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9-1-82

# University Computer Center Newsletter



September 1982 Volume 16, Number 9  
University of Minnesota Twin Cities

## SENDING YOUR JOBS TO THE CRAY

The target date for our conversion of the Cyber operating system to NOS 1.4-552 is September 18, 1982. WRITEUP(UPGRADE) provides details about this conversion.

The change will affect the format of Cray-bound jobs. At present, a Cray job looks like:

```
JOB,T=14.  
ACCOUNT,AC=account, PW=  
password.  
CFT.  
LDR.  
— EOR—  
PROGRAM ETC....
```

From a terminal, you would type  
**SUBMIT,job,MI=CR.**

A batch job would have:

```
cybjob.  
USER,account,pasword.  
EXPORT.  
7-8-9  
JOB,T=14.  
ACCOUNT,AC=account,  
PW=password.  
CFT.  
LDR.  
7-8-9  
PROGRAM ETC....
```

Until now, we had to appropriate parameters on the Cray job card to get your job back to you. Now that we are running COS 1.11 on the Cray, we have a better way to route job output to you, and we are relinquishing the job card parameters. Note that since JN= is a required pa-

rameter, you will have to include it on your Cray job cards yourself.

When we convert to NOS 1.4-552, we will use the CDC method of submitting jobs to other machines, via the ST parameter on the Cyber job card (and on the ROUTE statement). This will make the Cray-bound job look the same regardless of how you submit it. It will look like:

```
cyber,STMCR.  
[MCR is the Logical Id (LID) of  
the Cray.]
```

```
BIN,ex,0141.  
[The BIN card will be processed  
here if present.]
```

```
JOB,JN=myjob,T=14,US=  
whatever.
```

[No EOR precedes the Cray JOB-card. We are making the US= and JN= parameters available as in the Cray manuals. JN= is required now.]

```
ACCOUNT,AC=account,  
PW=password.  
CFT.  
LDR.  
—EOR— or 7-8-9  
PROGRAM ETC....
```

This job may be read in as-is from a card reader, submitted as-is from SUBMIT, or routed to the input queue with or without the ST= parameter on ROUTE:

```
ROUTE, JOB,DC=IN,ST=MCR.
```

(In the absence of ST=MCR, the

ST on the Cyber job card gets the job to the Cray, even though the ROUTE statement is exactly the same if you use it to run Cyber jobs.)

Output from Cray jobs will be printed at the site of origin if read from cards, or returned as a permanent file if submitted from another job (such as a terminal session or a batch job). This is unchanged from the way it is now done. If, however, a statement such as:

```
ROUTE,JOB,DC=NO.  
or SUBMIT,JOB,N.
```

is used, you will receive no output.

For SUBMITTED Cray jobs, the Cyber jobname assigned to the job (and the filename under which the output will appear) will be determined differently. It is currently derived from the job hash. Under NOS 1.4-552, it will be determined from the Cyber jobcard, as it is for card jobs. For the job given above, the Cyber jobname might be CY-BEHGX, rather than ABCIHGX.

Direct your questions about this change to J. Woolsey, 376-5604. (Jeff Woolsey, 376-5604)

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Director: Peter C. Patton  
Editor: Christine Mack Gordon

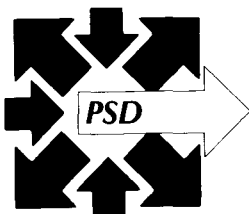
Comments about the content of this newsletter, or suggestions for changes may be directed to the editor, 235a Experimental Engineering, or call 612/376-9832.

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# P ROFESSIONAL S ERVICES D IVISION

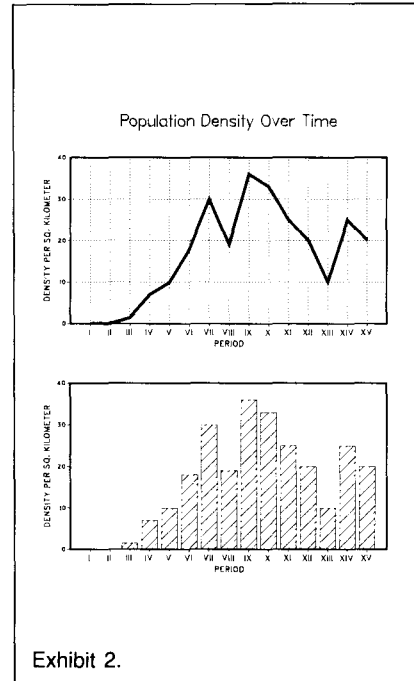
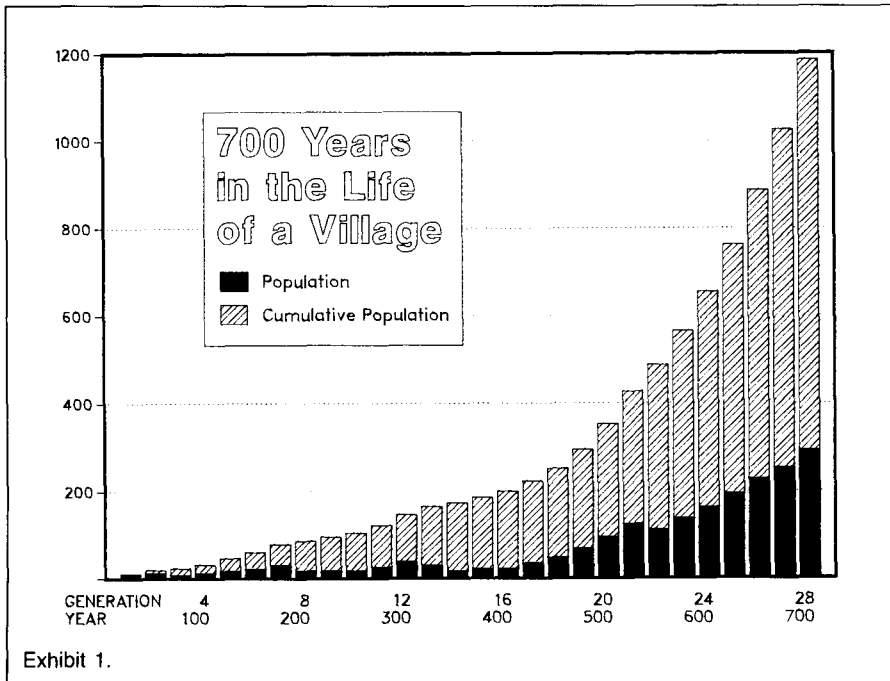
|                             |   |
|-----------------------------|---|
| graphics development:       | computer graphics for data presentation                     |
| statistical analysis:       | full range of services available                            |
| system analysis and design: | analysis of existing systems; design of new systems         |
| financial analysis:         | forecasting, accounting                                     |
| data base development:      | design and implementation using state-of-the-art technology |
| tape conversion:            | conversion of off-site tapes to UCC internal format         |
| customized programming:     | COBOL, FORTRAN, Pascal for virtually any application        |
| research applications:      | scientific or social research environments                  |



