Computer and Information Services Newsletter

July 1992

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News and Announcements

▼ MacPresents:
Multimedia Presentation Manager

Below is a Macintosh product announcement we recently received from Educational Multimedia Concepts, Ltd. Copies of this software will be available at cost to University faculty and staff who order it through their departments. To obtain the software and documentation contact

    Paul Eide, Media Resources
    540 Rarig, phone 5-0898

Currently Media Resources expects the cost to be about $12. (MacPresents is a trademark of the Regents of the University of Minnesota.)

A copy of MacPresents is also available for perusal in the Microcomputer HelpLine in Shepherd Labs.

Product Announcement

    MacPresents, Multimedia Presentation Manager is a multimedia presentation tool that gives users the ability to organize and control the presentation of text, scanned or painted graphics, videodisc material, and computer animation for large or small groups.

    Up to six pulldown menus can be defined for text, PICT files, videodisc images and movies, and MacroMind Director or QuickTime movies. Items for use in a presentation are loaded into these

Computer Basics: Macintosh CPUs

In the June issue of our newsletter we began a series of articles dealing with the hardware components of the microcomputers *currently* being offered through the University's discount program. The first article dealt with the CPUs (Central Processing Units) in IBM and ZEOS microcomputers. If you need a review of that article's short descriptions of terms such as register, bus, cache, clock speed, and memory addressing, read *Hardware Basics: CPUs* below.

This month's article will cover the CPUs (also called microprocessors) currently in use in the Apple Macintoshes. Future articles will discuss other hardware basics, such as monitors, storage devices, interfaces, and memory, as they apply to computers that are commonly in use at the University.

All CPUs Are Similar

All CPUs, regardless of the type of computer they control, perform similar functions in similar ways. All execute a sequence of instructions at a particular clock speed and move data to and from memory addresses across paths. What varies is the specific set of instructions the particular CPU uses, how it handles memory addressing, and how quickly it can move chunks of data.

Motorola CPUs

All Macintoshes come with CPUs manufactured by Motorola. The first Motorola processor was the 68000, followed by the 68020, the 68030, and the 68040. Each of these chips can be manufactured to operate at different clock speeds. (Unlike the Intel chips, which incorporate the clock speed into the CPU designation, such as the 386-16 or the 386-20, the names of Motorola chips give no hint of their clock speed.)

Table 1 shows Motorola CPUs, their speeds, and the Macintoshes that use them. (The table does not include those Macs that are no longer sold as part of the Micro-computer Discount Program.)

Hardware Basics: CPUs

This information is repeated from our June 1991 newsletter.

Microcomputer hardware has changed dramatically over the years, and changes seem to be coming faster all the time. Not only are the first machines now obsolete, but the early technology has been greatly enhanced or replaced altogether. Now people are faced with more choices when selecting a computer to buy. Some questions apply to any computer purchase. How much memory will I need? How big a hard drive should I get? Can I use it outside the US? Will all the software run on it?

All the questions finally come down to: Given what I want to do, and all these choices, which computer should I buy and why? This series of computer basics articles will attempt to help you in making those choices.

Central Processing Unit

The CPU (Central Processing Unit) is the "brain" of the computer and is often called the microprocessor. It is the part that performs the actual computations and acts as controller of all the activities a computer does — such as pay attention to what you type on the keyboard, find files on your disk, display things on the monitor, and pull data out of memory to be acted on.

Physically, the CPU is a single large chip that is plugged into a circuit board inside the computer. If you take the cover off the computer, you can easily find it because it is usually the largest chip in there.

When considering the different CPU chips, we will look at several features and functions: internal and external bus, clock speed, memory addressing, cache, and math coprocessing capabilities.

Internal and External Bus

A bus transfers information between different components of the computer. The larger the bus, the more information it can transport. Buses can be of different widths, measured by the number of bits they can handle at one time. Typical buses are 16- or 32-bits wide. A 32-bit bus can handle twice the information that a 16-bit bus can handle in the same amount of time.

The internal bus connects different sections of the CPU chip itself. The external bus connects the CPU to memory (RAM/random access memory) and other devices. It is also called the I/O (Input/Output) bus or the data bus.

Clock Speed

The CPU uses an internal clock to time and coordinate the execution of instructions. Clock speed refers to the speed at which this clock ticks and is measured in units called megahertz

Table 1: Motorola CPUs

Motorola CPU	Clock Speed in MHz	Macintosh
68000	8	Classic
	16	PowerBook 100
68030	16	LC II and Classic II
	16	PowerBook 140
	20	IIsi
	25	IIci and PowerBook 170
68040	25	Quadra 700
	33	Quadra 950

A brief overview of the CPU chips from Motorola follows.

68000

From the beginning, all Motorola processors had full 32-bit address registers. However, the 68000 uses only 24 of those bits to address 16 megabytes of address space. Of that 16MB of address space, half is directly available as RAM (Random Access Memory), the system memory used by software programs. The other 8MB are allocated for ROM (Read Only Memory) and I/O (Input/Output).

Although the 68000 uses 32-bit data registers to perform computations, it uses a 16-bit data bus to retrieve data from memory. Thus it requires two fetches from memory to fill a register.

68020

The original Macintosh II and the original Mac LC were the only Macintoshes to use the 68020 chip.

The 68020 is a full 32-bit processor (32-bit registers and 32-bit data path) that can utilize a companion chip, the 68851, to handle memory management.

68030

The 68030 merges the 68020 processor and the 68851 memory management unit (MMU). It uses full 32-bit addresses, allowing direct access to 4 gigabytes (4 billion bytes) of addressable space. The 68030 also uses a 32-bit data bus, allowing it to fill one 32-bit register with just one fetch from memory.

(MHz), which is one million ticks per second. Ultimately, computation speed is determined by clock speed and CPU type. In general, a more powerful CPU running at a slower clock speed gives better performance than a less powerful CPU running at a faster clock speed.

Memory: RAM

When you use an application, the operating system copies the program and its data from your disk into RAM (Random Access Memory). RAM is actually a sequence of storage locations, each with its own address. You could think of RAM as a huge wall of post office boxes. Each box has its own number. The more digits you can use, the more boxes you can

identify. (The only restriction is that, for our analogy, each box can hold only one piece of mail at a time.) Similarly, the more bits a computer can use to address memory, the more memory locations it can identify.
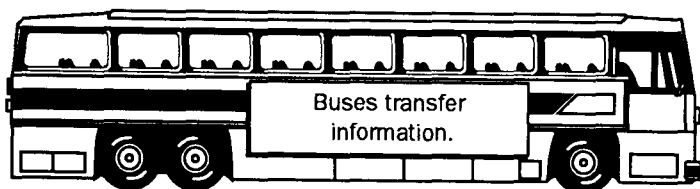
Cache Memory

Some CPUs have special memory called cache. Cache memory is much faster to access than regular memory; it's also much more expensive. Cache means "keep for later use." Most programs tend to need certain segments of memory over and over. Systems with cache load data into the cache from main memory and then feed it to the CPU as requested. Various algorithms try to keep information in the cache that the CPU

is most likely to request. When the CPU requests information that hasn't been copied into cache, the processor must wait until the cache fetches the data it didn't have. The larger the cache, the more likely it will already contain what the CPU needs.

