FIL

     1  Standard Printer            2  DOS Text Printer

                            PgDn for Additional Printer Definitions
                            Exit when Done
Printer 1                   Cancel to Ignore Changes
Using Definition: 1         Arrow Keys To Change Printer Number
```

These two menus contain essentially the same information, only with slightly different wording. In both illustrations, note the emboldened text. For version 4.1, you have "Select Printer Number" at the top of the screen, and for version 4.2 you have "Printer" at the bottom of the screen. These are the same thing, and refer to the logical printer number, which ranges from 1 to 6. If at this point you press any of the arrow keys successively, the printer number will cycle through all its possible values. (If you try it, restore things to their original configuration before proceeding.) Uparrow and Rightarrow increase the number until it goes past 6 and back to 1; Downarrow and Leftarrow decrease the number until it goes past 1 and back to 6. Note that in the original case (starting from scratch, as we have assumed), the printer number comes up as 1.

The word "Selection" in version 4.1 has been changed to "Using Definition" in version 4.2. You can change this value at any time to some other value just by typing in a new number. The number you type must be taken from the list of printer definitions, displayed here in italics (they are not printed in italics on the actual menu). These are the printers that have been "defined"; i.e., added to WPRINTER.FIL, by a process that we will describe presently. First, note that when you install WordPerfect for the first time, it comes with two printers already defined, "Standard Printer" and "DOS Text Printer". This is done so that dealers can use the print function without having to install any printers.

Now we come to the stuff in the lower right corner of both menus. You will note that they are the same instructions in both versions, slightly cleaned up and re-formatted for version 4.2. The four choices are Exit (F7) to complete any assignments made, Cancel (F1) to ignore changes, the arrow keys as described above to change the logical printer number, and PgDn to display "Additional Printer Definitions"/"Add New Printers". (You can use PgUp for this also.)

This last item is the one which is used to augment the list of defined printers that you already see on the screen. What you see on the screen now (before pressing PgDn) is a list of printers that are currently installed in WPRINTER.FIL. When you press PgDn, you will eventually see another menu almost exactly like the one you are now viewing, with an expanded list of printers (not including the ones on this list), that take up several screens. These are NOT printers already established in WPRINTER.FIL, but instead are printer definitions found on the printer support disks. In fact, if the appropriate printer support files are not found in the same directory as the program file WP.EXE, the following menu will be presented first:

```
Can't Find Printer Files...

      Place a WordPerfect Printer Diskette
      in any drive other than drive C:

      (If you don't have another floppy disk drive, you must
      install WordPerfect properly on your system before you
      can select printers. See the "Getting Started" section
      of your WordPerfect manual for help with this.)

Press Drive Letter When Ready: _
```

All you have to do at this point is insert one of the printer support disks in drive A or drive B, close the drive door, and press the appropriate letter. WordPerfect will then display the next screen, a sample of which is shown below (with slight variations due to version):

```
              Printer Definitions in A:WPRINT.ALL:

    1  AMT Office Printer (Diablo)      2  AMT Office Ptr (IBM Color)
    3  Brother HR-1                     4  Brother HR-15 / Dynax DX-15
    5  C.Itoh 8510 Prowriter            6  C.Itoh Starwriter/...
    7  Canon A1 Courier 10 N            8  Canon A1 Courier 10 R
    9  Canon A1 Elite 12 N             10  Canon A1 Elite 12 R
   11  Canon A1 Garland PS N           12  Canon A1 Garland PS R
   13  Canon A1 LPT Gothic N/R         14  Canon A1 Pica 10 N
   15  Canon A1 Pica 10 R              16  Centronics 351
   17  DOS Text Printer                18  Daisywriter
   19  DataProducts DP Series          20  DataProducts SPG 8050
   21  Diablo 620                      22  Diablo 630
   23  Diablo 630 ECS                  24  Diablo ECS/IBM
   25  Digital LA-50/LA-100            26  Epson FX
   27  Epson FX on Tandy               28  Epson LQ-1500 (1.x ROM)
   29  Epson LQ-800/LQ-1500 (2. ROM)   30  Epson LX
   31  Epson MX-Gftrx/Typ 3 on Tandy   32  Epson MX-Graftrax/...

