The ACSS
Newsletter

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VMS News

VX "Hints": An On-line Bulletin Board in VAX Notes

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We have supported the VMS operating system on the VX for one and one-half years. During that time we have discovered and collected solutions for what we believe are the most frequent questions, problems, and concerns of our VMS users. We compiled this information as a system bulletin board named **Hints**, using the VAX Notes conference utility, which we briefly described in the July issue of this *Newsletter*.

Documentation about all the topics briefly addressed in Hints exists elsewhere among the voluminous VMS documentation. The purpose of Hints is to give you brief information and, when needed, to direct you to that documentation and help you work with it.

When looking at Hints, please keep in mind that because of its purpose, it is *not* intended to be a thorough-going discussion, presenting "all you ever wanted to know about VMS" in an orderly and comprehensive fashion. It is instead a dynamic collection of notes that changes and expands according to our experience with the VX, its users, and their problems. Better organized and presented on-line information about VX can be found in the VMS Help library and on the additional ACSS libraries: Morehelp, Communications, etc., and in the Help facilities of several utilities.

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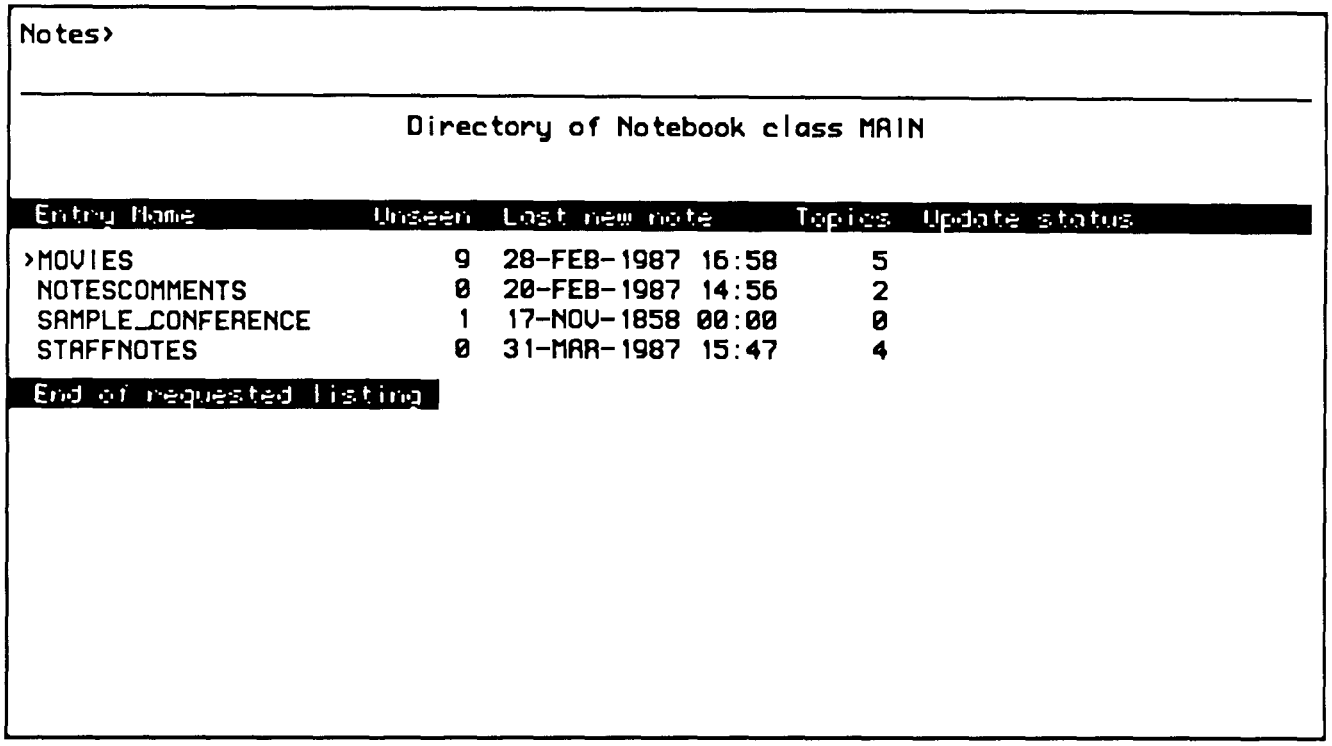
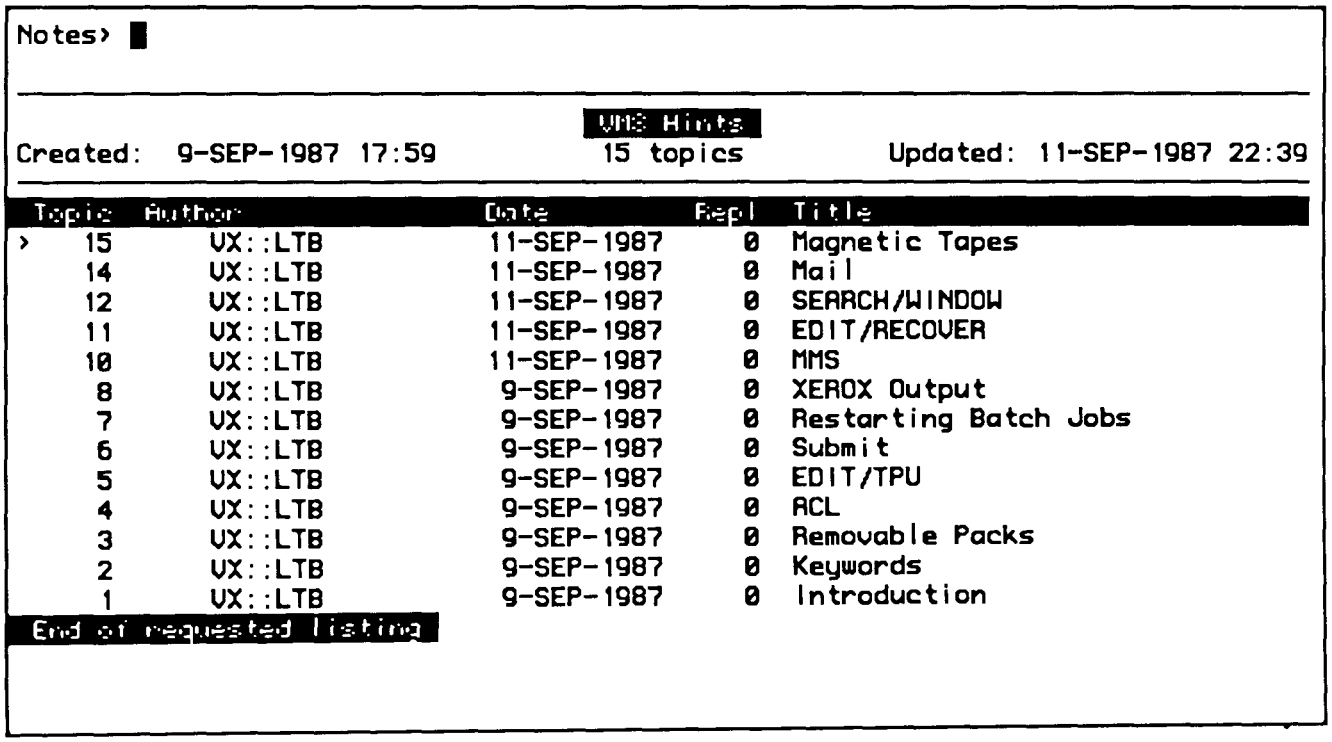
In This Issue . . .

CYBER CA and NV systems to be upgraded in December



Screen 1: This is an example of the first screen you will see when you enter VAX Notes. It displays, in alphabetical order, the conferences you have added to your on-line "notebook."



Screen 2: The list entry within the Hints topic. To see this list, first type **open hints**, then type **directory**.

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We designed the Hints conference to take advantage of the *keyword search* feature within VAX Notes. With this feature, you can find helpful entries in Hints by searching for special keywords. This feature is explained in detail below.