Math Coprocessing

Math coprocessing is a special set of functions that are optimized to perform very high-speed floating-point arithmetic. These functions can be built into the CPU itself, or they can come on their own chip.

Not all software will take advantage of the presence of math coprocessing capabilities. Programs that tend to use math coprocessors are spreadsheets, CAD applications (Computer Aided Design), statistical packages, and font-scaling utilities (especially if they use PostScript).

Buses transfer information.

The 68030 also has two 256-byte caches, a RAM cache, and an instruction caches. These caches speed up processing because they eliminate the wait that occurs in the execution of instructions in the 68020. (More detailed information about memory will be available in an upcoming article in our Computer Basics series.)

MMU: Memory Management Unit
The MMU supports A/UX (Apple's implementation of the UNIX operating system).

The MMU also supports virtual memory if you are running System 7.0. Virtual memory allows you to run more applications simultaneously than your RAM would otherwise allow by treating part of your hard disk as additional RAM. (System 7 users turn virtual memory on or off by using the *Memory* option in the Control Panel's folder.)

68040
In the 68040, the RAM and instruction caches are expanded to 4K each. Speed is further enhanced by reducing the average number of clock cycles per instruction.

The 68040 chip also incorporates the functions of a math (floating-point) coprocessor. In prior Motorola CPUs, math coprocessing capability could be obtained by using a separate coprocessor chip.)

680XX Comparisons
Each Motorola processor provides enhanced performance over its predecessor.
- ❑ The 68000 has 32-bit registers with a 16-bit data bus.
- ❑ The 68020 is a full 32-bit processor, i.e. both registers and bus are 32-bit.
- ❑ The 68030 merges memory management functions into the CPU itself and adds data and instruction caches.
- ❑ The 68040 incorporates a floating-point coprocessor and has larger caches.

Clock speed provides another point of comparison. A 68030 running at 25MHz will execute instructions 25% faster than one running at 20MHz.

The 68000 is the only Motorola processor with a 16-bit data bus. All the others have a 32-bit data bus, enabling them to retrieve data from memory twice as fast as the 68000. Thus a 68030 running at 20MHz will process data around five times faster than a 68000 running at 8MHz. (You get a fivefold speed increase because of improvements to the clock speed and the data bus. The 68030 is two and a half times as fast because of the clock speed, then twice as fast as that because of the data bus).

Motorola Summary
CPUs offer different features. Some features affect the speed of processing, such as clock speed, caches, and data bus size. Other features, such as integrated coprocessing, affect the functionality of the chip.

Which CPU you select depends on what you plan to do with the software you will be using. Simple word processing does not require a very fast CPU. However, if you are designing and reformatting elaborate desktop publishing documents, you will probably want all the speed you can get. Simple line art can be drawn with any CPU; complex graphics or spreadsheet software can benefit from, and may even require, a floating-point coprocessor.

Finally, you must decide what you want to do with the computer, find software that will enable you to do it, then select the computer that will run that software. Don't buy anything less than what the software requires, but also don't spend a lot of money for speed that you will never need or functionality that you will never use.

➡ News continued

pulldown menus. Sequences of these items can be built using the script editor, and then stored as separate presentations in a "script" menu. A set of directional arrows at the bottom of the screen allows easy navigation through a script. Using the pulldown script menu, users can also see where they are in a presentation and then quickly jump to any item in a script. All items that have been added to the user-defined menus remain accessible while running a script, so users are not restricted to a predetermined sequence. Multiple thumbnail representations of PICT files can be stored in RAM for quick recall to screen.

The program has built-in text and paint tools for customizing text, and a videodisc editor and controller for previewing and selecting material from videodiscs.

- ❑ Since users are likely to have separate workstations for assembling and presenting material, the product is licensed for use on two computers. Its retail price is $450. Educational and site license pricing is available.

❑ Requires: Macintosh II series or above with a 13-inch monitor, System 6.05 or above; HyperCard 2.1. Recommended: 5MB RAM for 8-bit color, and 8MB RAM for 24 bit color.

❑ The product is System 7 compatible and ready for immediate delivery. Contact Educational Multimedia Concepts, Ltd., 1313 Fifth St. S.E., Suite 202E, Minneapolis, MN 55414, phone 612/379-3842.

The April/May 1992 issue of *Syllabus* is devoted to Multimedia issues, and it features MacPresents as part of its *Multimedia on Campus* section. (Syllabus, a publication for people in the higher education market, is sponsored by Apple Computer. Qualified individuals - such as faculty, software developers, and publishers - can receive a complimentary subscription. You can inquire about a subscription from AppleLink: SYLLABUS or the internet at syllabus@applelink.apple.com.) The reference library in the Microcomputer HelpLine in Shepherd Labs has issues of Syllabus.

Media Resources Workstations

Media Resources is in the process of setting up two multimedia workstations that will be equipped with MacPresents. Although details are still being worked out, they hope to have the workstations set up by Fall.

Faculty who are interested in using these workstations should call Paul Eide, Media Resources, at 5-0898.

▼ Summer Eligibility

Students who are eligible to purchase hardware and software through the Microcomputer Discount Program during the summer must match one of the three scenarios listed in Table 1. As you can see from Table 1, students who are enrolled in the summer only do not meet the eligibility requirements.

Table 1: Summer Eligibility

Minimum Credits Per Quarter = 6

Scenario	Spring '92	Summer '92	Fall '92
1	Y		Y
2		Y	Y
3	Y	Y	

## ▼ An Unexpected Farewell
John Larsen Dies Suddenly

John L. Larsen, a user services specialist for 20 years, died suddenly in his office on June 29. He was 61 years old.

John earned a bachelor's degree in history and mathematics in 1955. He began working part-time with the University Computer Center in 1970 and became a full-time employee in 1972.

Over the years John answered questions for thousands of CYBER and VAX users. He also wrote utilities that helped many people move files from one system to another and use magnetic tapes. In recent years John, who was blind, also worked with our adaptive technology project.

John spent his last morning on our central system help line. Because of the CYBER and UNIX June 30 conversion deadline, he anticipated an unusually large number of calls coming in, and he opened the help line a half-hour early. After almost five hours on the help line, John returned to his private office, where he passed away. John, who had a history of heart problems, apparently suffered a heart attack. When staff found him at 3 pm, they called University Police, who responded quickly. Efforts to revive John failed.

We are particularly saddened by John's death because he was to begin his early retirement the following day, June 30. John had been looking forward to retiring for several months. We will miss John's companionship and expertise, and particularly his wry sense of humor.
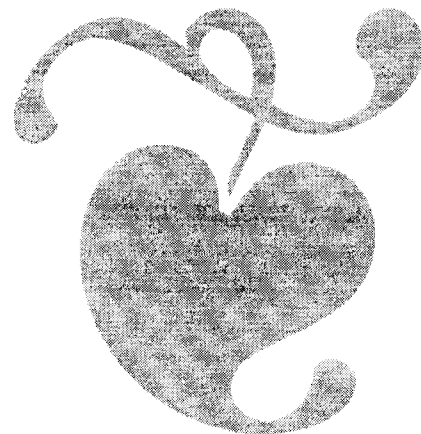
Central Systems News

▼ LAPACK Available:
Successor to LINPACK and EISPACK

LAPACK (Linear Algebra Package), a successor to the 1970's packages LINPACK and EISPACK, has been installed on the VAX VX and VZ central systems.

