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E-Print

Indigo's short-run color printing system uses liquid ink, unlike its closest competitors, the Agfa Chromapress and other digital presses based on the Xeikon DCP-1 engine. The colors produced by the E-Print are closer to those produced by conventional offset printing, and the system handles elements like fonts with fine serifs better.

See Also

Chromapress; Short-Run Printing

Earth Explorer

Earth Explorer, from Enteractive, Inc. (a division of **Apple Computer**, Inc.) is a multimedia encyclopedia of environmental topics. It gives background facts and figures as well as the history of such endeavors as whaling and power generation; it also discusses hot topics such as energy importing and exporting, ecological conservation, and possibilities of future development. Although Earth Explorer seems aimed towards kids—it is listed as being for ages 10 and above—the program has a large number of articles and graphics that can be useful in many adult presentations.

It's organized by category and then by topic, so the user must decide how to find a particular interest. There's a lot of worthwhile information on this CD-ROM, but finding it can be frustrating. There are "games" that have you

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decide whether arguments for or against a particular topic, such as building a nuclear power plant, are strong or weak. It presents both sides of these questions fairly, without seeming to get trapped in the “politically correct” point of view. The graphics are nice, and the hyperlinked definitions are extremely helpful. It’s not the most in-depth presentation you could find on most of these topics, but it’s a good jumping-off place for a study of environmental issues.

See Also

Software, Educational, Adult; Software, Educational, Grades 7-12; Software, Educational, Pre-School; Software, Educational, K-6

Easter Egg

Programmers often add extra features or entertaining diversions to their programs that are hidden from most users. These tidbits are known as Easter eggs.

Some of the hidden “treasures,” such as useful keyboard shortcuts, have a useful purpose. Other features are put in on purpose as inside jokes.

A program such as the **Web browser** Netscape Navigator contains secret shortcuts to **Web site s** that are built in just for fun. Pressing “Control-Option-F” takes you directly to the Amazing FishCam page (a camera in the Netscape offices, pointing at a fish tank, that sends out a new **JPEG** image every few minutes) at <http://home.netscape.com/fishcam/fishcam.html>.

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Some Easter eggs are undocumented features. They may be poorly tested or serve a need of a limited audience. (There is at least one program that enables certain features only if the Mac's username matches that of a particular person.) Sometimes, people find a documented feature they had overlooked and believe it to be an Easter egg. A great example is the set of command keys that can be used in the Finder. They are documented in the help menu (and elsewhere), but because most users don't know about them, they are constantly being "rediscovered" as Easter eggs.

More often, Easter eggs serve no purpose other than to entertain or amuse. This kind of Easter egg includes hidden pictures or about boxes that can be accessed only after entering an obscure key combination, or clicking just the right place while holding down a certain set of keys. Holding down the Option key while choosing "About This Macintosh..." from the Apple menu shows the "Silicon Valley" about box from the original Finder.

Easter eggs often appear in one version of software and disappear in the next, only to reappear in another form later. The **breakout** game in System 7.5, for example, disappeared in System 7.5.1. To access this game, drag the words "secret about box" from any drag & drop aware application onto the desktop.

Although the game was gone in System 7.5.1, a different egg showed up on the first crop of PCI Power Macs that uses the same trigger. Some say this is one of the greatest Mac Easter eggs of all times. Instead of the breakout game, a picture of the Apple campus appears, with a flag waving in the foreground

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and a list of credits scrolling along the bottom of the screen. Moving the mouse changes the direction of the wind blowing on the flag.

There are hundreds of other Easter eggs in various parts of the MacOS and in various applications. An excellent compendium of Macintosh eggs is located on the World Wide Web at <http://users.aol.com/ixist/easter-eggs.html>. A more general collection (including many Windows Easter eggs) is available at <http://weber.u.washington.edu/~davidnf/egg.html>.

See Also

About this Macintosh Easter Egg; History and Culture of the Macintosh, Overview; JPEG; Netscape Navigator; Web Browser; Web Site; World Wide Web

Eastern Mind: The Legends of Tong Nou

Eastern Mind is an incredible title. The combination of two and three dimensional graphics is virtually flawless, making it one of the best **Myst**-clones that can possibly give the original a run for it's money on the shelves. Though other **Myst**-like titles such as *Welcome to the Future* by Blue Sky Entertainment and *Majestic* from Piranha Interactive are good games, only **Eastern Mind** forges in a new direction adding philosophy to the experience. **Eastern Mind** was developed by Japanese artist Osami Sato, whose gallery-level work adorns each screen. The game is based on Zen-like eastern philosophy regarding patience and life experiences.

You wake up one day to find that your soul has been stolen. From this point

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on you are reincarnated as nine different creatures as you go through the game looking for your soul. Each time you die, you are reincarnated with the extra wisdom which can only be attained at the moment of death by a former self. Each area is very different depending on the body you inhabit when you visit it and the order in which you get there. Only after you have died nine times and found your soul can you be whole. Though death runs through the plot of the game, Eastern Mind presents it in a non-violent, natural part of life sort of way. The innovative alternative to the Myst platform and breath-taking artwork are well worth taking a look at, especially if a game with a little spiritual substance sounds like a good change of pace.

See Also

The Daedelus Encounter; Full Throttle; Myst; Return to Zork; The Riddle of Master Lu; The 7th Guest; TimeLapse

EasyAIFF

See
AIFF

Easy Access Control Panel

Easy Access helps people with disabilities who may have trouble using a

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mouse or the **keyboard**. Easy Access is made up of three features: Sticky Keys, Mouse Keys, and Slow Keys, as shown in the following figure. The Sticky Key function of Easy Access enables you to perform multiple-key commands by pressing one key at a time.

The Mouse Keys function enables you to use your keyboard's built-in **numeric keypad** to emulate the actions of a mouse.

The Slow Keys function helps prevent a user from making accidental keystrokes by requiring the user to hold down a keystroke for a moment before it is registered. This way, if the user accidentally presses the wrong key, it is not registered as a valid keystroke and is ignored. To be a valid keystroke, the key must be held down for the length of time the user specified in the Slow Keys dialog.

To use the Easy Access Control Panel, follow these steps:

1. Choose the Easy Access Control Panel from the Control Panels submenu on the Apple menu (or System Folder).
2. You can enable Sticky Keys by pressing the Shift key five times. To disable Sticky Keys, press the Shift key five more times.
3. To enable Mouse Keys, press Shift-Command-Clear (you can press them one-by-one if you have Sticky Keys enabled already). Now you can use the numeric key pad to navigate the cursor, moving one pixel at a time. To move left use the number 4; to move right, the number 6; to move the cursor up choose 8; and to move down choose 2. To move

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diagonally up, use 7 or 9; diagonally down, use 1, or 3. To click the mouse use 5. Use 0 to hold the mouse button down and the decimal point to release it. You can also set the speed for Mouse Keys and the initial delay before movement begins in the control panel.

4. You can enable Slow Keys from the control panel, as well as request that a clicking sound be made to confirm a keystroke. You can also adjust the keystroke acceptance delay to your preference.

See Also

Keyboard; Keyboard Commands; Mouse; Numeric Keypad; Shortcuts

Easy Open Extension

If you've ever **double-clicked** a document and gotten an **alert box** stating, "Cannot open this document because the application that created it cannot be found," this extension is for you. When you try to launch a document without the application that created it, Easy Open displays a window listing the applications you do have that are capable of opening the document.

This enables you to try and open the document using an alternate application, as shown in the figure. For example, if you have a document created in WordPerfect but don't have WordPerfect installed on your **hard disk**, Easy Open would enable you to open that file using another word application you had installed.

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See Also

Alert Box; Double-Click; Hard Disk

EasyApp

EasyApp is an application **framework** written by Jim Trudeau. Unlike many frameworks, EasyApp is not **object-oriented** , although it does borrow some of its design from object-oriented programming techniques. EasyApp is written in C and was originally written for the *Programming Starter Kit for Macintosh*..

Using EasyApp, programmers can create complex programs more quickly than they could by creating the program from scratch. Because EasyApp already includes much of the basic functionality needed in a Mac application, the programmer can concentrate on the unique functionality of his or her application.

See Also

C; Framework; Object-Oriented Programming

EBBE

See

EvenBetterBusError

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Edit Decision List

See
EDL

Edit Menu

Located at the **desktop level** , the Edit menu is home to the **Undo** , **Cut** , **Copy** , **Paste** , **Clear** , and **Select All** commands. The Edit menu also can have additional features necessary to the application. At the desktop level, the **Show Clipboard** command appears at the bottom of the menu. Some applications also have the Show Clipboard command within the Edit menu.

TIP The Undo command appears as the top item on the Edit menu in most applications, with the **keyboard shortcut** remaining Command-Z.

See Also

Clear; Copy; Cut; Desktop Level; Finder; Keyboard Shortcut; Menu; Paste; Select All; Show Clipboard; Undo

Editions

Editions are files created using Apple's **Publish and Subscribe** feature. These editions are files that can be imported into other documents, but

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maintain a link to the original document that created them. This way, if the original document that created the edition (called the Publisher) is edited, the edition file is automatically updated. If you have imported (or Subscribed to) that edition file in any other documents, they are automatically updated to reflect changes in the Publisher document. This is ideal for linking graphics, tables, spread-sheets, and databases between documents for instant automatic updates.

To create an edition, follow these steps:

1. Select the item you want to publish as an edition file.
2. Choose Create Publisher from the Edit menu.
3. In the Create Publisher dialog box that appears, give your Edition file a name, and choose where you want the edition file saved. Click Publish.

See Also

Publish and Subscribe

Editor

An editor is a program used to create, edit, and modify text.

Every Macintosh user is familiar with word processors; applications that enable you to create textual documents. Word processors give you a great deal of control over the appearance of the document, supporting such things as

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multiple styles and fonts, margins, indents, and other formatting. They also automatically wrap text from one line to the next when you reach the end of the line.

Although editors also enable you to create textual documents, that's where the similarity ends (see the following figures). Editors typically display all text in one font, size, and style. They generally do not autowrap text as you type. What editors lack in formatting tools, they more than make up for in text-handling.

Programmers use editors to edit source code. Editors often include special features to make the programmer's life easier. They might, for example, feature pop-up menus that enable you to jump quickly to any function within a file.

Some editors also are capable of *syntax highlighting*. These editors automatically identify keywords and other programming constructs by modifying their appearance to distinguish them from the rest of the code. Comments, for example, might be displayed in blue or italic.

Most development environments include an editor tailored to edit source code. **Symantec C++** , **CodeWarrior** , and **MPW** all include editors well suited to programming. Stand-alone editors frequently include more features than built-in editors and sport **AppleEvent** -driven interfaces along with the development environments themselves. Editors in this class include **Alpha** , **BEdit** , and **QUED/M** . Other editors, such as **Object Master** , are more correctly classified as **browser s** .

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See Also

Alpha; AppleEvents; BBEedit; browser; CodeWarrior; MPW; Object Master; QUED/M; Symantec C++

EDL

Some high-end video editing equipment accepts EDLs (Edit Decision Lists). This is an electronic document (usually an **ASCII** file) that contains information about edit and transition points in video clips. By simply providing the appropriate video tape (usually **time code** in **SMPTE** format) the equipment assembles the final video using the EDL.

The advantage of EDL's is that a video can be edited using inexpensive equipment, and then the final cut is produced on the high-end equipment. This can save a great deal on money. Adobe **Premiere** outputs EDL's in several different formats.

See Also

Premiere; SMPTE; Time Code

Edmark

See

Imagination Express, Millie's Math House

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EDUCATION

Education in the '90s and beyond will depend on computers as much as on teachers and books. The computer can be an instructional tool with a great deal more flexibility and potential than a printed text. Given the right software, the computer can teach virtually any subject at any level from toddler to doctoral dissertation. Computer learning lets the student go at his own pace. The computer is a patient and non-judgemental teacher, enabling the student to experiment and keep trying. It doesn't punish wrong answers.

The computer as an educational tool predates Apple by several years. Seymour Papert, in his book *Mindstorms*, first proposed the benefits of computers in the classroom. Using the LOGO instruction language, students were able to program a turtle on the screen and/or a robotic turtle on the floor to trace patterns. The benefits of the kind of thinking needed to write instructions for the turtle carried over into other learning activities. The LOGO language is still used in many schools, although today's software is much more sophisticated. In one popular project, students combine LOGO instructions with motorized LEGO™ construction sets to create programmable, moving toys.

