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S-Video

S-Video is a transmission method for video signals that separates the color and brightness information into separate channels (and separate cables) and results in better image quality compared to **composite** . The plug for this format resembles, but is not the same as, a Macintosh serial plug. Most digitizing boards support this format, and it is the preferred format to use if your camera and digitizer support it.

See Also

8mm; Composite; Component ; NTSC; PAL; VHS

Sad Mac Icon

Every time you **start up** , the computer runs an internal diagnostic check of your hardware and the **system** , and if the computer cannot startup due to a problem encountered during this check, the Mac displays a black **monitor** screen with a Sad Mac icon, as shown in the figure. The Sad Mac icon is a Macintosh icon with a frown, and two Xs for eyes, as shown here.

You could say it is exactly the opposite of the **Happy Mac** icon that appears when everything checks out okay, as shown here. Below the Sad Mac icon is a hexadecimal code designed to let an Apple repair technician know what problem was encountered during startup.

Generally when you get the Sad Mac icon, you will also hear four musical

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tones which are known as "the chimes of death." These "chimes of death," like the Sad Mac hexadecimal code, is used to aid the Apple repair technician as to which type of problem was found during the diagnostic check.

Seeing the Sad Mac icon is not unusual if you've recently installed additional **RAM** because if RAM chips are not seated correctly, they can cause the Sad Mac to display. If the Sad Mac appears after installing RAM, make sure the RAM chips are seated properly. Other Sad Mac codes may indicate problems with an **ADB** port, **NuBus** slots, **SCSI**, and more. It's also a good idea to **shut down** and check the connection of all your cables, including the cables of any SCSI devices, mouse and keyboard cables, power cables, modem cables, and so on to make sure they're all securely in place.

If you get a Sad Mac, and you've checked to see that your RAM is properly seated, restart the Macintosh. The Sad Mac situation may have rectified itself. Occasionally, when a Sad Mac icon appears at startup, restarting makes the Sad Mac go away without explanation.

See Also

ADB; Disk Drive; Happy Mac; Modem/Printer Ports; Monitor; NuBus Slots; RAM; Restart; SCSI; Shutdown; Startup; System

SAM

SAM is a popular commercial **virus** detection and eradication program from Symantec (10201 Torre Ave, Cupertino, CA 95104-2132, Phone (800) 441-7234.

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Web site at <http://www.symantec.com/>) designed to detect viruses and repair any infected files on your hard disk or any external disks. One of SAM's key features is its capability to scan mounted disks for viruses during periods of inactivity. The current version of SAM (version 4.0) also scans files that have been compressed with DiskDoubler, AutoDoubler, Compact Pro, StuffIt, and Now Compress.

The current version is also now native for the Power Macintosh, and has an increased scan speed that is reportedly five times faster than the previous version.

A nice feature of SAM is its capability to be updated on-the-fly as new viruses are detected, which enables enhanced protection without having to upgrade the entire program every time a new virus is discovered. SAM also provides automatic virus updating of virus definition files through a modem.

See Also

Anti-Virus; Hard Disk; Virex; Virus

Sample Editor

A freeware sound editor that includes such features as: cross-fades, reverb, and speed and pitch adjustment. The program also displays the sound's waveform. Available from online services.

See Also

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AudioShop; Sound Sculptor; Sound Edit; SoundEffects; SoundStudio Lite; Ultra Recorder

Sampling Rate

In sound digitizing, sampling rate (or frequency) refers to the number of times that the change in amplitude of the analog audio sound is measured. The sampling rate is measured in Hz (spelled Hertz, pronounced “hurts,” and sometimes referred to as *cycles per second*). The higher the sample rate, the higher the frequency of sound that can be recorded. The highest frequency that is digitized is exactly half the frequency of the sampling rate: a 44KHz sampling rate reproduces sounds with a frequency of up to 22KHz. Why? Sound is represented by a wave that represents amplitude against time. Over time the wave cycles up and down; the lower the tone of the sound, the longer the wave. The cycling of the wave is also measured in Hz. If a sample is taken at 44KHz and the sound wave is at 22KHz, the wave appears to be at the same point every time the sample is taken. This results in no change, or silence.

The quality of the digitized sound is also determined by the **audio bit depth** of the sample.