Transportable Library of Fortran 77 Subroutines

LAPACK is a transportable library of Fortran 77 subroutines for solving the most common problems in numerical linear algebra: systems of linear equations, linear least squares problems, eigenvalue problems, and singular value problems. It has been designed to be efficient on a wide range of modern high-performance computers.

LAPACK is intended to be the successor to LINPACK and EISPACK. It extends the functionality of these packages by including driver routines, iterative refinement and error bounds for linear systems, the capability for finding selected eigenvalues and invariant subspaces, and condition estimation for the eigenproblem. LAPACK improves on the accuracy of standard algorithms for linear systems, for finding singular values and singular vectors of bidiagonal matrices, and for finding eigenvalues and eigenvectors of tridiagonal matrices. The algorithms and software in the package have been restructured to achieve high efficiency on vector processors, high-performance "superscalar" workstations, and shared memory multiprocessors.

Obtaining the Users' Guide

The 250-page LAPACK Users' Guide is now available from the Society for Industrial and Applied Mathematics (SIAM).

It gives an informal introduction to the design of the algorithms and software, summaries of the contents of the package, describes conventions used in the software and documentation, and includes complete specifications for calling the routines. It also has information on converting LINPACK and EISPACK calls into LAPACK calls.

A copy of the manual is on reserve in the Computing Information Center, 1 Nicholson Hall, 625-7397. Copies can be ordered from SIAM for about $20 plus about $3 for shipping at 3600 University City Science Center, Philadelphia, PA 19104-2688, (215) 382-9800, FAX (215) 386-7999.

Accessing LAPACK

To access the LAPACK library on VX or VZ, use the command

```
libs lapack
```

at the beginning of a time-sharing session or batch job. For details on the LIBS command, use

```
help libs
```

Only the double precision (routine names begin with D) and double precision complex (routine names begin with Z) portions of LAPACK are available. They have been compiled with the /G_FLOATING parameter of the Fortran compiler as have all of our other Fortran libraries on VX and VZ.

A Sample

Here's a simple example, solving a symmetric set of linear equations. The file *SAM.FOR* is:

```
      double precision a(3,3),b(3)
      character *1 uplo
      data n/3/, nrhs/1/, lda/3/, ldb/3/, uplo/'L'/
      data a/1.0d0,2.0d0,3.0d0,
     *       2.0d0,6.0d0,4.0d0,
     *       3.0d0,4.0d0,15.0d0/
      data b/6.0d0,12.0d0,22.0d0/
      call dposv(uplo,n,nrhs,a,lda,b,ldb,info)
      print *,'info=',info
      print *,'soln.=',b
      stop
      end
```

To run the job using this file, at the $ prompt enter the commands shown below. Figure 1 shows the results.

```
      libs lapack
      fortran/g_floating test.for
      link test.obj
      run test.exe
```

Figure 1: Results of Running Sample File

```
info=             0
soln.=  1.00000000000000      1.00000000000000        1.00000000000000
```

Future LAPACK Plans

In the near future, we plan to install a VAX vector version of LAPACK which should be faster than the current non-vector one. Eventually, we also plan to install LAPACK on the CDC 4680 EP/IX machine.

Available from NETLIB@ORNL.GOV

We have already installed LAPACK as a binary ready-to-use library on VX and VZ. However, some of you may want to get source code for other machines. The LAPACK routines are available from netlib for users who require only selected pieces of the package. For a description of the contents of LAPACK, send E-mail to netlib@ornl.gov, and in the mail message type:

```
send index from lapack
```

A set of working notes are available from netlib as well and details can be found in the index to LAPACK.

LAPACK Available in UNIX tar Format

The complete LAPACK package can be obtained on magnetic media in UNIX compressed tar format from NAG, Inc. for about $100. For details, contact them at 1400 Opus Place, Suite 200, Downers Grove, IL 60515-5702, (708) 971-2337, FAX (708) 971-2706.

The compressed tar file takes up approximately 7 megabytes (MB) of disk space. Uncompressed, it occupies 26MB. A full install requires nearly 70MB. There are about 600,000 lines of Fortran source and comments (which explains its large size) and this includes full testing and timing programs.

Questions? Contact Mike Frisch

If you need help with LAPACK or have further questions, please contact Mike Frisch at phone 625-5830 or E-mail at mjfrisch@vx.cis.umn.edu.

▼ CA and UX Conversions Completed

Early in the morning of July 1, we shut down our NOS system, the CYBER CA, and also shut down our ENCORE UNIX system, the UX.

All users' ongoing projects on the CA were successfully transferred to our VMS, EPX, or other systems and all users' projects on the UX were transferred to our new UNIX system, EPX.

As readers will recall, we announced the end of our NOS service over a year ago. In the intervening year, we offered short courses and labs on CA conversion. Nevertheless, during the last two weeks before the end of NOS service, our central system help line, user services staff, and other staff were swamped with requests for help from CA users. During these last weeks, there were unusually long waits on our central system help line. Some people also had to wait for access to ports or tape drives. Our apologies to those who were inconvenienced during this period.

The Future

The branch of Computer and Information Services that was previously known as ACS, ACSS, and UCC has for decades been known as a CYBER NOS shop. That era has plainly ended. We now offer more modern central systems: the EPX version of UNIX, VMS, NOS/VE, and VM/CMS.

We look forward to continuing to improve and modernize our services and invite your suggestions.

Special Thanks

Our staff helped make the conversion a success. We particularly want to thank our operators who worked long hours mounting hundreds of magnetic tapes until the end. We also want to thank Michael Frisch, Thom Callaghan, Pat Bland, and Cheryl Vollhaber for their hard work in helping tape users.
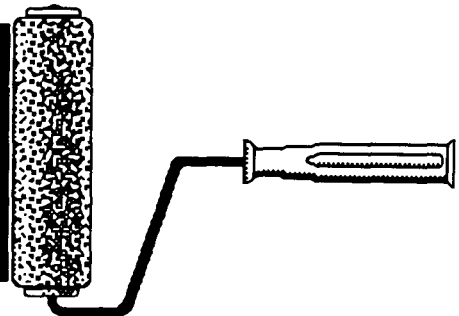
Training Resources
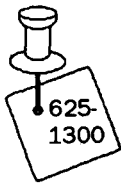
We own training packages for many popular software products. These training packages are available to University of Minnesota departments and current employees and students. There is no fee for using these packages, and you may check them out for 48 hours. However, before you can check them out, you must sign a *Usage Agreement* and leave your University of Minnesota ID with us. We will return your ID when you return the training materials.

Generally the IBM/MS-DOS disks are available on 5.25-inch 360K and 3.5-inch 720K disks; the Macintosh disks are 800K. Our newest training packages are described below.

