UNIVERSITY OF MINNESOTA

Computer and Information Services Newsletter

Information Services **Volume 1, Number 8**

February 1992

News and Announcements

MasterCard and Visa Charges

Beginning February 17 you can charge your Minnesota Book Center purchases on your MasterCard and Visa accounts.

Sun Site Licensed Software

We purchased a site license for eight software products sold by SunSoft. This package, referred to as the 8-pack or Scholar Pack, contains four of the most popular compilers and four graphics products.

The Four Compilers

The four compilers included in the 8-pack are Sun C, Sun C++, Sun Pascal, and Sun Fortran. All of these compilers are based on the SPARCompiler optimizing back end. All come with the SPARCWorks toolset, an OPEN LOOK version of the dbxtool debugger, the SourceBrowser, and other development tools.

- Sun C consists of two highly optimized compilers: Sun ANSI C and Sun C, which supports an enhanced version of K&R C. Sun C is a greatly enhanced version of the C compiler that is bundled with SunOS systems.
- Sun C++ 2.1 is an object-oriented programming language based on the C programming language. It is based on and includes all the features of AT&T's cfront 2.1 C++ translator.

News continued on 194

POPmail II 2.0.1

Electronic Mail for Any Mac

POPmail II is an easy-to-use electronic mail program for the Apple Macintosh. It differs from our previous versions of POPmail in that it does *not* require HyperCard. It is a stand-alone program that will run on all Macs from a Macintosh Plus to the new Quadras and PowerBooks.

A HyperCardless POPmail

We designed the new version of POPmail with the intention of continuing the availability of E-mail connectivity for all Macintosh users. You might ask what we mean by this. Well, over time HyperCard has evolved and many new features and capabilities have been added. While this has been great for owners of more powerful machines that are loaded with memory and hard disk space, it has not been as nice for people who own some of the earlier Macintoshes.

As HyperCard has evolved it has come to require more RAM (Random Access Memory), the memory used to run software. It's also increased in size, requiring more hard disk space. As a result of these changes we noticed that HyperCard became slower than many users would like.

Our new version of POPmail blends the old and the new. It carries on features from older versions and adds features that many of our POPmail users requested. Below we will explain the *new* features of POPmail. We've included screen shots showing POPmail's new appearance.

A Three Window View

One of the more significant new features is the ability to have more than one window open at a time. POPmail II allows you to have one sender window, one browser window, and one archive window open. In previous versions this was not possible.

One advantage of multiple windows is the ability to have the original message open while composing a reply in the sender window.

The Message Sender

We're starting with the *Message Sender* window because it's the first one most people will use. It is pictured in Figure 1. You use this window's recipient box, subject box, message box, and buttons to compose and send messages.

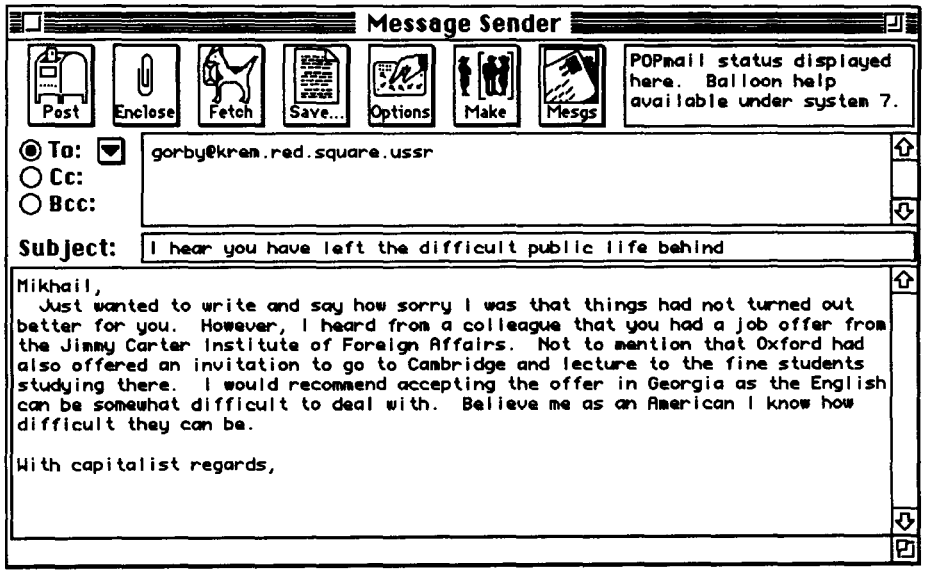
- To: use the recipient box to type in the E-mail address(es) of the person(s) to whom you are sending a message.
- Subject: use the subject box to type in the subject of your message.
- Message (unlabeled): type the text of the message that you are sending in this box.
- Buttons: click on a button to perform a typical action, such as fetch mail.

Carbon and Blind Copies

The recipient (To) box has additional options that send copies of your message to other individuals: carbon copy (Cc) and blind carbon copy (Bcc). Selecting these options allows you to type in the E-mail address(es) of people you want to receive a copy of your message. Bcc is a new feature that allows you to send a copy to someone without the other recipients being aware that another person received a copy.

"Cc" includes the E-mail address(es) of those who receive a copy in the message's header, while "Bcc" does not include that information in the message's header. However, when you send a blind carbon copy of a message, the Bcc recipient can see the other direct and carbon copied (but not other blind copied) recipients.

Figure 1: Message Sender Window

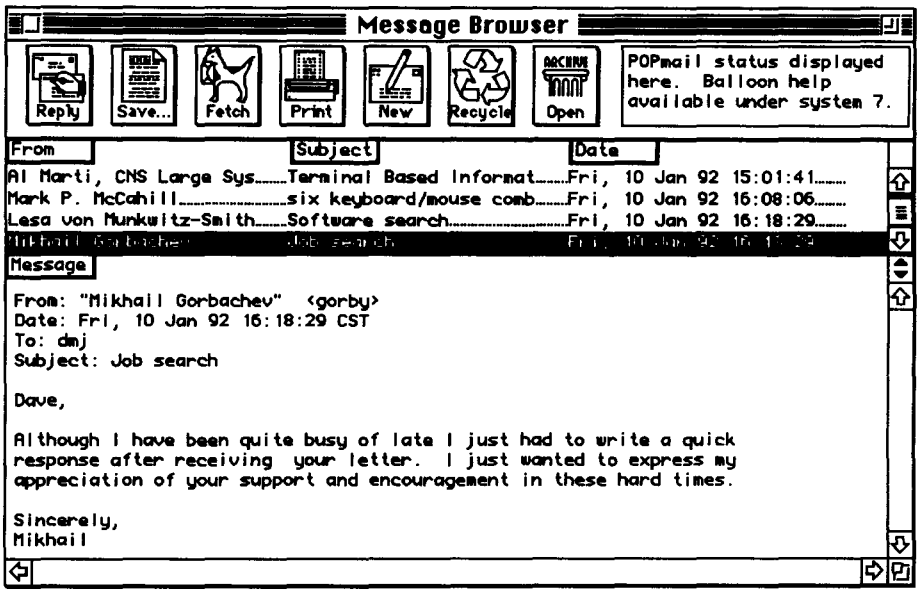


Convenient Mailing Lists

You can avoid typing long and tedious E-mail names and addresses by setting up mailing lists. A mailing list can contain one or many names and addresses. To set up a list, click on the *Make* button.

To use a group that has already been set up, click once on the ▼, shown beside the *To:* in Figure 1. When you click on the ▼, a pop-up menu displaying an alphabetized list of the groups you have defined appears. Select the group you want to use; release the mouse button, and the E-mail addresses of the group you selected will automatically appear in the recipient box.