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Since its earliest days, Apple Computer has maintained a commitment to education. In fact, the name Apple came as much out of the realization that the computer would be a natural in the classroom, as it did from Steve Jobs's year in an apple-growing commune. The Apple II was released in 1978 and soon found its way into the classrooms and hearts of teachers and students alike. Early software wasn't much better than an onscreen workbook, but the idea of using a keyboard or mouse and video display made computer learning more fun. At the same time, video games were being introduced for the home market. Game technology soon translated into more interactive, entertaining educational programs, and the computer became a necessity, rather than a luxury, in the classroom.

Apple created a separate Education division in 1992 to serve the needs of teachers, students, and school administrators, developing innovative products, services, and programs for learners of all ages. Apple's current statistics show that today, 93% of all students attend schools that use Apple Computers. Out of 84,000 public schools in the U.S., 98% now have at least one computer, and 86% have at least one Apple computer. Among full-time college students who own personal computers, 29% own Apple -- a full 11% more than the nearest competitor. Apple has even made it easier for students and teachers to purchase their own computers with an innovative program of educational discounts.

In many cases, computers have made it possible for students with handicaps or learning disabilities to function in regular classrooms. Because the Macintosh uses the same sets of commands in all of its programs, it's easier

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for dyslexic students to master. The Mac's ability to speak has given many students a new way to communicate with their teachers and peers. Children with cerebral palsy affecting their speech, or those who breathe with respirators, are finally able to "talk" through the Mac. The use of devices such as switches, head pointers, and other keyboard and mouse alternatives lets people with limited movement use the computer for everything from writing letters and playing games to turning lights on and off or calling for help. Blind and visually-impaired users can use outSpoken, from Berkeley Systems, to read anything on the screen. A device called the Optacon attaches to the Mac to provide a tactile representation of whatever's on the screen, by raising and lowering a block of pins which the user runs his hand over, letting blind students study maps, drawings, and scanned images along with the rest of the class.

Information on these and other products to help the differently-abled is available on the World Wide Web from Apple's Worldwide Disability Solutions Group at <http://www.apple.com/disability/welcome.html>.

For More...

If you want to do this...

Go to this entry...

Know which Mac models are the best for educational purposes

Education Models, Macintosh Family

Determine the best software to teach at an adult level

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Software, Educational, Adult

Determine the best software to teach at a junior-high level

Software, Educational, Grades 7-12

Determine the best software to teach at an preschool level

Software, Educational, Pre-School

Determine the best software to teach at a grade-school level

Software, Educational, K-6

Learn how Macs effect the classroom

Teachers, Macs and

Find software that can enable disabled users to better use the Macintosh

Software, Educational, Special Needs

Determine some good sources for education on the Internet

Internet, Educational resources on

Bibliography

For more information on the Macintosh used for educational purposes, refer to the following books:

Macs for Teachers, Michelle Robinette, published by IDG Books, 1995 (1-56884-601-0).

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Mac Multimedia for Teachers, Michelle Robinette, published by IDG Books, 1995 (1-56884-603-7).

Conversation with Dale LaFrenz

Dale LaFrenz set up the Minnesota Educational Computing Consortium, which helped establish the Apple II and then the Macintosh as the computers of choice in kindergarten through 12th grade and beyond. Have you ever played Oregon Trail? You can thank MECC, and Dale, for educational experiences such as that. MECC has grown from a public institution to a private, for-profit corporation and is now being merged into Softkey International.

Maclopedia: How did your consortium get started?

Dale: This is the 25th anniversary of Oregon Trail, a fairly well known product of ours. In 1971, we got it up on a Human Factors 2000A, model 3 teletype, at ten characters per second, so the graphics were not blazing back then.

MECC was formed in 1973, to provide computing services for elementary schools through colleges, with dual Cyber 24s and teletypewriters all across the state. So we predated Apple. And the idea of using a computer in every school predated the microcomputer. We had giant time-sharing systems set up so that every school in Minnesota could have a teletypewriter linked to the Twin City area, where we put the time sharing system. That was a statewide effort.

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Eventually we had 3,000 teletypewriters out there, though not more than 400 coming in at a time.

Along about 1977, some of our people—we call them trainers, and instructional coordinators with teachers in schools—went to a conference in California, and they came back and said, “I just saw something the size of a bread box, and it could do everything these time sharing computers do.” Steve Jobs and Steve Wozniak had been showing their stuff. We went back, and they were out of the garage, in their first warehouse, and they had a vision of Apple as being significant in education, but they hadn’t done anything yet.

There weren’t many other schools doing much with time sharing—one at Stanford and one in Philadelphia—but here in Minnesota, this was where the big machines were being made by Control Data, Univac, Honeywell, and IBM. So we told Steve and Steve what we were doing, and we said, “We’ll buy five of those and take them back to Minnesota, to see if we can sell them to the schools.” And in a year we had sold 500 of them. We had a very receptive computing community, and that launched the relationship between Apple and MECC.

What we did next was take the software we had on the Cyber 74s—it was in BASIC— and converted it to BASIC on the Apple IIs. Then things started popping, and the schools started picking up on microcomputers like the Apple II, the Atari, the TRS 80, and the question was, “What do we do beside teach BASIC?” and “Where do we get software?” And the

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answer was, “Get it from MECC.” Remember, there weren’t any dealers—there weren’t any evangelists—so we developed a membership program, which was a euphemism for site licensing, a fancy way of saying, “We will give you the disk, you pay the price, and you can make as many copies as you want.” That helped propel Apple’s machines over other machines, and got MECC into the business of making software for instruction. MECC was also the largest dealer of Apple II computers for a couple of years; then dealers started popping up, and they didn’t think it was fair that a quasi-state government organization should be taking their business away from them. Of course, we said, “We started it.” But that wasn’t our mission, so we got out of the hardware business. Our mission was to lead the schools in the use of technology.

We kept the software program going for us full force, right up until the Mac was introduced, and the Mac didn’t replace the Apple II for quite a few years—we still don’t have them all replaced—so we continued to produce for the Apple II and grew that membership program for schools around the country.

About 1988 we saw that the Apple II wasn’t going to be the basis for our business for long, so we got onto the Mac and DOS.

Maclopedia: Did you keep upgrading Oregon Trail?

Dale: Oregon Trail 2 is absolutely the number one program in all of education computing for the last thirteen months, either first or

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second on the hit list. Last week, we won the Consumer Software Award at the Software Publishers' Association meeting in San Francisco. That product won over *Fantasmagoria*, from Sierra Online, and *In the First Degree*, from Brøderbund and Lucas Arts. Pretty good competition. It's a whole new product, of course, in its 25th year. This is the second version on CD-ROM, so we have live actors playing the roles in video clips, whereas in the first Apple II version we had stick figures. We were totally enamored that we were moving from the teletypewriter to the Apple II, so we could have animation and things actually moved. Can you imagine trying to type out a graphic, an image of a deer in Xs, and every X has to be put down by having the head go across the paper and make a mark?

A lot of our products today are point-to-point simulation, where kids travel from point X to point Y and make all the decisions along the way and then have to suffer the consequences. So authenticity is a big part of that. No one has done more research on the Oregon Trail than we have. So if you are crossing the river, and you decide whether to caulk the wagons and float across, or ford, we know that river will be at a certain height on that date, from Farmer's Almanac records. Now we have the Africa Trail, too, about those bicyclers who travel from the northwest corner to the southern tip, and Amazon Trail, with a boat going down the river, and MayaTrek, exploring Central America. Those are all on CD-ROM and run on the Mac.

Gone are the days when the teacher could sit down and pound out a

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BASIC program and turn it over to us. Our products are developed internally now, by people with real teaching experience, and we put a lot of effort into making sure that we have authentic content. For instance, for the Oregon Trail, a number of people have traveled the whole trail and done the photography, and we have spent many hours with our people in the historical archives for the Oregon Trail Society of America. Wayne Scudder, a Ph.D. in history, is our Oregon Trail expert; he can tell you anything there is to know.

Now we have 220 employees and everyone has a Mac on the desk, and many have portable Macs to take home. Half our revenue is from the school area, which is dominated by the Mac. In the other half, home revenues are dominated by Windows machines. If we didn't have the school market, we couldn't be so supportive. But our heart is with the Mac.

Education Models, Macintosh Family

Apple Computer provides the **Apple Education Series** —a collection of Macintosh computers configured especially for grades K-12. Each Macintosh is composed of hardware and software to fit a specified educational need. These educational Macs are similar to the desktop models and consumer models, only configured with multimedia, security, networking, and compatibility features required by school systems.

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Educational Macs are labeled “LCs” and come in several models:

- A desktop standard workstation, called the **LC 580**. This computer is designed as an all-in-one model with a single power plug, a built-in 14-inch color monitor, as well as, **stereo speakers**, and a **microphone**. Because the computer, monitor, hard drive, and optional CD-ROM are contained in a single unit, there are not extra parts to track or cables to sort. You can also add an optional internal **double-speed, tray-loading CD-ROM drive**. The LC 580 uses the **Motorola 68LC040 chip** whose performance is measured at 33 MHz and that contains a built-in floating point processor.
- A Power Mac version of the standard workstation, called the **5200/75 LC**. The 5200 LC is also an all-in-one computer similar to the **Performa 5215CD**. This computer is also powered by a single plug with no external parts to track or sort. The computer is fully integrated into the stereo speakers and monitor, creating a small footprint. The monitor consists of a multiscan 15-inch color display and the computer comes with a quad-speed, tray-loading CD-ROM drive, stereo speakers, and a microphone. You can also add an external video connector card to create a real-time audio-visual authoring and development tool or a television tuner. The 5200 LC is based on the **PowerPC 603** processor running at 75 MHz and comes standard with **256 kilobytes of level-2 cache** for enhanced performance.
- A multimedia workstation based on the PowerPC chip, called **5300/100**

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LC. The 5300 LC is a desktop Power Mac configured for educational use. It has the speed to support such performance-heavy tasks as 3D-modeling, Computer-Aided-Design, and other computational-based processing. The 5300 LC comes equipped with a video capture card that support direct video input and output to an LCD projection panel or monitor; a television tuner that supports the monitoring of television on a window on the computer's display. The workstation includes a 15-inch color monitor, quad-speed, tray-loading CD-ROM drive, stereo speakers and microphone. The computer uses a PowerPC 603e 100 MHz processor with 256K level-2 cache.

- A **DOS-compatible** workstation, called the **LC 630**. The LC 630 is based upon the Performa 630 but with the added inclusion of a 66 MHz 486 DX2 DOS Compatibility Card. The DOS card lets you run MS-Windows-based software on your Mac concurrently with your Macintosh software. This configuration lets you connect your Mac to multivendor networks and share resources such as printers and file servers with other types of computers. The LC 630 is based upon a Motorola 68LC040 processor running at 33 MHz. The computer comes configured with a 14-inch color display, stereo speakers, microphone, and internal double-speed, tray-loading CD-ROM drive. You can optionally add AV components to perform real-time video capture and processing as well as output the resulting program to videotape.

The following table summarizes the components and configurations included in each Macintosh model.

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The Educational Macintosh Series

<i>Macintosh Model</i>	<i>Processor</i>	<i>Memory/Storage</i>	<i>Expandability</i> <i>Other Options</i>
LC 580	33 MHz 68LC040	8M/800M	LC Slot, Serial Port, Video In, and Video Out External Video Connector; Video-In card; Apple Presentation System
5200/75 LC	75 MHz PowerPC 603	RISC with 256K level-2 cache 8M/800M	Serial Port, Processor Direct Slot, Video-In slot, and Video-Out slot Apple External Video Connector, Video-In card, Expansion bay for TV tuner
5300/100 LC	100 MHz PowerPC 603e	with 256K level-2 cache 16M/1G	LC Slot, Ethernet Port, Video-Out connector, built-in TV tuner, 16-bit stereo sound in/out Video Capture Card
LC 630	33 MHz 68LC040 and 66 MHz 486 DX2	DOS Compatibility Card with 4M DOS RAM 8M/500M	Serial Port; LC Slot; Video-In slot; Expansion bay for TV Tuner Video-In card; Apple Presentation System; TV tuner

See Also

680x0 Processor; DOS Compatibility Card; LCs; Performas; LC Slot; PowerPC; Processor Direct Slot

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Educational Software

See

Software, Educational, Adult; Software, Educational, Grades 7-12; Software, Educational, Pre-School; Software, Educational, K-6

EfiColor

For several years, **QuarkXPress** has come with the EfiColor **XTension**, intended to handle **color management** from within XPress. Electronics for Imaging also sells EfiColor Works, which expands the XTension's capabilities and includes an interface for **Photoshop**. EfiColor Works can create **device profiles** for scanners and comes with a library of pre-created profiles for output devices and monitors.

