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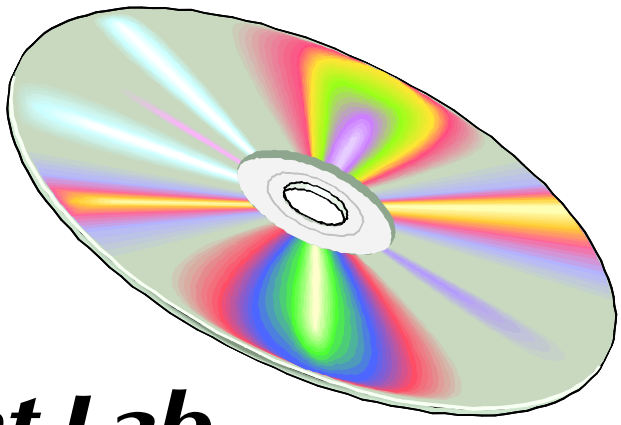


The Faculty Resource Development Lab

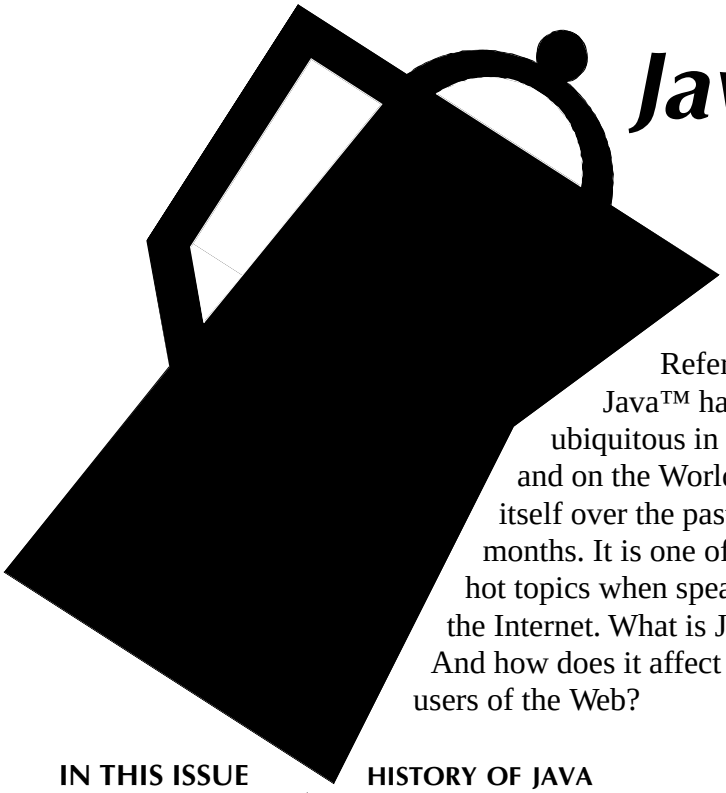
When the Keck Foundation provided funding for the renovation of Academic Computing's space in the Parsons building, one of the primary objectives was the creation of facilities to support faculty in incorporating new technology in the classroom. The demo area in the lobby of AC's main office is one part of this effort. The demo area will feature systems on which faculty can view and demo new software. The new electronic classroom, which was described in the last issue of *Occasional Downtime*, is also part of this project.

The keystone of the Keck funding, however, is the creation of the Faculty Resource Development Lab. The goal of the lab is to provide a place for faculty to explore new technology for use in the classroom and in research. This new facility will provide faculty (and students working with them) access to a broad range of commercial software and computer peripherals. Faculty will have the opportunity to develop and evaluate new multimedia applications using software and hardware not typically available on their desktop computers.

EQUIPMENT AVAILABLE IN THE LAB

The computers in the lab will consist initially of a Dell Pentium 166 and an Apple Power Macintosh 8500/132. Each will be equipped with a 20 inch color monitor, 80 megabytes of RAM, a multi-gigabyte hard drive, and a 100-megabit fast ethernet card. The Pentium will be attached to a CD-ROM writer and a slide digitizer. The Power Macintosh will be equipped for audio and video digitizing and production. To that end it will be attached to a VCR with an NTSC monitor. It can also be attached to other input devices such as a laser disc player, which can be borrowed from Audiovisual. Although these peripherals are attached to either the Pentium or to the Macintosh, they can be used to develop applications for either platform. In addition to the devices in the lab, faculty will also have access to a color printer over the network as well as to color scanners which are located in one of the other Academic Computing labs.