Figure 2: Message Browser Window



The Message Browser

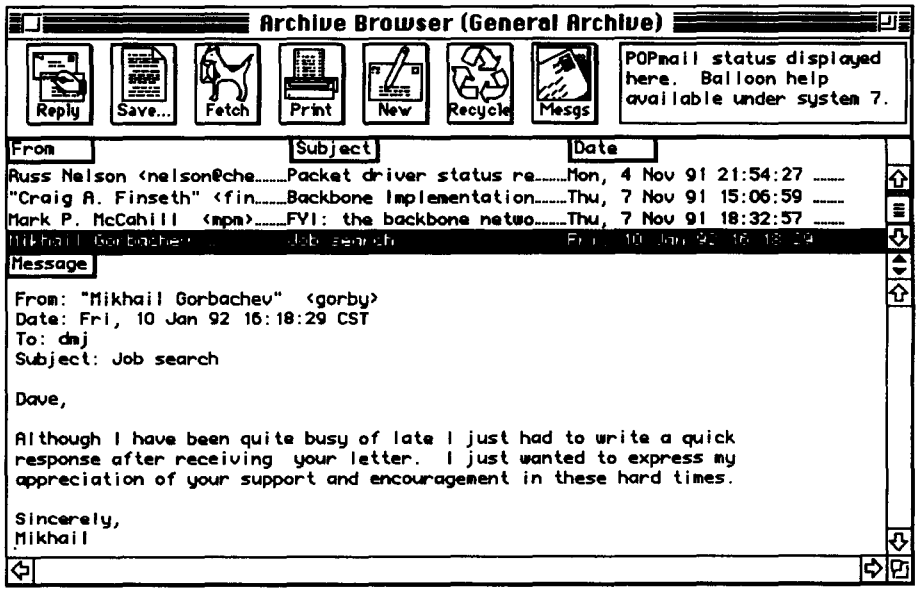
The *Message Browser* window is the first window you see when you start up POPmail. You use it to retrieve messages that are waiting for you.

As shown in Figure 2, the Message Browser window has three main sections:

1. a row of buttons
2. a message list with information about the sender (from), subject, and date
3. a section that displays the message.

You can enlarge or shrink the message list and message sections by dragging the line that separates the two.

Figure 3: Archive Browser Window



The Archive Browser

Use the *Archive Browser* to read messages that you have stored (archived) for future reference. You can read messages from the default folder or from a custom folder you have created to store messages that pertain to a particular topic.

As shown in Figure 3, the Archive Browser looks and acts much like the Message Browser. It has the same three main sections as Message Browser, only the buttons are different.

Hardware/Software Requirements

To use POPmail II you need the following equipment:

- ❑ an Apple Macintosh with at least 1MB of RAM and a hard disk
- ❑ System Software 6.0.7 or later
- ❑ MacTCP network drivers version 1.0 or later (free copies are available for the University community).

Mail Server

You also need a mail server setup:

- ❑ an account on a UNIX or other system that is running a POP2 or POP3 server or an account on a Macintosh that is running the MailStop software
- ❑ a LocalTalk, PhoneNet, or EtherTalk connection between the Mac and the mail server.

You can set up a $20 per year POPmail-only account on the UX (ENCORE UNIX) central system. To do this call 626-5592.

Two other central systems support POP2 and POP3: the VX and the EP/IX. If you have an account on either of these mainframes, you can use them as your mail server.

Obtaining the Software

You can get the POPmail software, documentation, and MacTCP drivers from the Mac Information Server. Look on the *information* volume for the *Communications* folder. The folder labeled *POPmail II* contains the latest release.

If you prefer, you may obtain POPmail II via anonymous ftp from

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BOOMBOX.MICRO.UMN.EDU
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Look in the directory named */pub/POPmail/macintosh/2.0.1.*

Demonstrations and Questions

If you have specific questions, or would like to see a demonstration of POPmail II, call or visit the Micro-computer HelpLine.

Software Services: the Expansion Continues

Our Software Services group continues to expanded its services to the University community. With many years of experience in creating customized applications for central systems computers (VMS, UNIX, NOS/VE, and CMS), we are now developing customized applications for microcomputers as well, using software such as FileMaker Pro, 4th Dimension, Paradox, Excel, and dBASE.

We can assist you with:

- ❑ Analyzing your computing requirements.
- ❑ Designing new database systems and extracting data from existing systems.
- ❑ Planning and running statistical tasks using packages such as SPSS, SAS, and BMDP.
- ❑ Creating or modifying special-purpose programs in a variety of computer languages.
- ❑ Reading and writing 9-track tapes.
- ❑ Uploading or downloading data from central systems to floppy disks (both 5-1/4 and 3-1/2-inch).
- ❑ Coordinating any data entry services your project may require (see our *Data Entry Services* article on page 189).

These customized programming services complement the services we introduced in our November 1991 newsletter, which include:

- ❑ Installing and upgrading system software and applications for Macintoshes, IBM-compatibles, UNIX workstations, DEC VMS systems, and various other platforms, and
- ❑ Removing viruses and installing virus protection on microcomputers.

Call us. We will be happy to meet with you to discuss your particular computing needs.

For More Information

For more information, including rates for these services, contact Cheryl Vollhaber at 625-2303 or sent internet E-mail to:

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CLV@VX.ACS.UMN.EDU
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Data Entry Services

Did you know that we offer data entry services? We provide a variety of data entry services to assist you with your research projects.

These services include:

- ❑ Assistance in preparing your questionnaire or survey for optimum efficiency.
- ❑ Assistance in transferring data files.
- ❑ Data entry and verification from most types of source documents, such as coding sheets, questionnaires, and survey forms.
- ❑ Word processing.

We can return your data in a variety of formats, for example:

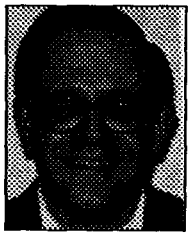
- ❑ Via electronic transfer, such as Electronic-mail or FTP.
- ❑ Directly into your central system account.
- ❑ On 1600, 6250, or 38K bpi tape (compatible with all central system computers).
- ❑ On 3.5- or 5.25-inch diskettes.
- ❑ On paper.

Call Us Weekdays: 8 am to 4:30 pm

For more information or to discuss your project, call one of the phone numbers listed below any weekday from 8 am to 4:30 pm.

Minneapolis 626-8351
St. Paul 624-7297

➧ Richard Hotchkiss



Goodbye Dick. From the original *Numerical Analysis Center* to the current *Computer and Information Services*, you gave the University 28 continuous years of outstanding service before you logged out to retire.

Database Computing: Part 1

The University supports several Database Management Systems (DBMS). You use these DBMSs when you connect to LUMINA, bulletin boards, and information services. All these DBMSs collect and store data. The way data is stored in a database helps speed access to that data as information is retrieved.

An Introduction

This article is an introduction to database issues in regards to choosing a database package, and it is part-one of a two-part article.

A computerized database is a collection of data stored on diskettes, hard disk drives, magnetic tapes, or other media. Database programs are designed to retrieve, display, update, add to, and delete information. Many people can access this data and share it in different ways.

The data in a database is a set of related information that may be pertinent to a research project or departmental operation. In a research project, for example, the data might include:

- ❑ Recorded observations of the subject.
- ❑ Computed data derived from collected data.
- ❑ Transformed data or information gathered from several observations and merged into the main database.

A database offers advantages over ASCII (plain text/text only) data files:

- ❑ It provides data independence, that is, the organization of the data and access to it is built within the programs that run the database.
- ❑ It can reduce inconsistencies in data and provide integrity. A program that manages the database can, for example, be set to reject an employee who claims to have worked for more hours than exist in a week or fictitious employees who are not in personnel records.
- ❑ It can eliminate redundancy, reducing the quantity of data that actually needs to be stored. An application within a database can use one occur-

rence of an employee information record and refer to it from any application of the database.

- It allows users to share data by eliminating the need to duplicate information.
- It provides security by allowing only authorized users to access the information.