See Also

Color Management; Device Profiles; Photoshop; QuarkXPress; XTensions

Eight Ball Deluxe

See

3-D Ultra Pinball

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Eject Disk Command

The Eject Disk command, found on the **Special menu**, ejects a selected disk from the disk drive. After your disk has been ejected, however, a ghosted version of the disk's icon remains on your **Desktop**, as shown in the following figure.

To remove the ghost version, drag the ghost disk icon into the **Trash**. It's not necessary to empty the Trash. If you drag the ghost icon into the Trash and it doesn't go away, some resources of that disk are still in use. In **System 7** and higher, you get a dialog box stating, "The disk (the disk's name appears here) cannot be put away because it contains items that are in use." If this happens, re-insert the original disk and make certain all documents on the disk have been properly closed.

This ghosting of the disk can create additional problems. If you **double-click** the ghosted disk, the Mac brings up a dialog box asking you to reinsert the original disk. You can make this dialog box go away by hitting ⌘- (period) on your keyboard or by inserting the original disk.

You can run into more problems if you eject a disk using the Eject Disk command and that disk has an open window when you eject it. If you try to close those windows, perhaps to reduce clutter on your desktop, you're met with a dialog box insisting that you reinsert your disk. It asks for the disk because a change to the disk has been made (a window was closed), and it needs to update that information to the original disk. Having your system

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demand disks that have already been ejected can be a frustrating experience. Because of the problems that ghosting disks cause, many people prefer to use the **Put Away** command (⌘-Y) rather than Eject Disk. The Put Away dismounts and ejects the disk but does not leave the ghosted version of the disk on the desktop.

To eject a disk from the desktop, follow these steps:

1. Click the disk's icon on your desktop to select it.
2. Choose Eject Disk (⌘-E) from the Special menu.
3. The disk ejects from the disk drive, but a ghosted version of that disk remains on your desktop.
4. To remove the ghosted disk, drag the ghosted icon of the disk into the Trash.

To eject a disk from the desktop without leaving a ghosted version of the disk, follow these steps:

1. Click the disk's icon to select it.
2. Choose Put Away from the File menu.
3. The disk ejects from the drive.

TIP You can also eject a disk by dragging the icon of the disk into the trash can. A ghosted version of the disk does not remain on the

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desktop when this is done.

See Also

Desktop; Disk; Double-Click; Ejecting Stuck Disk; Finder; Put Away; Special Menu; System 7; Trash

Ejecting Stuck Disk

If you have a **disk** stuck in your **disk drive** and can't remove it by using the **Eject Disk** command from the **Special menu** or by dragging it into the **trash**, you can eject the disk by taking an ordinary paper clip, straightening it out, and pushing the straight end into the small hole that appears just below the disk drive on the outside casing of your Macintosh. Believe it or not, that's how the disk drive was designed. When you stick the paper clip in, you'll get some resistance from a wall, but you've got to press fairly hard to get this manual override to work. Remember, it's your muscle manually popping the disk out of the drive, so don't be afraid to give it a firm push. Usually the disk comes right out. What would cause a disk to get stuck in the drive? The two most popular culprits are a bent metal door on the disk that's designed to protect the disk, or a label that's starting to peel off the disk. These two factors cause 95% of the stuck disk situations you run across.

To eject a stuck disk, follow these steps:

1. Straighten out an ordinary paper clip or use any thin metal wire.

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2. Push the paper clip into the small paper clip-sized hole just beneath the disk drive on the front of your computer. The hole appears below and to the right of the disk drive.
3. As you push in the paper clip, you feel the paper clip hit metal. Press against that metal to manual eject the disk. It sounds crazy, but that's how it's designed to work.

See Also

Hard Disk; Online Services

Elastic Reality

Elastic Reality has been used to create more morphing sequences in major TV and Hollywood productions than any other warping and/or morphing software. One of the production companies that used it got an Academy Award for their efforts some years ago. A version of it exists on all major platforms, and the best electronic artists and animators have incorporated it into their study and work. It is not easy to master because of its features, but once you get control over it, morphing and warping magic will be as close as your fingertips. Elastic Reality presents the user with two screens, Project and Edit. The project screen shows the source and target image as well as an effects track, all laid out like filmstrips. An Elastic Reality “Project” contains graphics and the point-line data that addresses the graphics, and all are saved to a specified project file. If you quit the project before rendering is

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accomplished, the program asks if you would like to save it at that stage in order to come back later. Every option has been added to the program that addresses the needs of the professional animator, from work habits to options and tools. Elastic Reality is both a warping and morphing platform, and it operates with one image, two (source and target), or with two sequences (single frame animation files). The capacity for fine tuning morph options is Elastic Reality's main strength, and its central asset for professional use.

Interface Design The Edit window's interface was made for larger professional monitors. The Elastic Reality image area covers most of the screen, and is flanked by the non-moveable toolbox on the left and menus at the top. The toolbox is small but full featured, and includes: Selection Arrow, Bezier Adjustment, Point Move Tool, Correspondence Point Connect Tool, Magnifying Glass (Zooms), Hand (Moves Graphic), Freehand Curve Tool (for those who hate to work in beziers, but need beziers as the outcome), Bezier Curve Pen (for those who love to work in beziers), and a Rectangle and Oval Shape Tool. The top menus are used for viewing either or both source and target images, and adjusting the contrast and brightness of each. A unique slider at the top allows you to mix the percentage of each image together to view the data, or to view either source or target graphic.

How it Works Elastic Reality created many of the basic guidelines that other morphing software has incorporated since its release, so as you might expect, it too follows the basic morphing principles. Bezier curves are drawn to outline image features in the source image, and moveable clones of those points appear on the target image. Points on the curves are moved until the

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shaped outlines match the image features, and morphing is set in motion. Elastic Reality doesn't stop there however, but adds more fine-tuning options to the process. "Correspondence Points", the same data point on the source and target image, can be connected with correspondence lines. This allows you to make sure that no correspondence lines cross. When correspondence lines cross, the result is a morph that does unpredictable things instead of a smooth transition. Control points can slide down a curve to remove the potential for correspondence crossings. Bezier curves are handled and shaped according to customary rules, by altering the size and direction of their control arms.

A drawn curve from the source image is copied and pasted into the target image. Once there, it can be placed exactly around the desired image elements. The precision of the freehand tool can be set from 1 to 100. The higher the setting, the more points on the curve. A preview dialog allows you to set the preview type (Warp A, Warp B, or Morph), what percentage of the total frames or how many of the total frames will be rendered, Outer Edge handling (Fixed, Sliding, Convex Hull, Cookie Cut... all of which affect the outlines of the final rendering), edges (Soft or Hard), Precision (Fast to Best), Final Transparency (Sharp or Smooth), and Merging (Defined, Default, Linear, 50% or controlled by an external alpha channel source), and Blurring (from None to a percentage of the mix). Data interpolation and anti-aliasing are supported. Then the wireframe or preview is rendered, and can be played back or played in reverse with VCR-like controls. Shapes can be loaded and saved independent of the underlying graphics, to be used with

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other images.

Warping and Morphing Data settings like those indicated for preview options are also presented for Warping and Morphing actions. Because of the extensive care taken in fine-tuning everything in the preview mode and wireframe rendering of the shapes, there are seldom any unpleasant surprises after the sequence is rendered. This is necessary because of the extensive projects that Elastic Reality is used for, projects that often render thousands of frames at a time. Using the same settings for the morph preferences as in the previews produces the same exact results.

Animation Bringing up the output options window is the first step in the rendering process. Elastic Reality allows you to set the size of the images, aspect ratio, and whether PICT file numbers should increment or decrement (allows the animation to be recorded in reverse). The Output File Settings dialog allows you to set the output data path and whether the sequence will be a QuickTime movie, PICS, or numbered PICTs. The Output Compression dialog gives you the chance to set the compression type and image quality settings, as well as frames per second. Network users can also choose to save the data across to another platform. Rendering on a PowerMac is very fast, with single frames being rendered every few seconds. Of course, if the size settings are extremely large, they'll take longer to render.

Save / Load Conventions Projects can be saved and loaded, including all of the shapes that were drawn and correspondence point data. Sequences are rendered as QuickTime movies, PICS, or numbered PICTs.

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Documentation Several animated tutorials ship with the software, and the documentation uses these to walk through each level of the warping and morphing process. In addition, a video is available that allows you to see some of the more professional uses the software has been targeted to. The software comes with two manuals, Getting Started and the User's Docs. A full explanation of creating shapes with bezier curves is included.

Addendum Elastic Reality is a very high end program, and it's optimized for the PowerMac. The only caution is that once learned, it becomes a very addictive pastime as well as a high end professional tool.

Electronic Banking

Electronic banking isn't as new as it might seem. Prodigy first offered it as far back as 1987. Through arrangements with a large commercial bank, Prodigy was able to offer its users checking, bill paying, and other banking services by connecting to the bank through a Prodigy gateway. The service didn't prove profitable and was later discontinued. But the notion lingered.

With the advent of the World Wide Web, there's a revival of interest in the possibility of banking by modem. Some experts believe that by the year 2000, over 13 million American households will do their banking online, rather than standing in line. Many of the nation's larger banks are already going online with Web pages giving information on their services and a password encrypted gateway to banking services. Boston's BayBank, reaching out to

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the thousands of college students who invade the Boston area each fall, created a virtual dormitory hallway, complete with an ATM locator, a bulletin board of events and concerts, and a daily page from a serialized mystery. As they say, "It's more fun than laundry."

Other financial services have been available online for several years. Brokerage houses have gateways on Prodigy, America Online, and CompuServe. Investors can check stock quotes and make transactions online after they're registered with the appropriate broker. For the general public, stock quotes are available at many places online, but in accordance with the rules of NASDAQ and the New York Stock Exchange, they're delayed by 15 minutes.

As of this writing, banks are moving cautiously ahead with plans to make accounts available on the Web. There are still security issues to be fully resolved, but the chances are good that by the time you read this, you'll be able to at least sign on and check your balance or transfer money between savings and checking accounts. Withdrawals are going to be a little more difficult to manage, although one suggestion is to provide users with a magnetic card scanner and a striped card. Entering the account number and running the card through the scanner would encode a credit amount, which the user could spend like cash at any place equipped to read and debit his card.

The biggest issue for potential users of an online electronic banking system isn't the security question, but rather the enforced organization it requires.

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According to a study commissioned by Microsoft and reported in *Money* magazine, most people still keep their bills in a shoebox or stuffed into a drawer. And most people queried wait until the last minute to pay bills. Banking by modem will demand some changes in user habits.

Electronic Banking and Security Concerns Banking online is convenient, but is it safe? Can hackers gain access to your bank account or credit card information? Despite the best efforts of some of the finest criminal minds in the world, the trillions of dollars that digitally pass back and forth each day through banks, other financial institutions, and government clearinghouses do so unmolested.

It's not that hackers and criminals can't crack the encryption codes. The government's 14-digit, supposedly uncrackable encryption scheme was "broken" in less than two weeks, by some well-meaning people who simply wanted to prove it could be done. But they couldn't do it without getting caught. It's nearly impossible to break into a system without leaving some evidence that you've done so, and the penalties are severe.

Security is less a concern in cyberspace than it is on the streets, according to government researchers at the Sandia National Labs in Albuquerque, NM. "Live" thievery is much easier. Credit card and ATM card fraud occur mainly in situations where the crook has obtained the actual card, or the number from a discarded charge slip or ATM receipt. This is not to say that such things can't happen on the Web, but it's unlikely, given the difficulty of orchestrating a large scale fraud without getting caught.

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The greater risk to your personal security and privacy, many experts feel, is not the hacker cult, but rather the many government agencies with a legitimate excuse for poking through data to trace criminal activities.

Several schemes have been proposed for a digital cash system, some anonymous and untraceable and others with no privacy in the transaction system. Agencies, such as the FBI, argue that untraceable digital currency would be a boon to kidnappers and extortionists. It might be possible for a kidnapper or terrorist to demand, and get, money electronically transferred without the payer even knowing what country to which the money was being sent.

There's also the possibility of new kinds of digital crime arising, as more people begin to look for ways to get rich on the Internet. Making digital currency traceable prevents one kind of crime, but could lead to others. Imagine electronic spies following you around from a terminal somewhere, checking on the bus or trolley you take to work, the coffee and doughnut you buy, the newspaper you get from the vending box, what you have for lunch, and even who you call from the pay phone... Could you be black-mailed for that hot fudge sundae, or the double Scotch? Does your boss want to know that you're reading the Racing Form? Most of us lead entirely blameless lives, of course, but one has only to remember the McCarthy-era witch-hunts to see the fearsome possibilities.