Using VAX Notes to Read Hints

To read Hints you have to enter the Hints conference within VAX Notes. The on-line document **acss$writeup:VaxNotes** will give you information on that. Log on to the VX and use the commands

```
$ TYPE ACSS$WRITEUP:VAXNOTES
```

or

```
$ EDIT/READ_ONLY ACSS$WRITEUP:VAXNOTES.LIS
```

To look at Hints, you first need to prepare your terminal by typing the command:

```
$ SET TERM/VT100
```

then begin Notes by simply typing

```
$ NOTES
```

You will then enter VAX Notes. If you're working from a "full-screen" terminal, like a VT100 (or a terminal that emulates a VT100), your screen will be cleared, and the prompt `Notes>` will appear at the top of your screen. (This description assumes you're working from a full-screen terminal.)

The first screen you see lists, in alphabetical order, the conferences you have added to your on-line "notebook." (See **Screen 1**, for an example. Several conferences have been added to this example notebook.) To see a list of all available conferences, type

```
Notes> DIRECTORY/CONFERENCES
```

To add the Hints conference to your notebook, type

```
Notes> ADD ENTRY HINTS
```

You only need to do this once; thereafter, Hints will always be part of your notebook. To open the Hints conference, type

```
Notes> OPEN HINTS
```

Notes will open the Hints conference at the *earliest unread note*. To see a list of all Hints notes, type, while in Hints,

```
Notes> DIRECTORY
```

Notes will display a list of all Hints notes (**Screen 2**).

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```
Notes>

                                VMS Hints
Created:  9-SEP-1987 17:59        15 topics        Updated: 11-SEP-1987 22:39

 Keyword                  Note
 ACL                      4.0
 BATCH                    6.0, 7.0
 CODE_MANAGEMENT          10.0
 DELAY_QUEUE              7.0
 EDITORS                  5.0, 11.0
 FILE_PROTECTION          4.0
 KEYWORDS                 2.0
 PRINTED_OUTPUT           8.0
 QUEUES                   6.0, 8.0
 End of requested listing
```

Screen 3: This display is the result of typing the command **`show keywords/full`** when you are in Hints.

```
Notes>

                                VMS Hints
Created:  9-SEP-1987 17:59        15 topics        Updated: 11-SEP-1987 22:39

 Topic  Author              Date          Repl  Title
>    8   VX::LTB            9-SEP-1987       0  XEROX Output
     6   VX::LTB            9-SEP-1987       0  Submit
 End of requested listing
```

Screen 4: This display is the result of typing, within the Hints Conference, the command **`directory keyword=queues`**.

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From this point, you can read any notes with the Notes **Read** command. For example, see Note 6 on submitting jobs by typing **Read 6** (or simply **6**).

Using Hints' keywords: VAX Notes permits you to use pre-established *keywords* within Hints to search for notes related to particular topics.

Within the Hints conference, you can see all of Hints' keywords using the **show keywords** command. To see which notes those keywords refer to, use the **/full** qualifiers on the command **show keyword/full**, which will produce a display like **Screen 3**. The numbers in the right-hand column, labeled Notes, refer to the individual notes linked to those keywords. You can now read any note by using the **Read** command, as described above.

To list all the notes that refer to an specific keyword, type, while within the Hints conference, the Notes command **directory/keyword=*subject***. For example:

```
Notes> DIRECTORY/KEYWORD=QUEUES
```

This command produces a display like **Screen 4**.

Exiting from Hints: Exit from Hints, or any other conferences by typing

```
Notes> exit
```

You can then open a different conference or exit from VAX Notes by typing **exit** again.

Removing Hints

If you decide you don't want to keep the Hints Conference in your notebook, simply type