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# NON-TRADITIONAL GRAPHICS



Everyone has data that can be graphed effectively with TELL-A-GRAF. Humanists, social scientists, physical scientists, and others can take advantage of the TELL-A-GRAF interactive graphics package to produce meaningful representations of their data. The data can vary from numeric, statistical information to alphabetic. If it can be counted or categorized, it can be graphed.

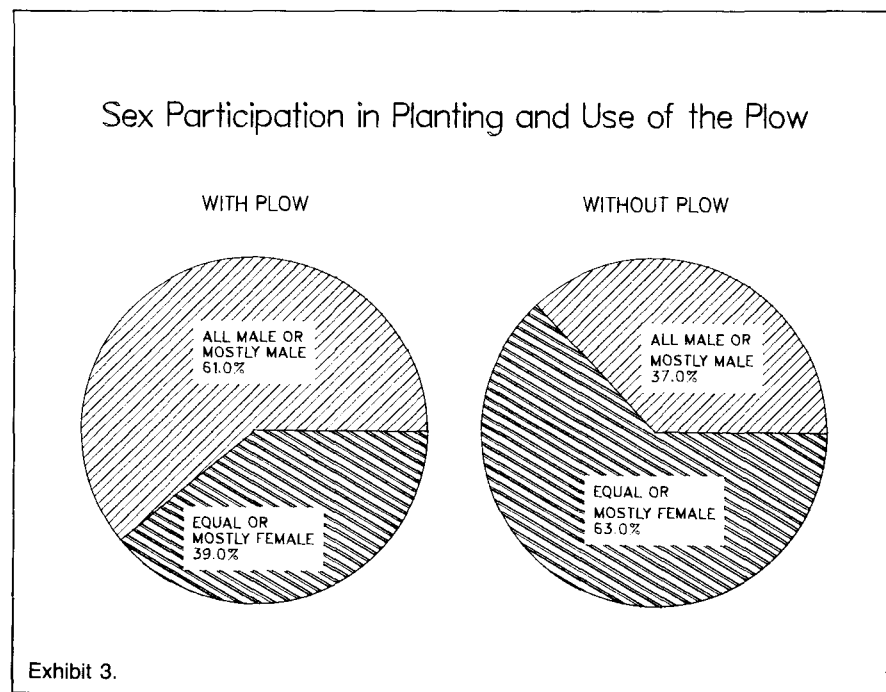
As you've seen in previous *Newsletter* articles (Vol. 16, nos. 5-8), TELL-A-GRAF can help you create a variety of graphs with different alphabets, fonts, and shading. In this article we illustrate some of the more unusual applications of TELL-A-GRAF and DISSPLA.

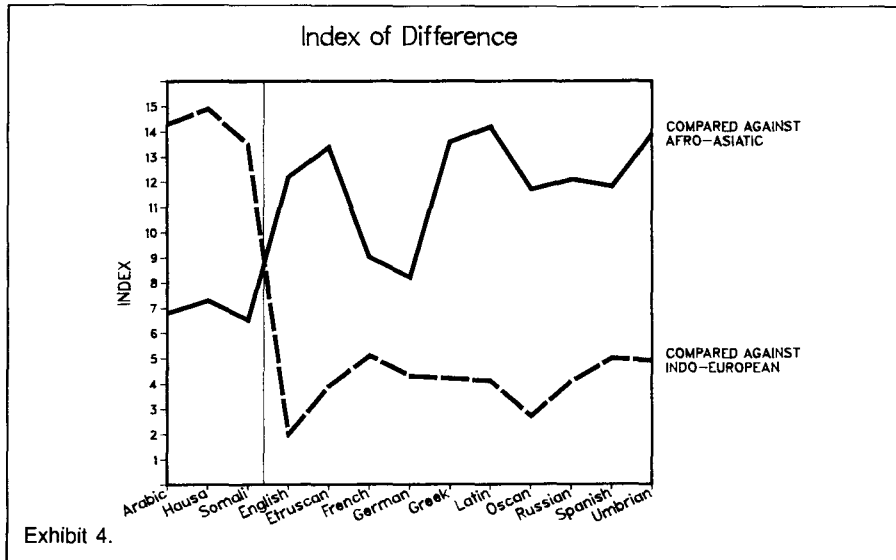
Exhibit 1 is a bar graph of data from a simulation of a pre-historic village in Greece (Walsh 1980). The fluctuations in the village population as well as the cumulative population are clearly displayed. Exhibit 2 illustrates two ways of handling some similar demographic information (Angel 1975). The same data is displayed in a plot (top) and a bar graph (bottom). By producing two or more types of graphs for the same data, you can easily choose which gets the message across best. Pie charts can also be useful in displaying anthropo-

logical data. Exhibit 3 shows a simple comparison of two sets of data that clearly illustrates the difference between the statistics on sex participation with and without the plow. This is more interesting and informative than a list of numbers.