See Also

Bit Depth; Sound Digitizing

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San Jose Flu

See

Scores Virus

Sans Serif

See

Typesetting Terms

Save Command

To save a document you're working on, use the Save command, found on the **File menu** (⌘-S). This brings up a **dialog box** asking you to name the document and it enables you to choose the location you'd like the document saved to, as shown in the figure. After you've made this initial save, you can use the Save command anytime you've completed a part of your document that you want to save. Many people press the Save command shortcut (⌘-S) every few minutes, so if there is a power surge or other problem and their computer should turn off or crash, they "saved" their work and are able to reopen the document that has their latest changes already saved.

Note: Some applications also now offer you the option of an "AutoSave," which basically invokes the Save command for you by use of a timer, as

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shown in the figure. You can decide how many minutes you like to go by between saves and it does the saves for you. Consult the instruction manual for your software to see whether it offers an autosave feature.

When you choose Save, the save dialog box appears prompting you to name the document. The default name for any new document is "Untitled" and the name "Untitled" is already **highlighted** for you in the save box, so all you have to do when it comes up is begin typing the new name.

Then choose the location you want to save the file by using **scrolling** window to navigate to a selected folder. If you need to select a folder that is not on the selected drive, you can click the **Desktop button** that gives you access to all disk **mounted** on your **desktop**. If you'd like a new folder to save your document in, you can click the **New Folder** button in the Save dialog and it prompts you to name your New Folder. After you've named it, it moves the scrolling dialog to that folder for you to save your document. When you're ready to save, click Save.

There are a number of shortcuts you can use in the Save dialog box. To jump directly to a particular folder in the currently displayed list, type the first letter of the name of that folder and it jumps there. For example, if at the bottom of your list you have a folder called Zapf Dingbats, you can either scroll all the way down there, or just type a "Z" to jump there. You can also use the arrow keys on your keyboard to move up and down the list. The **Return key** selects Save and the **Escape key** selects **Cancel** in this dialog box.

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To save a new document, follow these steps:

1. From the File menu of your application, select Save (⌘-S).
2. The Save dialog box appears prompting you to name your file.
3. Name your file and choose the location where you'd like your file saved.
4. Click Save or press Return to save the document.

To save a document that is already named, follow these steps:

1. From the File menu of the application, select Save (⌘-S).
2. Your changes are saved from the point you selected Save.

To save a document that is already named with a different name, see the **Save As Command** entry.

See Also

Cancel; Desktop; Desktop Button; Dialog Box; Escape Key; File menu; Highlighted; Mounted Disks; New Folder; Return Key; Save As Command; Scrolling

Save As Command

Use this command when you want to create a new document with the changes

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you have made, but leave the original document intact. You'll find Save As from the **File menu** of your application.

For example, let's say you've been working on a graphics project for several days, and the file is named "Artwork". You open the document and make some wild changes. You're not sure if you want to make these changes permanent, so you use the Save As command under the File menu and give this document a different name. You might now call it: Artwork2. This way, it leaves the original document, named Artwork, untouched and creates a new document called Artwork2. You'll see that the name of the document (found up in the **title bar** of the active window) has now changed to Artwork2. This is your way of knowing that you're now working on a new file, and not the original file named Artwork.

To use the Save As command, follow these steps:

1. Under the File menu of your application, select Save As.
2. The Save As dialog box appears prompting you to name your file.
3. Name your file and choose the location you'd like your file saved
4. Click Save or hit Return to save the new document.

See Also

File Menu, Title Bar

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Saving a File

Whenever you select Save As... from the File menu of a document, you set up a series of activities performed by the Finder to correctly identify and store your information so it can be accurately retrieved the next time you need it. Every application on a Macintosh should behave the same way, because the operating system and not the program performs the work of saving a file. What happens is as follows:

1. In the Directory dialog box, type a name for the file in the highlighted box and select a folder where you want to store the file.
2. The Finder passes control of the process to the File Manager by informing the File Manager of the new file's name and directory ID. In addition, the application tells the File Manager the location of the new document in RAM.

The Macintosh operating system already knows the ID of the folder where the file is to be placed. (If you are working in System 7 and assign a new folder the System goes through a series of additional steps to assign the next consecutive ID number from those maintained by the Volume Info Block.)

