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Innovative NSRC Team Helps Make Global Networks a Reality

Until late 1991, Peru had no computer links to the outside world. Today, not only does Peru have hundreds of institutions with thousands of users communicating via satellite link to the Internet, but network communication is making a vital contribution to that country's scientific advances.

This is but one of dozens of such stories of dramatic networking progress in the developing world. How did such rapid change come about? A major catalyst in these networking developments is a modest, low-key organization known as the Network Startup Resource Center (NSRC), now headquartered at the University of Oregon.

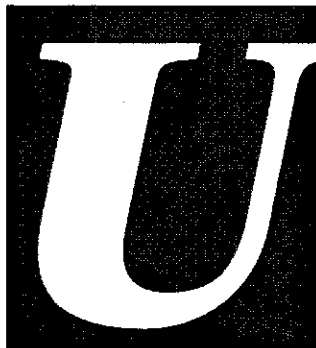
Originally an all-volunteer effort by veteran network engineers Randy Bush and John Klensin to help developing countries establish their own computer networks, the NSRC has become slightly more formalized since receiving its first National Science Foundation grant in 1992. While low cost and *pro bono* assistance is still a priority, the NSRC now has two successive National Science Foundation grants under its belt and a small staff of salaried professionals. Under the auspices of University Computing, and with funding from a new grant, the NSRC is currently collaborating with the University's Advanced Network Technology Center (ANTC) staff to make affordable networking technology available around the globe.

The express purpose of the NSRC is to disseminate the information, technical training, and tools necessary to create and maintain networks in developing countries. The organization doesn't seek out clients. Rather, it responds to requests for information and technical help, lending its expertise on everything from how to establish a T1 connection or solve a router problem, to how to use accounting tools or negotiate the best deal for Internet connectivity with international circuit providers.

The NSRC's style is to transfer technology and empower, not run or manage, network connectivity in nations which request its assistance. A significant portion of its work involves planning, organizing, and teaching network workshops that introduce in-country networkers to low-end, but scalable, technology. The emphasis is on enabling local networks to become independent and self-sustaining. While getting things up and running, the NSRC either provides, or arranges for, low-end connectivity until the embryonic network is ready to get on the air through more official channels.

To date, the NSRC has contributed significantly to the creation of national or regional networks in Africa, Asia, Latin America and the Caribbean, Central and Eastern Europe and several former Soviet states, as well as some start-up K-12 (kindergarten through grade 12)

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U sernames Are Forever...(Almost)

If you have a timesharing or modem account with the Computing Center, some recent changes in computing account policies may affect you. If for any reason you're planning to cancel a UO computing account, or have considered changing your account username, please note the following:

1. To cancel an account, you'll now need to come in person to Room 107 or 108 between 8am and 5pm, Monday through Friday. *Bring your photo ID.*

2. Account usernames are now permanent, and may be changed *only* in the event of a legal name change, stalking, or harassment.

Questions?

If you have any questions or concerns about the new policies, please call 346-1738, or send an e-mail message to connie@oregon.uoregon.edu

NSRC Team, continued...

networks in the United States. International connectivity is now a reality in Belize, Kenya, Guatemala, and Cambodia, and the NSRC is providing advice and technical assistance to emerging networks in such diverse countries as Angola, Cameroon, Comoros, Haiti, Morocco, Uganda, and Malawi...to name but a few.

Not only has the NSRC accomplished a lot in an astonishingly short period of time, it has done so with unprecedented economy. One of those most impressed by the group's thrift is Dr. Steven Goldstein, Program Director of International Networking with NSF's Networking and Communications Research Division, who states, "From its inception in 1992, the Network Startup Resource Center has been among NSF's wisest investments in supporting Internet infrastructure development. Starting with its initial founders, Randy Bush and John Klensin, who donated most of their services *pro bono*, and continuing through today with the staff augmentation at the University of Oregon, NSRC has done amazing things to spread the Internet around the world on the shoestring resources of the NSF award."

How do they do it?