Another area with great potential for the use of graphics is that of language and linguistic studies. The examples illustrated here are taken from a comparative study of graphemes (Harper

and Rindfleisch 1981). A grapheme can be a letter of an alphabet or the sum of letters and letter combinations that represent a single phoneme. Exhibit 4 displays the index of difference as computed for 13 languages compared with Afro-Asiatic (continuous line) and with Indo-European (dashed line). It is easy to see that English is more closely related to the Indo-European languages than to the Afro-Asiatic. Again this is more easily read

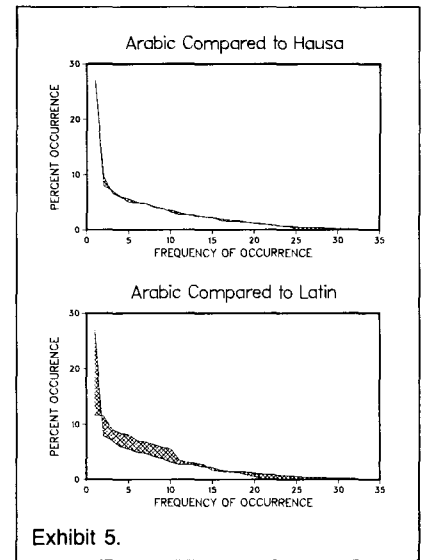




from a graph than from a list of numbers. Exhibit 5 illustrates a refinement on the language comparison. When Arabic is compared to Hausa, the frequencies of grapheme occurrence are very close. When Arabic is compared to Latin, however, it is clear from the graph that there is a much wider divergence of grapheme occurrence. Side by side, these graphs complement the discussion of the research by demonstrating visually the points being made.

These examples from anthropological and linguistic research show how many non-traditional fields can use graphic aids in describing and displaying research results. For the more hardy users, DISSPLA offers additional features for humanities and social science research projects. DISSPLA is a

package of FORTRAN or Pascal callable subroutines for producing more complicated and original charts. DISSPLA enables you to produce maps of the world or the continental United States. In addition to the general map, you can zoom in on any area of the map and add your own information as required. Exhibit 6 shows the 48 states with Minnesota and Duluth enlarged and boxed. The state capitals are indicated as well. Exhibit 7 is Minnesota extracted from the U.S. map with the Duluth area enlarged and boxed. The data for the world coastlines and the U.S. with state boundaries are already available within DISSPLA. All that you need do is select the area(s) of interest to you. If you are interested in these or other possibilities contact Carol Saylor on the

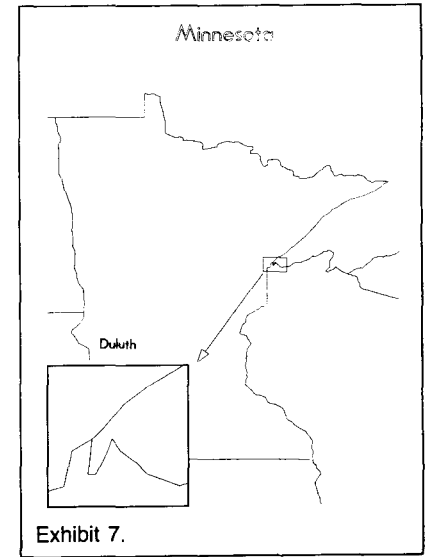
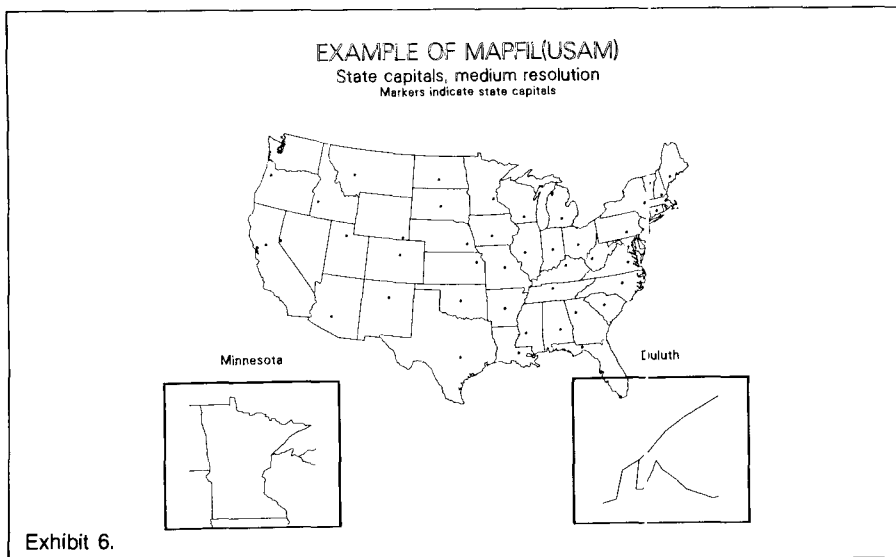


TELL-A-GRAF HELP-line (1-3 p.m., TTH; 376-2663). (Vicky Walsh)

(Graphics for this article were produced by Carol Saylor and John Cornelison)

#### References

- Angel, J.L. "Palaeoecology, Palaeodemography and Health," *Population, Ecology, and Social Evolution*. Edited by S. Polgar, 1975.
- Harper, Nicki D.C., and Tom Rindflesch. "A Computer-Assisted Study in Graphemic Analysis," in *Computing in the Humanities*, edited by Peter C. Patton and Renee A. Holoien, 1981.
- Walsh, Vicky A. *A Computer Simulation of the House Construction Activity System at Nichoria in SW Greece*. UCC Technical Report 1980.



# System News/Notes

## Graphics

### SEPTEMBER CHANGEOVER

On September 15, the Graphics Group will convert two graphics libraries to produce our standard graphics metafile. The procedures or programs of most users will not be affected by these changes.

As the December 1981 and June 1982 *Newletters* announced, the Cyber PLOTPAC and PASPLOT libraries, and the VIEW and PLOT31 commands, are the only software being modified. The current versions interface with the old metafile CALCOM, while the new versions use our standard MNPLOT format (identical to the PLOT.PLT format on the VAX).