3. The File Manager checks in the volume info block area for the amount of free space available. The File Manager compares this quantity to the size of the new document, adds an additional amount of space for growth and reserves enough space to accommodate the file. The File

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Manager then looks up in the volume info block the sector number of the next available block of space on the disk. When the space is located on the disk, the File Manager marks the sectors as “in use” in the volume bitmap and copies the document into this area from RAM.

4. The File Manager then records the location of the document in the volume directory. In this case, because the document is stored in consecutive sectors, only the Catalog B-Tree list is required.

Data is recorded in the Catalog B-Tree in *nodes*. There are two types of nodes: index nodes and leaf nodes. Index nodes identify where information is stored within the tree and leaf nodes identify the information itself. Nodes are stored in different levels, from the root outward. Within a level, nodes are inter-linked. Using a nodal structure enables the System to locate files more quickly because the data is broken into pieces.

The “B” in B-Tree stands for “balanced.” The node structure serves as a visible map of the location of leaves on the tree. As stated above, each file has a name and folder ID number. The index nodes are structured so that nodes on the left of a node are lower ID numbers and those on the right of a node refer to higher numbers. The lowest level index node is called the *root node*. The root node’s location is referenced in the volume info block, and therefore is known to the File Manager. Each node level refers to a range of IDs, called a *record*, pointing to another higher level node on the tree. The top-most level of the tree

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contains the leaf nodes that store the information pointing to the actual file's location.

The system operates like trying to find a specific apartment when you only know the name of its owners. First you have to find the location of the apartment building by locating the intersection of a street with another street. When you locate the apartment building, you must look up the owner's name in the apartment directory to correlate it with an apartment number. You do not want to check each floor for the specific apartment number, and the directory tells you that your apartment (say 601) is on the sixth floor. You go up the elevator to the sixth floor. Signs on the walls say turn right for 625 to 650 and left for apartments 600 to 624. You turn left and count each apartment number until you reach the one you want. The street address of the apartment building is like the index nodes taking you close to the location of your quarry. The apartment directory is another level of index node, taking you even closer. The floor signs are like the leaf nodes, telling you specifically where your apartment will be. The apartment is like the file, located in its specified site.

5. When saving a new document, the File Manager searches the catalog b-tree for the leaf node associated with the folder in which the new document is to be stored. This is performed by comparing the folder's directory ID with the numbers stored in each index node record, searching each index node level until it locates the leaf. The act of locating the leaf node is called *parsing*.

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6. When the leaf node is located, the Hierarchical File System checks to ensure that the document name is unique for that leaf. When the check affirms that the name has not been previously taken, all of the information about the document, such as its size, the location of three pieces of its resource forks and three pieces of its data forks, etc., is stored in a leaf record in that leaf node.
7. You see a document within a folder on the Desktop, all of the rest of the activities performed to place it there are invisible.

What Happens When You Update a Document? Each time you save an existing document, the File Manager performs the following steps (the same sequence as when you save a file).

1. In the Directory dialog box, type a name for the file in the highlighted box and select a folder where you want to store the file.
2. The Finder passes control of the process to the File Manager by informing the File Manager of the new file's name and directory ID. In addition, the application tells the File Manager the location of the new document in RAM.
3. The File Manager checks in the volume info block area for the amount of free space available. The File Manager compares this quantity to the size of the new document, adds an additional amount of space for growth and reserves enough space to accommodate the file. The File Manager then looks up in the volume info block the sector number of

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the next available block of space on the disk. When the space is located on the disk, the File Manager marks the sectors as “in use” in the volume bitmap and copies the document into this area from RAM.

4. The File Manager then records the location of the document in the volume directory. In this case, because the document is stored in consecutive sectors, only the Catalog B-Tree list is required.
5. When saving a new document, the File Manager searches the catalog b-tree for the leaf node associated with the folder in which the new document is to be stored. This is performed by comparing the folder's directory ID with the numbers stored in each index node record, searching each index node level until it locates the leaf. The act of locating the leaf node is called *parsing*.
6. When the leaf node is located, the Hierarchical File System checks to ensure that the document name is unique for that leaf. When the check affirms that the name has not been previously taken, all of the information about the document, such as its size, the location of three pieces of its resource forks and three pieces of its data forks, and so on, is stored in a leaf record in that leaf node.

Most likely your file has outgrown the blocks originally assigned to it. The File Manager locates the next available free space on the disk. The File Manager records the fragmented piece of the document in the catalog b-tree at the leaf node of the fragment under the same name as the original file. Information about up to six pieces can be recorded in the catalog b-tree for

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each file before the extents b-tree must be used.