                          PgDn for Additional Printer Definitions
                          Exit when Done
Printer 1                 Cancel to Ignore Changes
Using Definition:         Arrow Keys To Change Printer Number
```

Note two things: a) Printer 1 is the logical printer, and b) the "Using Definition" value is left blank, for you to fill in from one of the numbers on the list. If the printer you want is not on the list, press PgDn and the next screen will be displayed, starting with number 33 and going through number 64, and so forth, to the very last printer (146 on printer support disk #1, version 4.2). If you get to the end of the list, PgDn will take you back to the beginning. You can also use PgUp to move upwards in the list, except it will not wrap upwards beyond the first screen and back to the last one, as does PgDn when you get to the end.

Now let us say that you want printer 1 to be the IBM ProPrinter. Since the printer number on the screen is already 1, we can go ahead and select a printer. (Note: if you use the arrow keys at this point to change the printer number, WordPerfect will take you back to the Select Printers menu, so it is best to change this before using the PgDn key in the first place.) Since the IBM ProPrinter happens to be number 76 in this installation, we have to press PgDn twice more to get this printer description on the screen. Then type the number 72, and when you are satisfied that all is right, press Enter or the Exit key (F7).

The next thing that happens is that WordPerfect asks you to choose a printer port for this printer, and the forms type, in two stages. First, you will see the following menu:

```
Printer Port
      0 - LPT 1        1 - LPT 2        2 - LPT 3
      4 - COM 1        5 - COM 2        6 - COM 3      7 - COM 4
      8 - Device or File Pathname
Selection: 0
```

Generally, a parallel printer is 0 and a serial printer is 4. However, in some offices, a local computer guru has set up the the computer attached to the serial printer in such a way that users can print as if it were a parallel printer. You will need to ask the person in charge of your installation how the printer is set up if that is the case. If you choose option 8, you will print to a file, but the file will contain the codes for that printer (so that if you later print from DOS, your document will still contain boldfacing, underlining, etc.) The usual choice here is LPT1, so just press Enter. Immediately after this, the following will be added at the bottom of the menu:

```
Type of Forms
      1 - Continuous
      2 - Hand Fed
      3 - Sheet Feeder
Selection: 1
```

For most purposes, you would choose Continuous forms. However, if you are printing triplicate invoices on a printer that is sometimes balky, you might want to tell WordPerfect that you have Hand Fed forms, as this will cause WordPerfect to stop after printing every page and wait for you to tell it to continue. When your selection is complete, press Enter, and you will be returned to the Select Printers menu, but it will now have a new printer added to the list, as shown below:

Version 4.2 Select Printers Menu (modified)

```
Printer Definitions in C:\WORDPERF\WPRINTER.FIL

    1  Standard Printer                2  DOS Text Printer
    3  IBM ProPrinter

                            PgDn for Additional Printer Definitions
                            Exit when Done
Printer 2                   Cancel to Ignore Changes
Using Definition: 1         Arrow Keys To Change Printer Number
```

Note that the printer number has automatically switched to 2. This is where things may be a bit confusing, since it is not precisely clear what the relation is between the printer number and the printer definition number in the list above. A third printer, numbered 3, and identified as IBM ProPrinter, has been added to the list. However, if you now press the Downarrow key, the two lines in the bottom left-hand corner will change to "Printer 1" and "Using Definition: 3". What you have done is to assign logical printer 1 to printer 3 in the list (IBM ProPrinter), simultaneously as you were adding the ProPrinter to the list. In fact, you cannot add a printer to the list without at the same time assigning it to one of the six logical printers.

This fact should not alarm you, however, since you can easily go back and change the logical assignments at any time, without having the printer support disk in the floppy drive. Therefore, let us bravely go forward, and continue to add printers to the list, and let the printer number do what it will. So, leaving it at 2, we press PgDn again, and this time select #48, the Epson FX. Going through the usual stuff, we eventually get back to the Select Printers menu, which now looks like this:

```
Printer Definitions in C:\WORDPERF\WPRINTER.FIL

    1  Standard Printer                2  DOS Text Printer
    3  IBM ProPrinter                  4  Epson FX

                          PgDn for Additional Printer Definitions
                          Exit when Done
Printer 3                 Cancel to Ignore Changes
Using Definition: 1       Arrow Keys To Change Printer Number
```

The printer number is now 3, and since the original assignment of printer 3 was to definition 1, the Using Definition number is still 1. When the printer number gets to 6, this will change to 2, since that was the original assignment for printer 6. We assign more printers until we end up with the following setup:

Version 4.2 Select Printers Menu (final modification)

```
Printer Definitions in C:\WORDPERF\WPRINTER.FIL

    1  Standard Printer                2  DOS Text Printer
    3  IBM ProPrinter                  4  Epson FX
    5. Diablo 630 ECS                  6  IBM Quietwriter
    7  Centronics 351