PLOTPAC and PASPLOT will be replaced with functionally equivalent emulators. For most users, the switch will be transparent, although a few differences do exist. Most significantly, the emulators produce metafiles with an altered format (MNPLOT instead of CALCOM), as mentioned above. Later this fall we will provide a method to directly transfer these metafiles between the Cybers and the VAX. Then you'll be able to create plots on the Cybers or the Cray and graph them on one of the high-quality plotters available on the VAX. You may also produce plots with the powerful TELL-A-GRAF and DISSPLA packages residing on the VAX and plot them on the large format Varian electrostatic plotter connected to the Cybers.

In addition to the altered metafile format, the PLOTPAC and PASPLOT emulators do not support the SYMPLOT routines, the title parameter of the PLOTS routine, or the special symbol markers. The SYMPLOT routines, which redraw subsections of a graph, may be eliminated by placing the PLOTPAC or PASPLOT calls that draw the subsections into a local subroutine. Then, simply replace each reference to SYMPLOT with a call to the local subroutine.

The title parameter, a redundant feature since the system now automatically produces an identification banner, is ignored by the emulators. The emulators support the centered symbols, numbers 0 to 13, but not the special symbols, numbers 13 to 35.

The original PLOTPAC and PASPLOT libraries will be available as PAST products for those who have not modified their programs yet, but we urge all users to convert as soon as possible, since we no longer support the old packages. We will provide guidance in special cases where these changes are inconvenient.

The VIEW and PLOT31 commands will expect MNPLOT formatted and named input files after September 14. VIEW displays a metafile on your Tektronix (or Tektronix-emulating) terminal. PLOT31 converts the metafile to a new file, PLOTS, with a special Varian format. PLOTS can then be routed to our Varian electrostatic plotter. PAST versions of VIEW and PLOT31 will continue to expect CALCOM named and formatted files.

The Tektronix screen has a different height to width, or aspect, ratio from the Varian plotter. To avoid distorting graphs, the Varian will continue to use the full 14-inch paper width, but images on the Tektronix screen will be shrunk in one dimension by the ratio 10.84/14. This anomaly only occurs with PLOTPAC and PASPLOT images.

Here are the new streamlined procedures:

For Pascal programs, add the following line(s) to your Pascal source for linking to the procedures in the GRAFLIB library. If your program references MNCORE routines, add:

```
(*$/PASCORE/'GRAFLIB'*)
```

If your program uses PASPLOT (emulator) routines, add:

```
(*$/PASPLOT/'GRAFLIB'*)
```

Then, to compile and execute your program, do:

```
FETCH(GRAFLIB/V=xx)
where xx= compiler (e.g., MNF,
FTN, M77, Pascal)
```

```
ACQUIRE(MYPROG)
MNF(I=MYPROG,
L=LIST,B=LGO)
```

or

```
FTN(I=MYPROG,
L=LIST,B=LGO)
```

or

```
PASCAL(MYPROG,LIST,LGO)
LGO.
```

To display results on a Tektronix screen, type:

```
REWIND(MNPLOT)
VIEW.
```

or

```
VIEW(MNPLOT)
```

To route the output to the Varian plotter, enter:

```
PLOT31.
```

or

```
PLOT31(MNPLOT,PLOTS)
ROUTE(PLOTS,DC=PL,
TID=xx,BIN=nnnn)
```

If you have not yet converted your programs and procedures, you may continue to use the original PLOTPAC and PASPLOT libraries with the following commands:

```
PAST(PLOTPAC)
ACQUIRE(MYPROG)
MNF(I=MYPROG,
L=LIST,B=LGO)
```

or

```
FTN(I=MYPROG,
L=LIST,B=LGO)
LGO.
```

Or for a Pascal program:

```
PAST(PASPLOT)
ACQUIRE(MYPROG)
PASCAL(MYPROG,LIST,LGO)
LGO.
```

To display results on a Tektronix screen, type:

```
PAST(VIEW)
REWIND(CALCOM)
VIEW.
```

To route the output to the Varian plotter, enter:

```
PAST(PLOT31)
PLOT31.
ROUTE(PLOTS,DC=PL,
TID=xx,BIN=nnnn)
```

### CRAY UPDATE

MNCORE is now running on the Cray and PLOTPAC should be soon. For the current method

of submitting MNCORE jobs to the Cray, see one of the sample session writeups described by WRITEUP(GRAFGEN=DOCLIST). PLOTPAC availability will be announced in WRITEUP(GRAFGEN=NEWS) and in future Newsletters.

### ON-LINE DOCUMENTATION

Your graphics options at UCC have expanded recently and we want to document these new packages more completely for you. To do this, we have provided a set of on-line writeups that describe the various facets of our graphics system. Identical writeups exist on the Cybers and on the VAX, though the method of accessing them is slightly different (see below).

The writeups are broken down into two categories: samples and general topics. The samples group offers a series of sample sessions and programs illustrating how to use MNCORE, TELL-A-GRAF, DISSPLA, and our other graphics packages. On the records Cyber, these are of the indexed writeup GRAFSAM. On the VAX, you'll find the samples group within the directory: USERA:[WRITEUPS.GRAPHICS.SAMPLES].

The general topics group contains writeups of broad interest, including user tips for various packages, recent news about graphics at UCC, specific instructions for running the graphics packages on the various computers, and a graphics documentation list (both on-line and off-line). These are records the indexed writeup GRAFGEN on the Cybers and are files within USERA:[WRITEUPS.GRAPHICS.GENERAL] on the VAX. We encourage you to print the five-page documentation list of the writeups and manuals available by using the following commands:

On the Cybers:

```
WRITEUP(GRAFGEN=  
DOCLIST/L=LIST,PT=AS)  
ROUTE(LIST,DC=PR,EC=A9,  
TID=xx,BIN=nnnn)
```

And on the VAX:

```
PRINT/NAME=site.bin  
USERA:[WRITEUPS.  
GRAPHICS.GENERAL]  
DOCLIST.LIS
```

The MNCORE User's Manual is still being revised. The final version should be available in October; see upcoming Newsletters or WRITEUP(GRAFGEN=NEWS) for details. Preliminary versions are located in a third writeup section, manuals, on the VAX, and in a separate writeup, MNCORE, on the Cybers.