See Also

Disks; File Manager; Finder; Save As

Saving Time in Open and Save Dialog Boxes

You can save a considerable amount of scrolling in Open and Save dialog boxes by using some of the shortcuts Apple has included in the system. When you're in an Open dialog box, for example, you can use keyboard shortcuts to rapidly move through the list of available files. If you know the name of the file you want, for example, just type the first letter of the file's name and the list jumps to the first file containing that letter. You can even type the first two letters in quick succession to get even closer to the file you want. If, for example, the file you want is called Asteroids, you can type the letters A-S, one right after the other, to jump to the first file that starts with those two letters. You can navigate up and down the list, file by file, by using the up and down arrow keys on the keyboard.

In a Save dialog box, you have a field for naming the file, and a scrolling window where you select where the file will be saved. If you click the scrolling window itself, it will highlight (as if it was selected), and then you can use the same keyboard shortcuts (for the open dialog) to navigate

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quickly through the list. You can also use the Tab key in the Save dialog box to switch between the name field and the scrolling window.

Other shortcuts:

- To jump to the top of the list, press the spacebar.
- To jump to the file closest to the letter Z (presumably near the end), type the letter Z.
- If you want to jump to the last item in the list, press the Tilde key (~) without holding the Shift key.
- If you want to cancel the Open/Save function and close the dialog box, press Command-. (period) or the Esc key.
- In a Save or Save As dialog box, you can create a new folder by pressing Command-N.
- You can jump directly to the desktop by pressing Command-D or Command-Shift-Up arrow.

After you have selected the file you're looking for or where you want to save the file (in a Save or Save As dialog) you can press the Return or Enter key to confirm your selection.

Anytime you're in a dialog box that contains a checkbox or radio button, you can toggle that button on or off by clicking anywhere on the name of the checkbox instead of trying to click the checkbox or radio button, which

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makes toggling these items much easier. If, for example, you're in a Print dialog box, you can choose one of three quality modes (Best, Normal, or Draft) by clicking any of the three words instead of trying to click the radio button.

See Also

Disk Cache; Hard Disk; Memory Control Panel

Scan Bits

Scan bits refers to the number of levels of gray (or colors) that a scanner can “perceive.” Almost all scanners available in the mid-90’s can record 256 levels of gray or 256 levels each in the image’s red, green and blue channels.

256 levels can be stored in 8 bits of information ($2^8 = 256$) so you’ll often see color scanners described as 24-bit scanners.

Some new, high-end scanners record more than 8 bits in each channel—usually, these scanners sample 10 bits in each channel, i.e., they are 30-bit scanners. Even if your eye can perceive 1024 (210) levels of gray, your screen can’t display more than eight-bits, and your image-editing software isn’t built to handle this information. Rather, the extra information is used to “round off” each sample to a more accurate 8-bit value than an 8-bit scanner can produce.

See Also

Scanners, Buying

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Scanners, Buying

There are many issues to consider when choosing a scanner. The most significant measurements of a scanner's power are its resolution and dynamic range. However, there are practical issues to consider as well. The importance of these issues depends on your particular needs.

Resolution A scanner's resolution is measured in *dots per inch* or **dpi**. The higher the scanner's resolution, the more fine detail the scanner can capture. In most cases, you will be scanning at a resolution of 300dpi, but if you plan to enlarge the scanned image, scanning at a higher resolution may be necessary. Resolutions of 300, 600, and even 1200 dpi are common on flatbed scanners; slide scanners commonly provide even higher resolutions: 2700 or 3000 dpi slide scanners are not uncommon.

You'll often see the phrase *interpolated resolution* in scanner advertisements. Interpolation is a mathematical procedure for guessing what color (or level of gray) the dots between the dots that have actually been scanned should be. A scanner with true resolution of 600 dpi will produce scans of better quality than a scanner with an interpolated resolution of 600 dpi *when scanning at 600 dpi*. The two scanners will usually produce comparable results scanning at the true resolution of the lower-resolution scanner.

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Dynamic Range Even among scanners with the same number of scan bits, some scanners are better than others at picking out subtle differences in color, such as fine details in an image's highlight or shadow areas.