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Electricimage

One of the highest end animation systems in the world.

- True 3D Inverse Kinematics—Allows models with joints to behave like their real—world equivalents.
- Renderama (55KB)—Batch Processing and Network Rendering supporting slave camera render servers on Mac, Power Mac and SGI formats.
- State-of-the-Art Anti-Aliasing—Separate controls are available for anti—aliasing levels (settings from 4x4 to 64x64) and sampling levels (settings from 1x1 to 64x64). Also includes adaptive filtering.
- Bezier Motion Path Splines—Familiar to Adobe Illustrator.
- Motion Picture and Broadcast Quality Rendering Engine
- Sync Sound—Animate directly to sound cues. You can import and view an unlimited number of sound files (memory permitting) in any mode of the project window at frequencies from 5KHz to 64KHz.
- Smart Deformations—Add stretch, bulge, twist and more to objects in your environment.
- Texture Mapping—With Summation or MIP filtering, which retains the quality of the original file, without jagged anti—aliasing problems. Complete control over resolution. As many as 4,000,000 textures in a

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scene (memory permitting).

- OMF Support—Supports image translation to and from the Open Media Framework format.
- Project Window Overview—View data in time mode, by keyframe or index. Frame rate and resolution presets include NTSC, PAL, HDTV, 35mm film, Vistavision and IMAX.
- Vibe—Three animation tools (Randomize, Jolt and Spring) that can add vibrations or bumps to an animation path and add random flickering values to intensity controls, with parametric control over attack, decay, hold and frequency.
- Professional Gamma Control—Specific input and output monitors gamma control.
- Quick Render Previews
- QuickTime Compatible

Light Effects

- Five Different Types—Radial, parallel, spot, ambient and camera point light with full color and intensity control.
- Fully Animatable—Including position, color, intensity, drop—off, inner and outer cone angles, and light factor.
- Millions of Allowable Lights—You can have 4,000,000 lights in a scene

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and 4,000,000 shadow casting light sources (RAM permitting).

- Lens Flares—Incorporates realistic flare transitions as an object moves to obscure the light source.
- Light Rays (88KB)—Light Rays are created through 3D volumetric rendering.
- Glow Lights—Casts shadows within those glows.
- Depth Buffer Shadows—Controls how each shadow is cast.
- Fog And Smoke—Adds atmosphere to your 3D environment.
- Motion Blur
- Motion Vector—Rendered blur, adding motion blur to a fully anti-aliased, full rendered frame.
- Frame Multi-Sample—Renders many frames and then samples them down to a final blurred image.
- Point/Line—Very effective when used with particle generation.

Internal Plug—Ins

- Mr. Nitro—Literally blow your models apart. Includes explicit motion control (gravity, air resistance, and so on).
- Mr. Blobby—For metaball style effects.

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- Dicer!—Applies a user-selectable mesh to any previously made model.
- Particle Generation—Generate fountains, sparks, fireworks and more. Every aspect is controllable and animatable.

Model/Font Import

Imports over 30 Different Model Formats, including formats from different platforms.

- 3D Font Models—Created instantly from PostScript Type 1 fonts with automatic bevels and fillets.

Object Deformations Arbitrary Scale, Arbitrary Shear, Twist, Taper, Bend, Bulge, Linear Wave, Circular, Wave, Bezier—including Oversample, Adaptive, Independent Sampling, Anti-Aliasing for Each Group, Sampling Levels from 1x1 to 64x64, Anti-Alias Levels from 4x4 to 64x64

Electricimage Plugins

Northern Lights Productions

Big Dipper: Used for generating star fields and asteroids. Point stars can be colored using the seven spectral star types. Model stars can be animated to tumble and roll.

Dante: Emits particles from the surfaces of objects. Particles will follow the motions of the parent object whether it is orbiting, spinning or tumbling. Dante emits point particles and object particles.

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Zeus: Generates three-dimensional lightning effects with explicit control over turbulence, branch quantity.

DaVinci's Chisel: Reveals hidden models one section at a time.

LiquiFACT: A new plug-in that melts models.

Onyx Computing

Tree: The ultimate tree modeling software. Over 100 parametric files of broadleaf and conifer trees, palms, bushes, and a collection of plants.

Develop Your Own Plug-Ins

Download the Electric Socket Toolkit. The Toolkit is free of charge.

Use in Feature Films

- The Net
- Batman Forever
- Congo
- Sleepless In Seattle
- Drop Zone
- Richie Rich
- The Mask by Dream Quest Images

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- The Mask
- Jurassic Park
- Species
- Star Trek Generations
- Terminator 2: Judgment Day
- Beverly Hills Cop III
- Naked Gun 33[1/3]
- The Shadow
- Precious Find

Electric Image, Inc.

Fax: (818) 577-2426

Phone: (818) 577-1627

Web: <http://stingray.cac.psu.edu/~eias/>

See Also

3D; Rendering

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Electronic Mail

See
Email

Electronic Prepress

See
Prepress

Ellipsis

An ellipsis is used to indicate that something has been left out or that there has been a sudden shift from one topic to another. Even though it looks like three periods in a row (like this...), the spacing might be different. A true ellipsis is produced by pressing Option and the semicolon key.

An ellipsis following a menu item means that selecting it will open a dialog box.

Em

See
Printing Terms

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Email

Email is the product of using a network to send and receive messages. Linked by high-speed data connections, email enables you to compose messages and transmit them in seconds to one or more recipients anywhere around the world—as long as you know their electronic addresses. Email can be sent via the Internet as well as through the office with products like CCMail and Microsoft Mail.

Email Server

See
Servers/Email

Emoticons

Typographical representations of things such as smiling faces used to annotate a text with a suggestion of the author's feelings about what is being written. This set of keyboard symbols, which are sometimes called "smileys," can avoid misunderstandings with **Usenet** audiences who can't read body language or tune into the tone of voice. Now a subculture within the culture of the **World Wide Web**, emoticons can be found on T-shirts as well as in **electronic mail** messages and often are meant to be viewed by tilting your head.

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For example, :-) means the author is smiling, and :-(conveys unhappiness.

See Also

Electronic Mail; thread; Usenet; World Wide Web

Empire Deluxe

In Empire Deluxe, a war **strategy game** from New World Computing, your goal is to build an empire large enough to take over that of every other player, computer or otherwise. Because the game incorporates network play, even **cross platform** play between PC and Mac, you have the chance to conquer up to six possible opponents by using your weapons and man power to plunder their empires before they burn your city to the ground. Empire Deluxe's network play is adjustable so that beginners can play against handicapped experts, making the slaughter is a little less skewed to age and experience. You can also edit the maps, opt for a random landscapes, or play a preset scenario. Although Empire Deluxe originally debuted on DOS, the game transports well to the Mac.

See Also

Allied General; Chaos Overlords; Pax Imperia; Sid Meier's Worlds; Spaceward Ho!; Strategy Games; V for Victory; Warcraft

Empty Trash Command

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This command, found on the **Special menu**, empties the contents of the **Trash** at the **Finder** level. Items in the Trash are not erased from your disk's or hard drive's **directory** until the Empty Trash command is invoked. To view the contents of the Trash, double-click the Trash icon (a trash can). The window reveals the contents of the Trash. If there is an item in the Trash that do not want deleted, click the item and drag it out of the Trash on to the desktop, a disk, or a hard drive window. You can also click the item you want to take out of the Trash and choose the **Put Away** command (⌘-Y), and the file goes back to the location it was in before you dragged it into the Trash.

Because the Empty Trash command permanently deletes files from your drive, the Macintosh has a number of safeguards to keep you from throwing away important files by accident. The first level of protection comes from the trash can. When you choose Empty Trash, you get a dialog box that says, "The Trash contains (the number of items in your Trash). It uses (the combined amount of disk space of all files in the Trash is calculated and displayed here) disk space. Are you sure you want to permanently remove it?"

If you're certain you want those items permanently removed, click OK; if not, press **Cancel** and the Empty Trash command is canceled, leaving your files intact inside the Trash. This safeguard gives you a chance to drag a file back out of the Trash if you put it there accidentally or change your mind.

You can turn the Empty Trash warning off by clicking the Trash can icon and selecting **Get Info** (⌘-I) from the **File menu**. When the Get Info windows appears, you see a checkbox named "Warn before emptying" that is

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selected. Click that checkbox to deselect it. The warning dialog no longer displays and the Trash is emptied after choosing the Empty Trash command.

Another level of protection comes into play if you choose Empty Trash and the Trash contains an item that is currently in use. You get the warning dialog box, "The item (the item's name appears here) cannot be deleted because it contains items that are in use. Do you want to continue?" The dialog box gives you the choice of "Continue" or "Stop," both of which do exactly the same thing; nothing. Your item remains in the Trash, but it cannot be deleted. Only after you've closed the file that was in use can you delete the file by using the Empty Trash command.

Another situation may arise when you select the Empty Trash command and you get the warning dialog, "The Trash cannot be emptied because all of the items in it (other than folders) are locked. To delete locked items, hold down the **Option key** while you choose Empty Trash." You can take Apple's advice and hold the Option key, or you can go to the file in question, click the file, and select Get Info (⌘-I) from the File menu. In the lower-left corner, a marked checkbox called "Locked" indicates that this disk is locked and cannot be emptied from the Trash. Locking files that you don't want accidentally thrown away is a popular way to prevent the loss of important files. To unlock a file, click the locked checkbox. The file can now be deleted using the Empty Trash command.

To empty the Trash, follow these steps:

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1. Select Empty Trash from the Special menu.
2. A dialog box appears telling you, "The Trash contains 1 item. It uses 2K of disk space. Are you sure you want to permanently remove it?".
3. If you want to permanently delete the items in the Trash, click OK. If not, click Cancel and the items remain in the Trash, but they are not deleted.
4. If you decide that you don't want to delete certain items in the Trash, open the Trash by double-clicking the trash can icon. This opens the Trash window, enabling you to drag items you don't want deleted back onto the desktop or your hard disk.
5. If no items are locked or currently in use, the Trash is emptied and the trash can icon, which is bulging as it were full, changes to a regular trash can icon, indicating that the Trash has been emptied and the files within the Trash were deleted.

See Also

Cancel; Directory; File Menu; Finder; Get Info; Option Key; Put Away; Special Menu; Trash

Emulator

With the development of the Power Macintosh, Apple had a difficult choice to make. They could implement an entirely native operating system with a new

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model of program behavior (a time-consuming and compatibility-ruining proposition) or implement only the most time-critical portions of the OS in native code, and leave the rest in 68K code to be ported later. This second option has the tremendous advantages of speed and compatibility, and as a result, was the path Apple chose.

An emulator is a program that enables a program written for one kind of computer to run on another. The most widely used emulator on the Macintosh is the 68K emulator built in to every Power Macintosh. This emulator enables programs written for the Motorola 68000-series microprocessor used in earlier Macs to run flawlessly on the PowerPC chips in the Power Macs.

The 68K emulator is at such a low level in the Power Macintosh architecture that it goes completely unnoticed by most users and even programmers. In fact, the emulator lies below much of the operating system, as it is used to run parts of the MacOS that have not yet been ported to native PowerPC code.

The MacOS includes a special **Mixed Mode Manager** that enables the Macintosh to switch seamlessly from executing native PowerPC code to executing emulated 68K code without a hitch. The stability of the 68K emulator combined with the cleverness of the Mixed Mode Manager are largely responsible for the extraordinarily smooth transition to the Power Mac.

Another more obvious emulator is **SoftWindows** from Insignia (see following figure). In this case, the emulator runs as a separate application on top of the operating system. SoftWindows emulates an Intel-based personal

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computer running MS-DOS and Microsoft Windows.

Emulators translate individual **machine language** instructions from the instruction set of one microprocessor into the instruction set of another. For many instructions, this translation is trivial, as both instruction sets may include nearly identical instructions. Other times, there is no simple translation from one to the other. In these cases, the emulator must create a series of instructions that accomplish the same task in the end. In either case, the overhead introduced by the emulator slows down execution compared to running the code directly on a non-emulated processor. Sometimes this overhead can be dramatic, which is why SoftWindows often provides only lackluster performance, even on relatively fast Power Macs.