(John Cornelison, 376-7465)

## Math Packages

### T.S.P.

We will put a new version (3.5) of T.S.P. (Time Series Package) from Concordia University on the Cyber systems Monday, September 13. You can get a complete machine-retrievable user's manual on the Cybers with the following control statements:

```
WRITEUP(TSP/L=LIST,PT=AS)  
ROUTE,LIST(DC=PR,TID=xx,  
EC=A9)
```

where "xx" is the optional site code of a high-speed printer (EA=Experimental Engineering, BC=Lauderdale).

Version 3.5 includes the following changes:

- The package has been structured under a segmented load, rather than under an overlay structure. This results in a significant saving in core.
- Memory is dynamically allocated, both on the basis of working space needed, and on the basis of buffer size.
- Buffer size is changed automatically to adjust for different sample sizes.
- All table lookup is done through a hashing routine.

If you have any questions about T.S.P., call James Wang, 376-5262.

## All Systems Bulletins

### DOCUMENTATION COSTS

The UCC publications *Guide to Batch Computing* (\$1.20), *Guide to Interactive Computing* (\$1.20), *Pascal 6000*, Release 3 (\$3.70),

and *Prose Instruction Manual* (\$1.45) are now available at the Computer Store, 211 Experimental Engineering. Store hours are 9 a.m.-3 p.m Monday through Friday and 5 p.m.-7 p.m. Monday through Thursday.

### COLUMBUS DAY HOURS

Our computer systems will maintain normal operating hours on Columbus Day, Monday, October 11, 1982. Administrative offices will be closed, however, and no consulting will be available.

## Microcosm

### SOFTWARE DISTRIBUTION

On September 1, the Micro Group will simplify the method of microcomputer software distribution. In the past, you purchased software at the Computer Store, then picked it up in the Microcomputer Group office. As of September 1, the Computer Store will deliver the floppy disk at the time of purchase.

In addition, we are shuffling the contents of the disks to more nearly reflect past sales patterns. We have also modified our pricing policy to make it more uniform and logical. A current list of available disks and prices accompanies this article. An instructor who would like a low cost "required class disk" available in the Computer Store should contact Michael Collins of the Microcomputer Group to make the necessary arrangements. We will be happy to prepare a special disk package with the necessary software and documentation. The minimum time required to package a special disk is two weeks.

### MICRO HELP-LINE RELOCATES

In September, the Micro HELP-line will physically move to its new location in 139 Shepherd Labs. The telephone number and hours will remain unchanged.

From off-campus, call DR MICRO (376-4276); on-campus, call MICRO (6-4276). The hours are 10 a.m.-noon and 2-4 p.m. Monday through Friday.

(Michael D. Collins, 376-2975)

## DISKS CURRENTLY AVAILABLE AT THE COMPUTER STORE

In parentheses following each microcomputer name is the disk format:

SS = single-sided; DS = double-sided; SD = single-density; DD = double-density. The disk name, price, and contents follow.

### TERAK 8510 (8" SS SD)

MMOS  
\$50

The complete operating system, including: run-time system, Pascal compiler, screen editor, and file manager.

MMOS Utilities  
\$35

General MMOS utility program including:  
 Calc a "desk top calculator" program  
 ChEdit a character set editor; design your own characters  
 DecList an optimized listing program for a Decwriter  
 Epson a graphics screen dump utility for an Epson MX-80 or MX-100  
 Input "user proof" integer and real input procedures  
 Plot a package of graphics utility routines  
 Prose a text formatting program  
 Spruce a Pascal pretty printer  
 Seek Pascal random access file routines  
 RT-11 a program to allow reading and writing of RT-11 format disks under the MMOS system  
 XRef a fully scoped Pascal cross referencer  
 Recover a utility for testing and recovering damaged disks

MMOS COM  
\$50

MMOS communications program providing many intelligent terminal functions. Allows you to communicate with most other computers.

MMOS SimTek  
\$50

A Tektronix 4010 series graphic terminal simulator. Providing almost all 4010 features as well as multi-page memory and image storage on floppy disk.

### APPLE II (5-1/4" floppy)

UCSD Utilities  
\$35

General Pascal utility programs including:  
 PeekPoke Pascal procedures to allow Basic-style peeking and poking  
 Input "user proof" integer and real input procedures  
 Prose a text formatting program  
 Spruce a Pascal pretty printer

UCSD COM  
\$50

UCSD communications program providing many intelligent terminal functions. Allows you to communicate with most other computers.

UCSD SimTek  
\$50

A Tektronix 4010 series graphic terminal simulator. Providing almost all 4010 features.

UCSD Applications  
\$25

Two application programs for the Pascal Apple including:  
 Journal a key word filing system for journal article abstracts  
 Catalog a system for providing a master catalog of the contents of all your disks

UCSD Plotting  
\$50

A collection of Pascal procedures for using a Houston Instruments desk top digital plotter or the graphics display screen for drawing graphs, pictures, etc.

XEROX 820 (8" SS SD or 5-1/4" SS SD)

820 Utilities  
\$35

A collection of CP/M programs including:  
Restore a program to allow restoration of disk files that have been accidentally erased  
WSClean converts a WordStar document file to a standard ASCII file that can shipped to other computers or used by other programs  
Configur a program that allows the 820 to use printers other than the Diablo 630  
BaudSet allows setting the baud rates of either serial port to any standard baud rate from 110 to 19200

820 Plotting  
\$50

A collection of Pascal procedures for using a Houston Instruments desk top digital plotter for drawing graphs, pictures etc.

820 COM  
\$50

A CP/M communications program providing many intelligent terminal functions. Allows you to communicate with most other computers.