- By emphasizing local control and local maintenance. Local engineers are trained to maintain the networks so that connections become permanent. Development and deployment are in local hands, using local expertise, primarily at local expense.
- By maintaining a lean, non-bureaucratic structure: when not on the road giving training workshops, Randy Bush often works from his home network operations center on Bainbridge Island, Washington, while UO project leader Steve Huter fields network questions from his office at the UO Computing Center and his home in Eugene.
- By tapping the *pro bono* expertise of leading-edge professionals, like the UO's Dave Meyer (director of the ANTC) and Dale Smith (director of Network Services), as well as network engineers and coworkers throughout the world.
- By archiving information about international networking infrastructure and connectivity providers in Asia, Africa, Latin America and the Caribbean, the Middle East, and Oceania, and making data freely available on the World Wide Web (see <http://www.nsrc.org/>)
- By enlisting the talents of UO students, who can go on to further the work of international network connectivity after graduation

As worldwide networks proliferate, geographic boundaries dissolve. With increased network access, scientists all over the world can communicate with each other, sharing information and insights in record time and participating in international collaborative projects. The NSRC team are among the pioneers paving the way to a new millennium of worldwide communication and scientific exchange.

! Compatibility Problems with Performa 6400/6360

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If you're thinking of buying a new Mac, be aware that the Performa 6400/6360 series computers are not very compatible with the UO networking environment. For details, see

<http://micro.uoregon.edu/performa.html>

Students: Interested in Networking Opportunities?

If you're a UO student interested in the computer networking field, here's an opportunity to gain some experience and skills while contributing to the enhancement of the global Internet infrastructure: the Network Startup Resource Center (see article "Innovative NSRC Team..." on pp. 1-2 of this issue), partially supported by the National Science Foundation, is currently seeking students with initiative to assist with applied research, education, and service projects. General skills and qualifications include one or more of the following:

- applied knowledge of Internet infrastructure and terminology
- working knowledge of UNIX systems and knowledge about the administration of TCP/IP networks desirable
- writing ability (technical writing and journalistic writing skills equally desirable)

For more information about student networking opportunities with the NSRC, contact Randy Bush (randy@nsrc.org), Steve Huter (sghuter@nsrc.org), or Dave Meyer (meyer@antc.uoregon.edu).

'Over Quota' on VMS? What Now?

Beginning May 1, University Computing will be more strictly enforcing disk quotas on the VMScluster due to recently recurring disk space crunches. This means that OREGON, DONALD, and DAISY account-holders who are over quota won't be able to create new files or receive new mail until they free up some space. Of major concern to most users who've exceeded their allotted disk space is that they will be unable to receive new e-mail messages until their quota problem is resolved.

How Do You Know if You're Out of Disk Space?

When you exceed your quota, you'll receive an e-mail warning that begins

IMPORTANT NOTICE: You are over quota on the VMScluster...

followed by detailed instructions for recovering disk space.

What Can You Do to Resolve the Problem?

If you're over quota, you'll need to delete some accumulated obsolete e-mail messages and/or files to recover disk space. (Since the text of the system warning message provides detailed suggestions for resolving quota problems, we have not reproduced them here.) You can display a copy of the instructions for deleting unwanted e-mail messages by typing

```
$ type sys$document:email_cleanup.txt
```

To display instructions for deleting obsolete files in your directory, type

```
$ type sys$document:file_cleanup.txt
```

Can You Request More Disk Space?

If you have a legitimate need to store more than your quota currently allows,

you can request more storage space by contacting Connie French in Room 107 Computing Center (e-mail: connie@oregon.uoregon.edu; phone: 346-1738).

Do You Use Eudora or Pine?

Eudora Users. If you use *Eudora* to read your e-mail, we urge you to make sure you're running the latest version of the program. With some mail server re-configurations scheduled to take place on VMS in the near future, earlier versions of *Eudora* may not continue to operate properly. The latest version (v.3.x) may be copied at no charge from the public domain file servers, CC Public Domain (Mac version) and Public (PC version), or from <http://www.eudora.com>

Another consideration: messages deleted from *Eudora* may not get deleted from the server. Many *Eudora* users who've checked "Leave on server..." in their Special menu settings may have years of accumulated mail stored on the server without realizing it. To resolve this problem, review the online instructions for deleting obsolete e-mail messages, as outlined above, and follow the procedures described.