DBMS packages allow you to present data in a standard data type during the data entry phase. During the retrieval phase and when you generate printed reports, they allow different representations. Standard data types consist of the following:

1. Numeric data stored as integers or real numbers. (The scale being fixed or floating point and precision – number of digits – for accuracy.)
2. A character string of letters, digits, or special symbols.
3. Data encoded fields to represent data as a different value, for example:
   1 = Alabama, 2 = Arkansas, ... *or*
   1 = female, 2 = male.
4. Date and Money.

Database Architecture

Database programs define an architecture within the database; that is, they organize the stored information so that the users of the database can access the information quickly and efficiently. There are three general kinds of architecture: hierarchical, network, and relational.

The Hierarchical Organization

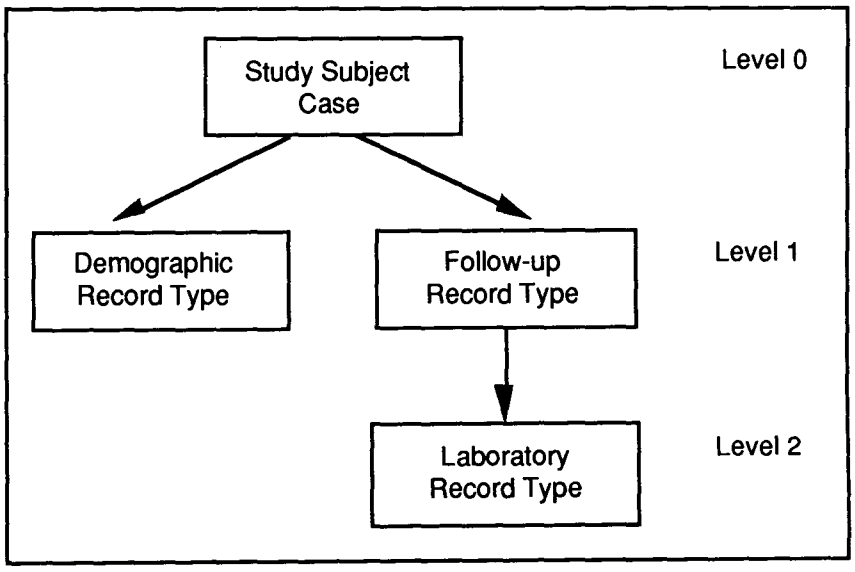
In the data records collected in a research study, an organizational structure is usually quite evident. In a controlled clinical experiment, for example, many records will be collected on each individual in the experiment. It makes sense to keep all of the records collected on an individual together as we would in a file folder. The collection of records on one individual is called a *case* in database terminology. The records within this case can be organized naturally into categories or record types (for example, demographic information, follow-up outcomes, and laboratory tests).

When a case has more than one record of a particular type (e.g., when more than one follow-up record has been collected), the researcher will define a variable to distinguish one follow-up record from another.

So we've arrived at a logical organization of data records into two levels: first into cases and then into record types within cases. This type of organizational structure is called a hierarchy. We have organized our data for this study into a two-level hierarchical model. The hierarchical model is a very natural one and has been a very popular model for database management systems.

The hierarchical model is not limited to two levels. We could, for example, add another level to the hierarchy in the clinical trial example. Suppose that on some follow-up measurements we order a laboratory test when certain indicators are present. Thus, a lab record will be collected for some of the follow-up records. This lab record will be stored in a laboratory record type within the appropriate case. A particular laboratory record is owned by the follow-up visit record that generated it. We indicate this ownership by placing the laboratory records at a lower level in the hierarchy, below the follow-up records that own it. Figure 1 illustrates the hierarchical model for the clinical trial we've just discussed.

Figure 1: Hierarchical Model



We can see that a hierarchy creates a nested or tree-like structure among the records. As a tree is composed of a root and trunk section that divides into branches that continue to divide until they finally terminate in the leaves, so the records of a study can often be organized hierarchically, as shown in Figure 1.

Conclusion

The hierarchical structure is a one-to-one or one-to-many relationship. Figure 1 shows that one case owns many records within the case, and the follow-up records within a case own, at most, one laboratory record. This hierarchical model is not suitable for handling a structure that requires many-to-many relationships.

The Network Organization

Consider an extension to the clinical trial study we've used as an example. Suppose that a group of doctors are involved with this study. Each patient may see many doctors. Each doctor will certainly see many patients.

For each doctor who is involved in the study, we have available a collection of information that we also want to organize and have available in our database. For example, we have a record giving general information about the doctor: one record for each hospital with which he is affiliated and one record for each time he has seen a subject in the study. Thus, the data records for the doctor cases in our study can be organized as a two-level hierarchy.

Our particular doctor's records are collected into a case and organized into three record types within the case.

We now have two sets of cases that contain the data records of interest in this study: the subject cases and the doctor cases. Within each case, the data records are organized into simple hierarchies. However, the hierarchy does not enable us to represent the relationships between these two types of cases, where each follow-up subject record in a doctor case "owns" a particular subject.

The relationships we have described between the study subject cases and the doctor cases are easily handled by a *network* model superimposed onto the separate case structures.

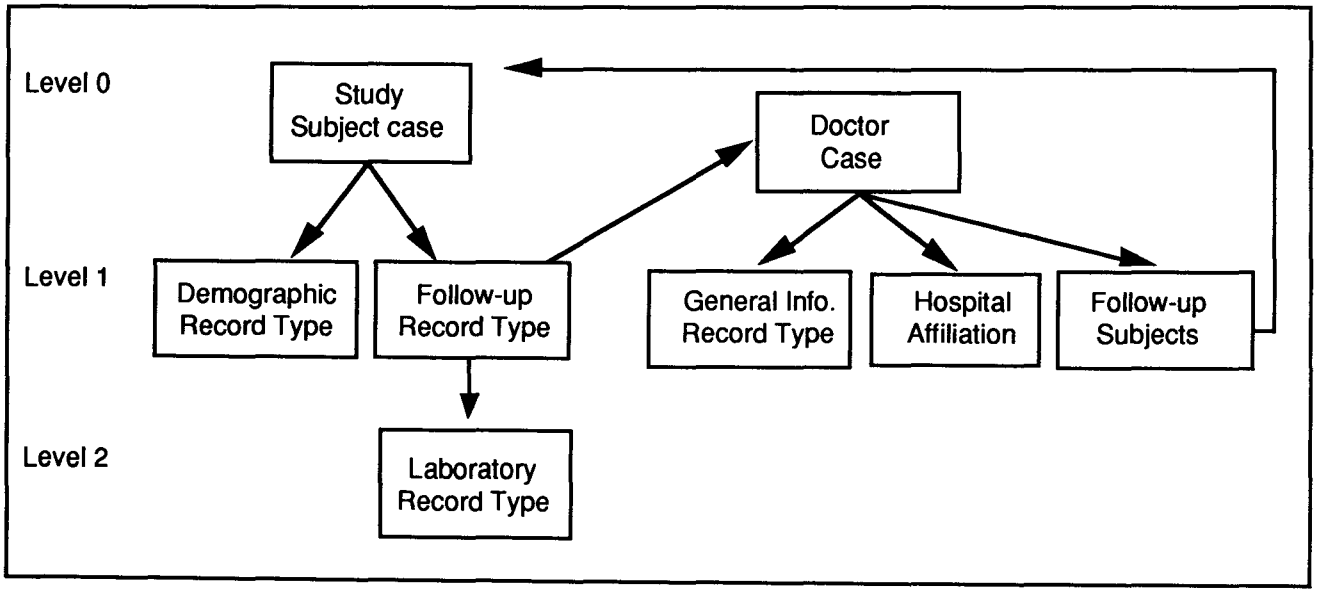
A network is best illustrated by extending Figure 1's subject case diagram to include the doctor cases and to depict network relationships among these cases.