One way that emulators can improve their performance is through *dynamic recompilation* (DR). As a section of code is executed by a DR emulator, it is translated all at once (**compiled**) into the other instruction set. The emulator maintains a cache of previously-translated code that can be executed again without translation.

See Also

Compiled; Machine Language; Mixed Mode Manager

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See

Printing Terms

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Encapsulated Postscript File

See
EPS

Encoding Files

Encoding a file makes it transportable between different kinds of computers and different networks on the Internet. Each computer's operating system maintains a different description of what a file is and how that file is structured. Encoding is not unique to the Macintosh, but Macintosh files do have a unique structure and often require special treatment before they can be served from a non-Macintosh platform.

Macintosh files consist of both a **resource fork** and a **data fork**, either of which may be empty in particular cases. Applications, for instance, consist almost solely of resources. Word processing files consist primarily of data. Other kinds of files, such as sound files, contain both resources and data.

When you send a Mac file to a UNIX computer, for example, the contents of the resource fork must be moved over to the data fork in order for the file to be stored in the alien operating system's directory.

A standard way of storing resources in the data fork of a Macintosh file is *MacBinary II*. A MacBinary file is a special type of binary file. A *binary file* uses all eight of the bits in it; in a non-binary file, the top bit is set to zero.

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Some of the networks that comprise the Internet, such as **Usenet** and **email**, do not support the transfer of binaries. The ASCII text files used on the Internet are seven-bit files, that is, they use only seven of the data bits in them.

A user who wants to transport Mac files on the Internet, then, must encode the file in a text-compatible format, or in other words, change the binary file to a non-binary file. The most common format for encoding Mac files as non-binary files is called **Binhex**, and Binhex files are signified by the extension “.hqx”—a common site on **FTP** sites such as **software archives** for the Mac.

example, if you have a Macintosh file, such as a shareware or freeware application, that you want to transmit to a site on the Internet, you need to do the following:

1. Open a freeware encoding program such as MacBinary (available at <http://wwwhost.ots.utexas.edu/mac/pub-mac-compression.html>) or BinHex 4.0 (available at <http://web66.coled.umn.edu/Cookbook/Utensils.html>).
2. Open the file you want to encode: on BinHex 4.0, you choose TEXT to Upload from the File menu.
3. Save the file with the correct name.

If you encounter an application saved with the file extension “.hqx” the best application for **decoding/decompressing** that file is **Stuffit Expander**, a freeware application created by Aladdin Systems, Inc. (also available at

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<http://web66.coled.umn.edu/Cookbook/Utensils.html>).

See Also

Decoding/Decompressing Files, FTP, Macintosh Archives, Stuffit Expander

End Key

If you are at the **desktop level**, pressing the End key on an extended keyboard takes you to the bottom of the **active window**. Within an application, pressing the End key moves your **cursor** to the last space at the bottom of the document's visible window.

See Also

Active Window; Cursor; Desktop Level

Energy-Star Monitor Issues

The monitor is the single biggest consumer of power in the Mac. With dozens or hundreds of computers in a building, the energy bill for the monitors alone can be significant. Even at home, leaving a monitor on all the time can use some power.

Most monitors sold today meet the EPA's Energy Star rating for equipment, which requires that less than 30 watts of power be used. Now, if you think of the light and heat a 30-watt light bulb puts out and compare it to what your

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monitor puts out, this may seem impossible. Monitors meet the standard by going into a sleep mode during inactive periods. A tap on a key usually brings the monitor back to life. The power savings can be substantial. For instance, The Apple 15-inch Multiple Scan monitor uses 90 watts of power in full operation, but less than 5 watts when sleeping. Even Apple's big-screen monitors use only 10 watts when asleep.

The so-called **PCI Macs**, including the Power Mac 7200, 7500, 8500, and 9500, come with an Energy Saver control panel (see figure) that will put the monitor to sleep, even if the monitor doesn't have its own sleep mode and is not Energy Star compliant. Energy Saver brings down power usage for the entire computer system to under 30 watts. It also spins down the hard drive, and "sleeps" the CPU, similar to the sleep state of **PowerBooks**. Only the fan stays on when the Mac is in sleep mode. Energy Saver can also schedule automatic shut downs and startups through the Energy Saver Control Panel.

Of course, the ultimate power saver for a monitor is to turn it off. You can safely turn off your monitor while leaving your Mac on.

See Also

Monitors; Monitors, Common Models; Multimedia Monitors; Multisync Monitors; Portrait and Pivoting Monitors; Monitors, Size of

Enter Key

In most cases, the Enter key (on extended keyboards) is the same as the

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Return key . In a **dialog box** where you can use the Return key to choose the **default button** (any button with two dark lines around it), you can use the Enter key instead. Within applications, (such as databases and spreadsheets) you can use the Enter key to move the insertion point to the next available entry point. In word processing documents or page layout documents, the Enter key functions like the Return key.

The Enter key is also used as the equals (=) key when using the Calculator DA.

See Also

Calculator DA; Default Button; Dialog Box; I-Beam Cursor; Return Key

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ENTERTAINMENT

What good would anything be without a flashy fun side? Not everybody simply sits on a desk and types numbers into a spreadsheet all day. Sure, we all have to keep track of our finances and turn reports in every once in a while at the office, but the Macintosh is more than just a work horse. The PowerMac is the perfect gaming machine and more companies than ever are starting to take notice. Even companies with mainly PC games in their catalogs such as **Sierra Online** and **7th Level** are starting to bring their titles over to the Mac. New games for the Macintosh are coming out in record numbers and are cooler than ever, many optimized for the PowerMac.

Power Macs can handle everything from **Network**-capable software to stereo sound and top of the line high-resolution graphics to support today's influx of **3-D** and video incorporation in computer games. With the hassle-free Mac interface, without doing much more than installing a few new items into your system folder and clicking a game icon, you can be running top-selling games like **Marathon** and **Descent** in no time.

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Conversation with Rochelle Garner

Rochelle Garner started out writing for Regis McKenna, getting the word out about Apple before going on to *MacWeek*. She has recently become a freelance journalist, writing for a wide spectrum of computer and business magazines. Here, she shares her perspective on Apple and the Mac.

Maclopedia: What was your first contact with the Mac?

Rochelle: In 1983, I was at Regis McKenna and our editing team got to play with the prototypes. They were so secretive—no one could see what this thing looked like. So I come to work early, it's 8 in the morning, and there it is, in the window, with the curtains all drawn like a theater. There'd been a photo shoot the night before, and they'd left it out there for anyone in the parking lot to see.

I went through the Mac's introduction and the first 128KB machine. I couldn't see it. I thought, "This is a toy." I could never really understand why my friend Paul Saffo—he's at the Institute of the Future now—was so immediately taken with the potential of the Mac... I didn't see the value until the Mac Plus.

Maclopedia: Where do you see Apple and Microsoft, today?

Rochelle: I don't talk much to developers, but I have really had to explore economies of scale and market position. Microsoft has reached a stage where it doesn't matter if it is good or bad, and momentum carries the day. Everyone hates Microsoft and every developer goes out of their

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way to get an alliance with Microsoft and then complains that only Microsoft makes money from the alliance.

Apple has had a series of problems over the years caused by its own hubris. Hubris got in the way, and the market did not stand still. We've reached the juncture where sheer innovation and good products will no longer compensate for what was hubris. I don't think Apple is going to go away, but it will not be a major player. It must now develop niche markets clearly—graphics, prepress, publishing, and the Web. Did you know that the single most popular platform for creating Webservers is a Mac? Unfortunately, real money is made in the mundane business applications for big business, not small, not mid-business.

I work with a Mac because I have no support. I could never do things with a win.ini file. Everyone agrees the Mac is cheaper and easier to support. You need fewer support staff. But that doesn't matter because big business is going into client server, which is very complicated, so they are trying to get rid of Macs. I would love to be proved wrong, but Apple has really lost the big business game.

Maclopedia: What should Apple do, then?

Rochelle: Look at what is happening at the Baby Bells, particularly U.S. West, going after the residential customer with Internet access because that is where the growth is. Apple needs to figure out how to have high volumes in the home.

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Maclopedia: What has to change, to expand the home market for computers from the current 35 to 40 percent of households?

Rochelle: The whole animal has to change. Everyone who has a PC or a Mac in the home now is attracted to the technology for one reason or another; they are drawn toward computing. But there has to be an element of fun and entertainment, like TV has, to really grab. Or a utilitarian service, like what Minitel offers in France—it isn't fun, but it serves local needs. I want to find out what events are happening in my suburb of Paris, and I can find that on Minitel. But computer manufacturers are abominable at figuring out customer needs.

The cable modem might just be the device that kickstarts a residential market, in about eighteen months, fall of 1997. It's really fast compared to 28Kbps on the fastest personal computer modems. You can have enough information flowing back and forth, and you have the cable installed in all the major markets. I can hardly wait to get rid of 28.8; I only use it because I have to; it takes forever, and that's because of the phone wiring structure, which is beyond the ken of computer manufacturers. That's where the relationships between cable and the Bells are going to be important.

You need content with immediacy; things like local services. There's no reason for the average person to really get an Internet service because the average person doesn't need to do the kind of research that I do. The average person just wants to find out what is happening

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locally. Where are the best schools? How are the schools doing? What is the ticket at the local convention center? I want things I can get quickly, instead of screwing around waiting to get around to the right screen. Today it is only the kids who have the stamina to keep hoofing the same thing; I just did a search, and it took 15 minutes.

I think the Mac offers some tremendous Web capabilities. I interviewed a gentleman who had put the first airline ticketing Web site up, and he said, "I used the Mac server because it is far and away the best." What he liked particularly was the operating system. Because of its nature, it's more difficult to break into the server than into a UNIX server, so with secure Web software you can transmit credit card numbers inside the country, though not outside, because we can't export the encryption software strong enough to handle it.

Maclopedia: What else would you recommend?

Rochelle: What Apple is going to have to focus on more is their internal cohesiveness. When a company has a product line with 20 custom chips, with 75 different models, that's insane. When it allows one group of research and development to create one form factor for one DuoDock, but use another for another DuoDock, that is insane. Look at the competition: Compaq has the most models with 20. It is impossible to know the difference.

What needs to be done internally is to reign in the runaway fiefdoms. They're not after power. Each is saying we know best how to do this,

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but there have to be constraints. They have to bring in a culture, establish a new culture, in which there are actually shared visions, shared directions. You have to have a goal, such as, “To be a billion dollar corporation,” and definite strategies to get there.

At the heart, Apple is an engineering company. It happens to have been blessed with creativity, or it was. But at its soul are engineers. They do things because they are neat, like the Newton, the brain child of an egomaniac, with no utilitarian use when it first came out. Now it is quite nice to have, but who knows it because it has a bad rep. So you need a business person who does not get caught up in the neatness, the way John Sculley did, and says, “Cut bait here, trim here, go there!”

Computer games are more than just shooting your opponent or going head to head with the computer in a game of chess. The gaming industry has indeed grown so large that every consumer Mac magazine from *Wired* to *MacHome Journal* gives it generous attention.

Although spin-off versions and clones of popular **Arcade Games** are still a big part of the market, **First Person Perspective Shooters** , a modern spawn of arcade shooting games, **Adventure Games** , **Role-Playing Games** and **Simulations** have created their own followings. In addition, **Traditional Board Games** , sports, non-violent kid’s games and the inevitable movie tie-in titles have made also made a huge impact on the way we enjoy ourselves on the Mac.

Today’s Mac games immerse you in a fanciful environment, providing an

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escape from daily cares. With the impending release of **Virtual Reality** software and hardware from companies such as VictorMaxx and Virtual i/o, game-related MacVirtual Reality seems just around the corner. But with production delays and constantly revised release dates, a real-life version of Star Trek: The Next Generation's Holodeck is probably still quite a ways off. The next move in gaming will most likely be toward team play, either via an Internet scavenger hunt, or a **CD-ROM** game that allows **network play** .

Titles such as Havoc from Reality Bytes and **Hexen: Beyond Heretic** from GT Interactive give cross-platform gaming a new meaning, linking PCs to Macs via a network. As gaming ultimately progresses, it will be increasingly true that there is something out there for everyone.