Pine Users. Those who use *Pine* on VMS may not realize that, once read, their e-mail messages are automatically transferred to a folder called MAIL. The messages stay in the MAIL folder until they're deleted.

Still Have Questions?

If, after following all the troubleshooting suggestions, you still have questions or problems getting back under quota, contact a VMS consultant at 346-1758.



Need Computer Repairs/ Upgrades? Electronics Shop is the Answer

Is your Mac giving you flak? PC on the blink? Need to add more memory or hard disk storage? The Computing Center's Electronics Shop is your answer.

The Electronics Shop is fully committed to meeting the needs of the UO computing community. For more than a decade, the shop has offered extensive microcomputer hardware support and repair service to UO students, faculty, and staff. Its technicians are experienced with many brands of microcomputers and peripherals, including Intel-based

machines, and can offer advice regarding upgrades as well as repairs.

Services include:

- **Upgrades:** The shop staff can add memory, hard disk storage, and/or peripherals. Memory for virtually all Macintosh and Intel-based personal computers is kept in stock.

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Spring Workshops Combine Library, Computing Center Offerings

This spring, our computer workshops have a new name: the Information Technology and Computer Workshops—'IT' for short—represent a joint effort by the University Library and University Computing to provide a full range of computer and Internet training for everyone on campus. The Library's former Internet Curriculum and the Computing Center's Workshops are now combined into one program. This allows campus users to more easily identify workshops covering topics related to computing technology, the Internet, and networked information resources.

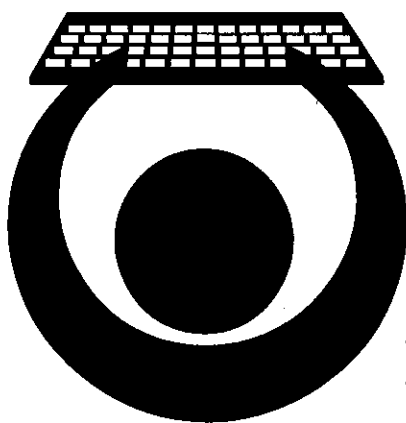
These non-credit workshops are free of charge to all UO faculty, staff and students. No advance registration is necessary, except where noted. Seating is limited, and available on a first-come, first-served basis.

Requests for accommodation related to disability may be made to 346-1897 at least one week in advance of the workshop.

For more information about these workshops, contact Colleen Bell (e-mail: cbell@darkwing.uoregon.edu; phone: 346-1817)

As in previous terms, select videotaped workshops are being aired on Cable Channel 14. These and other videotaped workshops are available for checkout or purchase from the Computing Center Documents Room (205) and at the front desk of the Knight Library's Instructional Media Center. The videos may be checked out for one week at a time; a photo I.D. is required for checkout.

The spring IT schedule is reproduced on pp. 5-7. This schedule is subject to change. See <http://libweb.uoregon.edu/it/> for the most current information.



Keep Your Personal Computer Healthy!

Does your computer crash for no apparent reason? Does it seem to run slower now than when you first bought it? Is the hard drive running all the time, even when you are not saving a file or opening or closing a program?

Just like taking an automobile in for a regular tune-up and inspection, it is useful to give your personal computer a checkup every now and then to make sure it's running at peak performance. Two workshops detailing system maintenance and troubleshooting for Macintosh and Windows-based computers are being offered this spring through the IT Curriculum (see spring workshop schedule, pp. 5-7). Even if you can't attend the workshops, performing even a few simple routines can help maintain the health of your computer and save you the headache of potential problems in the future.

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System Maintenance

The more files you create and save on your computer, the more cluttered and confused the data on your hard drive becomes. "Fragmentation," a condition where individual files are split up into numerous segments located on different parts of the hard drive, makes your machine work harder than it needs to in order to locate and reconstruct fractured files. Fragmented files are also likely candidates for data errors, should a power failure or system crash occur while working with them. Finally, fragmentation makes it harder to install new software on the drive (or use a portion of the hard drive as "virtual memory"), since the used portion of the drive and the free areas of the drive are not clearly defined.