```
Notes> Delete entry hints
```

and this will remove the conference.

For More Information

There is an on-line help facility within VAX Notes. See **Help Keyword_commands** and **Help Directory/keyword** and the "keywords" entry of Hints for more information on the keyword search.

We invite you to open Hints and browse through. If you have some "hints" for Hints, you can send them through VMS Mail to user **CONSULT**, who maintains the Hints bulletin board.

Help Page

Walk-in Consulting

East Bank: 128C Lind Hall; 10 am to 4 pm, weekdays; 7 to 9 pm Wednesday

West Bank: 140 Blegen Hall; noon to 3 pm, Tuesday; 10 am to 12:45 pm, Wednesday; 2:15 to 3 pm, Thursday

Micro: 125 Shepherd Lab; 9 am to noon and 1:30 to 4 pm, Monday, Tuesday, Friday; 9 am to 4 pm Wednesday and Thursday

HELP-Lines

Mainframes CYBER, ENCORE,VAX	626-5592	8 am to 5 pm weekdays
Artificial Intelligence	625-8332	3 to 4 pm weekdays
Data Bases	626-1887	10 to 11 am weekdays
Microcomputer	626-4276	9 am to noon and 1:30 to 4 pm, Monday, Tuesday, Friday; 9 am to 4 pm Wednesday and Thursday
Statistics	626-1887	1 to 3 pm weekdays
Text Analysis	625-8332	3 to 4 pm weekdays
Text Processing	625-1391	10 am to noon, Tuesday, Wednesday, Thursday

Consulting by Electronic Mail

Consulting is now available via the mail facility on all ACSS systems (the CA, NV, VX, and UX). Send mail to user name CONSULT for questions after hours and for low-priority questions that are not critical to your immediate computing work. Replies will be sent to your account through the mail facility on your system.

Instructional Computing Consultant

Department instructors may call 626-0200 for assistance in choosing ACSS systems (CYBER/NOS, CYBER/VE, VAX/VMS, ENCORE/UNIX), software, and for answers to any other inquiries on using computers for instructional computing.

Computing Information Center

128A Lind Hall, 625-7397, YZE6075@UMNACCA or MAD@UMNACVX

Computing account and grant applications available for CYBER, ENCORE, and VAX computers.

Short course enrollment. Short course schedules and class descriptions available.

Assistance in ordering vendor documentation. Vendor documentation is not always available in the University bookstores and may be ordered directly from the company.

Complete documentation collection. Reference copies of vendor and all other documentation for ACSS software.

Free ACSS documentation. General and mainframe information available.

Computing Newsletters. Subscribe to the *ACSS Newsletter* and the *Microcomputer Newsletter.* Newsletters from other computing centers are also available for reference.

HyperCard: Hypertext or Hyperbole?

Lawrence Liddiard
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> The trade press rumors were short and anonymous at first, then changed to glowing descriptions of pre-release versions. The drum roll began softly and reached a feverish peak just before the introduction of the latest software miracle.
>
> Educom's *Supplement to the Guide to Corporate Associates* included a color insert—an advertisement from Apple Computer—telling us, "The human mind works by association. So why don't computers? Introducing HyperCard: Freedom to Associate. Now one good idea can lead to another. And another...And another...There's no telling how far you can go. Let freedom ring."
>
> In the August 24, 1987 *Computerworld*, William Zachmann entitled his Small Talk column "Antsy over HyperCard," and raved that "HyperCard is undoubtedly one of the most exciting, innovative software products I have ever seen." He went on: "HyperCard convincingly demonstrates that Apple hasn't lost the innovative edge that characterized the Macintosh from the start."
>
> Our September *Microcomputer Newsletter* had a two-paragraph HyperCard announcement, stating that it would be bundled free with every new Mac and sold separately for $34 at the University Bookstore.

In late September, wondering if all the excitement was justified, I bought HyperCard, a package with four chock-full double-density disks and the *HyperCard User's Guide* for $36.21, including tax.

HyperCard Basics

HyperCard is comparable in some ways to the use of keywords to cross-reference encyclopedia articles, but it has been referred to as an easy-to-learn "data handling environment"—it lets you put information in "stacks" comparable to index cards, then permits you to link elements of the data easily and in complex ways within single or multiple stacks. "Buttons" (links to other cards) and "fields" (text) are parts of an individual card—or of a "background" card (a model for a subset of cards in a stack). You can design different paths through your "stack" (or collection) of cards, connecting them in ways that are useful to you. These buttons allow you to browse through the stack in a non-linear way that is presumably similar to the intuitive leaps the human mind makes. Searches for matching text patterns within specific or all "fields" of a stack can be done in a few seconds. The package also includes a programming language, HyperTalk, and sample stacks to use while learning the package. A "script" in HyperTalk is associated with each element (button, field, card, background, stack) and this gives HyperCard the ability to move over complex paths in response to simple mouse or keyboard actions.

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HyperCard Support