While the new peripherals include basic software to support their use, most applications will require the use of other software to produce final products. Academic Computing already provides a wide variety of presentation and graphics software on its main file server, *Kato*. Presentation software such as Aldus Persuasion and Microsoft Powerpoint can be used to prepare class presentations, slides, and lectures. Other available graphics software packages include Adobe Illustrator and Photoshop, Aldus Superpaint, Claris MacDraw, and KPT Bryce. Using these packages faculty can design their own graphics. These packages are intended mostly for producing static images. Two other packages will also be available, which are designed (*continued on page 5*)



Java™: Perking up the Web

References to Java™ have become ubiquitous in the media and on the World Wide Web itself over the past couple of months. It is one of the current hot topics when speaking about the Internet. What is Java, though? And how does it affect ordinary users of the Web?

IN THIS ISSUE

Occasional Downtime is composed on a Apple Power Macintosh 6100/66 using Aldus PageMaker 6.0 and Microsoft Excel 5.0. The primary typefaces used are Times and Optima. We wish to thank Sally Rich Arroyo of the HMC Office of College Relations for all her help.

HISTORY OF JAVA

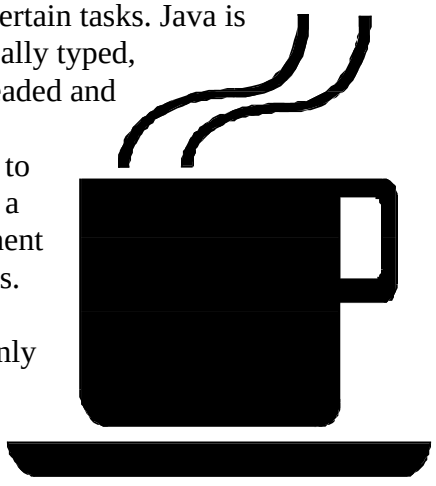
Java is a new programming language developed by a team of researchers at Sun Microsystems. The team was headed by James Gosling, who was also the author of the first version of emacs, a popular text editor for UNIX. Java was originally conceived as a language for programming computer chips for consumer electronic devices. C and C++ have been the programming languages of choice for such applications, but they have a variety of problems that the Sun team hoped to solve with a new language. One of the main goals of the project was to create a programming language that did not have to be rewritten to take advantage of the features of a particular computer, i.e. a language that was platform-independent.

The Java project was begun in 1990 and Java was officially announced in May 1995 at the SunWorld conference in San Francisco. At that same conference, Netscape Communications announced that Netscape Navigator would include support for Java. Over the past year many other companies, including IBM, Adobe, Microsoft, Apple, and Novell, have announced licensing agreements with JavaSoft, the new operating company created by Sun Microsystems to manage Java.

Why did all of these companies jump on the Java bandwagon so quickly? As mentioned earlier one of the main goals of the Java project was to design a language that was platform-independent. This is the feature that makes Java so attractive as a language for programming applications, especially applications for use on the Web. Java programs will run on any computer platform that supports Java and since there are many different types of computers attached to the Internet, including UNIX systems, Macintosh computers and PC's, this feature makes Java ideal for programming Web applications.

FEATURES OF JAVA

Java was designed to be both simple and familiar. This was accomplished by removing some of the more redundant and problematic features of C and C++ while keeping the syntax very similar. Java should thus be easy to learn if you know C or C++. Like C++ Java is an object-oriented programming language. For those of you with little background in programming languages, this means that rather than thinking in terms of functions manipulating data, programs are written in terms of objects which know how to perform certain tasks. Java is also statically typed, multi-threaded and garbage collected, to name just a few pertinent buzzwords.



The only feature of Java that really

matters to the ordinary user, though, is that Java is architecture neutral. Java programs are compiled into byte-codes instead of machine code. Byte-codes are machine independent so that a compiled Java program can run on any system for which the Java interpreter and run-time system have been implemented.