Game Types Table

<i>Category Name</i>	<i>Description</i>	<i>Best Games</i>
Arcade	Fast-paced games based on classic video arcade style games like PacMan, Asteroides and Pitfall. This also includes pinball titles. Looney Labyrinth, Crystal Caliburn, #-D Ultra Pinball, Lode Runner, Power Pete, Prince of Persia, Crystal Crazy	
First Person Perspective Shooters	Sometimes bloody shoot-em-ups, similar to arcade games in rapid pace, that sport	

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Adventure

a first person view of the game's landscape. Marathon, Doom II, Descent, Hexen

Quest and journey type games which pit the player in another world. Often the player is required to solve a mystery, engage in battle and travel in a pack with other characters. Most adventure games have a high level of puzzles incorporated into game play. Many have a sci fi or fantasy feel. The vast majority of computer games fall into this category in one way or another. D a e d e l u s Encounter, The Dark Eye, Eastern Mind, Full Throttle, Hell, Myst, Bad Day on the Midway, Return to Zork, Riddle of Master Lu, 7th Guest, TimeLapse

Role Playing Games (RPGs)

Similar to Dungeons & Dragons, RPGs are more complex adventure games in which the player takes on the role of a character involved in an intricate storyline. Most are based in medieval folk lore. Might & Magic III, Curse of Dragor, Dungeon Master II

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Sim Games

A large category encompassing flight simulators, games in which you control a government, and games in which you create societies from scratch. All teach require you to maintain your city, plane, animal or country as if you were in charge for real. Random elements are built in for increased similarity to real life

Flight: F-A/18 Hornet, A-10 Attack!, Out of the Sun, Absolute Zero, Rebel Assault II, Wing Commander III

Government: SimCity 2000, Afterlife

Strategy

Similar to Sim Games, strategy games put you in more specific charge of a society or government. Many strategy games have a war element and require you to maintain troops and defend yourself against or attack other players, computer or human.

Allied General, Chaos, Empire Deluxe, Pax Imperia, Civilization, Spaceward Ho!, Colonization, V for Victory, Warcraft, Vikings

Non Linear Storytelling

Games with a literary feel. They are

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similar to a book that you move through, not page by page, but by randomly picking different points of entry. You weave through a pre-designed story at your own pace. The Resident's Bad Day on the Midway, The Dark Eye, The Cypher

Traditional Games

Games based on non-computer entertainment such as board games, card games and Trivia. Classic Collection (Monopoly, Risk & Scrabble), You Don't Know Jack

Chess

Games which pit the player against the computer or an online human opponent. Chessmaster 3000, Battle Chess

Puzzle Games

Require quick thinking and strategy to solve. Similar to non-computer games like dominoes and the Rubik's cube BreakThru, Tetris, Troubled Souls, Diamonds 3-D, Zoop

Sports Games

Games based on real sports. For some reason, there are no outstanding games in any field but golf for the Mac. Golf:

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Family Entertainment

Links Pro CD for Macintosh, PGA Tour Golf III

Non-violent games aimed at children and families that are not considered "edutainment" or too difficult. Are you afraid of the dark?, Foul Play, Masterpiece Mansion, Mortimer, Yellow Brick Road II

For More...

If you want to do this...

Go to this entry...

Find Golf

Sports Games

Find war games

Strategy Games

Find games with Live Actors

Hollywood Connection

Find games based on movies

Hollywood Connection

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Find flight simulators

Sim Games

Find gambling

Traditional Games

Find games similar to Sim City

Sim Games

Find horror games

Adventure Games

Find games with political elements

Sim Games; Strategy Games

Find card games, board games and other standard style games

Traditional Games

Find brain teasers

Puzzle Games

Find controversial games

Violence in Games

Find games with a literary element

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 Hypertext Fiction; Non-Linear Storytelling

Find kid's games

 Family Entertainments

Find games similar to Dungeons and Dragons

 Role Playing Games

Find out about Adventure Games Adventure Games

Find a Pinball game

 Arcade-Style Games

Find out about Internet/online games

 Multi-User Dungeons; Online Live Games; Network Gaming

Find out where to find good game reviews in magazines

 Mac Gaming Magazines

Find out about games like Doom

 First Person Shooters

Find out about games like Myst

 Adventure Games

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Find inexpensive games online

Shareware Games

EPS

Both **vector graphics** and **bitmapped graphics** can be stored as encapsulated PostScript, or EPS files, which are easily output by high-resolution imagesetters. Because bitmapped EPS files are larger than their **TIFF** counterparts, however, EPS is primarily suitable for vector graphics.

Macintosh draw programs create EPS files when graphics will need to be imported into other programs. EPS files may or may not include a low-resolution preview image, which allows users to see what the image look like when they import it into another program, and the preview may be PICT or TIFF.

See Also

Bitmapped Graphics; TIFF; Vector Graphics

EPSF

See

EPS

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EQ

See
Equalization

Equalization

A sound processor or software that boosts or attenuates frequencies to improve sound quality. Treble and bass controls provide very simple examples of equalization.

See Also
Compressor; Limiter; Sound Digitizing

Erase Disk Command

This command permanently erases the contents of a disk or a hard disk. When you choose Erase Disk from the **Special menu**, the selected disk is **initialized**, a process that deletes the contents of the disk. To erase (or initialize) a disk, click the disk icon and select Erase Disk. A warning box appears asking you, "Completely erase disk named (the disk title and location appears here). It also enables you to rename the disk. Note: The Erase Disk command does not erase the contents of the startup disk. This is a built-in safety feature to keep you out of trouble.

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This works the same way initializing works when you insert a brand new unformatted disk. When you insert a disk that is not formatted for Macintosh, you get a dialog asking you whether you want to **format** that disk. If you click OK, the system erases and initializes the disk for Macintosh. Just as the Erase Disk command does. If you have the System 7.5 extension PC Exchange active, the dialog box gives you the choice of formatting the disk as a Macintosh or DOS disk. You can select the format from the pop-up list in the Erase Disk dialog box.

The Erase Disk command also performs a diagnostic check on the disk to see that it's operating properly. If for some reason there are bad sectors on your disk, or there are other problems, you'll get a dialog box telling you, "Initialization failed." This is a safeguard to keep you from writing important information to a damaged disk.

What happens if you accidentally select your startup disk and choose the Erase Disk command? Don't worry, the system is looking out for you and has already taken into account the fact that this might happen. You get a dialog box with the message, "The disk (your internal hard drive's name appears here) could not be erased because it is the startup disk which contains the active system software." This is the Mac's way of protecting your system and keeping you from initializing and erasing your **startup disk**. However, if you choose any other external, or internal drives, that do not contain the active system software, you get the standard dialog box asking you if you're sure you want to erase the contents of the drive. If you do, press OK, and the drive is reinitialized and the contents erased.

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To erase a disk, follow these steps:

1. Click the disk you want permanently erased.
2. Select Erase Disk from the Special menu.
3. You'll get a dialog box asking you if you're sure want to initialize the disk and permanently erase the contents of the selected disk. If you're sure, click OK. If not, click Cancel.

See Also

Cancel; Format; Initialize; Special Menu; Start-Up Disk

Eric Virus

See

Scores Virus

Error Correction

See

Modems/Choosing, Modems/Error Correction

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Errors, System

A system error occurs when the system software encounters a problem that keeps it from operating. When a system error occurs you get a **dialog box** with an icon of a bomb that states, "Sorry, a system error has occurred," and your only choice is to **restart** . A restart button appears on the dialog box, but depending on how serious the system error is, it might or might not work. If the restart button on the system error dialog box does not work, you can restart the Mac by pressing the restart button on the front of your computer, or, if your model does not have a restart button (Like LCs, Quadra 605s, and so on), you can restart with the keyboard command Control-Command-PowerOn key .

By restarting your Mac, the situation that caused the temporary system error usually disappears, and you can continue working. If the situation persists, you may have a system extension conflict, and you should try to isolate the extension causing the conflict (see **crashes**, **system** for a step-by-step method for tracking down and fixing conflicts).

See Also

Bomb; Dialog Box; Error Messages; PowerOn Key; Restart; Crashes, System

Error Messages

If you try to do something that the Mac doesn't allow (such as throwing away

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your startup System file) or if your Mac encounters some type of problem that needs your attention, most times you receive an error message. Some error messages are just warnings, such as when you go to initialize a disk, it displays an error message asking you if you're sure you want to permanently erase the selected disk's contents. Or if you try to name a file with more than 31 characters, it will warn you that 31 characters are the limit. There are also more serious messages that appear when the system encounters a more serious problem.

If your Mac **freezes** up or **crashes**, the Mac displays an error message alerting you of the problem, as shown in the figure. Unfortunately, by the time you see an error message, it's usually too late to avoid the crash or freeze-up, but the error message may contain an error code to help you track down the cause of the error.

These error codes, however, are too simplistic and vague to make much use of them. There are **shareware** programs that list all the Macintosh error messages by number. You can enter the number of the error code from the error message and the shareware program displays the error code's official Apple description. The official descriptions of these error codes don't help much more than the codes themselves, unless you happen to be an Apple hardware technician.

There are other error messages that appear such as when an application suddenly quits or when you try to launch a document but don't have the application it was created with. There are a host of messages to accompany a

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wide range of possible error situations.

Common Error Messages and What They Really Mean

<i>Error Message</i>	<i>Means</i>	<i>What to do Next</i>
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The Trash Cannot Be Emptied because it contains locked items.		
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	You have files in the Trash that are locked through the Get Info box (⌘-I) to keep them from being accidentally deleted. Hold the option key while choosing Empty Trash, or click the locked file in the Trash, and Get Info (⌘-I) and uncheck the locked option.	
--	---	--

Are you sure you want to permanently erase the contents of the selected disk?		
---	--	--

	You're about to reformat (Initialize) this disk and everything on it will be deleted forever. If you want to erase this disk, click OK. Otherwise click cancel.	
--	---	--

Are you sure you want to rebuild the desktop on the selected disk?		
--	--	--

	You're going to rebuild the desktop and any comments in Get Info windows will	
--	---	--

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- be lost (unless you're using System 7.2 or higher). Click OK if you want to rebuild the desktop file.
- This name is already taken You cannot have two files in the same place with the same exact name. Pick a different name for your file.
- The application is busy or missing You may not have the application that created the document, or the file may not be able to be opened (such as the Finder File). If you have the application that created the document, but double-clicking it won't launch it, rebuild the desktop as it may have become corrupted. If you don't have the application that created the file, you can try to open the document from a similar-type application.
- This is not a Macintosh disk, Do you want to initialize it? The system is not recognizing this as a mountable disk. Only click OK if you want to permanently erase the contents of the disk.

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The disk could not be put away because it contains items that are in use.

A document, file, or font on the disk is open and in use, so the disk cannot be ejected. Close all files, documents, or fonts on the disk. When all files are closed, it can be ejected.

There's not enough memory to keep windows open.

You're running very low on memory, and windows that are open at the Finder have to be closed to conserve memory. Quit any open applications that you're not using. Close all documents that are open within applications.

Are you sure you want to shutdown your computer now?

You may have accidentally pressed the PowerOn key. If you don't want to shutdown or restart, click the Cancel button.

The Trash contains XX items that occupy XXXk of disk space. Are you sure you want to permanently remove these items?

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You are about to delete all the files in the Trash. Their combined size is shown.

You can click OK to empty the Trash, or you can click the trash can and Get Info (⌘-I) and then uncheck the checkbox marked "warn before emptying," which will disable the warning.

See Also

Crash; Errors, System; Freeze; Launch; Troubleshooting Your Mac; Quit; Shareware

Error Messages, Hardware and Software

See

Software and Hardware Errors

Error Messages, Internet Connection

Error messages appear on the Macintosh screen occasionally when connecting to the **Internet** or accessing a **World Wide Web server**. Such a message does not mean the reader has done something wrong. Rather, it means the **client** software encountered an error while trying to perform the requested function.

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The following table lists a number of common error messages, possible causes and possible remedies.

Common Error Messages

<i>Message</i>	<i>Cause</i>	<i>Remedy</i>
Server Does Not Have DNS Entry	Your Internet client cannot find the URL of the site	1) Check the address for typos or other mistakes; 2) Check your MacTCP control panel settings and make sure Domain Name Server information has been entered.
File Not Available	Client is connecting to the site, but cannot find the file you requested	Check file name to make sure it is correct.
Forbidden URL	1) Page has moved; 2) There is a typo in anchor pointing to the page; 3) Access to the directory is restricted.	Edit the URL to go back to the next folder up, and look for links that lead back to the page you want.

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Esc Key

The Esc (Escape) key is another name for cancel, and it can be used as a keyboard shortcut for cancel in any **desktop level dialog box** that has a Cancel button. Many applications support the use of the Esc key as the Cancel button. Also, if you mistakenly **launch** an application, if you press the Esc key fast enough, the launch may be canceled. Sometimes. You have to be really quick. You can also use the keystroke ⌘-. (period) as an alternative to the Escape key.