Reservations Required

To reserve or check out these materials, phone 625-1300 or stop in our Shepherd Labs office in room 190 (formerly room 132), Monday-Friday, 8 am to 4 pm. Unless you use our Self-Paced Training Centers, you must supply your own software and equipment, such as computer and cassette player, to use these training materials.

Training Center Hours

Location	Monday - Friday
1 Nicholson Hall	8 am to 7 pm
99 Coffey Hall	9 am to 4 pm

Introduction to Personal Computing
(MS-DOS, Macintosh, OS/2, UNIX, and networking)

We recently purchased this audio training package from FlipTrack. The two self-paced lessons last a couple of hours

each and include an illustrated Study Guide. After listening to the tapes you will be able to:
❑ understand the capabilities of today's computer software - word processors, spreadsheets, databases, graphics, desktop publishers, utilities, on-line services, and communications
❑ compare computers, monitors, storage options, and networking as well as operating systems such as MS-DOS, Macintosh, OS/2, and UNIX
❑ decode the jargon - memory, boards, RAM, ROM, floppies, hard drives, CPUs, LANs, WANs, 386, 486, laptops
❑ learn about peripherals - printers, mice, trackballs, scanners, modems, backup tape drives, and more.

MacAcademy: 14 New Packages

We recently purchased training for the Macintosh from MacAcademy. Each package contains one VHS video tape.

Canvas 3.0
Video 1: basic tools and palettes, multiplex tools; menus and preferences; object (drawing) and bitmap (painting) concerns; grouping and locking objects; drawing order; shuffling; paste priorities; bezier curves; creating, editing, and setting defaults; pattern sets; foreground and background color use.

Video 2: working with text, creation and modification; text on paths, encrusting, slanting, scaling; creating and manipulating text outlines; text rulers, tabs, formatting, leading; spell checking; special edit managers and tools; duplication of objects; auto tracing; layers and the layer manager; using Pantone colors.

Video 3: multiple objects; transformations; gradient fills - using and creating; blending objects; combining and slicing objects; creation of presentation slide shows; dimensioning drawings; use of hatch (cross section) patterns; separations for printing, negatives; System 7 special options: publish and subscribe.

ClarisWorks
Video 1: Word Processing: document windows, text ruler; menus; on-line help; formatting; color; tables; line spacing;

spelling check; find/change; columns; footnotes; headers/footers; printing.

Video 2: Spreadsheets: environment; formatting; design; color; number format; formulas; charting; sorting; single criterion sort; protection; relative cell address; functions; logic functions; checks; macros.

Video 3: Database: defining fields; menus; page setup; new records; duplicating records; sorting; find; additional fields; new layout; importing graphics; zoom control; align objects; tab order; calculations; columnar reports.

Video 4: Graphics: creating objects; text and graphics tools; spreadsheet frame; grouping; reshaping; importing graphics; newsletter; multiple pages; linking text; integrating; graphs; archive database; mail merge; communications; send a file.

Design and Layout Techniques for Desktop Publishers
This video is for anyone using a graphics, design, or desktop publishing program. It contains professional design guidelines and covers these topics: design options; planning your document; font options; readability; using graphics; grids and columns; moderation; using clip art; logos; proofing; using scanners; imagesetting; color options; printing options; desktop publishing help.

Font Management for the Mac
This video covers: system resources; system file; system folder; screen fonts; installing screen fonts; PostScript fonts; TrueType fonts; installing TrueType fonts; identifying installed fonts.

Illustrator 3.2
Video 1: components; selection, rectangle, oval, and pen tools; grouping; ungrouping; paint menu scaling, rotation, reflection, and sheering tools; preferences; curves; conv. direction point.

Video 2: windows; blending, scaling, and text creation tools; make guide; rulers; graph paper; blending points; masking; auto tracing; text; custom colors and fonts; text paths.

Newsletter Index Volume 1:
July 1991 to June 1992
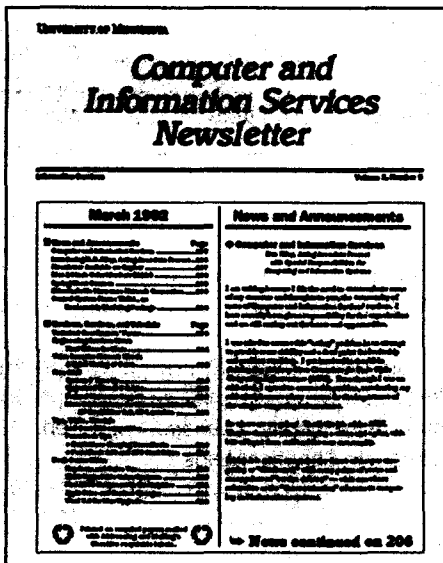
We began publishing the *Computer and Information Services Newsletter* in July 1991. This issue of the newsletter begins volume 2. On July 1 1991 we also began the process of reorganizing many of the University's computer-related services. Our name change to Computer and Information Services was part of that reorganization.

The index for Volume 1 is divided into topics. Articles within each division are arranged in alphabetical order. Some entries may appear under more than one division.

Volume 1 is on Gopher

All issues in Volume 1 are available electronically via the *News* and the *Computer Information* sections of Gopher Consultant. Since Gopher Consultant offers guest access, you do not need a password or special account to use it. The version of the newsletter that is stored on Gopher is not a replacement for the paper copy. Since the information on Gopher is stored only as text, most figures will not show up. To see the figures and illustrations, you must obtain a copy of the "original" newsletter.

For information about saving and printing information from Gopher, see *Newsletter Available on Gopher* in our March 1992 newsletter. For more information about accessing and using the Gopher Consultant, see *Public Information Available Electronically* in our January 1991 newsletter.

Book Center Notes Highlights

Training Resources *

*   *the Fall '91 Special Training Edition
    was published in September 1991*

Video 3: separator; densitometer chart; type fonts; Pantone colors; Type Manager, compound paths; cutting type; type manipulation; blending type; page layouts; custom patterns, graphs.

Lotus 1-2-3

Video 1: worksheet navigation; using the draw and style palettes; status bar defined; using the console; building simple formulas; formatting numbers and text.

Video 2: using functions; creating defined ranges; using name definitions; customizing menus; setting defaults; styling text; using color; creating and editing charts.

Video 3: creating linked worksheets; using linked formulas; creating databases; using criteria; using forms for data entry; sorting records; creating tables and series.

PageMaker 4.2

The new additions for version 4.2 are covered in Video 4.

Video 1: desktop publishing tips; document set-up; margins/page options; page views; ruler/guide set-up; using master pages, columns guides, and the Tool Box; layering text/graphics; headlines; graphics; creating reverses; placing graphics and text; text blocks/strings.

Video 2: setting preferences; creating shadow boxes; creating drop caps; using in-line graphics; inserting and deleting pages; text options; leading and kerning; creating pull quotes; forced justification; text rotation; paragraph options; using table editor; manual kerning.

Video 3: using story editor and spell checker; search/replace; creating style sheets; new styles; using image control; text wrap, color, printing, and saving options; linking features; on-line help; using templates; tricks and tips.

Video 4: subscribe feature; English scripting language; adding functionality; page sorter addition; booklet edition; column balancing; auto drop caps; hot linking to Freehand; baseline to baseline leading; master fonts; and more.