IBM PERSONAL COMPUTER (5-1/4" SS DD)

PC-UCSD COM  
\$50

UCSD communications program providing many intelligent terminal functions. Allows you to communicate with most other computers.

PC-DOS COM  
\$50

PC-DOS communications program providing many intelligent terminal functions. Allows you to communicate with most other computers.

PC-DOS Plotting  
\$50

A collection of MS-Pascal procedures for using a Houston Instruments desk top digital plotter or the graphics display screen for drawing graphs, pictures, etc. For plotting only does not require the Color Graphics Card.

HEATH/ZENITH 89 (8" SS SD or 5-1/4" SS SD soft sector)

Z89 COM  
\$50

A CP/M communications program providing many intelligent terminal functions. Allows you to communicate with most other computers.

OSBORNE OS-1 (5-1/4" SS SD)

OS1 COM  
\$50

A CP/M communications program providing many intelligent terminal functions. Allows you to communicate with most other computers.

VECTOR GRAPHICS (5-1/4" DS DD)

Vector COM  
\$50

A CP/M communications program providing many intelligent terminal functions. Allows you to communicate with most other computers.



## Libraries

### COMPLETE MINNLIB NOW ON CRAY

We have completed conversion of the MINNLIB library for the Cray computer. To access this library, use the following COS control statement on the Cray:

**LDR,LIB=MINNLIB.**

The routines listed in Table 1 have been converted without any changes (except that errors in input parameters are usually not checked).

The following random number generator routines have been converted. They produce *different sequences* on the Cray from those they produce on the Cyber:

|         |        |        |
|---------|--------|--------|
| GETRAN  | IRAN   | NORMAL |
| PERMUTE | RANBIT | RANDOM |
| RANT    | RAN2F  | RAN3F  |
| SETRAN  |        |        |

Routine RANBIT produces 60-bit random numbers using the low order 60 bits of the Cray input mask word.

The routines listed in Table 2 have been replaced by new routines with new names, but using the *same* parameters (except possibly for type such as REAL or INTEGER).

Table 3 lists routines replaced by new routines with *different* parameters on the Cray. Until writeups are completed, contact Mike Frisch for details.

Temporary conversions listed in Table 4 will be *deleted* from the Cray on September 13.

The following routines will not be converted.

DOTPRD (use SDOT on the Cray)

GAMMAF

GENSORT for REAL keys with mixed signs

GENSRT2 for REAL keys with mixed signs

GNREAD ICOUNT ICPA

LEGAL NUMARG SPACZRO

ZROSPAC

(Mike Frisch, 376-1636)

**Libraries to 100**

Table 1. Unchanged MINNLIB routines now available on the Cray.

|         |         |         |         |
|---------|---------|---------|---------|
| AITKENF | ALOGAM  | AMEAN   | AMEAND  |
| BESJ    | BETAI   | BINCOF  | CDFN    |
| CDFNI   | CEINT1  | CEINT2  | CHEBY   |
| CHSQ    | CHSQI   | CINTEG  | CMXCMBN |
| CMXMOV  | CMXMPY  | CMXPY1  | CMXTRP  |
| COMINT  | CONVERT | CVAL    | CVECT   |
| DOTPROD | DVAL    | DXINT   | EI      |
| EIG3    | ERFN    | ERFNC   | FINV    |
| FRESNEL | FTEST   | GAMMA   | IVLFREQ |
| LINT    | LSQORPY | MEANVAR | MXCMBN  |
| MXMOV   | MXMPY   | MXPLY1  | MXTRP   |
| MXTRP1  | NONLIN  | ORTHON2 | ORTHON3 |
| PLROOT1 | PLROOT2 | PLROOT3 | QRCMPX  |
| QRSYM   | RCVECT  | RK      | RKGILL  |
| ROM1F   | ROM2F   | ROOT1   | RVAL    |
| RVECT   | SICI    | SIMPSON | SNCNDN  |
| SYMPACK | SYMUPK  | TINV    | TINV1   |
| TINV2   | TTEST   | TTEST1  | TTEST2  |
| XCEINT1 | XCEINT2 | XCEINT3 | XINT    |

Table 2. Old routines replaced by new routines with new names but using the same parameters.

FREQDSN for INTEGER data — use VFREQI  
 FREQDSN for REAL data — use VFREQR  
 GENSORT for INTEGER or CHARACTER keys, or REAL keys of all the same sign—  
 use VGSTI  
 GENSRT2 for INTEGER or CHARACTER keys, or REAL keys of all the same sign—  
 use VGST2I  
 ISERCH for INTEGER data — use ISRCHI  
 ISERCH for REAL data — use ISRCHR  
 MERGE2 for INTEGER data — use VMRG2I  
 MERGE2 for REAL data — use VMRG2R  
 MERGE4 for INTEGER data — use VMRG4I  
 MERGE4 for REAL data — use VMRG4R  
 MXEXTRM for INTEGER data — use MEXTI  
 MXEXTRM for REAL data — use MEXTR  
 QSORT for INTEGER data — use VQSTI  
 QSORT for REAL data — use VQSTR  
 QSORT1 for INTEGER data — use VQST1I  
 QSORT1 for REAL data — use VQST1R  
 SORT1 for INTEGER data — use VSRT1I  
 SORT1 for REAL data — use VSRT1R  
 SORT2 for INTEGER arrays — use VSRT2I  
 SORT2 for REAL arrays — use VSRT2R

Table 3. Old routines replaced by new routines with different parameters.

|                     |                      |
|---------------------|----------------------|
| BANSOL — use MBANR  | MXTRIDI — use MXTRIR |
| CMXLNEF — use MSOLC | PRNPLOT — use PRNPLO |
| CMXLNEQ — use MSOLC | SCLPLT — use SCLPL   |
| DMXLNEF — use MSOLD | SYMINV — use MSYINP  |
| DMXLNEQ — use MSOLD | SYMSOLU — use MSYSOU |
| MXLNEF — use MSOLR  | SYMSOLV — use MSYSOV |
| MXLNEQ — use MSOLR  |                      |