The escape key is also used in a keystroke combination that enables you to force quit an application or the Finder (Option-⌘-Esc key) in case an application has crashed. By using this keystroke, you can sometimes force a crashed application to quit, which enables you the opportunity to save any other open documents in other applications, and then restart the machine.

See Also

Cancel; Desktop Level; Dialog Box; Finder; Launch

EtherNet

When EtherNet was first introduced, it was an expensive way to provide networked computers with far more data-carrying capacity than they needed. But times, and computers, have changed a good deal. Today, EtherNet is acknowledged as the standard. New Macs and Power Macs intended for

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office use are equipped with EtherNet as well as **LocalTalk** connectors.

EtherNet was originally developed by Xerox in collaboration with Digital and Intel. Companies such as Digital and Sun use EtherNet to run a variety of networking protocols for mini-computer and workstation applications, as well as for Mac and PC networking. In fact, EtherNet was developed with multi-protocol support in mind. An EtherNet network can support many different protocols at the same time. When AppleTalk protocols run over EtherNet cables, Apple calls the system EtherTalk.

Whereas LocalTalk cables have a bandwidth of 230.4Kbps, EtherNet has a bandwidth of 10Mbps or, with the new 100Base-T system, 100Mbps. So instead of being limited to a maximum of 32 nodes as LocalTalk is, EtherTalk networks can handle literally thousands of devices.

EtherNet cables are often “connected” by network bridges, microwave links, and even satellites to other EtherNet networks to create an “extended” EtherNet LAN. Many large companies have extensive world-wide EtherNet LANs with thousands of computers produced by different companies.

Because of the increased bandwidth, the throughput of an EtherNet network is higher than that of LocalTalk. Actual transmission rates will depend on many factors, such as the amount of network traffic being handled simultaneously, size of the transmitted file, and performance of the individual EtherNet controller and CPU. On average, you can expect an EtherNet network to perform three to five times better than a LocalTalk network.

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Several different types of cabling can be used with EtherNet. These include ThickNet, also called Thickwire 10Base-t; ThinNet, which may be called Thinwire 10Base-2; and Twisted Pair or 10Base-T. ThickNet, as the name implies, is a thick wire, about 3/8 inch in diameter. It is actually a coaxial cable, meaning that it has one wire in the middle, surrounded by a circle of insulation, and then a second wire (which may be braided or even foil. It uses a fifteen pin D-style connector and must be terminated at both ends, much as a SCSI chain is. Because it is sturdy, and because it can accept as many as 200 devices on a 1,640 foot segment, it is frequently used as a central “backbone for” an EtherNet network. (Fiber-optic cables can also be used as backbones.) Thick wire connections are made by clamping a transceiver onto the cable. The transceiver has sharp metal pins which puncture the cable and make electrical contact with the inner and outer wires. The connector is often called a “vampire” tap.

ThinNet is a thinner and more flexible type of coaxial cable, which uses BNC connectors that twist and lock into a T-shaped fitting. Though it used to be a popular choice for wiring desktop computers and workstations, it's been replaced in many facilities by twisted pair. The free ends of a ThinNet network must be terminated by resistive end caps.

Twisted pair, or 10Base-T is the most common kind of cabling, especially for desktop computers and peripherals. It allows EtherNet to run on two pairs of standard, unshielded wires—a much lower cost type of wiring. However, 10Base-T requires that you use a hub to connect the devices on the network. Unlike the other types of cable, it can not be used for a daisy chained

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network.

See Also

Connectivity, Ethernet Port; Data Link; Networking

Ethernet Ports (AAUI)

See

Connectivity, Ethernet Port

Etiquette on the Internet

See

Netiquette

E.T.O.

E.T.O. (Essentials, Tools, Objects) is Apple's premiere development-tool CD-ROM series. It includes **MPW**, **MacApp**, **Symantec C++**, the Virtual User testing tool, Macintosh Debugger, **ResEdit**, **MacsBug**, pre-release versions of the hottest new programming toys, and lots of other stuff. E.T.O. is a subscription product. Your purchase price buys three CDs—one full year of updates. Apple has recently dropped the price of E.T.O. dramatically. It is now \$595.00 for new subscribers and \$195.00 for renewals. E.T.O. is available only through

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Apple's Developer Catalog.

See Also

MacApp; MacsBug; MPW; MrC; ResEdit; Symantec C++

Evangelism

When Apple first introduced the Macintosh, it had a tough road ahead of it. Here was a new computer with no installed base and very little software. Unlike the early days of personal computers, when most users wrote their own software, by the time the Macintosh was introduced, most users relied upon commercial software packages to get their work done.

So, Apple needed to get software developers to write programs that would run on the Macintosh. This wasn't exactly an easy task. First, when Apple began "evangelizing" for the Mac in 1983, there were no Macintosh computers available to developers; they had to write their software on the Lisa. There were no Macs available to customers, either, so there was no established market for Macintosh software.

It takes a lot of time and money to create software, and developers did not want to invest a lot of time and money into a product that might not sell. Apple had to convince them that their time and money would not be wasted.

Apple sent out "evangelists" to try to convince people to develop for the Macintosh. The first Apple software evangelists were **Guy Kawasaki** and

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Mike Boich. Kawasaki and Boich were passionate. They plead with developers, told them they would be making history and changing the world! In short, they got the developers to see and believe in the Macintosh vision.

Without Apple's concerted effort to evangelize the Macintosh platform, this book might never have existed. Without the work of the software evangelists, the Mac may never have reached the "critical mass" of software any platform needs to keep going.

See Also

Kawasaki, Guy

Even Parity

See

Parity

EvenBetterBusError

EvenBetterBusError is a free **debugging** tool that catches memory errors caused by accessing memory location zero. It accomplishes this by periodically placing a value at location zero that causes an immediate bus or address error on every type of Macintosh. This feature, as well as many others, is included in the commercial debugging tool **QC**.

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Event

The graphical interface of the Macintosh adds some interesting twists to the task of programming. Unlike older, command-line based programs that follow a fixed path from beginning to end, Macintosh applications must be able to respond to any user action at any time.. The application detects user actions by receiving *events* from the operating system.

Every kind of message an application can receive from the user, the system, or another application arrives as an event. Each application must continually ask the system for new events and respond to them appropriately. This is done in an *event loop*. The event loop repeatedly retrieves events using the **Toolbox** routine WaitNextEvent() and responds to them, exiting only when the user has chosen to quit the application.

There are 11 kinds of events that an application can receive from the operating system:

- Mouse-down
- Mouse-up
- Key-down
- Key-up
- Autokey
- Disk

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- Activate
- Update
- Null
- Operating system
- High-level

Each of these events can be classified as a low-level event, operating system event, or high-level event.

The first nine events are low-level events, or “original” Macintosh events defined in the very first version of the MacOS. The first four are pretty self-explanatory. Each time the user clicks the mouse button or presses a key, a mouse-down or key-down event is sent to the front application. Similarly, when the mouse button or key is released, a mouse-up or key-up event is generated. The auto-key event is generated when a single key is held down for a period of time.

Note that there is no such thing as a double-click event. Each application must determine whether a pair of clicks constitute a double-click. For each of these events, the application is informed of the location of the mouse and the exact time the event occurred, as well as details relevant to the specific event (such as which key was pressed).

If the user inserts a disk into a drive, the System generates a disk event. A good application should respond to disk events. If the disk isn't initialized,

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the application can initialize the disk; otherwise, this event is generally ignored.

The activate and update events apply to specific windows within an application. The activate event is actually two events masquerading as one: one that lets an application know a window is being activated, and another that lets it know a window is becoming inactive. Applications respond to these events by enabling or disabling scrollbars, showing or hiding the current selection, and making any other changes that differentiate inactive windows from active ones.

The system generates an update event for any section of a window that needs to be redrawn. When a window is revealed from behind another, for example, the application receives an update event telling it to redraw the newly revealed part of the window. Applications *must* respond to update events, or the system will continue to send them, drowning out other events.

The null event is the anti-event. When an application requests an event, and there are no other, more important, events waiting, it is passed a null event. The application can use the null event as an indication that the machine is idle and then perform whatever idle-time processing it sees fit.

The operating system event—osEvt—came on the scene with **MultiFinder** and **System 6**. There is only one OS event, but it can contain any of three distinct messages. The first two are the suspend and resume events. These are sent to an application just before it is switched into the background and just after it has been returned to the foreground, respectively. The third OS event is the

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mouse moved event. Applications use this event to determine when the mouse has moved outside a predefined region and to respond appropriately (by changing the cursor from the arrow to the I-beam, for example).

The final class of events, high-level events, were introduced with System 7. These events are used to pass high-level messages between applications (or sometimes between different parts of the same application). Most high-level events are **Apple events**, which make all sorts of exciting stuff, such as scripting, possible.

Events are documented in the Macintosh Toolbox Essentials volume of **Inside Macintosh**. High-level events are covered in more detail in the Interapplication Communications volume.

See Also

Apple Events; Inside Macintosh; Toolbox

eWorld

Realizing that it had missed a major market opportunity in online services, Apple announced the eWorld service in January of 1994 with expectations to be operational by Spring of 1994. Because they had purchased the GUI software from **America Online**, the overall format of eWorld closely resembled that of AOL, as did its pricing structure.

Unfortunately, the timing of eWorld's release coincided with the explosive

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growth of the Internet. Thus, not only was the online market saturated with the third generation interfaces of **CompuServe** and America Online, but nearly all of the industry's publicity and user interest was geared toward the Internet. So, despite several interesting advances in online interface, eWorld never gained much of a following. In early 1996, Apple made the final decision to shut down eWorld. The service was officially shut down at 12:01 AM on April 1st, 1996.

Apple had planned to move all of its existing AppleLink-based contact with its developers, salesforce, and other employees and interested third parties to eWorld because of the obvious ineffectiveness of the AppleLink Interface. However, with the shut down of eWorld, Apple has revised these plans and now plans to use its many Web sites to spread information, leaving AppleLink as the only way to communicate by email with Apple Computer.

See Also

America Online; CompuServe

Excel

Excel is Microsoft's **spreadsheet** for Windows and Macintosh, and the preeminent financial and mathematical tool for the Mac. It's easily the most powerful:

- Each page can have more than four million **cells** , and a file can have multiple pages sharing the same information.

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- Data can be displayed in hundreds of different two- and three-dimensional graphs, cells can be **dragged** directly into graphs, and a single graph can display up to 32,000 data points.
- Data can also be displayed as *PivotTables*, which let you analyze data by dragging category names around the screen while the program generates subtotals to match.
- More than 800 prebuilt **functions** and **macros** are built-in.
- Continuous dialogs (called *Wizards*) guide you through almost every operation, using graphics where appropriate (see figure).
- The program even includes a **superset** of **BASIC** as its macro language.

All this power comes with a cost, as well as a \$300 street price: Excel requires at least a **68040** processor to run well, and Microsoft recommends a **Power Mac** with at least 8MB of free RAM and 16 to 28MB of disk space. Because all these extra features have their own rules of operation, the learning curve can be an additional cost. The built-in help system can help if you're already spreadsheet-savvy, but isn't for beginners.

On the other hand, because it's such a popular program, there is plenty of third-party support. Dozens of books and hundreds of classes will teach you Excel, and academic computing centers often post excellent instructions on the **World Wide Web** . One of the best is:

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<http://www.gla.ac.uk/Compserv/Doc/Mac/un606/un606.html>

Because the Windows and Mac versions are compatible, user information as well as documents can be shared between them. You'll learn a lot about the program in the `slac.users.excel` and `comp.apps.spreadsheets` **newsgroups** . Downloadable macros and **templates** are available from Microsoft's at:

http://www.microsoft.com/msexcel/fs_xl.htm

as well as most **shareware** sources. Commercial templates for **vertical markets** are also available, and usually advertised on the Web.

More information is available from Microsoft's Mac area at:

<http://www.microsoft.com/support/products/mac/office/excel.htm>

Expanded

See

Typesetting Terms

Expanded Folders

If you want the contents of a **folder** in **list view** , you can expand the folder by **clicking** the white arrow that appears to the left of the folder in the list. The triangle turns black, points down, and without actually opening the

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window for that folder, gives you a list of its contents. If there are folders within that folder, you can use the white triangle beside that folder to expand it as well.