Fortunately, fragmentation is a relatively easy problem to fix with the right tools. MS-DOS 6.x and *Windows 95* both offer built-in tools to repair fragmentation. DOS provides a tool appropriately named "DEFRAG" which will pull fragmented files back together and separate used disk space from free space. Typing `defrag` at the DOS prompt activates this program. *Windows 95* offers the same features in a tool named *Disk Defragmenter*, located in the System Tools folder, off the Accessories folder on the Start menu. MacOS unfortunately does not offer built-in disk optimization, but the well-known *Norton Utilities* package includes a *Speed Disk* utility that can do the job.

Troubleshooting

One of the most common problems with personal computers occurs when trying to run incompatible software. Either the program you want to use is too old (or too new) for your hardware or operating system, or it is competing for

...continued on page 8

SPRING WORKSHOPS

Workshop	Day/Date	Time	Location	Presenter(s)
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(This schedule is subject to change. For the most current information, see <http://libweb.uoregon.edu/it/>)

General Internet Topics

<i>Introduction to the Internet</i>	Thu Apr 3	1 - 2:20pm	EC	Robare, Slight-Gibney
	Mon Apr 7	11am - 12:20pm	EC	Robare, Slight-Gibney
	Tue Apr 8	7 - 8:20pm	EC	Sundt
	Wed Apr 16	10 - 11:20am	EC	Cawthorne, Panchenko
<i>Usenet Discussion Groups (PC/Mac)</i>	Tue Apr 22	1 - 2:20pm	EC	Klassen
<i>How News Works (Requires basic familiarity with a USENET News reader, such as Trn, Tin, or Netscape)</i>	Thu May 22	3 - 4:50pm	EC	St Sauver

E-Mail & Listservs

Using Pine for E-Mail (Active timesharing account on GLADSTONE, DARKWING, or OREGON required)

PC users	Mon Apr 7	4 - 4:50pm	EC	Kuhn
Mac users	Mon Apr 14	3 - 3:50pm	ITC	Lynch
<i>Managing a Majordomo List</i>	Mon Apr 21	3 - 3:50pm	ITC	Haller

The World Wide Web

<i>Web for Computer Novices (PC/Mac)</i>	Tue Apr 8	1 - 2:20pm	EC	Robare, Smith
<i>Introduction to the World Wide Web (PC/Mac users)</i>	Thu Apr 3	7 - 8:20pm	EC	Crumb, Paynter
	Thu Apr 10	1 - 2:20pm	EC	Crumb, Stark
	Fri Apr 11	9 - 10:20 am	EC	Cawthorne, Crumb
	Mon Apr 14	10 - 11:20 am	EC	Cawthorne, Stark
	Tue Apr 15	4 - 5:20pm	EC	Chadwell, Thomas
<i>Beyond Surfing: How To Find What You Really Want on the Net</i> (Basic knowledge of the Web highly recommended)	Fri Apr 4	10 - 11:20 am	EC	Benedicto, Lenn
	Tue Apr 8	3 - 4:20pm	EC	Heinzkill, Lenn
	Tue Apr 15	1 - 2:20pm	EC	Paynter, Pike
	Fri Apr 18	10 - 11:20 am	EC	Frantz, Pike

Web Publishing

Intro to Web Publishing (Requires DARKWING or GLADSTONE account and familiarity with a graphical Web browser)

Mac	Tue Apr 8	10 - 11:50am	ITC	Holman
PC	Wed Apr 9	6 - 7:50pm	EC	Bell, Smith
PC	Thu Apr 17	1 - 2:50pm	EC	Benedicto, Smith
PC	Mon Apr 21	10 - 11:50 am	EC	Johnson
Mac	Wed Apr 23	1 - 2:50pm	ITC	Frantz
<i>Beginning Photoshop for Web Authors</i>	Mon May 12	10 - 11:20am	ITC	Kim

Intermediate Workshops in Web Publishing (Assumes previous experience with HTML and an account on DARKWING or GLADSTONE. For more information, contact JQ Johnson at 346-1746 or jjq@darkwing.uoregon.edu)

1. More HTML	Wed Apr 16	10 - 11:50am	LR	Johnson
2. Images (Mac)	Tue Apr 22	9 - 10:50am	ITC	Holman
Images (PC)	Wed Apr 23	10 - 11:50am	LR	Holman
3. Designing for the Web	Wed Apr 30	10 - 11:50am	LR	Bell
4. HTML Editors & Converters				
Mac	Tue May 6	9 - 10:50am	ITC	Klassen
PC	Wed May 7	10 - 11:50 am	EC	Brownmiller