Photoshop (Adobe)

Video 1: preferences; virtual memory; zoom tool; pixel concept; cropping, marquee, lasso, pen, magic wand, eye dropper, and rubber stamp tools; pixel memory; RGB and CYMK modes.

Video 2: line and eraser tools; background; airbrush; text; blur and sharpen; paint bucket; scanning; brightness menu; black and white control; color and level control; color balance.

Video 3: channels; color picker; create brush; alpha channel; threshold; copy and paste; text; stroke; transform images; scale; distort filters; printing; image size.

PowerPoint (Microsoft)

This video covers: sample slides; slide changer; title sorter; color; creating slides; slide masters; graphics; spell checker; label tools; tabs; genigraphics; auto slides; handouts; speaker notes; story board; printing; and other tips and tricks.

Resolve (Claris)

Video 1: cells; columns; column and row adjustments; using tools; text fields; icons; headings; calculations; formatting text; printing, Save As, and formula options; using page preview; transposing info; using objects; protecting documents.

Video 2: creating graphs and charts; editing charts; creating lines; chart options; 3-D graphs; database options; finds; using summaries; extracting; sorts; printing options; frequency distribution; vertical look-up; logic functions;

Video 3: creating and compiling scripts; text comments; using buttons; removing scripts; additional scripts; script arguments; linking formulas; script options; variables; If/Or commands; looping; publish and subscribe.

System 7: How to Use

This video covers: what is System 7; file sharing; installing; virtual memory; exploring the desktop; the trash can; new messages; views; new menus; templates; Apple menu; TrueType fonts; inter application communications; compatibility issues.

System 7 Basics: three videos

Part 1: getting started; icons; desktop; point, click and drag, selecting; Apple menu; windows; menus; memory, RAM disk, and virtual memory; folders; text; floppy disks; copying to disks; desktop; printing.

Part 2: files; system, applications; utilities loading a hard disk; views; desktop; short cuts; alias; backing up; organize desktop; manage and set memory.

Part 3: system updates; Apple HD SC Set-up; updating utilities; modifying the System; Key Caps; fonts; PostScript fonts; testing a hard disk; optimizing a hard disk; rebuilding the desktop; labels; publish and subscribe; file sharing.

Utilities, CDEVs, and Inits

This video covers CDEVs, Inits; virus protection, desk accessories; sound master; windows on-cue; suitcase; heap fixer; widgets.

Word 5.0

Video 1: word processing tips; selecting, deleting, moving copy; style, font, and sizing changes; using the ruler and ribbon; creating tabs and tables; using spell checker; using print preview; graphics tools.

Video 2: using page view, the glossary, and key caps; printing tips; adding columns; tab leaders; headers and footers; glossary features; facing printed pages; table of contents.

Video 3: keyboard short cuts; tab leaders; publish and subscribe; converting data; templates; importing graphics; indexing; footnotes; outlining; creating a mail merge; using tables; creating and using style sheets.

Video 4: mail merge; "if" function; calculations; "ask" and "set" functions; FAX sheet merge; mailing labels; summary info/find file; label set-up; inserting objects; System 6.0 differences; System 7.0; inserting equations, worksheets, and Excel charts; publish and subscribe; positioning/styles; link styling.

◀ Word 5

We recently purchased audio training from Personal Training. Each package in this series contains one 90-minute audio tape, a practice disk with examples, and a Command Summary Card. Each tape's lesson plan is listed below.

Tape 1: Beginning Word: entering and editing; using spell checker; printing: changing appearance of text; using styles; changing defaults; using tabs; entering headers and footers; finding files.

Tape 2: Intermediate Word: creating tables; creating form letters; sorting records: selecting records: customizing form letters; converting text files; creating borders; adding finishing touches; numbering lines.

Tape 3: Advanced Word: using styles; finding and replacing; importing styles; formatting characters; using the Glossary; creating headers and footers; inserting footnotes; creating an index; creating a Table of Contents.

▼ IBM/MS-DOS Training

❖ DOS Fundamentals

We recently purchased InfoSource, Inc.'s disk-based DOS training. The training materials contain a manual and disks. The lessons' topics are listed below.

#1 important PC basics; #2 some background details: a DOS overview; #3 getting your system ready to use; #4 critical DOS record keeping functions; #5 managing your files; #6 setting up and using directories; #7 DOS disk management; #8 special screen and print output; #9 safeguarding your data; #10 automating your system and batch files; #11 editing text and batch files; #12 creating your own custom menu. Appendices A-E: major changes in DOS versions; internal and external comments; DOS editing key summary; DOS command summary; DOS wild-card characters - some options.

❖ MS-DOS 5, How to Use

We recently purchased FlipTrack's audio training for DOS version 5. Each FlipTrack package contains an audio tape, a Quick Reference Guide, and a document disk.

Tape 1: installing DOS; network users; hardware and software; main functions of DOS; protecting your computer and software; starting your computer; getting the DOS prompt; typing commands, beginning DOS commands; restarting your computer; locating yourself in DOS; directories and files; DOS commands for manipulating files; formatting disks. FlipTrack options: know your computer; your hard disk drive; floppy disks; data storage; troubleshooting your startup ; kinds of computer memory; planning your directory tree; disk format variations.

Tape 2: drives and directories; making new directories; using directories; more ways to use DIR; reading directory lists; working with directories using wild card symbols; DOS protocols reviewed; inspecting file contents; recovering deleted data; removing a directory. FlipTrack options: using the DOS 5 Menu Shell; operating with the Menu Shell; using your mouse with the shell; file management principles.

Tape 3: copying multiple files; determining disk condition; interpreting CHKDSK messages; internal and external commands; altering file characteristics; backing up and restoring files; other backup options; syntax rules for backup and restoring. FlipTrack options: tracking and recovering deleted data; printing with DOS; DOS Shell operations.

Tape 4: redirecting screen output; filtering screen output; piping output; creating text files; using the full screen text editor; text editor menu operations; creating and using batch files; understanding AUTOEXEC.BAT and CONFIG.SYS. FlipTrack options: sending output to a printer; using the DOS line editor; comparing file contents; managing speed and memory.

❖ Paradox

We purchased InfoSource, Inc.'s disk-based training for Paradox. The training materials contain a manual and disks. The lessons' topics are listed below.

#1 Starting Paradox and moving around the screen; #2 Paradox menus and help; #3 creating and editing tables; #4 sorting and keying tables; #5 tools and utilities;

#6 queries - asking questions; #7 scripts; #8 printing and designing reports; #9 designing your own forms; #10 graphing your data.

❖ Quattro Pro Fundamentals

We purchased InfoSource, Inc.'s disk-based training for Quattro Pro. The training materials contain a manual and disks. The lessons' topics are listed below.

#1 Getting Quattro up and running; #2 moving around within a spreadsheet; #3 menu mode; #4 setting up headings; #5 entering numbers; #6 getting a printout; #7 function key shortcuts; #8 writing a formula; #9 using the copy command to replicate a formula; #10 entering numbers and special characters as labels; #11 using a few special functions; #12 modifying an existing spreadsheet; #13 displaying and using spreadsheets in multiple windows; #14 customizing your display and printouts with WYSIWYG; #15 using a mouse.