Dynamic range is measured in many different ways. Most often, you'll see it measured on a 0-4 scale, where 4 is the ideal—the quality produced by drum scanners. Even a scanner with limited dynamic range can usually produce an acceptable scan of a good photograph that does not contain extensive light and dark areas. However, such scanners have trouble with poorly-balanced photographs, or good photographs containing dramatic tonal effects.

This dynamic range scale doesn't tell you anything about where the scanner's particular weaknesses are. Some scanners have special trouble with highlight areas, and some have trouble with shadow areas. There isn't a

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good way to quantify the scanner's weaknesses, but most reviews of scanners in Mac magazines identify the scanner's problem areas.

Single-Pass versus 3-Pass Scanners Some scanners can scan color artwork in a single pass; some scanners must make 3 passes—one each for the scan's red, green and blue channels. In a real-world production environment, single pass scanners are definitely more desirable. 3-pass scanners are slow, and 3-pass slide scanners are terribly slow. Furthermore, artwork can sometimes shift slightly during the scanning process, and if this happens with a 3-pass scanner, the image's channels will be out of alignment.

Sheet Feeder Users who will routinely use scanners to input multi-page documents for processing by OCR software will want to investigate the availability of sheet feeder attachments for the model of scanner they are considering.

Transparency Adapter Most advertising agencies and design studios that do color work will need to scan slides and large-format transparencies from time to time. Some scanners can handle transparencies without special attachments, and some require transparency adapters. In most cases, these solutions handle medium- and large-format transparencies, and may not provide for mounted slides.

Scanning Area It's very frustrating to try to scan an image that's larger than your scanner can accommodate. It's possible to scan the image in more than one pass and composite the image together in an image-editing

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program, but this approach is time-consuming, and requires that the artwork is perfectly straight on the scanning bed each time. If you expect that you will routinely scan large art, you should consider the scanner's maximum scanning area as part of your decision.

An excellent resource for information about scanners, with extensive tables that detail the features of many models of currently available scanners can be found at http://www.hsdesign.com/scanning/table/scanner_table2.html

See Also

Desktop Publishing; Scanners, Choosing

Scanners, Desktop

There are many different kinds of desktop scanners, and many different software applications and plug-ins you may use to control a scanner. Almost all hardware/software packages address the basic issues of resolution and tonal balance and there are basic procedures to follow, no matter how the specific features are organized on your particular system.

Choosing a Scanning Mode Most scanning software packages offer several different modes of scanning: bitmap, grayscale, color, and in many cases, “halftone.”

Bitmap mode is sometimes called “line art”, and it's best suited for scanning one-color line art illustrations. Bitmaps are significantly smaller in file size

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and memory requirements than grayscale and color scans of the same physical size. However, they don't resize very well. If you're not sure how large your image will be, scan it in grayscale and convert it to bitmap format in your image-editing application when the layout is finalized.

The grayscale and color modes are most commonly used for day-to-day scanning. You can certainly scan black and white prints using color mode, with excellent results, but color images are three times as large as grayscale images of the same size.

The halftone mode of most scanning software converts grayscale photographs to black-and-white halftones—patterns of tiny dots that simulate levels of gray—on the fly, as the image is scanned. There isn't a good reason to do this nowadays. Halftones don't resize well at all, and can't be corrected or sharpened in your image-editing software. It's most appropriate to scan in grayscale, and let your service bureau (or your laser printer) create the halftone when you output your job.

Scanners, Calculating Correct Resolution It's very important to scan images for print at the correct resolution. If the resolution is too low, the image will look pixelated (i.e., bad); if the resolution is too high, it will be difficult to work with in your image-editing program, difficult or impossible to print, slow to load over the Web, and wasteful of hard disk space. Fortunately, it's easy to calculate the correct resolution for a scan.

If you're scanning line art, you should scan at the resolution of the output device, as possible. For a 600 dpi laser printer, for instance, you should scan

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at 600 dpi. If your image will be sent to a 1200—1600 dpi imagesetter for output, scan your image in grayscale at half the imagesetter’s resolution and, when you convert the grayscale image to bitmap mode, increase the image’s resolution to that of the imagesetter.

The resolutions for grayscale images recommended in the table below are based on final sizes of the image: if the image must be resized, you may need to adjust the scan resolution so that the resized image will be of the correct resolution. Most scanning software handles scaling automatically. If yours doesn’t, consult your image-editing software’s manual for information about how the software handles resolution when images are resized.