The most impressive demonstration stack that comes with HyperCard is the "Help stack," which provides information pictorially as an on-line "spiral notebook." *The HyperCard User's Guide*, packaged with the disks, is helpful up to a point. But to learn Scripting (programming in the associated HyperTalk language) you'll need the *HyperCard Script Language Guide* and the *HyperCard Stack Design Guidelines* from the Apple Programmer's and Developer's Association.

To assure its long-term quality and conformance to standards, HyperCard will need more internal structures allowing consistency and other development checks than it has now. It should get continuing support from Apple Computer —which it currently does not have. For widespread use, HyperCard stacks will need to be accepted by the computing industry as a de facto standard, similar to that achieved by the Postscript language for desktop publishing. In addition, HyperCard should be compatible with (or extendable to) standard CD ROM data bases and other Macintosh files, and fast enough to interface with them.

Assessing HyperCard

InfoWorld recently gave HyperCard a good review, finding the package excellent in its ease of use, error handling, and overall value, and very good in its performance. (The same review also criticized its documentation and the lack of vendor support.)

Having experimented with HyperCard for several weeks now, I am very impressed with the package, but I'm disappointed in the effort I have to invest to create and check out a "good" stack. Also note that HyperCard requires a megabyte of memory and a considerable load time to get it going, which may mean a dedicated Macintosh is necessary if you're using HyperCard frequently.

I see ways that the package could be improved. Currently HyperCard only searches for text fields, but it should be possible to implement searches for graphics fields as well, in which HyperCard would compare "fingerprints" or numerous graphics for "goodness" of fit or for specific attributes.

HyperCard currently permits you to see only one "card" at a time, but this could be changed for the Mac II. I would also like to see some form of automatic graphic maps of "card stacks" and their associated "buttons" added to the package.

HyperCard needs more supporting reports and implementation tools for the HyperTalk "scripts" that you can write for each button field, card, and stack. Without these tools and reports, debugging a large stack will be very hard for a user or for a consultant trying to help a user. I hope that Apple will steadily improve HyperCard toward its full potential, while permitting upward compatibility with previous versions.

Conclusion

Jeff Conklin, in a recent survey of hypertext software, remarked:

> It has been my intention to give the reader a clear sense of what hypertext is, what its strengths and weaknesses are, and what it can be used for. But I also intended something more: that the reader come away from this article excited, eager to try using hypertext for himself, and aware that he is at the beginning of something big,

something like the invention of the wheel, but something that still has enough rough edges that no one is really sure that it will fulfill its promise.

That describes the excitement I hoped to experience while working with HyperCard. The potential is there, it will be a useful tool for prototyping, and the price is right.

References

Jeff Conklin, "Hypertext: An Introduction and Survey," *Computer*, September 1987, pp. 17-41.

HyperCard User's Guide, Apple Computer, Inc., 1987.

HyperCard Script Language Guide and *HyperCard Stack Design Guidelines*, Apple Programmer's and Developer's Association, 290 SW 43rd Street, Renton, WA 98055.

Keith Thompson, "HyperCard," *InfoWorld*, October 5, 1987, pp. 70-73.

Using VAX Minitab; Storing Magnetic Tapes

Debbie Felt
DLF@UMNACVX

Q. I want to use Minitab on the VAX. The documentation that I have is incorrect. What's wrong?

A. There is a new version of Minitab on the VAX: Version 5.1. This is the same version that is now available on the PC's. To use Minitab on the VAX or your PC you should refer to the new documentation: *Minitab Reference Manual, Release 5.1* (October 1985). ACSS is still running Minitab (82.1) on the CYBER CA.

Q. I have come to the University with magnetic tapes; where do I take them so I can use them on your mainframes?

A. Bring tapes to 128 Lind Hall on the East Bank, 170 Anderson Hall on the West Bank, 125 Classroom Office Building on the St.Paul Campus, or at our main site at Lauderdale, 2520 Broadway Drive. At each of the these sites, you can fill out the necessary paperwork to identify the tapes and the storage time you need.

If you have questions regarding tape storage, you can call the tape librarian (626-1838). To learn how to use tapes on the CYBER CA, see the on-line documentation, WRITEUP,TAPEUSE. On the VAX, type ACSS$WRITEUP:VMSTAPES. Address your further questions to the ACSS HELP-Line (626-5592).

BMDP 85

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On November 27, we will make BMDP85 the current version of BMDP on the CYBER CA. BMDP83 will become the past version, and BMDP82 will fade into oblivion, a small town near Manitowoc, Wisconsin. The 1985 release corresponds to the BMDP 1985 manual, now on sale at the bookstores, and available for reference in the Computing Information Center, 128A Lind Hall. Users who still need the 1982 version of BMDP should contact me at 626-2538.

To access BMDP85, type