❖ Windows (Microsoft)

We recently purchased InfoSource, Inc.'s disk-based training for Windows. The training materials contain a manual and disks. The lessons' topics are listed below.

#1 Windows - what, why, and getting started; #2 doing windows; #3 menus; #4 dialog boxes, lists and messages; #5 organizing your programs; #6 environmental control - the Program Manager; #7 File Manager - finding files and directories; #8 working with files and directories; #9 sharing information; #10 help.

❖ Word for Windows 2.0

We recently purchased this video training from Anderson Soft-Teach. Each volume includes a videotape, a practice disk, and a personal training guide. To complete individual lessons allow 10-25 minutes. Allow 2-3 hours to complete the training in each volume.

Volume 1: Word for Windows
1. *Exploring Word for Windows:* examining the Word window, the Toolbar, the

Ribbon, and the Ruler; exiting Word; Windows basics.

2. *Creating a document:* entering text and using wordwrap; using the backspace key; saving and closing a document.
3. *Editing and printing a document:* opening a document, deleting, inserting, and replacing text; saving a revised document; printing a document; creating and closing a new document.
4. *Working with blocks of text:* selecting blocks of text; cutting and pasting text; using drag and drop; using the Undo command; spell checking a document; closing a document.
5. *Formatting:* changing font and point size; formatting characters; setting tabs; typing with tabs; displaying special marks; setting margins; using print preview.

Volume 2: Word for Windows

6. *Changing document layout:* changing paragraph alignment; centering a title; adding a border; indenting a paragraph; changing line spacing.
7. *Creating headers and footers:* understanding headers and footers; creating and closing footers; adding a page number to a footer; using and editing in page layout view; returning to normal view.
8. *Defining columns with the Toolbar:* removing column formatting; adding and viewing a vertical line.
9. *Creating a table:* understanding and creating tables; entering information into a table; selecting parts of a table; formatting a table; inserting a column; changing column widths; adding a border to table; printing a table.
10. *Merging documents:* understanding merge concepts; examining a data file and a main document; attaching and creating a data file; adding records to a data file; saving a data file; working with a main document; adding merge fields to a main document; merging two files.

Volume 3: Word for Windows

11. *Using styles:* understanding styles; displaying the style area; defining a style by example; applying a style; using the repeat key; modifying a style; removing the style area.
12. *Working in outline view:* understanding outlines; using outline view; collapsing and expanding an outline;

adding a heading to an outline; changing the level of a heading; adding body text; moving a heading and subtext; rearranging headings; returning to normal view.

13. *Using templates:* understanding and using templates; creating a template from a document; saving a document created with a template; using a default word template.
14. *Using graphics:* using WordArt; resizing and cropping an object; previewing a picture; inserting a picture; adding a frame; moving a framed graphic.

Extras for Experts:
   using Microsoft Graph; using views and zoom.

❖ WordPerfect for Windows 5.1

We purchased this video training from Anderson Soft-Teach. Each volume includes a videotape, a practice disk, a personal training guide, and a self-test to make sure you understand the software before you begin using it. To complete individual lessons allow 10-25 minutes. Allow 2-3 hours to complete the training in each volume.

Volume 1, WordPerfect

1. *Exploring WordPerfect:* examining the WordPerfect window; using the mouse; selecting command menus; exiting WordPerfect.
2. *Creating and printing a document:* entering text and using wordwrap; saving, printing, and closing documents.
3. *Editing with the Button Bar:* displaying the Button Bar; opening and moving through a document; deleting, inserting, and replacing text; saving a revised document; using print preview; centering text on a page; printing from print preview.
4. *Working with blocks of text:* selecting and deleting blocks; cutting and pasting text; using the undelete command; copying text into a new document; moving between documents; tiling and cascading documents; closing a document without saving; saving and closing a document.
5. *Formatting with the Ruler:* using Reveal Codes; displaying the ruler; changing line spacing; deleting codes; setting margins; clearing and setting tabs; typing with tabs.

6. *Perfecting a document:* justifying text; centering a line; indenting a paragraph; italicizing and bolding text; changing fonts and point size; spell checking a document.

Volume 2, WordPerfect

7. *Merging documents:* merging concepts; recognizing secondary and primary files; adding a record; adding a field to the primary file; merging the two files.
8. *Formatting multi-page documents:* understanding headers and footers; creating a header; adding a page number; inserting a graphics line and a page break; previewing a header.
9. *Creating multiple columns:* defining newspaper columns; changing column spacing; moving through columns; turning columns off.
10. *Creating a table:* understanding tables; creating and entering information into a table; creating, copying, and recalculating a formula; changing to decimal alignment.
11. *Modifying a table:* inserting a row and a column; joining and formatting cells; changing column width; formatting a column; removing lines.

Volume 3, WordPerfect

12. *Using graphics:* viewing and retrieving a graphic; sizing and positioning a graphic; removing a border and text wrap from a graphic.
13. *Adding graphic style to documents:* creating a bullet; creating, positioning, and sizing a text box; changing options on a text box.
14. *Using macros:* recording and playing a macro; assigning a macro to the menu; playing and removing a macro from the menu.
15. *Creating customized Button Bars:* creating a Button Bar; assigning a macro to a button; saving and editing a button bar; selecting the default button bar.
16. *Using WordPerfect's File Manager:* opening the file manager; using and closing a navigator; viewing and moving a file; creating a new directory; opening a second navigator; copying a file; deleting a file and a directory; closing the file manager.

Book Center Notes

The offers listed here are made to University departments, employees, and students, and are subject to the eligibility rules of the Micro-computer Discount Program. If you have questions about availability, phone the Computer Desk at 625-3854. The Computer Desk is open Monday–Friday from 8:30 am to 5:30 pm and accepts MasterCard and Visa charge cards.

Those with access to electronic mail and the University's internet can get product and price change bulletins for the products sold through the Computer Desk. Once you are on the mailing list, you will receive notification via E-mail as soon as we have new prices or products. To be added to the mailing list, E-mail a request to:

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request@boombox.micro.umn.edu
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Individuals must add 7% sales tax to all prices listed here or in our handouts. University departments do not have to pay sales tax. For more complete descriptions of the hardware products listed here or of those available through the discount program, pick up one of our handouts. Paper handouts are available at all Microcomputer HelpLines. Electronic versions are available from the Computer Consultant (gopher).

Price and Package Changes: NeXT

We have new prices for NeXT computers. Selected preset configurations are shown below; software comes with most of the machines. You can also purchase items A La Cart, including additional mass storage devices, memory expansion kits, and systems with parity memory.

● All color NeXTstation configurations include
1) N4004   NeXTSound Box

High-capacity NeXTstation Turbo with $9,746
N1200-4495   32MB RAM, 400MB hard disk
N4005   MegaPixel Color Display, 21-inch

● All color NeXTdimension configurations include
1) N4004   NeXTSound Box
2) N7014-2833   NeXTdimension board,
                  NTSC Version (16MB RAM)

High-capacity NeXTcube Configuration with $17,416
N1000A-2316   32MB RAM, 1.4GB hard disk
N4005   MegaPixel Color Display, 21-inch

NeXT: Upgrades

The N5516 license permits an owner of Release 2.0 or 2.1 to upgrade *one* additional system using a previously (or concurrently) purchased N5507. You must submit one signed license agreement with each N5516 order.