Sun Microsystems currently supplies free Java Developers Kits for Solaris, Windows NT, Windows 95 and MacOS. The Java Developers Kit allows you to create Java programs and applets and includes the Java compiler and interpreter. Independent parties are working on porting Java to other platforms, including the DEC Alpha, Next, and the Amiga, but these are not supported by Sun Microsystems.

JAVA AND THE WEB

How is Java used on the Web? Java is used to write small programs, called applets, which can be embedded directly into Web pages. The applets are loaded into your Web browser along with any text, image or audio files on the page. The applet can then run and perform any number of special effects such as animation, graphics, and sound. Applets can also interact with the user through the mouse, keyboard, and buttons and other elements on the page. Java applets can even be entire programs such as games or even a simple spreadsheet.

In order to take advantage of Java applets on the Web you need a Java-compatible Web browser, such as Netscape Navigator 2.0 or Sun's Web browser HotJava™ (beta version only). Netscape Navigator 2.0 for the Macintosh does not support Java, but version 3.0 (in public beta testing) does. Web pages that contain applets often display the "Java Powered" logo on them. Pages that contain applets can still be viewed using a non-Java-compatible browser, but you won't be able to see the applet.

(*continued on page 6*)

Editor's Notes

This month's issue of *Occasional Downtime* has two main articles, one on the Faculty Resource Development Lab and one on Java, Sun's popular new programming language. We mentioned the Faculty Resource Development Lab in our last issue, but in this article we discuss in a little more detail what hardware and software will be available in the lab.

Summer is finally here and Academic Computing is busy implementing our many upgrade plans to software, hardware and the network. Summer also means the beginning of a busy workshop schedule. Several new workshops have been added, including a week-long series on Basic Macintosh Skills and Basic Windows Skills. These workshops are designed to help you become more comfortable and proficient with your computer. We hope that you will find time to attend some of our workshops this summer.

As some of you may know, I recently began experiencing some problems associated with repetitive stress. For those of you who may be interested in learning more about repetitive stress and computer work, especially in terms of preventing injuries, I have included some information on repetitive stress injuries that I found on the Web.

Have a good summer!

—Elizabeth Hodas

Occasional Downtime is published bimonthly by the Academic Computing Department at Harvey Mudd College. It is also available in a variety of formats on the HMC Web Server. Comments and questions can be directed to `downtime@hmc.edu`.

Summer School!

SUMMER WORKSHOPS

- Introduction to the World Wide Web
- Searching the Web
- Creating Your Own Web Pages
- Using Audiovisual Equipment in the Classroom
- FTP (File Transfer Protocol)
- SLIP/PPP
- Basic Macintosh Skills
- Your Macintosh and the HMC Network
- Introduction to Aldus Persuasion
- Introduction to Eudora
- Advanced Eudora
- Usenet News
- Introduction to FileMaker Pro 2.0
- Introduction to Word 6.0
- Introduction to Powerpoint 4.0
- Introduction to Excel 5.0
- Basic Windows Skills
- Your PC and the HMC Network

Looking for something to do this summer? Why not learn a new computer skill by coming to one of Academic Computing's summer workshops? Or learn more about a topic by borrowing a book from AC's reference library.

AC REFERENCE LIBRARY

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Faculty Lab continued from page 1

for creating interactive multimedia applications.

Macromedia Director 5.0 will be installed on both the Pentium and the Power Macintosh. Director is based on the paradigm of a play or movie with a cast, score, and stage. The cast comprises every element that can be part of a Director movie—graphics, text, sound effects and music, color palettes, digital video movies, and buttons. The score is used to control what each element of the movie is doing moment by moment while the stage shows the physical placement of each element.

In addition to animation, sound and other multimedia elements, Director movies can also be interactive. Director supplies a scripting language called Lingo for creating interactive scripts. An important aspect of Director is that it is cross-platform for both authoring and playing back applications. Files created on the Macintosh can be played back on the PC and vice-versa. Director 5.0 also includes Shockwave, a utility that allows you to embed Director-produced applications in Web pages.

The other multimedia package which will be available is Authorware, also from Macromedia. Honnold Library has several copies of Authorware, purchased by the Mellon grant, which can be borrowed for several weeks using your regular library card.