See Also

Click; Folder; Keyboard Shortcut; Views; View By Name

Expansion Bus

See

Power Macs, Logic Boards

Expert Draw

See

Other Drawing Applications

Export, Spreadsheet

See

Import/Export, Spreadsheet

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Express Modem

Apple's Express Modem isn't a modem at all, but is software that enables a Mac with a **GeoPort** adapter to perform the functions of a modem. The Express Modem includes modem, fax, and voice capabilities. Until now, its top speed was 14.4Kbps, but a software upgrade, expected in the summer of 1996, would increase the Express Modem's top speed to 28.8Kbps.

The Express Modem requires another piece of system software, the Apple Telecom Manager, and well as the GeoPort Telecom Adapter connected to the Modem port. The Express Modem works with any communications software that works with a hardware modem, including on-line service software such as America Online, terminal emulators such as ZTerm, and data software such as Apple Remote Access and Farallon Timbuktu. It also works with telephony software such as Cypress Research Megaphone. In your communication software, you simply select Express Modem, as you would any other modem, in the Modem field of the setup window.

Because the Express Modem is an application, it takes some of the Mac's memory. To save about 500K of System **RAM**, turn off the Express Modem when you aren't using it. You can do this in the Express Modem control panel.

You can still use a hardware modem even if you have the Express modem installed. If the Express Modem control panel detects a GeoPort Telecom Adapter connected to the Modem port, the Express Modem software will

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process the serial communications before transmitting them through the serial port to the GeoPort Telecom Adapter. If Express Modem doesn't detect a GeoPort Adapter, it does not process serial communication, and lets it pass through the modem port so that a hardware modem can process it. If you want to use the Express Modem and the GeoPort Telecom Adapter, you should select the Modem Port in your communications software.

The Express Modem can receive voice, fax, and data calls and differentiate between them by listening to the calling tone that the calling modem sends. Although most fax machines send a calling tone and are therefore easily identified, not all modems send tones for data or voice. Use the Express Modem control panel to set a default answer mode for voice and data calls. For instance, you would set the default to voice if you were using a voice telephony application (such as MegaPhone). You would set the default to data if you were expecting to receive a data call using a program such as Apple Remote Access server.

See Also

GeoPort; ISDN; Modems

Extended Double-Click Text Selection

When you **double-click** a word, only that word is highlighted. However, it is possible to extend the selected area to include surrounding text by holding down the **mouse** button after double-clicking a word. After the second click,

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hold the mouse button down. Now drag the mouse to extend the highlighted area in the direction you want.

See Also

Double-click; Mice

Extensions (Disabled) Folder

The **Extensions (Disabled) folder** in your **System Folder** stores any **extension(s)** that you turned off (disabled) using the Extensions Manager. When you turn off an extension, the Extensions Manager puts that extension in the Extensions (Disabled) folder. To enable an extension that resides in the Extensions (Disabled) folder, **highlight** the extension's name in the Extension Manager and **restart** your Mac.

See Also

Extension; Extensions Manager; Folder; Freeware; Highlight; Restart; System Folder

Extensions Folder

This **folder**, located in your **System Folder**, contains any system **extensions** that are loaded during **startup**. It also contains any **printer drivers** to be loaded as well as network drivers. Extensions are used to customize and actually extend the capabilities of the Macintosh (henceforth

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the name: Extensions). They are designed to perform their designated task without any input from the user, whereas **control panels** enable the user to set preferences for different control panel tasks. The Extensions folder helps users better organize their System Folder by separating the control panels and extensions into separate folders.

See Also

Control Panels; Extensions; Folder; Printers; Printer Drivers; Startup; System Folder

Extensions Manager Control Panel

This **control panel** enables you to decide which control panels, **extensions**, and **startup documents** load the next time your Macintosh restarts. Since many system conflicts and crashes can be traced to incompatible control panels and extensions, the ability to control, or isolate, the loading of individual extensions can be a great help.

The Extensions Manager Control Panel can also create sets of extensions for different users. (See Fig. 4I.sk) If, for example, one user is using the Mac solely for word processing, then having extensions like **QuickTime Musical Instruments** and **ColorSync** may be unnecessary and take up memory. So, that user may want to create a set of extensions for themselves. However, if another user needs a lot of graphics software, they may need QuickTime, ColorSync, and other extensions to be loaded. Using the Extensions

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Manager, they can create a set of extensions for themselves. You have the option of displaying the Extension Manager at startup, to select the set you want to load, by holding the spacebar during startup process.

There are a number of options in the Extensions Manager, which are accessed through a pop-up menu at the top of the dialog box. You can create and save custom sets of extensions to load at **startup** and add these sets to the pop-up menu by choosing "Save Set" from this menu. You can delete sets by choosing "Delete Set." From this pop-up menu you can also choose to turn all extensions on or off, or you can choose to load just the System 7.5 extensions.

To use the Extensions Manger Control Panel, follow these steps:

1. Choose Extensions Manager from the Control Panels submenu on the Apple menu (or System Folder).
2. A list of the current set of extensions appears. Extensions, control panels, and startup items that are loading appear highlighted. To disable an extension or control, click the highlighted item. When you're done, close the Extensions manager and **restart** your computer.
3. To choose a different set of extensions than the one displayed, select a different set from the pop-up menu. From this pop-up menu you can also delete and create new sets of extensions based on the current selections in the window.
4. To create your own custom set of extensions, click the extension you

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want to be part of your set and choose Save Set from the pop-up menu. You'll be prompted with a dialog box asking you to name this new set. Enter a name and click OK to have your new set added to the Extension Manager's pop-up menu.

See Also

ColorSync; Control Panel; Extension; Freeware; QuickTime; Restart; Startup; Startup Items

Extreme 3D

Macromedia's Extreme 3D splits the working tools between an extensive ToolBox and a selection of menu options and dialogs. This is done so that the interface remains uncluttered and as large as possible. One of the best features of Extreme 3D's interface is that a help line appears to explain anything the mouse passes over in the ToolBox or in the menu selections. This is a great aid in learning to use and mastering the software. The ToolBox itself separates the tools into three main groups: basic Tools, Object manipulation Tools, and Object Primitives, with a few non-categorizable tools thrown in for good measure. Many of the tools also feature pop-out options, and many have associated parameter setting dialogs when double-clicked on.

Modeling Tools All of the modeling tools in the ToolBox operate on the editing screen. Extrude pulls selected objects along a linear path, Cone builds simple cones by allowing you to set the base dimensions and the altitude,

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Sweep pulls objects along a drawn path, Lathe turns objects on an axis, Twist contorts objects on any axis, and the Skin Tool builds solids by creating volumes between and among selected planar polygons. The most professional and useful modeling tools of Extreme 3D is the ability to sculpt 3D objects by moving and twisting an object's points. This gives you the capacity to move beziers in 3D, and the feel is like sculpting in virtual space.

Boolean Operations Extreme 3D offers no Boolean operators.

Texture mapping Extreme 3D comes with a selection of texture Libraries on board: Chrome and Glass, Marble, Metal, Organic, Plastic, Solid, and Tiles. Given that each texture (material) can be altered or customized, the basic sets open out to many more variable choices. The textures are written to the object by an "Apply" command, and are not drag and drop oriented. An Objects dialog gives you a measure of control over texture mapping and other info and tile placement.

Lights Omni, Spotlight, and Distant Lights can be selected for color and shadow casting. An interactive directional control allows you to see the effects of light direction changes instantly in the scene preview rendering.

Rendering Renderings can take place on the screen or to a file. You can set adaptive or uniform smoothing and other rendering parameters in the Final Render setup dialog. Objects can be set to display double faces, so that rendering will occur no matter the angle of the objects involved (or if you fly through them). Rendering over networks is supported as well.

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Included Libraries Extreme 3D is accompanied by a CD-ROM with extra texture and object libraries. Because all of the textures can be edited or customized on every parameter, the amount of final items in any Extreme 3D library can be multiplied infinitely.

Animation Extreme 3D's ToolBox features child-parent linking options that the animator will find quite useful for their accessibility and command sets. Child objects can be set to move only when a parent object moves or as constrained links. If your Extreme 3D animations feature things like orbiting objects around other elements or humanoid figures, object linking is extremely important. The animation script is called a "score", and the score can determine when anything—from objects to textures to surfaces—moves and what quality that movement will contain. All elements of a scene can be listed, and the scripting dialog allows you to set the total length of the animation as well as its qualities. The time of the movie can be scaled, and Eases In/Out can be applied. As the animation is being constructed, wireframe previews can be generated to check the design. Animations can be recorded to play start to finish, start to finish and then returning (ping-ponging), or start to finish in a continuing loop. A VCR-like controller is available to check the settings at each step.

Other Special Features Extreme 3D comes with a CD-ROM that shows off the animated work possible to achieve, a movie complete with movement and sound. Extreme 3D is geared to the multimedia producer/animator.

File Load/Save Conventions Aside from saving and loading its own

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Project Files, Extreme 3D can Import Draw PICT, EPSF, DXF, 3DGF, 3D Script, Swivel 3D, Extreme 3D Tracks, and Freehand 5.x. Export formats include Draw PICT, Paint PICT, DXF, Swivel 3D, and Extreme 3D Tracks.

Extruding

See
Modeling

Eye Candy

This AlienSkin Software packages adds some wide ranging functions to Photoshop, or to any other software that supports Photoshop plug-in filters. AlienSkin's other plug-in collection, the BlackBox Filters, focused primarily on effects that addressed areas that Photoshop's own filters didn't include. Eye Candy adds filters that are more esoteric and unusual, but computer artists will find this set as useful and full of creative potential as AlienSkin's other release.

Eye Candy includes:

Antimatter— This filter inverts just the brightness of the image, leaving Hue and Saturation unchanged. This is somewhat similar to the photographic negative effect achieved by simply using the Invert command in Photoshop. Antimatter, however, does not alter the actual color of the image. Antimatter

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will change a bright red pixel to dark red rather than dark cyan, and so might be considered a specialized inversion tool.

Polygon—Photoshop is great for creating organic airbrushed shapes, but it cannot make user designed symmetric geometric objects. The only other way to create an equilateral triangle in Photoshop is to use Illustrator and then import it, a rather time consuming method. Polygon generates regular polygons and stars with user definable input on number of points and radial dimensions. The Polygon filter can accomplish gradient shading in the shape (using the Fill Color menu in the lower-right of the Polygon dialog).

Squint—This filter performs a special type of blurring that creates the characteristic halo caused by watery eyes. It can be used as an alternate effect, with different results from the blurring functions in Photoshop and other software.

Warpo—This filter performs a variety of different types of random image warping, from shattered edge displacement to abstracted effects. A large range of image stretching results can be achieved, with renderings that emulate complex vibrations, bubbles and earthquakes.

Fire—This filter will generate very realistic flames based upon items in a preset menu and variable sliders that address the direction and intensity of the effects.

Smoke—This filter will generate very realistic smoke, from wispy tendrils to billowing clouds. A list of PreSets is included.

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Fur—This filter will be one of the most used in the set, representing an effect demanded by the majority of computer artists. It will change each pixel from the original image into a hair in a fur coat, and responds to user customization.

Water Drops—This filter generates extremely realistic and randomly placed water drops on top of the image. It can be used to show everything from condensation on glasses to leaves after a storm.

Eyewitness, Dorling Kindersley

There are several titles in the *Eyewitness* CD-ROM series from DK (Dorling Kindersley). These multimedia reference guides cover Nature, Science, and World History. We can only hope that they will produce many more in the series, because these three are marvelous. Although they're most appropriate for ages 10-15, younger and older students can benefit as well. The Science Encyclopedia features careful explanations of everything from trigonometry to the big bang theory, along with demonstrations of such phenomena as the physics of sound, the workings of magnetism and gravity, and much more. The universe and the periodic table have their own sections, with demonstrations and complete information.

There are biographies of scientists and mathematicians in the Who's Who section, and a Quiz Master with challenging questions on all aspects of science and math. The Nature Encyclopedia is equally comprehensive,

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covering animals and plants from prehistoric times up through today's endangered species and how we can help save them. Like the Science volume, the Nature Encyclopedia makes lavish use of **hypertext** references and videos. It also has “sound bites” for most animals—short clips of the sounds each one makes, and a Quiz Master game. The History Encyclopedia is the most superficial of the three. It gives interesting facts, dates, and an overview of world history, but not much in-depth coverage. What it does exceptionally well, however, is to give a feel for the cultural and sociological context of the times. Such soundclips as Ché Guevarra's letter to his children, balalaika music, and the sounds of the Jazz Age give the student a sense of “being there”, of being truly an eyewitness to history.

EZ Drives

See

Backing Up with Removable Cartridge Drives