Conclusion

In Figure 2 we see that our example forms a network, since the subject's follow-up records contain the doctor's name. Likewise, each doctor's follow-up record type contains each patient's ID. The subject records identify many doctors, and the doctors' records identify many subjects, creating a many-to-many relationship.

The network is a fairly simple, pre-defined relationship. Sometimes relationships are much more complicated and depend primarily on the point of view of the researcher at

Figure 2: Network Example



the moment. In this case, we need a more flexible organization.

The Relational Organization

A relational database is the most flexible of databases. It considers each of the record types as a separate file, each similar to a spreadsheet. These record types are then tied together by common variables among the records. You can retrieve data with complex relationships, often quite simply, by using a select query language (SQL). SQLs are designed for the non-programmer. If you have programming skills, you can retrieve data of almost any relationship using more formal procedural languages, which are similar to higher-level programming languages like Fortran or Pascal.

In our relational example we want to keep track of the names of all of our suppliers, their inventory of widgets, and where they are located. The widgets we use have multiple relationships: each supplier carries more than one widget and each widget is carried by more than one supplier. If we simply have one record of each supplier/widget combination, our database will have many duplicate entries. We can expect that the supplier lists will contain at least one contact person and their associated telephone number and address for each widget that the supplier carries. Likewise the widget list will include brand, manufacture, wholesale cost, catalog number, etc. If we use a relational database we do not need to repeat the same information over and over for each supplier/widget combination.

Managing Data

The relational model manages data by defining a strict relational algebra that is applied to the data sets (called relations) making up a study. The data for each record type in a study is stored in individual data sets (relations). The relational algebra enables you to sort, merge, join, and project records from one record type to another record type. Each record type contains identifiers to link records of one record type with records of another record type as you like. Using the relational algebra properly, you can accomplish almost any type of retrieval from your database.

In Figure 3 the columns provide natural links between the tables. For example, the first column of the S (Supplier) and P (Parts) tables have links into the SP (Supplier-Parts) table. These links enable you to learn the quantity that exists to fill an order.

The first row of the SP table contains the S1 and P1 values with a quantity of 3. Through the S# link of table S, we find that supplier S1 has the supplier name (SNAME) *Simpson* and is located in *Athens*. Through the P# link of table P, we learn value P1's part name (PNAME) is *nut* and that this nut has a weight of *12*.

Conclusion

When records are related through links, you can simultaneously examine, print, and update data from two or more tables.

Figure 3: Relational Example

S

S#	SNAME	CITY
S1	Simpson	Athens
S2	Jones	Paris
S3	Clark	Paris
S4	Adams	Athens

SP

S#	P#	Qty
S1	P1	3
S1	P2	2
S1	P3	1
S2	P1	4
S2	P2	3
S2	P3	1
S3	P2	2
S4	P1	4
S4	P3	1

P

P#	PNAME	WEIGHT
P1	Nut	12
P2	Bolt	17
P3	Washer	14

To Be Continued

Next month we will look at how to choose a software package for various applications, whether your data files are small or large. We will also look at what is available on various systems.

New Microcomputer Software In Shepherd Labs

We purchase and receive a lot of commercial software that we make available for your evaluation. This software is kept in the Microcomputer HelpLine in 125 Shepherd Labs. Although you may not remove the software from the HelpLine, you may test drive it for a reasonable time in the lab. When you test drive the software you may have to navigate through the manual(s) on your own. We do not support or use all of the software that is in our library.

Below are lists of recent additions to our commercial software library.

New IBM Software	Version
Ami Pro for Windows	release 2
EXP	2.1
Lotus 1-2-3 for Windows	1.0a
Norton Utilities	6.0.1
PC Tools	7.1
Personal R:BASE	1.0
PowerPoint for Windows	2.0.1
Publisher (Microsoft)	1.0
Toolbook	1.5
Word for Windows (Microsoft)	2.0
WordPerfect for Windows	1.0
Works for Windows (Microsoft)	2.0

New Mac Software	Version
4th Dimension	2.2.2
Authorware Professional	1.7
Disk Express II	update to 2.07
Excel	3.0a
MacTools Deluxe	1.2
MacWrite II	1.1v2
MathCAD	3.0
Norton Utilities	1.1
Pro-Cite	2.0
Resolve (Claris)	1
SoftAT	2.5
Word (Microsoft)	5.0
Works (Claris)	1

Software Policy Overview

If you need to use software to complete your projects, you can use the software in the Public Computer Facilities. For more information on these facilities, see our October 1991 newsletter.

We try to maintain a variety of popular and significant products so you can look at the software and manuals out of their shrink-wrap and try them out on our equipment. However, we do not have the funds to buy and update all software that a community as diverse as the University would like to have available. We do not always update our software as new versions are released. For example, we receive demonstration packages for which we have no update privileges. We also do not update software that has been replaced by other products that offer a better value.

Vacation/Sick Leave Special Interest Group

We developed a Vacation/Sick Leave (VSL) application that is designed to make recording Civil Service employees' accrual and use of leave benefits easier. Its calendar format helps make the program intuitive and easy to use. To date we have distributed over 175 free copies of the program to IBM and Macintosh users.

E-mail Special Interest Group

We recently created an electronic mail VSL special interest group. This group is set up to be a forum for discussing news, updates, problems, hints, or other issues related to VSL. To participate in the forum send Internet or Bitnet E-mail to:

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VSL-news-request@boombox.micro.umn.edu
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Folks on the PROFS mail system can mail requests to:

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VSLREQ
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❧ News from page 185

- Sun Fortran 1.4 combines an ANSI Fortran 77 development system with VAX VMS Fortran 4.0 extensions.
- Sun Pascal 2.1 is an optimized, feature-enhanced Pascal compiler that conforms to OSI and ANSI standards.

The Four Graphics Products

The four graphics products included in the 8-pack are: SunPHIGS, SunVision, XGL, and OpenWindows DevGuide.

- SunPHIGS 1.4.1 is a graphics environment and library for developing 3-D applications. It conforms to the ANSI/ISO Programmers Hierarchical Interactive Graphics System (PHIGS) standard. It also provides much of the advanced functionality contained in PHIGS+.
- SunVision 1.1 is a collection of libraries and interactive tools. It supplies an environment for the visualization of applications and advanced animations. SunVision provides software for high-quality (Renderman compatible) rendering, volume rendering, and interactive graphics.
- The XGL 2.0 environment provides rich 2-D and 3-D graphics capability for immediate-mode applications and support for the GX accelerator. XGL requires OpenWindows Version 3.
- The OpenWindows Developer's Guide (DevGuide) is a user interface builder that enables developers to graphically and interactively build an OPEN LOOK user interface for an application.

Obtaining the Software

This software is available only on CD-ROM. (Older versions of the software may be available on 1/4-inch cartridge tape.)

University Departments may obtain the software media for these products as well as SunOS 4.1.2 through us. We hold a site license for these products and coordinate their distribution. Individual faculty, staff, and students are not covered by the site license.

Fees, Registration, Upgrades

The license runs on an annual basis from December 1 through November 30. Once your workstations are registered, you have the privilege of borrowing the software media from us at any time during the registration year.

The departmental costs are as follows:

Product	Single Workstation Cost
SunOS 4.1.2	$ 30
Scholar Pack (8 products)	750
Individual compilers/libraries: per compiler	300
Upgrades	0

To register for the site license program, contact our Shepherd Labs office at 625-1300. They can provide you with the registration form you must complete. You also must submit a CUFS IV document to transfer the appropriate funds to us. You should complete the bottom portion of the form; we will fill in the numbers for the upper portion. Once these forms have been submitted, you may arrange to borrow the software media.

When Sun provides upgrades to their products, your department can borrow the media to upgrade at no additional cost.