EXAMPLES OF USING THE LAB

The lab can be used to develop many different kinds of multimedia projects, both large and small. Projects could range from the development of a CD-ROM covering the entire content of a course, including text, video, graphics and sound to digitizing a short video clip from a video tape to a QuickTime movie for inclusion on a course home page on the Web.

The slide digitizer might be used to convert images from existing slide presentations for use in Powerpoint presentations or Web pages. While the CD-ROM writer is attached to the Pentium computer it can be used to produce CD-ROMs for the Macintosh as well. It can even be used to produce ordinary audio CD's. The scanners, in combination with optical character recognition (OCR) software, can be used to digitize large amounts of printed text.

Both the Pentium and the Power Macintosh will have large hard drives, but in most cases it will be preferable to use storage space on the network for these projects since digitized audio, video and image files require large amounts of storage space. The fast ethernet cards should make it possible to digitize directly to storage space on the network. To accommodate this and other anticipated needs, we will be resurrecting the file server *Lurch* to be a faculty and clinic file server. We will be adding hard disk space to *Lurch* as necessary. Your existing account name and password for *Kato* will also work on *Lurch*. Faculty members planning a large project should contact Academic Computing first to make sure that sufficient storage space is available to them.

The Faculty Resource Development Lab is in the early stages of its development and only some features will be available in time for summer research projects. Obtaining additional software and hardware for the lab will depend to a great extent on what the faculty feel will be most useful and what additional capabilities are needed. If you have ideas for additional software or hardware please contact Richard Parker by sending e-mail to `Richard_Parker@hmc.edu`.

REPETITIVE STRESS INJURY INFORMATION ON THE WEB

- Typing Injury FAQ
  `http://www.cs.princeton.edu/~dwallach/tifaq/`
  An excellent resource for information on the causes of typing injuries and how to prevent them. Also has useful information about keyboards, alternatives to mice, software monitoring tools and furniture.

- RSI Page
  `http://engr-www.unl.edu/ee/eeshop/rsi.html`
  The causes of repetitive stress injuries and how to avoid them, including some very helpful tips and exercises you can do.

- Avoiding Carpal Tunnel Syndrome
  `http://copper.ucs.indiana.edu/~sheehan/cts.html`
  A reprint of an article from the *University Computing Times* with information on the causes, prevention, and early detection of carpal tunnel syndrome.

- Hand Anatomy
  `http://www.scoi.com/handanat.htm`
  An explanation of the anatomical mechanisms behind carpal tunnel syndrome along with diagrams.

- Berkeley University FTP archive
  `ftp://ftp.csua.berkeley.edu/pub/typing-injury/`
  An FTP archive of materials related to typing injuries including articles, graphics, reviews, etc.

- Safe Computing Home Page
  `http://hamilton.netmedia.com/safe/`
  One of the many commercial sites offering ergonomic computer products. Also has links to other resources about repetitive stress injuries.

- Newsgroups
  `misc.health.injuries.rsi.misc`
  `misc.health.injuries.rsi.moderated`
  `misc.health.therapy.occupational`

- Mailing list
  SOREHAND
  To subscribe send e-mail to
  `listserv@itssrv1.ucsf.edu`
  with the message:
  `subscribe sorehand firstname lastname`

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JAVA SECURITY ISSUES

Java applets are actual executable computer programs that are downloaded onto your computer from the Web and which then run on your computer. As such, it's natural to be concerned about security issues. What are the safeguards against a corrupted applet crashing or damaging your computer's hard drive or files? What's to prevent someone writing a malicious applet that might modify or delete files on your computer?

Java provides a resource called the byte-code verifier which is supposed to scan the code downloaded to your computer and verify that it is safe to run. Unfortunately, in March several researchers at Princeton University (Drew Dean, Dan Wallach, and Ed Felton) discovered a security hole in the byte-code verifier which would allow a malicious applet to perform actions such as reading, modifying or deleting files on the user's machine.