Typical Resolutions

<i>Medium</i>	<i>Resolution</i>
Web page	72dpi
Ink on coated paper	225-300dpi
Ink on newsprint	150-200dpi
Laser printer or Docutech	150dpi

In general, the resolution of the scan should be twice the line screen that the press or laser printer uses. However, the table above is not a substitute for discussing a job to a commercial printer; if you haven’t talked to your printer about a particular job, put down the Maclopedia and give them a call right now.

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TIP If you're scanning a big stack of things for comps (rough layouts) and you don't know the size of the images will be in the final piece, you can scan the picture at low resolution, and rescan them later—it will make the scanning and design process go much more quickly.

Scanners, Making Tonal Adjustments If you're scanning art for a Web page, what you see on-screen is pretty much what readers will see with a Web browser, and you can adjust everything by eye. If you intend to print what you're scanning, *do not* trust your monitor. Your monitor's screen is not made out of paper, and it doesn't represent what the printed piece will look like. The following is an introduction to the basic issues, but you must consult your printer about the specifics of your project and the printer's press.

The monitor is backlit, and images appear brighter on-screen than they will on paper. When you adjust the brightness of the scan with your scanning or image-editing software, you should make the image a little brighter than what looks good on-screen.

A monitor's pixels can display any level of gray; on paper, grays are simulated with patterns of tiny black dots. If you're printing with ink (rather than with toner, as on a laser printer) some dots will spread out on press, making the grays darker. (This is called *dot gain*.) You may need to compensate for dot gain in your scans: you should ask what sort of dot gain you can expect from your printer's press and how you should compensate for

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it. Your printer may wish to have the pre-press department deal with this issue—unless you know *exactly* what you're doing, let your printer handle it.

Even if your monitor is perfectly calibrated—and it's probably not—it displays a wider range of colors than can be printed with CMYK (a.k.a. process, 4-color) printing. For best results, you should calibrate your scanner using the software provided by the manufacturer, calibrate your monitor, and use a software color-management tool such as Apple's ColorSync or Pantone ColorDrive to maintain consistent use of color across applications.

See Also

ColorSync; Docutech; Gamma Values in Scanners; Monitors, calibrating; Scanners, OCR Software and

Scanners, Dynamic Range of

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Scanners, OCR Software and

OCR (Optical Character Recognition) software analyses a scanned page of text, and produces a word processor document that contains the same text. OCR is a developing science, and still produces some bizarre results, but high-end OCR packages running on Power Mac's can now process documents at nearly 100 percent accuracy.

Each OCR software package uses different techniques to accomplish the conversion from image to text, but from the user's perspective, most packages behave in the same way: the user specifies a file or files to be converted, the machine attempts to convert the file, and prompts the user about any words that it can not recognize.

OCR packages vary in price and sophistication. High-end packages incorporate a variety of tools for deciphering image files, and can accurately process text in any roman or italic typeface, even if the text is in multiple columns, with little input from the user. Some less sophisticated packages may be optimized for particular fonts or page layouts, and may require more input from the user, including "training" the software to recognize new typefaces.

See Also

Scanners, Choosing

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Scanner Types

See

Slide Scanners, Handheld Scanners, Flatbed Scanners, Drum Scanners, Office Scanners

Scanning

See

Image Scanning

Scanning Software

Software for use by motion-disabled persons that places a keyboard on-screen, with a cursor moving over it. The user activates a switch to stop the cursor and select the letter it's on. Then the cursor moves again until another letter is selected. Although it's slow, it enables many people to use a computer who otherwise would be unable to do so.

See Also

Co:writer; Freedom

Scenery Animator

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Natural Graphics' Scenery Animator is a scenery creator and animation tool. There are three types of scenes that can be manipulated in this software. First, Scenery Animator can import DEM (Digital Elevation Model) files. DEMs are available from the USGS (United States Geographical Survey) as data sets, and are often posted free on-line. DEMs are available for just about every location on the Earth, and there are several planetary DEMs available for lunar, Martian and Venusian terrain. Scenery Animator comes with a collection of six DEMs (Mount St. Helens, Grand Canyon, a moon view and others), and additional DEM sets (32 in all) can be purchased directly from Natural Graphics. The second method for creating a scenery model in Scenery Animator is to use the random number generator on-board to construct an original geography. You can determine the height, and even set trees (Oaks or Redwoods) to cover a percentage of the terrain. Scenery Animator geography is fractal based, and you can set the "edge" of the terrain to a discrete distance or make it infinite. The last method for loading in a scene is to choose a scene already saved out from a previous work session. You can alter any scene that is loaded in.