Table 4. Temporarily converted MINNLIB routines that will be deleted from the Cray September 13.

|                      |                      |
|----------------------|----------------------|
| CMXSOLN — use MSOLC  | MXEXTRM — use MEXTR  |
| FMERGE2 — use VMRG2R | QSORT — use VQSTR    |
| FMERGE4 — use VMRG4R | QSORT1 — use VQST1R  |
| FREQDSN — use VFREQI | RMXBAN — use MBANR   |
| FSORT1 — use VSRT1R  | RMXSOLN — use MSOLR  |
| FSORT2 — use VSRT2R  | RMXSYM1 — use MSYINP |
| GENSORT — use VGSTI  | RMXSYM2 — use MSYSOP |
| GENSRT2 — use VGST2I | RMXSYM3 — use MSYSOU |
| ISERCH — use ISRCHI  | RMXTRI — use MTRIR   |
| MERGE2 — use VMRG2I  | SORT1 — use VSRT1I   |
| MERGE4 — use VMRG4I  | SORT2 — use VSRT2I   |

# FALL SHORT COURSE SCHEDULE

## INTRODUCTORY COURSES

PRICES: U. Student = \$10, U. Staff = \$20, Non-Univ. = \$30

- 010 Introduction to Computer Terms (Section 1)  
Oct. 5-7 (TWTh), 3:15-5 p.m.
- 015 Introduction to Computer Terms (Section 2)  
Nov. 22-24 (MTW), 3:15-5 p.m.
- 020 Text Processing: An Overview  
Oct. 5-7 (TTh), 3:15-4:30 p.m.
- 030 Introduction to UCC (Section 1)  
Oct. 8 (F), 3:15-5 p.m.
- 035 Introduction to UCC (Section 2)  
Dec. 2 (Th), 3:15-5 p.m.
- 040 Introduction to VAX/VMS  
Oct. 12-18 (TWThFM), 2:15-4 p.m.
- 050 NOS (Cyber Operating System)  
Oct. 13-29 (MWF), 2:15-4 p.m.
- 055 Interactive System Commands  
Oct. 26-28 (TWTh), 3:15-5 p.m.
- 060 Introduction to Batch Computing  
Oct. 28 (Th), 2:15-5 p.m.
- 100 Text Editing on VAX/VMS (EDT)  
Oct. 26-Nov. 4 (TTh), 3:15-5 p.m.
- 110 Introduction to Cray 1-A and COS  
Oct. 28-Nov. 5 (ThMWF), 3:15-5 p.m.
- 080 Introduction to Microcomputers  
Oct. 21-Nov. 11 (Th), 3:15-5 p.m.
- 120 Introduction to DBMS  
Nov. 1 (M), 3:15-5 p.m.
- 130 XEDIT  
Nov. 2-11 (TTh), 2:15-4 p.m.
- 150 Introduction to Programming  
Nov. 2-18 (TTh), 3:15-5 p.m.
- 160 CP/M Software and UCC Systems  
Dec. 2-9 (Th), 3:15-5 p.m.

HOLIDAYS: Monday, October 11, and Thursday & Friday, November 25-26, are University holidays. No classes will be held.

REGISTRATION: Registration will be open for these classes by mid-September at the UCC Computer Store, 211 Experimental Engineering. Mail registrations will be accepted for an additional \$1 fee.

A self-service registration terminal will be located outside the Computer Store, and separate lines at the Store window will be designated for registrants and for regular customers. Course fees may be paid with cash, check, University journal voucher, or charged to your UCC user account.

If you have questions about our short courses or about registration, call Jerry Stearns, 376-8806.

## ELECTIVES

PRICES: U. Student \$20-30, U. Staff = \$30-50, Non-Univ. = \$50-100

- 510 Introduction to System 2000 (DBMS)  
Nov. 1-17 (MWF), 3:15-5 p.m., \$30-\$40-\$50
- 520 SIR (DBMS)  
Nov. 2-18 (TTh), 3:15-5 p.m., \$30-\$40-\$50
- 530 SPSS (Statistical Package)  
Nov. 8-12 (MTWF), 3:15-4:30 p.m., \$25-\$40-\$65
- 600 Beginning FORTRAN  
Nov. 8-19 (MWF), 3:15-5 p.m., \$25-\$35-\$60
- 620 Cray FORTRAN Features (CFT)  
Nov. 9-18 (TTh), 3:15-5 p.m., \$30-\$40-\$60
- 550 PROSE (Text Formatter)  
Nov. 16-18 (TTh), 3:15-5 p.m., \$20-\$30-\$50
- 560 Scribe  
Nov. 15-19 (MWF), 3:15-4:30 p.m., \$30-\$40-\$60
- 570 Text Processing on Micros  
Nov. 22-30 (MT), 3:15-5 p.m., \$25-\$35-\$60
- 580 Graphics  
Nov. 29-Dec. 8 (MW), 3:15-5 p.m., \$20-\$30-\$50
- 640 Introduction to Pascal  
Nov. 2-18 (TTh), 3:15-5 p.m., \$25-\$40-\$70
- 650 COBOL  
Nov. 22-Dec. 10 (MWF), 3:15-5 p.m., \$30-\$45-\$75
- 590 Cray Assembly Language (CAL)  
Nov. 29-Dec. 3 (MWF), 3:15-5 p.m., \$25-\$45-\$70