This security hole was reported to the CERT Coordination Center which issued an advisory. The advisory recommends that if you are using Netscape 2.0 that you disable Java when browsing the Web. This advisory was distributed to the HMC community by our Webmaster shortly after it was announced. The problem occurs when you connect to an "untrusted" site that may have a malicious applet. Since applets are downloaded automatically when you connect to a site, a site could be "booby-trapped" with a malicious applet that could damage your computer before you realized it. Disabling Java solves this problem. If you connect to a "trusted" site that contains a Java applet that you want to download you can then choose to enable Java and view the applet. Distinguishing a trusted site from an untrusted site is a matter of evaluating the reliability of the site. For example, pages maintained by Sun Microsystems or Apple would be

"trusted" whereas a site maintained by an unknown person would be less trustworthy. For the record, it should be pointed out that there have not yet been any malicious applets discovered. Both Sun and Netscape are working on solutions to this problem.

Java and HotJava are trademarks of Sun Microsystems, Inc., and refer to Sun's Java programming language and HotJava browser technologies.

SOURCES

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2. Arthur van Hoff, Sami Shaio, and Orca Starbuck, *Hooked on Java: creating hot Web sites with Java applets*, Addison-Wesley Publishing Company, 1996.

3. JavaSoft Home Page, `http://www.javasoft.com/`

4. CERT Advisory CA-96.07, *Weakness in Java Bytecode Verifier*, `ftp://info.cert.org/pub/cert_advisories/CA-96.07` and `ftp://info.cert.org/pub/cert_advisories/CA-96.07.README`

Have you visited Academic Computing's Web page lately?

Check out Academic Computing's home page at
http://www.hmc.edu/comp
for:

- ***AC policy statements***
- ***AC Documentation Library***
- ***Occasional Downtime on the Web***
- ***Current workshop schedule and workshop notes***

Tricks & Tips

CREATING A SCRIPT IN FILEMAKER PRO

If you find yourself performing the same set of actions on one of your FileMaker Pro files then you might want to think about creating a script to automate those steps. For example, if you often need to perform a search and then print a report based on the result of that search then you could create a script to automate the process.

There are two ways to create a script in FileMaker Pro. You can either use the ScriptMaker dialog box to build a new script from scratch or have FileMaker Pro record a series of actions you perform to create a script which you can then edit. The latter method is the easiest way to create a script. To record a script, first perform exactly the actions that you want to automate. When you've done the last action, choose the `ScriptMaker` command from the `Scripts` menu. Type a name for your new script and then click the `Create` button. A second dialog box appears containing two scrolling windows. The first lists the available steps you can use to create a script. The second window shows the steps in your script. This window will already list the script steps you just performed. All you need to do is check to make sure all of the steps that you want are there. You can edit the script by adding or deleting steps. When you're done click the `OK` button and then the `Done` button.

You can tell FileMaker Pro to perform a script by selecting it in the first ScriptMaker dialog box and then clicking the `Perform` button. An easier way though is to have FileMaker Pro include it in the list of shortcuts under the `Scripts` menu. To include a script in the menu just select it by single-clicking on it in the dialog box and then check the "Include in menu" checkbox.

QUESTIONS and ANSWERS

Q: How can I rename a worksheet in Excel 5.0? I'm using several worksheets and want to rename them to something more descriptive than Sheet1, Sheet2, etc.

A: To rename a worksheet just double-click the sheet tab of the worksheet you want to rename. A dialog box will appear. Enter the name for the worksheet in the text box and click `OK`.

Q: I'm going away on vacation for a couple of weeks this summer. I know how to set up an extended absence greeting for my VoiceMail. Is there anything similar I can do for my e-mail?

A: Yes, there is. You can use what is called a vacation program. A vacation program keeps track of everyone who sends you e-mail while you're away. The first time they send you mail it responds by sending them a message saying that you are away and will read your e-mail when you get back. It does not affect your incoming mail, which is saved for you to read when you get back.

There are different vacation programs depending on whether you receive your mail on a UNIX system (e.g. *osiris* or *muddcs*) or a VMS system (e.g. *thuban* or *hmcadm*). The complete instructions for using the vacation programs can be found in the AC Documentation Library on the Web at `http://www.hmc.edu/comp/doc/email/vacation/`. Unfortunately, there is no way to use the vacation programs directly from within Eudora. You will need to log into your UNIX or VMS account using telnet or another method in order to use them.

Q: Have a computer question that has you stumped?

A: Send it to *Occasional Downtime* at `downtime@hmc.edu` and we'll try and answer it for you!