Order Documentation from SUN

You can purchase documentation directly from Sun. Their telemarketing service phone number is 1-800-USA-4SUN (1-800-872-4786). Sun says that customers will receive their order within five days.

❧ Hewlett-Packard IIP Plus

Hewlett-Packard's least expensive laser printer, the LaserJet IIP, was recently replaced by the LaserJet IIP Plus. The significant difference between the IIP and the IIP Plus is speed. The IIP Plus has a new heatup feature, a faster processor (16MHz versus 10MHz), and faster parallel I/O than the IIP. These features enable the IIP Plus to perform closer to its 4 pages per minute capability. Overall paper handling is also improved on the IIP Plus. The standard input paper tray holds 70 sheets (instead of 50), and its average duty cycle is 8000 pages a month (instead of 6000).

Compatibility

The IIP Plus supports the same fonts, memory boards, and toner as the original IIP; and if your software supports the LaserJet IIP, it will work with the IIP Plus.

IIP Plus versus IIIP

The table below features some differences between HP's two low-end laser printers: the IIP Plus and the IIIP.

The IIIP is designed to appeal to customers who need features such as an AppleTalk interface or resolution enhancement.

LaserJet Discount Price	IIP Plus $745	IIIP $899
Resolution: dots per inch	300	300
Capacity		
• maximum pages per minute	4	4
• duty cycle; pages/month	8000	8000
Paper Input		
• standard/70 page tray	1	1
• optional /250 page cassette	1	1
Fonts		
• bitmapped internal	14	14
• scalable internal	0	8
• cartridge slots	1	1
Memory		
• standard	512K	1MB
• slots	2	2
Interfaces		
• parallel	Y	Y
• serial	N	Y
• AppleTalk option	N	Y
Printer Language		
• HP PCL level	4	5

➧ New Mac Course: Word 5.0 for Word 4.0 Users

This new 2.5-hour class is for Macintosh users who are already familiar with Microsoft Word 4.0 and want a quick review of the changes and new features in Word 5.0. The purpose of this class is not to teach you how to use all the new features of Word 5.0. Instead, it will give you a taste of what the program has to offer and introduce you to the new features. Topics covered include changes in the menus, new ways to perform familiar tasks, new file management features, sharing data, print merge helper, editing tools, voice annotation, and other features as time allows.

❶ Prerequisite: Mastery of *Mac Fundamentals*
❷ Prerequisite: Mastery of Word 4.0.

Offered March 6 from 9:30 am to noon.
Fees: $10/10/30

Please note: Instructors will not slow down classes to accommodate students who have not mastered the stated prerequisites.

➧ Other Class Openings

As we went to press we still had openings in some of our other classes. You have time to register for the classes listed below.

- ❑ *Central Systems:* Introduction to NOS/VE; NOS/VE Full Screen Editor; NOMAD2; and Electronic Mail on NOS/VE.
- ❑ *Microcomputer - IBM:* Excel 3.0 for Windows; Beginning Lotus 1-2-3 version 2.2; and Object Oriented Programming using Turbo Pascal 6.0.
- ❑ *Microcomputer - Mac:* Mac Fundamentals; Mac Graphics Fundamentals; Introduction to Word; Intermediate Word 4.0; Mail Merge with Word 4.0; Intermediate 4th Dimension; Introduction to FileMaker Pro; and Using the Vacation and Sick Leave Program.

For dates, descriptions, fees, and prerequisites, refer to the Winter 1992 *Special Short Course Edition* of our newsletter or call 625-1300.

Registration and Fees

Registration is handled by Computer and Information Services. You can register in person at our office in room 132 Shepherd Labs, Monday–Friday, 8 am to 4 pm or by mail. Fees must accompany your registration. You can pay fees with cash, check, or a University Intra-Institutional Voucher. In the course descriptions, fees are shown in ascending order and apply to the following three groups:

1. University students
2. University faculty and staff
3. Others

Classes are filled in the order registration is received. The deadline for registration is 4 pm on the working day before the class begins. For additional registration information, call 625-1300.

Intra-Institutional Voucher (IV) Payments

The IV replaces the Journal Voucher. If you pay by Intra-Institutional Voucher, credit the following Computer and Information Services account (our new Org is 2001):

Area	Org	Sub Org	Rev Src	Sub Rev
357	2001	05	4410	20

The *debit* account must use Object 7400 and Sub Object code 20. Please include a name and phone number so we can call you if we have questions. Departments *must* mail or bring the IV to our office in 132 Shepherd Lab for registration. Currently we will *not* accept on-line vouchers. IVs sent to the wrong location or on-line will *not* be registered, and we do not accept photocopies of IVs.

Registration by Mail

Send fees and registration materials to Computer and Information Services. Campus mail users can use this address:

Short Course Registration
Computer and Information Services
132 Shepherd Labs

U. S. Postal Service users should include the following lines to the address listed above:
University of Minnesota
100 Union Street SE
Minneapolis, MN 55455-0421

Cancellations and Refunds: 625-1300

If you cannot attend a class, call 625-1300 to arrange a refund. We need to hear from you so that we can contact people on our waiting lists. If you want a refund, we must receive your cancellation notice two working days before the beginning of a class. If we must cancel a class, we will refund your registration fee in full.

Other Training Resources

We own over 100 training packages for many popular microcomputer software programs. These training packages are available to University departments, current employees, and students. There is no fee for using these packages, and you may check them out for a limited time.

Unless you use our Self-Paced Training Centers to use these materials, you must supply your own equipment and software. To reserve or check out materials, phone 625-1300 or stop in room 132 Shepherd Labs.

Central System News

NOS/VE and EP/IX Moved

NOS/VE and EP/IX Central Systems

As part of our ongoing consolidation and cost saving efforts, the NOS/VE and EP/IX computers have been moved from M39 Masonic to the Lauderdale computer facility to reduce operations staffing requirements.

Printers and Documentation in M39

For your convenience, printers and terminals, as well as application forms, free handouts, and reference materials for NOS/VE and EP/IX will remain in M39 Masonic.

The room will be staffed from 8 am to 6 pm Monday through Friday.

Cost Effective Offline Storage

We strongly encourage our NOS/VE users who still use tapes to transfer their data to NOS/VE's offline storage system. This storage system is currently the most convenient and cost-effective way to store large amounts of data.

Simple commands enable you to specify that your data be moved offline, according to criteria you establish. For more information on offline storage, see our *Offline Storage Options on NOS/VE* Brief or call the NOS/VE Help Line at 626-8366.

M39 Tape Users Must Call 625-3644

Magnetic tapes currently stored in M39 will be considered transient tapes.

When you wish to have a tape mounted on NOS/VE, call 625-3644 between 8 am and 6 pm Monday through Friday. The tape will then be sent by shuttle to Lauderdale (the shuttle runs twice daily) and returned to you after processing.

Mail/VE: E-Mail on NOS/VE Upgraded


Software on NOS/VE Central System

Electronic-mail on NOS/VE has been upgraded. This version of Mail/VE is significantly faster and has several new features as well as a slightly reorganized set of function keys.

Function key locations were slightly modified to provide better consistency between screens. The Read and Delete functions were moved from function key 4 to 3. The Forward Letter function moved from function key 3 to 2, and the List function on the Mail List screen was moved to a menu within the Options function key.

The delete function now marks letters for deletion but does not actually delete them until you exit Mail/VE. This means you can still ***undelete*** your letters before exiting, if you decide to keep a letter.

The TOP and BOTTOM (shifted FWD and BKW) keys now work. Pressing FWD at the end of the letter list returns your cursor to the beginning of the list, and pressing BKW at the top of the letter list moves your cursor to the end of the list.

For more information, refer to our document *Electronic Mail on NOS/VE*, January 1992 revision, or call the NOS/VE Help Line at 626-8366.