                          PgDn for Additional Printer Definitions
                          Exit when Done
Printer 6                 Cancel to Ignore Changes
Using Definition: 2       Arrow Keys To Change Printer Number
```

Now we have a total of 7 printers on our list, which are contained in WPRINTER.FIL. Printer 1 in the list, Standard Printer, is no longer assigned to any logical printer. The assignment sequence is now printer 1 (list item 3, IBM ProPrinter), printer 2 (list item 4, Epson FX), printer 3 (list item 5, Diablo 630 ECS), printer 4 (list item 6, IBM Quietwriter), printer 5 (list item 7, Centronics 351), and the original printer 6 assignment (list item 2, DOS Text Printer), which we have not re-assigned. You can now verify this simply by pressing one of the arrow keys successively, thus displaying in the lower left corner all the logical printer assignments.

Finally, we come to the problem of changing the printer assignments once they are made. Ordinarily, you will assign printer 1 to the printer that you use most often (in the example above, this was the IBM ProPrinter.) Suppose that on one particular day you had to work extensively with the Epson FX printer instead, and on the next day revert back to the ProPrinter. Instead of choosing printer 2 for each job, or each time you start the program (as described in the next section), you could simply re-assign the Epson as printer 1. To do this, all you have to do is go into the Select Printers menu and use the arrow keys to make the re-assignment. First, change the logical printer number to 1 by pressing one of the arrow keys. This will result in "Printer 1" in the lower left hand corner for version 4.2, and in "Select Printer Number 1" on the top line for version 4.1. After you have done this, then type "4" to change Using Definition/Selection to 4, and press the Exit key (F7) or the Enter key. You will now be asked to re-assign the printer port and type of forms, as before. Complete this operation, and you will be back in the Select Printer menu. When you are satisfied that you have the right association, press F7 to complete the action. (If you press F1, for example, the assignment will not take, and you will have to do it over.) You can verify the assignment by using the Display Printers and Fonts menu, or you can go back into the Select Printers menu and check it with the arrow keys.

This completes the discussion of installing printers. The next section shows you how to change the printer being used for the current print job, either for the current print job only, or for the duration of a session of WordPerfect.

Trap #6: Choosing A Printer

Now go back to the basic print menu, Shift-F7:

```
1 Full Text; 2 Page; 3 Change Options; 4 Printer Control;
(line continued)                                    5 Type-thru: 0
```

Remember that printer 1 is the default printer for all print jobs not otherwise assigned. If this is what you want, then you can at this point select 1 Full Text or 2 Page to print the entire document, or the current page, respectively. If you want to choose a different printer for this job only, press 3 Change Options at this point. You will then see the following menu:

```
Change Print Options Temporarily

     1 - Printer Number              1
     2 - Number of Copies            1
     3 - Binding Width (1/10 in.)    0

Selection: 0
```

The numbers 1-3 on the left are your choices. On the right are displayed the current values of each of the three choices. In this case, we want to change choice number 1, and make the default printer become printer 2. When you type "1", the "1" at the right of the first line immediately vanishes, and the cursor is placed in that position for you to type a new value. Type "2", and the cursor jumps to the bottom of the screen, under the "0". Now press Enter or Exit (F7), and the action takes place. The default printer has been assigned for the next print job only; as soon as the next print job is complete, the default printer will revert to its previous value.

Now suppose you want to change the default printer for the duration of the WordPerfect session. To do this, you first go into the Select Printers menu, and while there choose option 1. The following menu will then come up:

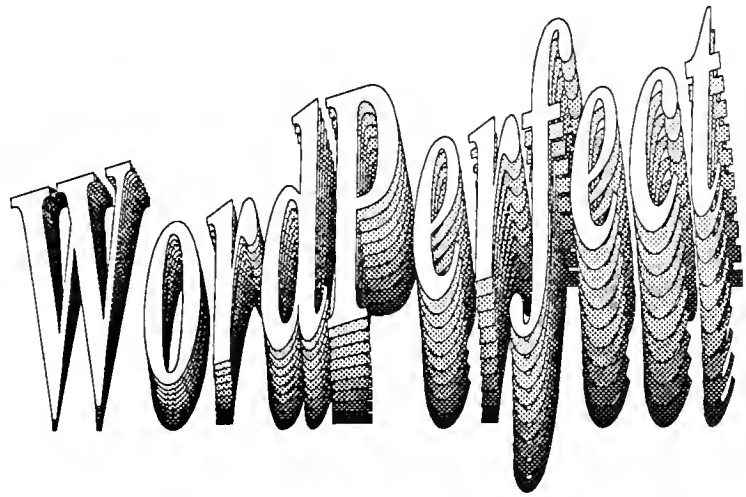
```
Select Print Options