```
BMDPxx
```

where *xx* is the two-letter code describing the specific BMDP program (i.e., **BMDP8V** for ANOVA or **BMDP2T** for Box-Jenkins Time Series Analysis).

More information on BMDP85 can be obtained through WRITEUP,BMDP85.

There are a number of changes, bug fixes, and minor improvements in the 1985 version. Most notable of these is that the bug introduced in the W parameter on the BMDP call command has been fixed. This bug, which rendered the W parameter useless, had been introduced by NOS 2.4.

Changes

Other changes that may require modifications to an existing program include:

1. In order to specify that the data is coming from file INPUT, use

   ```
   /INPUT FILE IS CONTROL.
   ```

   rather than

   ```
   /INPUT UNIT = 5.
   ```

   The latter statement is no longer permitted. Note that file usage is more flexible than under the old "unit" system because files are opened and closed whenever the control language includes the sentence: **FILE IS** *lfn*. Therefore, more than one file of any given type can be used in a single run.

2. The sequence *d*./ (where d is a digit) is now interpreted as "end of paragraph." Thus to perform a division of 4 divided by SUM, state **4/SUM** and not **4./SUM**.

3. The **NONB** function is no longer available in the **TRANSFORM** paragraph.

4. BMDP4V: The **DEPTH** option cannot be speicfied in the **ANALYSIS** paragraph unless the **PROCEDURE** option is also specified.

5. BMDP6D: The statements **SCALE = ALL** and **SCALE = EACH** in the **PLOT** paragraph have been changed to **SCALE = COMBINED** and **SCALE = INDIVIDUAL** respectively. The default is **SCALE = COMBINED**.

6. BMDPLR: The statement **CELL = ALL** in the **PRINT** paragraph has been changed to **CELL = USE.**

Improvements

New in BMDP85 is the BMDP News file. A list of new features will be printed by the BMDP program if you include a **/PRINT NEWS** statement in your run.

If you wish to obtain just the news about a program, without running anything, the simplest way would be to type:

```
BMDPxx
/INPUT VAR = 1.  FORMAT = FREE.
/PRINT NEWS.
/END
```

This will list the news at your terminal and then terminate the program with an error message.

SAS User Group Procedures

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BAC@UMNACVX

Along with the SAS upgrade to 5.16 on the VX last September, a little noticed feature was the availability, for the first time, of five SAS procedures from the SAS Users' Group Supplemental Library. These user routines, although not officially supported by SAS, can be accessed from SAS like any other SAS procedure. While there are a large number of these routines available for IBM systems, this is the first time that any supplemental procedure has been converted for VMS.

- **LOGIST** performs a logistic multiple regression for a single binary or ordinal dependent variable. Logistic regression employs a maximum likelihood technique amenable to computing test statistics to assess the fit or lack of fit of the model. Logistic regression contains far fewer assumptions (i.e., no assumption of multivariate normality for covariates) than the linear discriminant model, and it is virtually as efficient as discriminant analysis. For these reasons, it is sometimes a preferred technique.

- **PHLGM** fits the Cox proportional hazards linear regression model to a single dependent variable, with complete or censored data. Survival and hazard functions or estimates can be computed as well as test statistics for assessing the lack of fit of the model.

- **FMTLIB** accesses SAS format files and produces a listing of contents, and writes results to a data set.

- **QPRINT** prints values from a SAS data set with greater control over the layout of reports than PROC PRINT, and in many cases, greater efficiency as well. But QPRINT does not offer all the features of PRINT.

- **IDPLOT** produces a scatterplot for the line printer similar to PROC PLOT. However, it also includes labels for individual points.

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Primary documentation for **LOGIST**, **PHGLM**, and **FMTLIB** are contained in the *SUGI Supplemental Library User's Guide, Version 5,* SAS Institute, Cary, N. C., 1986. ISBN: 1-55544-000-2.
Instructions for running these three procedures under VMS, as well as documentation for **QPRINT** and **IDPLOT** are contained in *Technical Report P-168: Changes and Enhancements to the Version 5 SAS System under VMS,* SAS Institute, Cary, N. C., 1986.

This technical report is an update to the *SAS Companion for the VMS Operating System, 1986 Edition,* SAS Institute, Cary, N.C., 1986. ISBN: 0-917382-98-6.

All three of these publications are available at the Computing Information Center in 128A Lind Hall.

SPSSX/Tables Users: PRINTPREP

Bruce Center
BAC@UMNACVX

SPSSX/Tables, by default, prints some of its headers and titles in bold type. (This can be controlled by the user, of course). It does this by overprinting: that is, by printing the bold portion of a line 3 or 4 times. This technique works well enough with line printers; for bit-mapped printers that print a page at a time, however, overprinting has no effect. Unfortunately, this includes our Xerox 8700, which is the standard output device for VX. (The two printers at Lind Hall, **Lind128a** and **Lind128b**, work even less satisfactorily for this purpose).

In order to make overprinting appear as bold type, ACSS has provided a VAX utility: **PRINTPREP**. PRINTPREP converts a file with Fortran characteristics and overprinting to a Xerox 8700 control file. This latter file can then be printed using the parameter **CHAR=PASSTHRU**.

The format of PRINTPREP is:

```
@ACSS$UTIL:PRINTPREP input_file  output_file  characteristics
```

Replace ***characteristics*** with one of these options:

L132 [default]	Landscape mode 132 characters wide
L100	Landscape mode 100 characters wide
P100	Portrait mode 100 characters wide
P75	Portrait mode 75 characters wide

PRINTPREP will prompt the user for any missing parameters.

For example, if TABLES.SPS contains an SPSSX/Tables job, you might type:

```
SPSSX/OUTPUT=TABLES.LIS TABLES.SPS
@ACSS$UTIL:PRINTPREP TABLES.LIS TABLES.BOLD P100
PRINT/NAME=bin/CHAR=PASSTHRU TABLES.BOLD
```

This will run the SPSSX job, putting the output on TABLES.LIS. PRINTPREP then converts the standard Fortran output to a Xerox 8700 control file on TABLES.BOLD in portrait mode (with maximum line length of 100 characters), which is sent to the Xerox 8700 printer.

Passwords and Archived Files

In fall quarter, you should invest some time in password security and file maintenance, if you have not done so recently.

Change Your Password

To keep your account secure, it is a good idea to change your password frequently— once a month is not too often. (On the CYBER CA, use the **PASSWOR** command; on the VX, use **SET PASSWORD**; on the UX, **PASSWD**; on the NV **SETPW**.)

File Archiving

Once every month ACSS removes from disk storage all CYBER CA files and VAX VX USERA files that have expired—those that have not been accessed for at least 30 days on the CYBER, 90 days on the VAX. (In some cases the file expiration term is longer if you have set a longer expiration term on your account. See WRITEUP,SETVAL on the CYBER CA.)

These files are stored in the ACSS archive. For a small fee, you can reload archived CA and VX files from our archives. On the CYBER, use the **RELOAD** command. To learn more about **RELOAD**, log on to the CA and type

```
WRITEUP,COMMAND=RELOAD
```

See also WRITEUP,RESTORE or WRITEUP,RELOAD for more information.

To reload VX files, call our Permanent File Restoration number, 626-0595. A reloading command will be available on the VX soon. To see archived VX files use the **ARCLIST** command.

The One-Year Purge

ACSS does not keep archived files indefinitely, but purges them after they have been archived for one year. At that point the files *cannot be retrieved.*

You are responsible for the preservation of those files of yours that have been archived for a year. ACSS does not assume responsibility for the loss of a file after it has been purged from our archive.

Your surest method for preserving your files is to store back-up copies on your own magnetic tapes. (You should use at least two tapes, and preferably three.) There is a small charge for tape storage.

ACSS provides inexpensive short courses and documentation on using tapes to maintain your files. If you have questions about tapes or file maintenance, call the HELP-Line at 626-5592.

VAX Writeups for the Prolog and Lisp Editors

Ron Zacharski
BITNET: RAZ@UMNACVX

We have recently put up two new VAX Writeups. These are short introductions to the Quintus Prolog editor and the Vax Lisp editor.

These Writeups are available as the files ACSS$WRITEUP:QUINTUS and ACSS$WRITEUP:VAXLISP. They are intended for the first time user of these editors. To read on-line documentation on how to use writeups, type the command