WORKSHOP LOCATION CODES

EC: Electronic Classroom (1st Floor Knight Library)

ITC: Internet Classroom (2nd Floor Knight Library)

LR: Long Read Seminar Room (235 Knight Library)

ITC (Mac) classroom: (2nd Floor Knight Library)

LR: Long Read Seminar Room (235 Knight Library)

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SPRING WORKSHOPS

Workshop	Day/Date	Time	Location	Presenter(s)
World Wide Web, continued...				
5. Debugging Tools	Wed May 14	10 - 11:50am	LR	Johnson
6. Animation	Wed May 21	10 - 11:50am	LR	Klassen
7. Imagemaps, Access Counter, Applets	Wed May 28	10 - 11:50am	LR	Johnson
8. Forms & CGI Scripts (Some knowledge of computer programming desirable)	Wed Jun 4	10am - 11:50am	LR	Johnson
Computing Fundamentals				
Practicing Safe Computing: Preventing and Recovering Data from Computer Viruses				
PC/Mac	Wed Apr 30	3:30 - 4:50pm	IMCB	Latterell
System Maintenance and Troubleshooting: MacOS (For any Macintosh user)				
	Wed Apr 9	3:30 - 4:50pm	IMCB	Albrich
System Maintenance & Troubleshooting: Windows & DOS (First hour covers DOS and <i>Windows 3.1</i> ; the second, <i>Windows 95</i>)				
	Wed Apr 23	3 - 4:50pm	IMCB	Allen, Latterell
What's New in System 7.6 (Intermediate to advanced understanding of MacOS recommended)				
	Wed Apr 16	3 - 4:20pm	IMCB	Allen
Basic UNIX	Thu Apr 24	3 - 3:50pm	ITC	Kuhn
Security for Your UNIX Account	Thu May 1	3 - 3:50pm	EC	Kemp
Getting Started with VMS (Requires active account on OREGON)				
	Thu May 8	3 - 4:50pm	EC	St Sauver
Excel 5 Advanced Topics (PC/Mac)	Mon Apr 28	9 - 10:50am	EC	Arkin
Using PowerPoint for Presentations (For <i>Windows 95</i> , <i>Windows 3.1</i> , and Mac users. No prior experience required.)				
	Mon Apr 7	9 - 10:50am	EC	Arkin
Microsoft Office 97 Overview I: Word and Outlook (no prior experience required)				
PC	Mon May 12	2 - 3:50pm	IMCB	Arkin
Microsoft Office 97 Overview II: Excel, PowerPoint and Access (no prior experience required)				
PC	Mon May 19	2 - 3:50pm	IMCB	Arkin
Computer Conferencing				
Using Motet	Thu Apr 10	9 - 9:50am	EC	Lynch
Hosting a Motet Conference	Thu Apr 17	9 - 9:50am	EC	Lynch
Special Topics: Internet Resources				
Art & Architecture Info on the Web				
	Mon Apr 21	5:30 - 6:50pm	EC	Esau, Klos
	Tue Apr 22	4pm - 5:20pm	EC	Esau, Klos
The Electronic Scholar (An overview of research strategy using Internet search engines and electronic databases, books, etc.)				
Environmental Studies:	Fri Apr 4	3 - 4:20pm	EC	Stirling
Physics:	Fri Apr 18	3 - 4:20pm	EC	Stirling
Chemical Information:	Fri May 2	3 - 4:20pm	EC	Stirling
Finding a Job on the Internet (Contact the Career Center, 346-3235, to register for this workshop.)				
	Fri Apr 11	3 - 4:20pm	EC	Songer
	Thu May 15	3:30 - 4:50pm	EC	Songer
Introduction to Janus				
	Thu Apr 3	3 - 4:20pm	EC	Benedicto, Frantz
	Wed Apr 9	10 - 11:20am	EC	Panchenko, Pike
Patent Searching	Fri May 16	2 - 3:20pm	EC	Stave
	Tue May 20	2 - 3:20pm	EC	Stave
World News Connection	Tue May 6	2 - 3:20pm	EC	Stave