     1 - Printer Number              1
     2 - Number of Copies            1
     3 - Binding Width (1/10 in.)    0

Selection: 0
```

This is almost identical to the previous case, except for the first line, and, of course, the net effect. This time, after you change the printer number as described above, the choice will remain until you leave WordPerfect.

Note: If you are using Print from the List Files screen (F5), you will only be able to print to printer 1. Even if the current printer as defined above is other than printer 1, the file you print through the F5 operation will go to printer 1. There is no error message in this case.



[Editor's Note: This article was prepared on a Macintosh, using Microsoft Word Version 3.01. The WordPerfect logo above was done with direct PostScript coding. The entire issue was printed on an Apple LaserWriter.]

MICROCOMPUTER SOFTWARE PACKAGES AVAILABLE FOR PURCHASE AT THE CSO DISTRIBUTION CENTER

Bob Penka

CSO has made quantity purchases of a number of software packages for the IBM PC and the Apple Macintosh. They are offering these packages for sale at prices which are typically below list prices. These packages are being sold at the CSO Distribution Center, 1208 W. Springfield, Urbana. (NOTE: Some of the packages are available via site licensing, so purchasers must sign license agreements for those particular packages, and may have to renew some license agreements yearly.)

The products currently available are:

Software Package	System	Price
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PC-Write V2.7	IBM PC	$25.50 (license & manual)

There are eight (8) manuals available for PC SAS. Three manuals recommended for use with the Base software are (1) SAS Intro. Guide at $13.15, (2) SAS Language Guide at $17.45, and (3) SAS Procedures Guide at $17.45. The SAS/STAT Guide is $17.45; the SAS/IML Guide is $17.45; the SAS/RTERM User's Guide is $9.85.

The Chancellor's office has arranged a site license for Electric Desk, an integrated package for the PC, published by Alpha Software. It includes word processor, database, spreadsheet, and communications modules. The license agreement permits use of Electric Desk on any system installed in a student lab. The Microcomputer Resource Center (106 CSOB, 101 S. Gregory, Urbana) distributes the package.