```
$ HELP WRITEUPS
```


CYBER CA Upgrade to NOS 2.5.3

Dave Bianchi

On December 20, we plan to upgrade our CYBER CA operating system to NOS 2.5.3-688. Users will notice relatively few changes in the new operating system. More details on the upgrade will appear in the December *Newsletter*. Also see the on-line document WRITEUP,NOS688.

CYBER NV Upgrade to NOS/VE 1.2.3 L688

Dave Bianchi

On December 20, we will upgrade our CYBER NV operating system to NOS/VE 1.2.3 L688. See the NV WRITEUP NOSVE688 for more information.

Thanksgiving Hours

In observance of the Thanksgiving holiday, ACSS mainframes–the CYBER 855 (CA), CYBER 830 (NV), ENCORE (UX), and VAX 8600 (VX)–will run in unattended mode beginning 6 a.m Thursday, November 26. It is unlikely that any tape requests or printing will be processed during these hours. Normal operations on all systems will resume at 6 a.m. Friday, November 27.

Phones/Hours/Labs

ACSS PHONE NUMBERS

Administrative Office: 626-1600

HELP-Line 626-5592

Access:	
CYBER (CA)	626-1620
CYBER (NV)	626-1622
ENCORE (UX)	626-1681
VAX (VX)	626-1641
RJE (2400 baud)	626-1656
RJE (4800 baud)	626-1663
Accounts:	
CYBER, ENCORE, VAX	625-1511
Computer Hours (recorded message)	626-1819
Computing Information Center	625-7397
Contract Services	625-2303
East Bank I/O, 128B Lind Hall	625-5082
Engineering Services	627-4357
Equipment Maintenance/Repair	627-4357
Graphics Software	626-5592
Information, Lauderdale	626-1600
Lauderdale Computer Room	626-0550
Lauderdale Services	626-1838
Magnetic Tape Librarian	626-1838
Math and Statistics Packages	625-5830
Micro Information	626-4276
Newsletter Subscription	625-7397
Permanent File Restoration	626-0595
Project Assist	626-1090
Public Labs (Managed by ACSS)	
170 Anderson Hall	624-6526
90 Blegen Hall	624-1387
14 Folwell Hall	625-4896
306B Lind Hall	625-9032
130 Physics	625-6820
9 Walter Library	626-1899
Lab Manager (14 Folwell Hall)	625-7850
Publications Information	626-1093
Short Course Registration	625-7397
Shuttle Bus Service	625-9525
System Status (recorded message)	626-1819

PUBLIC LABS TWIN CITIES CAMPUS

Location	Batch	Interactive	Micro
East Bank			
ApH 204			X
Arch 148			X
CenH		X	
ComH		X	
DiehlH 207, 270		X	
EddyH Annex 54			X
EltH 121, 124	P	X	
FolH 14, 14a	P	X	X
FronH		X	
LindH 26		X	
LindH 128B	P	X	
LindH 306B			X
MechE 308		X	
MoosT 8-425			X
Nich 109			X
Phys 130		X	X
PioH		X	
SanH		X	
TerrH		X	
VinH 4		X	
VinH 203			X
WaLib 9		X	X
West Bank			
AndH 170	P		X
BlegH 90			X
BlegH 140	P	X	
MdbH		X	
OMWL 2	P	X	
St. Paul			
BaH		X	
CentLib B50			X
ClaOff 125E	P	X	
ClaOff B22			X
McNH 69			X

P means Printer only.
For more information see WRITEUP,LABS.

SYSTEM OPERATING HOURS

	CYBER (CA), ENCORE (UX), VAX (VX)	CYBER (NV)	Low Rate
M-F	7 am - 4 am	7 am - 1 am	8 pm - 4 am, 7 am - 8 am
Sat	4 am - 9 pm	7 am - 10 pm	all operating hours
Sun	6 pm - 4 am	6 pm - 1 am	all operating hours

Contents

***The* ACSS Newsletter**
November 1987
Volume 21, Number 11

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