Laser Printing from VAX WordPerfect


Software on VX VAX VMS Central System

When we announced VAX WordPerfect in the July 1991 *ACS Newsletter*, we didn't include instructions on how to print PostScript files on laser printers because the feature didn't work on our VAX system. Now our VMS systems staff has written a program called *WPFIX* that solves the problem.

When you ask WordPerfect to print a document, it automatically makes a PostScript copy of the file on disk. To actually print the file you exit WordPerfect, use WPFIX to modify the file for our VMS system, and then use the VMS PRINT program to send the file to a laser printer.

Setup

Setting up WordPerfect for laser printing is a three-part task you only have to do once. WordPerfect retains the settings in files called WPCORP_LOCALSET.VSET and APLASPLU.PRS in your login directory. Later, you can use WordPerfect with files in any directory, and PostScript laser printer files are created in that same directory.

1) Specify the Location of .PRS Files

Your first task is to specify the location of .PRS files by using the logical name WPCORP$PTRPATH (which is equivalent to SYS$LOGIN, your login directory).

To get into the WordPerfect program enter the VMS command:

```
WP
```

Next bring up the *Setup* display by entering:

```
<ctrl> f S E
```

From the resulting menu, enter *6* to select the *Location of Auxiliary Files* menu. From this menu, enter 5 to select *Printer Files* as shown in Figure 1.

Then define the special logical name by entering:

```
WPCORP$PTRPATH
```

Figure 1: Use <ctrl> f S E to Display the Setup Menu

```
Setup: Location of Auxiliary Files

     1 - Backup Directory                  WPCORP$SCRATCH

     2 - Hyphenation Module(s)

     3 - Keymapping -  Keyboard Files      WPCORP$WP50_KEYBOARDS:.VWPK
                         Macro Files       WPCORP$WP50_MACROS:.WPM

     4 - Main Dictionary(s)                WPCORP$WP50DIR

     5 - Printer Files                     [redacted]

     6 - Style Library Filename

     7 - Supplementary Dictionary(s)       SYS$LOGIN:.SUP

     8 - Thesaurus                         WPCORP$WP50DIR

     9 - Documents


Selection: 5
```

Finally, enter:

```
<ctrl> z
```

to go back to the initial WordPerfect display.

2) Select the Apple LaserWriter

Your second task is to select the Apple LaserWriter as the printer. Note that this selection will work for all VMS PostScript printers at the University, including the high-speed Kodak printer (described in our January newsletter).

Within WordPerfect, bring up the *Print* display by entering:

```
<ctrl> f P R
```

From the resulting menu, enter *S* for *Select Printer*, as shown in Figure 2.

From the next menu, shown in Figure 3, enter *2* to select *Additional Printers.*

Use the arrow keys to move down the list until you reach *Apple LaserWriter Plus/IINT/IINTX.* Then enter *1* to select that printer.

You must also enter a carriage return to acknowledge that the *Printer filename: APLASPLU.PRS* is the correct file name.

WordPerfect will ask if you want to replace the file. You should enter *Y* to indicate that you do want it replaced.

Next, WordPerfect sets up laser printer fonts and prints a display: *Printer Helps and Hints.* After reading it, enter:

```
<ctrl> z
```

to get back to the *Select Printer: Edit* display.

3) Define File Name for Output

Your third task is to define a file name for laser printer output. We've chosen LASER.OUT for the name in this article, but you can choose any name you want.

From the *Select Printer: Edit* display (the Edit choice is shown in Figure 3) enter *2* for output type. Then enter *3* for *Other* and type:

```
LASER.OUT
```

(or whatever file name you want) for the *Device or Filename.*

Finally, enter zero three times to go back to the initial WordPerfect display.

Printing

You now are ready to print PostScript files on a laser printer.

From the *Print* display (shown in Figure 2) you can choose to print the full document, a page, or print the document on disk. (To print a document on disk, WordPerfect will prompt you for the filename of the document for printing.) Other options you can select are described in the VAX WordPerfect reference manual.

Once you make your selection, WordPerfect saves your printer output to the file you designated when you did the setup operation, in our case LASER.OUT. Each time you

Figure 2:
Use <ctrl> f P R to Display the Print Menu

```
Print
     1 - Full Document
     2 - Page
     3 - Document on Disk
     4 - Control Printer
     5 - Multiple Pages
     6 - View Document
     7 - Initialize Printer

Options
     S - Select Printer
     B - Binding                          0"
     N - Number of Copies                 1
     G - Graphics Quality                 Medium
     T - Text Quality                     High

     J - Job Priority                     100
     O - Notify Job Started/Completed     Yes
     L - Flag Pages                       None
     H - Hold                             No
         Automatic Release Time
     A - Alternating Pages                No

Selection: S
```

print, a new version of the file is created. If that's all you want to print, you can exit WordPerfect.

Now you're ready to enter the VMS commands at the $ prompt:

```
WPFIX LASER.OUT
PRINT LASER.OUT /QUE=queuename /NAME=binlocation
```

Queuename is the name of the printer queue where the output will be sent (e.g., NICH1A). *Binlocation* is the site code and bin number in the form xx.nnn (e.g., EA.425).

To see the queue names and locations of the available printers enter the VMS command:

```
LISTDOC LISTPR
```

After you're satisfied with your printed output, you may want to delete old versions of the LASER.OUT file, for example:

```
DELETE LASER.OUT;1
```

Further Information

A copy of the reference manual is on reserve in the Computing Information Center in 1 Nicholson Hall, phone 625-7397.

Further information on VAX WordPerfect is also available by entering the VMS command:

```
HELP WP
```

For a copy of the information in this article, use the VMS command:

```
LISTDOC WP_PRINT
```

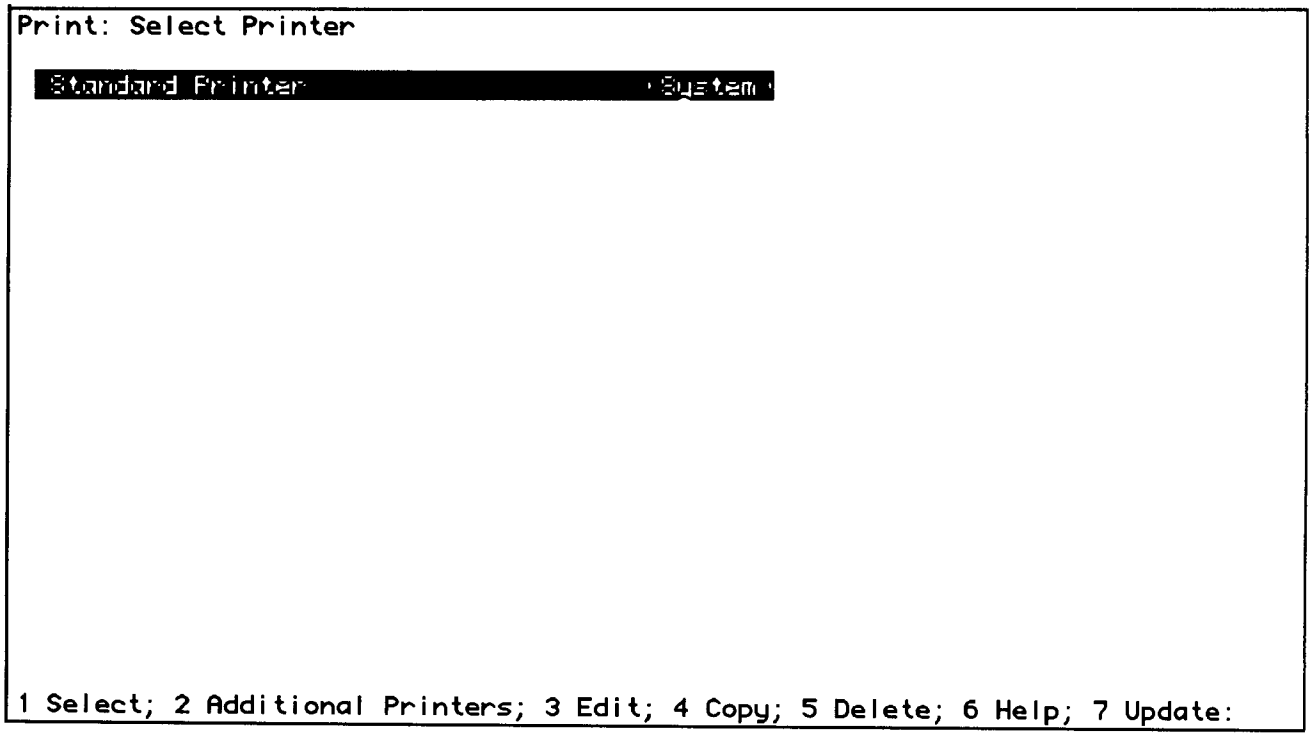
To see what keys to use for WordPerfect commands, use the VMS command:

```
LISTDOC WPKEYS
```