The Microcomputer Resource Center has received a copy of STATGRAPHICS from the Office for Information Management. OIM has site licensed STATGRAPHICS and has given CSO permission to allow users to copy it without charge. Any user who wishes to make a copy of this package must present a current, valid University staff or student ID, and must fill out and sign an agreement form. Six (6) diskettes are needed to copy the package.

The University is a member of the AutoCAD consortium, making AutoCAD available for $500 for institutional purchases. Randy Cetin of CSO is the local consortium coordinator. Contact him at 244-3224 for information on buying AutoCAD at this special price.

Other licenses are being arranged. We have signed contracts but have not yet received materials for distribution for Learning Tool (a study aid for the Macintosh) and SYSTAT (a statistics package available for both the IBM PC and Macintosh). Both will be available soon.

Finally, we get numerous questions about the status of a site license arrangement with Apple for Hypercard for existing Macintosh systems. Apple has now formulated a site license policy but the Chancellor's office has not yet received contracts spelling out the details. We expect a conclusion in the near future.

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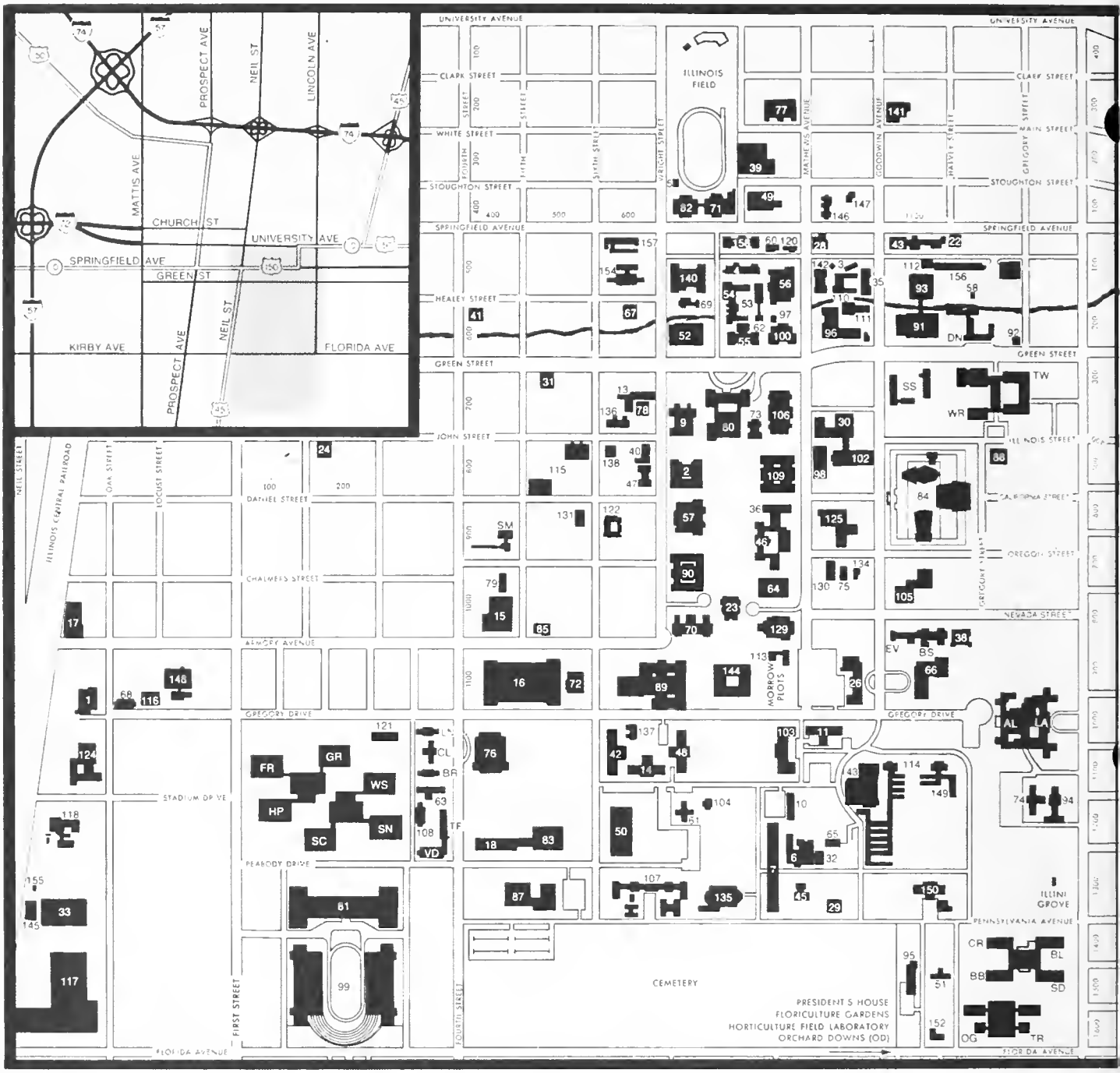
CSO NORTH (DCL)	
14 Digital Computer Lab	Monday-Saturday, 24 hours/day
333-7685	Sunday, 12 noon - 12 midnight
CSO SOUTH	
70 Commerce West	Monday-Saturday, 8 am - 12 mid.
333-4500	Sunday, 12 noon - 12 midnight
AGRICULTURE	
N-120 Turner Hall	Monday-Thursday, 8 am - 10 pm
333-8170	Friday, 8 am - 5 pm
	Saturday-Sunday, Closed
CHEMISTRY	
150-154 Noyes Lab	Monday-Friday, 9 am - 5 pm
333-1728	Saturday-Sunday, Closed
CRH SNACK BAR	
120 Snack Bar	Daily, 12 noon - 12 midnight
333-1851	
ELECTRICAL ENGINEERING	
146 Electrical Engineering	Monday-Friday, 8 am - 12 mid.
333-4936	Saturday, 8 am - 5 pm
	Sunday, Closed
FAR	
Florida Avenue Residence Halls	Daily, 12 noon - 12 midnight
333-2695	
ISR	
Illinois Street Residence Halls	Daily, 12 noon - 12 midnight
333-0307	
MECHANICAL ENGINEERING	
65 Mechanical Engineering	Monday-Saturday, 8 am - 12 mid.
333-1430	Sunday, 12 noon - 12 midnight
PSYCHOLOGY	
453 Psychology	Monday-Friday, 8 am - 5 pm
333-7815	Saturday-Sunday, Closed
SOCIAL SCIENCE	
202 Lincoln Hall	Monday-Friday, 8 am - 12 mid.
333-0309	Saturday, 10 am - 5 pm
	Sunday, 12 noon - 5 pm



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)