## PHONE NUMBERS

|   |                    |   |          |
|---|--------------------|---|----------|
| Budgets .....                               | 373-2521           | HOURS-line (recorded message) .....         | 373-4927 |
| Computer-Aided Instruction .....            | 376-2975           | Image Processing .....                      | 376-2895 |
| Computer Hours (recorded message) .....     | 373-4927           | Information, Experimental Engineering ..... | 373-4360 |
| Computer Store .....                        | 373-4877           | Information, Lauderdale .....               | 373-4912 |
| Consulting                                  |                    | Information Systems .....                   | 376-1764 |
| HELP-line .....                             | 376-5592           | Instructional Labs .....                    | 376-2703 |
| 9 a.m.-5 p.m., Monday-Friday                |                    | Job Status, ExpEng (recorded message) ..... | 373-4994 |
| Business Data Products .....                | 376-1761           | Lauderdale Computer Room .....              | 373-4940 |
| 1-3 p.m., Monday-Friday                     |                    | Lauderdale Services .....                   | 373-4995 |
| Statistics Packages .....                   | 376-5062           | Lauderdale Services Manager .....           | 373-7538 |
| 1-2 p.m., Monday-Friday                     |                    | Lauderdale Users' Room .....                | 373-4921 |
| Data Bases .....                            | 376-1761           | MECC Liaison .....                          | 373-4573 |
| 1-3 p.m., Monday-Friday                     |                    | Newsletter Subscription .....               | 376-4668 |
| Microcomputers .....                        | 376-4276           | Permanent File Restoration .....            | 376-5605 |
| 10-12 a.m. and 2-4 p.m., Monday-Friday      |                    | Professional Services Division (PSD) .....  | 376-1764 |
| Non-Traditional Computing .....             | 373-5780           | Project Assistance .....                    | 376-1764 |
| 10:30-11:30 a.m., Monday, Wednesday, Friday |                    | Program Librarian .....                     | 376-1636 |
| TELL-A-GRAF/DISSPLA .....                   | 376-2663           | Programming Languages .....                 | 376-7290 |
| 1-3 p.m. Tuesday, Thursday                  |                    | Reference Room .....                        | 373-7744 |
| Contract Programming .....                  | 376-1764           | Remote Batch (RJE) Services .....           | 376-2703 |
| Data Base Applications .....                | 376-1764           | Short Courses .....                         | 376-8806 |
| Educational Services .....                  | 376-3963           | Shuttle Bus Service .....                   | 376-3068 |
| EDUNET Liaison .....                        | 373-7745           | System Status (recorded message) .....      | 373-4927 |
| Engineering Services .....                  | 376-1023, 376-8153 | Tape Librarian: see Lauderdale Services     |          |
| Equipment Purchase/Information .....        | 376-8153           | Text Processing Services .....              | 376-2943 |
| Experimental Engineering I/O .....          | 373-4596           | User Accounts .....                         | 373-4548 |
| Field Engineering .....                     | 376-7584           | User Services .....                         | 376-3963 |
| Graphics Software .....                     | 376-5592           |   |          |
| HELP-line .....                             | 376-5592           |   |          |
| 9 a.m.-5 p.m., Monday-Friday                |                    |   |          |

## OPERATING HOURS

|     | Cyber 74/730       | Cray              | MERITSS (Cyber 172)   | VAX             |
|-----|--------------------|-------------------|-----------------------|-----------------|
| M-F | 8 a.m. - 4 a.m.    | 8 a.m. - midnight | 7:45 a.m. - 1:30 a.m. | 8 a.m. - 6 a.m. |
| Sat | 4 a.m. - 5:15 p.m. | 8 a.m. - 5 p.m.   | 7:45 a.m. - 1:30 a.m. | 24 hours        |
| Sun | 4 p.m. - 1 a.m.    | 4 p.m. - midnight | 4 p.m. - midnight     | 24 hours        |

## PUBLIC LABS—TWIN CITIES CAMPUS

| East Bank       |       |             |       | West Bank         |       |             |       |
|-----------------|-------|-------------|-------|-------------------|-------|-------------|-------|
| Location        | Batch | Interactive | Micro | Location          | Batch | Interactive | Micro |
| Arch 160        |       | X           | X     | BlegH 91T         |       |             | X     |
| CentH           |       | X           |       | BlegH 140         |       | X           |       |
| ComH            |       | X           |       | MdbH              |       | X           |       |
| DiehlH 270, 207 |       | X           |       | OMWL 2            | X     | X           |       |
| EltH 121, 125   |       | X           |       | SocSci 167        |       | X*          |       |
| EltH N640       | X     |             |       |                   |       |             |       |
| ExpE 130        | ?     | *           |       | <i>St. Paul</i>   |       |             |       |
| FolH 14, 14a    |       | X*          | X     | BaH               |       | X           |       |
| LindH 25        |       | X           |       | ClaOff 125        | X     | X           |       |
| MasCan 39       | X     |             |       | NorH 24           | X     |             |       |
| MechE 308       |       | X           |       |                   |       |             |       |
| Physics 69      |       | *           |       | <i>Lauderdale</i> |       |             |       |
| SanfH           |       | X           |       | Users Room        | X     |             |       |
| TerrH           |       | X           |       |                   |       |             |       |
| VincH 4         |       | X           |       |                   |       |             |       |
| WaLib 204       |       | X           |       |                   |       |             |       |

\* Research cluster; access to Cyber 730 and VAX/VMS

X in interactive column indicates access to MERITSS

? Unknown at the present time

### ICPA DELETED FROM MINNLIB

We are deleting the routine ICPA from MINNLIB as part of the NOS 1.4 conversion. ICPA reads words from the user's control point area, but this is system dependent and has been changed for previous system conversions. ICPA was originally needed by PLOTPAC but no longer is. We are not aware of any user programs that need ICPA, but if its deletion will affect you, please contact Mike Frisch, 376-1636.

### SLIDES NOW \$5

To stimulate interest in and use of our advanced graphics capabilities on the VAX/VMS system, we are reducing color slide processing charges to five dollars per image through December 31, 1982. Please consider taking advantage of this price reduction on high-quality graphic output. You'll be pleased with the results.

### FOR SALE

Four Multitech acoustic couplers  
One DEC DUP11 synchronous interface  
One DATA 100 remote batch terminal (HASP and CDC 200UT)  
Contact Andy Lopez, University of Minnesota— Morris, (612) 589-2234.

### DISSPLA ON CRAY

The DISSPLA graphics package is now available on the Cray-1A. For more information, see WRITEUP (TAGDSPL).

# *University Computer Center Newsletter*

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University of Minnesota  
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