N5516   Software Release 2 License 47
               License *only* - includes *no* software.

N7022   Software Release 2.1 Update Set 37

N5507   Software Release 2.1 Extended 286
Includes the following: Software Release 2.1 Extended on optical disk, keyboard tilt feet and manuals.

N7003   68040 circuit board for NeXTcube .....$ 1802
               (requires purchase of N5507 or N5516)

Public Computer Facilities: Summer Break Schedule

Most of the Public Computer Facilities reduce their hours during the break after Summer Sessions I and II and will be closed Monday, September 7 for the Labor Day holiday. Walter Library will be open for Labor Day. The hours for Summer Sessions I and II are shown on pages 17 and 18; the hours for those Public Computer Facilities whose hours will change during the break are shown in Table 1.

**Table 1: Hour Changes for
Summer Break: Aug. 27 - Sept. 23**

Building	Room	Weekday	Weekend
East Bank			
Architecture	148	closed for break	
EE/CSci	4-204	M-F, 9-5	
Eddy Hall	54	closed for break	
Folwell	14	M-F, 8-6	
Lind	1	undetermined	
Lind	26	M-F, 9-5	
Walter	9	M-Th, 8-10	Sat, 10-6
		F, 8-6	Sun, 4-10
St. Paul and West Bank			
Anderson	170	closed for break	
Anderson	250	M-F, 8-5	
Blegen	140	M-F, 8-5	
Central Libr	B40	M-F, 9-5	
Central Libr	B50	M-F, 9-5	
COB	135	M-F, 8-5	
McNeal	305	M-F, 9-6	Sat, 10-6

Public Computer Facilities: *Summer Sessions* 1992

Building	Room	Phone	Classes	Laser Printing ◆		Hours: Weekday		Hours: Weekend

East Bank

Access to these microcomputer facilities requires an access card.

▼ Microcomputer facilities managed by Computer and Information Services: contact Jerry Larson at 625-7850.

Building	Room	Phone	Classes	Laser Printing ◆	Hours: Weekday		Hours: Weekend	
EE/CSci ♣ – ACSnet	3-166 4-204	closed for the summer 625-9081		1 LaserWriter	M–Th Fri	8 am–midnight 8 am–8 pm	Sat Sun	8 am–midnight 10 am–midnight
Elliott Hall – ACSnet	121	624-0866	†	1 IBM Per Pg Prntr 2 LaserWriters	M–Fri	9 am–5 pm		
Folwell Hall – ACSnet	14	625-4896	†	2 LaserJets 3 LaserWriters	M–Th Fri	8 am–10 pm 8 am–6 pm	Sat Sun	noon–6 pm 4 pm–10 pm
Lind Hall	26 ♠	626-0856	†	1 LaserJet 2 LaserWriters	M–Th Fri	8 am–10 pm 8 am–6 pm		
Physics ♣ – ACSnet	130	625-6820	†	1 LaserJet 2 LaserWriters	M–Fri	9 am–5 pm		
Walter Library – ACSnet	9	626-1899	†	1 LaserJet 3 LaserWriters	M–Th Fri	8 am–midnight 8 am–10 pm	Sat Sun	10 am–6 pm noon–midnight

▼ Microcomputer facilities managed by other departments.

Building	Room	Phone	Classes	Laser Printing ◆	Hours: Weekday		Hours: Weekend
Architecture	148	624-9583 Contact: Lee Anderson, 624-5201			M–Fri	9 am–5 pm	
Eddy Hall Annex	54	625-0314 Contact: Dennis Kern, 625-4350		1 LaserWriter	M–Fri	8 am–2 pm	
Moos Tower	8-425	625-1477 Contact: Marge Tillery, 625-1477		1 LaserWriter	M–Fri	7:45 am–noon and 1–4:30 pm	

ACSnet terminal facilities: access to these facilities does not require an access card.

Building	Room	Phone	Classes	Laser Printing ◆	Hours: Weekday		Hours: Weekend	
Diehl Hall	278	624-3128 Contact: 626-4045 *(limited access to microcomputer facilities)*		◊	M–Th Fri	7 am–10:45 pm 7 am–6 pm	Sat Sun	8 am–6 pm noon–11 pm
Lind Hall	1	625-0801 Contact: Charles McCarthy, 624-4001		◊	MTWThFri (hours posted on door) SSI and SSII hours are different			
Mech. Eng.	308	625-7352 Contact: David Hultgren		◊	M–Th Fri	9 am–9 pm 9 am–7 pm	Sat	9 am–7 pm
Nicholson	1	625-5082 Contact: Mike Dunham, 625-7397		◊	M–F	8 am–7 pm		

ACSnet
ACSnet facilities have terminals that can access LUMINA and other Central System Computers, e.g., Computer and Information Services' EP/IX, IBM CMS, MEDLINE, NOS, NOS/VE, VX, and VZ and the School of Management's IBM mainframe.

◆ *Printer Access Card* required. Laser printing notations apply only to microcomputer facilities. Laser*Jets* available for printing from IBMs and IBM-compatibles. Laser*Writers* available for printing from Macs.

◊ Mainframe printing is charged against your central system account.

† Instructors can reserve all or part of these labs for *instructional use* by contacting the department responsible for the lab.

♠ These labs are frequently scheduled for classroom use. Call before making plans to use these facilities.

♣ IT Students have priority use of the EE/CSci and 130 Physics labs.

Building	Room	Phone	Classes	Laser Printing ◆	Hours: Weekday	Hours: Weekend

St. Paul

Access to these microcomputer facilities requires an access card.

▼ Microcomputer facilities managed by Computer and Information Services: contact Jamil Jabr at 624-7766.

Building	Room	Phone	Classes	Laser Printing	Hours: Weekday	Hours: Weekend
Central Library	B50	624-3269	†	2 LaserWriters	M–Th 8 am–8 pm Fri 8 am–6 pm	
Cla Office Bldg.	135	624-9226	†	1 IBM Per Pg Prntr 1 LaserWriter	M–Th 8 am–8 pm Fri 8 am–6 pm	
McNeal Hall	305 ♠	624-5367	†	1 LaserJet III 1 LaserWriter IIg 1 LaserWriter	M–Th 8 am–10 pm Fri 8 am–6 pm	Sat 10 am–6 pm Sun 1 pm–7 pm

▼ Microcomputer facilities managed by other departments.

Building	Room	Phone	Classes	Laser Printing	Hours: Weekday
Vet. Science	450	624-4281		1 IBM 4019	M–Fri 1–5 pm (lab attendant on duty)
	Contact: Livija Carlson, 624-3078				

ACSnet terminal facilities: access to these facilities does not require an access card.

Building	Room	Phone	Classes	Laser Printing	Hours: Weekday
Central Library	B40	—		◇	M–Th 8 am–8 pm Fri 8 am–6 pm
	Contact: Jamil Jabr, 624-7766				

West Bank

Access to these microcomputer facilities requires an access card.