WORKSHOP LOCATION CODES

EC: Electronic Classroom (144 Knight Library)

IMCB: Studio B (Ground Floor, Knight Library)

ITC: (Mac) Classroom (2nd Floor, Knight Library)

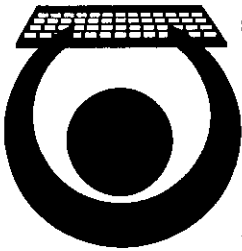
LR: Low Level Seminar Room (2/3 Knight Library)

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SPRING WORKSHOPS

Workshop	Day/Date	Time	Location	Presenter(s)
Special Topics				
<i>Introduction to Lexis/Nexis</i>	Fri Apr 4	12:30 - 1:50pm	EC	Panchenko
	Tue Apr 8	4:30 - 5:50pm	EC	Heinzkill
	Thu Apr 10	11:30am- 12:50pm	EC	Panchenko
	Wed Apr 16	11:30am- 12:50pm	EC	Panchenko
	Mon Apr 21	12:30pm - 1:50pm	EC	Panchenko
	Thu Apr 24	11:30am- 12:50pm	EC	Frantz
<i>Lexis/Nexis (Advanced)</i> This workshop may be scheduled for groups of 4 or more. For more information or to schedule a workshop for your group, contact Alexey Panchenko, 346-1960 or panchenk@oregon.uoregon.edu				
<i>Using Bibliographic Mgmt. Software</i>	Mon Apr 28	4 - 5:20pm	LR	Brownmiller, Lenn
	Tue Apr 29	4 - 5:20pm	LR	Brownmiller, Lenn
<i>Intro to Scanning: Creating & Moving Digitized Images</i> (Knowledge of Web and File Transfer Protocol recommended.)				
	Thu Apr 10	3 - 4:20pm	ITC	Panchenko, Sundt
<i>Introduction to Splus</i> (Knowledge of elementary statistics and an account on DARKWING required)				
PC	Thu Apr 17	3 - 4:50pm	EC	High
Workshops on Video				
<i>Computer Fundamentals (PC/Mac)</i>	Mon Apr 7	6 - 8pm		TV Cable Channel 14
	repeated Apr 21, May 5, May 19			
	Wed Apr 16	6 - 8pm		TV Cable Channel 14
repeated Apr 30, May 14, May 28				
<i>UO Computing Resources</i>	Tue Apr 8	6:30 - 6:45pm		TV Cable Channel 14
	repeated Apr 22, May 6, May 20			
	Wed Apr 9	6:30 - 6:45pm		TV Cable Channel 14
	repeated Apr 23, May 7, May 21			
	Thu Apr 10	6:30 - 6:45pm		TV Cable Channel 14
repeated Apr 24, May 8, May 22				
<i>Introduction to Macintosh</i>	Mon Apr 7	8 - 10pm		TV Cable Channel 14
	repeated Apr 21, May 5, May 19, Jun 2			
	Wed Apr 16	8 - 10pm		TV Cable Channel 14
repeated Apr 30, May 14, May 28				
<i>Introduction to Windows 3.1</i>	Wed Apr 9	7 - 10pm		TV Cable Channel 14
repeated Apr 23, May 7, May 21				
<i>Introduction to Windows 95</i>	Tue Apr 8	7 - 10pm		TV Cable Channel 14
	repeated Apr 22, May 6, May 20			
	Thu Apr 17	7 - 10pm		TV Cable Channel 14
repeated May 1, May 15, May 29				
<i>Microsoft Office</i>				
<i>Intro to Microsoft Word (PC/Mac)</i>	Thu Apr 10	7 - 10pm		TV Cable Channel 14
	repeated Apr 24, May 1, May 15			
<i>Microsoft Word Advanced Formatting for Papers (PC/Mac)</i>	Tue Apr 15	6 - 8pm		TV Cable Channel 14
	repeated Apr 29, May 13, May 27			
<i>Getting More Out of Microsoft Word 6.0 (Windows or Macintosh)</i>	Tue Apr 15	8 - 10pm		TV Cable Channel 14
	repeated Apr 29, May 13, May 27			
<i>Microsoft Excel 5.0 Fundamentals (Windows or Macintosh)</i>	Mon Apr 14	6pm - 8pm		TV Cable Channel 14
	repeated Apr 28, May 12, May 26			
<i>Getting More Out of Microsoft Excel 5.0</i>	Mon Apr 14	8 - 10pm		TV Cable Channel 14
	repeated Apr 28, May 12, May 26			

PC Health, continued...



system resources (memory, hardware components, serial ports, or software drivers) with another program. Incompatible software leads to poor performance, system crashes, and data corruption.