For further help on VAX WordPerfect, contact Mike Frisch at 625-5830, or

```
MJFRISCH@VX.ACS.UMN.EDU
```

Figure 3: Select Printer Menu



Free Stuff

8•24GC Software

If you have the 8•24GC video board, at least 3MB of RAM in your Macintosh, and you use System 7, we have new software for you. This software enables graphics acceleration with the 8•24 card, but it is not compatible with System 6.0.x.

You can copy this new control panel device from the Mac Information Server. Look on the ***information*** volume for the *System Software* folder. Within the System folder, you will find an *Apple Peripherals* folder; this folder has 8•24GC software.

Be sure to copy the README document. It tells you about third party bugs and has installation instructions.

TinCan 5.0

TinCan is Macintosh communications software you use with a modem to connect to computer systems such as LUMINA. Members of the University community can obtain a free copy by stopping in any Microcomputer HelpLine. We cannot put TinCan on the Mac Information Server because its use is restricted. Before we can let you make a copy you must sign a Usage Agreement.

Sample Changes

Here are samples of some things that have changed in version 5.0.

Xmodem and Kermit file transfer have been implemented. The *Transfer Protocol* dialog of the *Options* menu offers a choice between PCtrans, Xmodem, and Kermit.

VT100 emulation is improved. Reverse video and underlining are supported. New hardcoded keypad, cursor, and return key functions have been implemented which closely emulate a real VT100 keyboard. To enable the hardcoded functions, check the *VT100 Keypad* box in the Options dialog box.

Since TinCan 5.0 has a new, limited method of making an auto-logon script, we've included scripts for accessing some central systems.

Book Center Notes

The offers listed here are made to University departments, employees, and students, and are subject to the eligibility rules of the Microcomputer Discount Program. If you have questions about availability, phone the Electronics Desk in Williamson Hall at 625-3854. The Electronics Desk is open Monday–Friday from 8:30 am to 5:30 pm.

Those with access to electronic mail and the University's internet and BITNET can get product and price change bulletins for the products sold through the Electronics Desk. To be added to the mailing list, E-mail a request to:

`request@boombox.micro.umn.edu`

Once you are on the mailing list, you will receive notification via E-mail as soon as we have new prices or products.

➧ Handouts and Sales Tax

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. Handouts are available at all Microcomputer HelpLines. Our current handouts are: *IBM PS/2 Computers*, *ZEOS MS-DOS Compatibles*, *Printers for IBM-Compatible Computers*, *Apple Macintosh Computers*, *Macintosh Printers and Peripherals*, *NeXT*, and *Networks*. Some specialized handouts are also available from the Microcomputer HelpLines.

➧ Quadras with 400MB Hard Disk

You can order two more configurations of Apple's new Quadras. The configurations are shown below.

Quadra	700	900
Part	M5724LL/A	M4250LL/A
RAM (megabytes)	4	4
Hard Disk (megabytes)	400	400
Discount Price	$ 5270	$ 6280

➧ Quadras: Video Displays

The Quadras 700 and 900 come with a built-in video board. To get greater pixel depth and more colors with the built-in video board, you may need to add more VRAM (video RAM): 512K is standard on the 700 and 1MB is standard on the 900.

Table 1 shows how many Expansion Kits you need to add to the Quadras 700 and 900 to get 1MB or 2MB of VRAM. The Book Center's price for the VRAM expansion kit is $145.

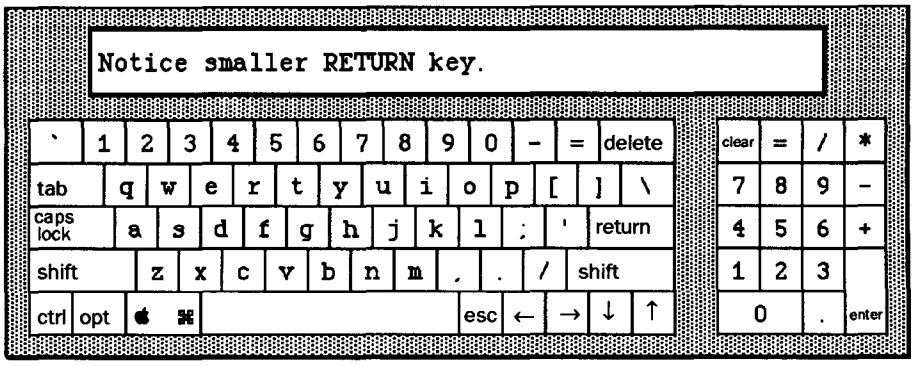
Table 1: Expanding VRAM on Quadras

Quadra	700	700	900
VRAM *	1MB	2MB	2MB
512K VRAM Expansion Kits	1	3	2

* 512K is standard on the 700. 1MB is standard on the 900.

Table 2 shows the Quadra's display capability with various monitors and VRAM combinations. In some cases adding more VRAM is not beneficial.

Figure 1: New Standard Keyboard



➧ Standard Apple Keyboard

All the Macintoshes sold through the Book Center come with a "standard" keyboard. Over time Apple's standard keyboard has changed. It's changed again. Presently all Macs will come with the same keyboard that comes with the Mac LC, Classic, and Classic II: part M0487. Although this keyboard also has 80 keys, some keys were relocated. Figure 1 shows you the new location of the [`], [Caps Lock], [Control], [\], and [Esc] keys. For your comfort, you can adjust the tilt of the newest standard keyboard.

Extended Keyboard

If you would rather have the larger, 102-key extended keyboard, for $60 you can substitute it for the standard keyboard when you place an order for some Macs. This substitution is not available for the Classic, Classic II, and the PowerBooks.

Table 2: Quadra VRAM and Monitor Combinations

Apple Displays			Bits per Pixel (bpp) and Colors or Shades of Gray		
	Discount Price	Resolution	512K VRAM	1MB VRAM	2MB VRAM
Monochrome					
12"	$ 195	640 x 480	8 bpp, 256	8 bpp, 256	8 bpp, 256
15" portrait	720	640 x 780	4 bpp, 16	8 bpp, 256	8 bpp, 256
21" 2-page	1070	1152 x 870	4 bpp, 16	8 bpp, 256	8 bpp, 256
Color					
12"	$ 390	512 x 384	8 bpp, 256	24 bpp, 16.7 million	24 bpp, 16.7 million
13"	650	640 x 480	8 bpp, 256	8 bpp, 256	24 bpp, 16.7 million
16"	1120	832 x 624	8 bpp, 256	8 bpp, 256	24 bpp, 16.7 million
21"*	3100	1152 x 870	4 bpp, 16	8 bpp, 256	8 bpp, 256

*to get greater pixel depth, you must add a third party video NuBus card

➧ Asante Ethernet Products for Mac

We recently added Asante Ethernet cards for the Mac IIsi and the LC to the Asante products we carry. You can use the 2.7" by 5.1" MC+30i series card for the Mac IIsi in two ways: installed directly on the logic board or with Apple's 030 Direct Adapter card. (If you've added a NuBus Adapter to the IIsi, use a NuBus Ethernet card.)