▼ Microcomputer facilities managed by Computer and Information Services: contact Shu-Fan DeJarlais at 624-0877.

Building	Room	Phone	Classes	Laser Printing	Hours: Weekday	Hours: Weekend
Anderson Hall		624–6526		2 LaserJets 2 LaserWriters		
	170				M–Fri 8 am–5 pm	
	250				M–Th 8 am–10 pm	Sat noon–6 pm
	250				Fri 8 am–5 pm	Sun 4 am–10 pm
Blegen*	10, 90, 125, 130		†		classroom only	
Wilson Library	closed for the summer					

▼ Microcomputer facilities managed by Computer and Information Services: contact Jamil Jabr at 624-7766.

Building	Room	Phone	Classes	Laser Printing	Hours: Weekday
Blegen	455 ♠	626-7778	†	1 LaserWriter	M–Fri 9 am–5 pm

ACSnet terminal facilities: access to these facilities does not require an access card.

Building	Room	Phone	Classes	Laser Printing	Hours: Weekday	Hours: Weekend
Blegen	140	—		◇	M–Th 8 am–9:30 pm Fri 8 am–4:30 pm	Sat noon–5:30 pm Sun 4–9:30 pm
	Contact: S. DeJarlais, 624-0877					

* Call the Scheduling office at 5-6030 to reserve these Blegen classrooms. Computer and Information Services can help you set up the classroom's computer equipment.

Help: Computer and Information Services

Consulting Service	Phone	Help Line Hours

Computer Services Information Line   625-1555
If you do not know which computer service phone number to call, dial the Computer Services Information Line.

Central System Computers
To use these systems, you need a user name and password, which you get when you open an account.
Qualified users can apply for grants to handle some computing related costs.

Machine ID
☐ EPX (UNIX), NVE (NOS/VE), VX (VMS), VZ (VMS) .... 626-5592 ..... Monday–Friday 8:30 am to 4:30 pm
   1 Nicholson Hall Walk-in Consulting .... Monday–Friday 10 am to 4 pm
☐ CMS (IBM), 99B Coffey Hall Walk-in Consulting .... 624-6235 ..... Monday–Friday 9 am to 4 pm
☐ MEDLINE .... 626-8366 ..... Monday–Friday 8 am to 4 pm

LUMINA
If you have trouble connecting to LUMINA call .... 626-2272 ..... Monday–Friday 8:30 am to 4:30 pm

Microcomputers and Workstations
Software, hardware, peripherals, local area networks .... 626-4276 ..... Monday–Friday 9 am to 4 pm
☐ East Bank .... 152 Shepherd Labs .... above .... above
☐ West Bank .... 93 Blegen .... above .... Tuesday and Friday 1-4, Thursday 9-noon
☐ St. Paul .... 99B Coffey Hall .... above .... Monday and Friday 9-noon, Wednesday 1-4 pm

Central System, Microcomputer, and Workstation Consultants: B. Alberti, F. Anklesaria, R. Baird, J. Bergman, T. Bonfiglio, S. Brehe, S. Collins, S. DeJarlais, M. Dunham, P. Goblirsch, G. Gonzalez, C. Griesel, S. Hakomaki, S. Hickman, M. Hu, J. Jabr, J. Jannett, D. Johnson, P. Kachelmyer, M. Kelleher, D. Larsen, P. Lindner, M. McCahill, P. Oberg, K. Olson, N. Ostrom, J. Pearson, K. Pearson, C. Plaisance, E. Schleske, C. Squires, K. Teder, E. Thayer, A. Thomas, H. Tonsky, D. Torrey, S. Traxler, L. von Munkwitz-Smith

General Information

Acting Associate Provost *with Special Responsibility for Computing & Information Systems on the Twin Cities Campus*
   Donald R. Riley 626-9816

Computer and Information Services
   Distributed Services and Planning .... Shih-Pau Yen
   Engineering Services .... Don Clark
   Networking Services .... Lawrence Liddiard
   Software Services and Operations .... Lee Croatt
   St. Paul Services .... Mel Sauve
Adaptive Technology Services, voice 6-0365
   TDD 4-4037
Central System Accounts, IBM CMS 4-7788
   EPX, NVE, VX, VZ (includes MEDLINE) 6-8366
Data Entry Services, Minneapolis 6-8351
   St. Paul 4-7297
Equipment Repair and Warranties (Engr. Serv.) 5-1595
Faculty Resource Center 6-1090
Network Addresses (130 Lind) 5-8888
Public Computer Facilities (obtaining access) 5-1300
Software Services 5-2303
Tape Librarian (Lauderdale Computer Facility) 6-1838
Training, Course Registration (190 ShepLab) 5-1300

Other Departments
Computer Desk, Williamson Hall Book Center 625-3854
AIS (Admin. Info. Services) Customer Assistance 6-0505
Supercomputer Center Help (3030 SCC) 6-0808
Telecommunications, Networking Services:
   Information 6-7800
   Repair 5-0006

Access Information

✍ Internet addresses.
☎ Terminal settings for dial-up access to these systems are 8-1-N (8 data bits, 1 stop bit, no parity) unless otherwise noted. The phone number you use may depend on the modem's bps (bits per second) or baud rate.

▷ Dial-in Server: 626-**0300**, **-1200**, **-2400**, **-9600** (at 9600 V.32 standard and MNP level 5 error correction). Telecomm supports 8-1-N serial access to the TCP/IP network at 300, 1200, 2400, and 9600 bps.

LUMINA: 300/1200/2400 .... 625-6009 ☎
   _____ LUMINA.LIB.UMN.EDU ✍

CMS (IBM) at 7-1-even
   1200/2400 .... 624-4220 ☎
   19.2 campus data phone .... 4-4220 ☎
   _____ VM1.SPCS.UMN.EDU ✍

EPX, VX (includes INFO), VZ, NVE (includes MEDLINE)
   300, 1200, 2400, 9600 .... see *Dial-in Server* ☎
   300/1200/2400 at 7-1-even .... 626-1630 ☎
   _____ EPX *or* VX *or* VZ *or* NVE.CIS.UMN.EDU ✍

EPX, NVE (includes MEDLINE)
   300/1200/2400 .... 625-1445 ☎
   up to 19.2 campus data phone line .... 3-2400 ☎
   _____ EPX *or* NVE.HSCS.UMN.EDU ✍

Computer Consultant (log in as gopher)
   300, 1200, 2400, 9600 .... see *Dial-in Server* ☎
   _____ CONSULTANT.MICRO.UMN.EDU ✍

Consulting via E-mail: *low-priority central system questions*
☐ Format: _____ CONSULT@MACHINE.NAME.UMN.EDU
☐ Example: _____ CONSULT@EPX.CIS.UMN.EDU ✍

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Computer and Information Services

The University of Minnesota is committed to the policy that all persons should have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.

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Free E-mail Services (also see Book Center Notes)
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❑ POPmail users can receive notices about updates and upgrades by sending E-mail to: popmail-news-request@boombox.micro.umn.edu
❑ Our Vacation/Sick Leave software users can join a forum that includes update information and usage hints by sending E-mail to: VSL-news-request@boombox.micro.umn.edu

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