DOS/Windows 3.x machines rely on four files to load and execute software. At the DOS level, the AUTOEXEC.BAT and CONFIG.SYS files are responsible for loading memory resident programs, such as the software that tells the computer you are using a mouse or a fax modem. *Windows 3.x* stores program information primarily in two files: WIN.INI and SYSTEM.INI. Without a fairly sophisticated understanding of what each line of instructions means, it is difficult to troubleshoot software incompatibilities. The usual approach to solving these problems in DOS or *Windows 3.x* is to remove the line of instructions from the appropriate file (placing "REM" in front of the line in AUTOEXEC.BAT or CONFIG.SYS, or a semicolon in front of the line in the WIN.INI or SYSTEM.INI files) and rebooting the machine. This is a "hunt-and-peck" approach that will probably require many attempts before rooting out the problem.

Windows 95 makes it a little easier to get at the basic incompatibilities. The first step in dealing with software incompatibilities is usually to change the way *Windows 95* boots up. Pressing the F8 key before *Windows 95* begins loading will bring up a boot menu. Option 3, Safe Mode, will load *Windows 95* with basic configuration that does not include special video drivers, networking software, or other device drivers. If your computer started acting oddly just after installing software for your new modem, but seems to work fine when booting in Safe Mode, chances are you need to reinstall the software or find the correct software for your modem. The least that booting in Safe Mode will offer is a chance to undo the conflict by "uninstalling" the software (an option available through the Add/Remove Programs Control Panel).

Newer versions of MacOS offer fairly advanced tools to diagnose software incompatibilities. Beginning with System 7.5.x, the Extensions Manager provides the means to remove individual control panels and extensions from the system. System 7.6 expands the Extensions Manager to include start-up items, shutdown items, and other system

components. Before System 7.5, the approach to resolving software incompatibilities involved holding down the SHIFT key while starting up the computer to disable all control panels and extensions. After the Mac booted up, you could pull out the likely software that was causing the problem, restart the machine, and hope that the file you pulled was the damaged or conflicting program. With 7.5.x, starting up while holding down the space bar allows you to choose a set of control panels and extensions from the Extensions Manager. Booting with a basic System 7.5.x, for example, would exclude only those programs that are not official components of MacOS—making it much easier to identify and diagnose software incompatibilities.

Tuning Up Your PC

The above maintenance and troubleshooting techniques are just two of many tips and tricks that can keep your personal computer in top condition. The availability of free and commercial utility software that can deal with the common computer problems makes maintenance and troubleshooting even easier. For a more detailed look at troubleshooting and maintenance, attend one of our free "Taking Care of Your Computer" workshops being offered spring term. Outlines for the classes are published at

<http://micro.uoregon.edu/workshops>



Electronics Shop, continued...

- **Apple Computer Repair:** The shop is a Level 1 Apple authorized service center, and can perform warranty, AppleCare, or out-of-warranty repairs on Apple computers.
- **Intel-based Computer Repair:** Out-of-warranty repairs are offered for Intel-based machines, but some parts may require ordering (this usually takes 2-4 business days).

Repair services are offered on a first-come, first-served basis. Bring your computer equipment to the Computing Center and check it in with the receptionist in Room 108 any time between 8 am and 5 pm, Monday through Friday.

Questions?

If you have questions concerning repairs or upgrades, contact Jeff, Rob, or Einar at 346-4403 (e-mail: jeffh@oregon.uoregon.edu, robj@oregon.uoregon.edu, or einari@oregon.uoregon.edu).

See the Electronics Shop Web page at <http://cc.uoregon.edu/eshop.html>

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