The prices for the basic models of these new cards and other popular Asante cards are listed in Table 3. Networking Services currently supports Asante cards for connecting Macintoshes to the campus Ethernet. Asante products have a 5 year warranty.

Table 3: Asante Ethernet Cards

Model	Macintosh, Other Features	Price
MCLC10T **	LC, 10BaseT *	$ 195
E Series, Thick and Thin		
MC+30iE **	IIsi, 16K	$ 195
MC+IIE	II family NuBus, 16K	195
MC+SEE	SE, 8K	195
ET Series, Thick and 10BaseT *		
MC+30iET **	IIsi, 16K	$ 195
MC+IIET	II family NuBus, 16K	195
MC+SEET	SE, 8K	195

* 10BaseT interfaces let you use unshielded twisted-pair (UTP) telephone wire. Asante's maximum cable length on UTP cable is 100 meters (328 feet).

** For $275 you can place a special order for models that have a math co-processor installed.

New Asante Ethernet Drivers: v3.32

Asante also updated their EtherTalk drivers. All of the drivers are now on one disk, the EtherTalk Universal Installer v3.32. The Installer has options for installing the EtherTalk Phase 2 drivers for Systems 6 and 7 on the Mac SE, LC, SE/30, and Mac II family.

Copies of the new drivers are on the *information* volume of the Mac Information Server. The drivers are in the *EtherTalk Installers* folder which is inside the *System Software* folder.

➧ ZEOS 286 and 386 Notebooks

Here is our monthly notice of changes in the ZEOS product line. The 7 pound ZEOS Notebooks come with a serial port, a parallel port, and an external 15-pin video port; their AC adapter is autosensing and autoswitching within the following ranges: 47-64Hz and 100-240V. The latest configurations are shown in the Table 4.

Table 4: ZEOS Notebooks

Microprocessor (CPU)	80286			80386SX			80386SX		
• Speed (MHz)	12			16			20		
• Math Co-processor	none			optional			optional		
Package #	1	2	3	1	2	3	1	2	3
RAM (megabytes of memory)	1	3	5	1	3	5	1	3	5
Drives:									
• 3.5" 1.44MB Floppy	1	1	1	1	1	1	1	1	1
• Hard (megabytes)	20	60	60	20	60	60	20	60	60
Software and Accessories:									
• DOS 4.01 with GW-Basic or DOS 5.0 with QBasic	-	Y	Y	-	Y	Y	-	Y	Y
• Carrying Case	-	Y	Y	-	Y	Y	-	Y	Y
Package 3 Only									
• Battery charging stand	-	-	Y	-	-	Y	-	-	Y
• Extra battery	-	-	Y	-	-	Y	-	-	Y
• Internal 2400 baud modem	-	-	Y	-	-	Y	-	-	Y
Price	$1230.25	1800.25	2275.25	$1420.25	1990.25	2465.25	$1705.25	2275.25	2750.25

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 establish an account. Qualified users can apply for grants to handle some computing related costs. To talk to a consultant in person, call for exact location.

Machine	*ID*		
☐ CYBER	NOS/VE, NOS, EP/IX, MEDLINE	626-8366	Monday–Friday 9 am to 4 pm
☐ IBM	CMS	624-6235	Monday–Friday 9 am to 4 pm
☐ VAX, ENCORE, CYBER	UX, VX, VZ, CA	626-5592	Monday–Friday 8:30 am to 4:30 pm
1 Nicholson Hall Walk-in Consulting			Monday–Friday 10 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	125 Shepherd Labs	above	Monday–Friday 9 am to 4 pm
☐ 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. Hail, S. Hakomaki, S. Hickman, M. Hu, J. Jabr, J. Jannett, D. Johnson, P. Kachelmyer, M. Kelleher, D. Larsen, J. Larsen, J. Larson, P. Lindner, M. McCahill, P. Oberg, K. Olson, N. Ostrom, J. Pearson, K. Pearson, C. Plaisance, E. Schleske, C. Squires, J. Steams, K. Teder, E. Thayer, A. Thomas, H. Tonsky, D. Torrey, S. Traxler, L. von Munkwitz-Smith

General Information

Chief Information Officer
E. F. Infante, Acting CIO ..... (612) 625-0088

Computer and Information Services
Computing Services Operations, Mike Skow; Distributed Services and Planning, Shih-Pau Yen; Software Services, Lee Croatt; St. Paul Services, Mel Sauve; Networking Services, Lawrence Liddiard.

Adaptive Technology Services (voice)	6-0365
(TDD)	4-4037
Central System Accounts:	
UX, VX, VZ, CA	6-5592
NOS/VE, NOS, EP/IX, MEDLINE	6-8344
IBM CMS	4-7788
Data Entry Services, Minneapolis	6-8351
St. Paul	4-7297
Equipment Repair and Warranties	5-1595
Faculty Resource Center	6-1090
Instructional Computing on Central Systems	6-0200
Networking Services, Network Addresses, 130 Lind	5-8888
Software Services	5-2303
Tape Librarian at Lauderdale Computer Facility	6-1838
Training, Course Registration, 132 ShepLab	5-1300

Other Departments

Electronics Desk, Williamson Hall Book Center	625-3854
Telecommunications, Networking Services:	
Information	6-7800
Repair	5-0006

Access Information

✉ Internet addresses.
☎ The terminal settings for dial-up access to the University's central systems are 8-1-N (8 data bits, 1 stop bit, no parity) unless otherwise noted. Some phones work at 7-1-even (7 data bits, 1 stop bit, even parity). Which phone number you use may depend on the modem's bps (bits per second) or baud rate.

LUMINA
300/1200/2400 ..... 625-6009 ☎
LUMINA.LIB.UMN.EDU ✉

UX, VX, VZ, CA, INFO (VX)
300, 1200 ..... 626-0300 –1200 ☎
2400, 9600 ..... 626-2400 –9600 ☎
300/1200/2400 at 7-1-even ..... 626-1630 ☎
UX *or* VX *or* VZ *or* CA.ACS.UMN.EDU ✉

NOS, NOS/VE, EP/IX, MEDLINE (NOS/VE)
300/1200/2400 ..... 625-1445 ☎
up to 19.2k campus data phone line ..... 3-2400 ☎
NOS *or* NVE *or* EPX.HSCS.UMN.EDU ✉

IBM CMS at 7-1-even
1200/2400 ..... 624-4220 ☎
up to 19.2k campus data phone line ..... 4-4220 ☎
VM1.SPCS.UMN.EDU ✉

Microcomputer Consultant (log in as gopher)
300, 1200 ..... 626-0300 –1200 ☎
2400, 9600 ..... 626-2400 –9600 ☎
CONSULTANT.MICRO.UMN.EDU ✉

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Department ❑ Faculty ❑ Staff ❑ Student ❑ Alumni ❑ Other ❑

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`newsletter-subscription@boombox.micro.umn.edu`

Electronic-mail Notification Services

- We receive notices of software and hardware fixes, seminars, helpful hints, and various computer related items from many sources. This information may be of immediate importance or interest to the University community. To make this information available in a timely manner, we offer an E-mail news notification service that periodically sends out "news" bulletins. To subscribe to this free service, send E-mail to:
  `news-request@boombox.micro.umn.edu`
- Network managers with LANs attached to the University's internet could benefit from subscribing to this E-mail group: `net-people-request@mail.unet.umn.edu`

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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The Duplicate Problem

Dear Reader, we need help eliminating duplicates from our mailing list. Minor differences in address and names frequently prevent us from automatically eliminating duplicates. When you receive an unwanted duplicate, mail or fax us the mailing label or call 612/625-1300.

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