The Camera View Not only does the camera view act as a preview of the overall scene, but it can be used to move the camera until just the right position is found for a keyframe. You can take advantage of panning left and right or up and down, moving forward or back, banking on any angle, and adjusting the pitch. All of these controls are vital when determining the drama of an animated fly-through of a scene. An adjustable rectangle on the Camera View screen lets you change the focal length of the "lens".

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The Map View This is a top/side toggleable view elevation map of the loaded scene, complete with a colorization of the different elevations (lighter equals higher terrain). Along the left side of this Viewport are eight icons: path Modification Arrow, Move-View Hand, Camera Angle/Focus Tool, camera Position Crosshair, a “lake” tool, two Path Construct Tools (linear and curved), and a positionable magnification rectangle. The tools are straightforward to use and intuitively designed. Fine tuning controls with numerical inputs for camera, sun and path alterations exist in a separate dialog. The “lake” tool places water at whatever level in the top view you select, and everywhere below that level on the same contour lines. This makes it easy to place a watery surface at the base of mountain cliffs.

Landscape Controls Land, sky, water and trees are controllable in Scenery Animator. Each has a separate dialog that alters needed parameters. In land, you can alter the snow, rock, vegetation and soil min/max elevation levels and the distribution of each. Sky has a toggle for both clouds and gradient, a cloud height setting, and cloud position and density. In water, you can turn ocean and waves on or off, and also set the altitude for the ocean. With the tree setting, you can select between Oaks and Redwoods and set their min/max altitude and coverage percentage. A separate “smooth” setting smoothes out the sharpness of a landscape.

Rendering Rendering a graphic based upon the settings is a snap. Simply go to the render menu, set the size of the render (custom sizes are supported along with custom DPI settings), and choose a storage path. You can also select an area of a scene and save it out as a DXF file so it can be rendered in

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any 3D software that supports DXF imports.

Animation Scenery Animator has a simple keyframe setting system for animated sequences that beats 90% of the animating software available. Settings are easy to configure, simple to alter, and quick to preview. Everything can be tweaked until it's just right.

Science Fiction Themes in Games, See The Daedelus Encounter, Hell, Marathon, Descent, TimeLapse, Absolute Zero, Wing Commander III, Rebel Assault II, Spaceward Ho!, Chaos Overlords, Adventure Games, First-Person Perspective Shooters

Science Programs for Children, See ADAM, Bumptz Science Carnival, MacFrog, What's the Secret, Undersea Adventure, Widget Workshop

Scores Virus

Scores, also known as Eric, Vult, NASA, and San Jose Flu, infects System, Note Pad, and Scrapbook files and creates two invisible files in your System folder named Scores and Desktop (not the same as the normal Desktop file). After your system becomes infected, Scores tries to spread to each application you run. This virus spreads only itself, but that occupies memory and disk space.

See Also

ANTI Virus; CDEF Virus; CODE 1 Virus; CODE 352 Virus; Frankie Virus; INIT 17 Virus; INIT 1984 Virus; INIT 29 Virus; INIT 9403 Virus; INIT-M Virus; MacMag

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Virus; MBDF Virus; MDEF Virus; nVIR Virus; Scores Virus; T4 Virus; WDEF Virus; ZUC Virus

Scott, Mike

Mike Scott was the first president of Apple Computer. He was brought in by **Mike Markkula** shortly after Apple was incorporated. Scott served as president until 1981. Following the dismal failure of the Apple III, Scott fired many people, creating an uproar that led to his demotion from president to vice-chairman. Shortly thereafter, he left Apple.

See Also

Apple Computer, history; Markkula, A.C. “Mike”

Scott, Ridley

See

1984

Scrabble

See

Classic Collection

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Scrapbook

The Scrapbook is used as a permanent holding place for items that you want to have access to after the computer is **shut down**. The Scrapbook enables you to store text, graphics, sounds, **QuickTime** movies, and any item that you can **copy** and **paste** .

You can see the contents of the Scrapbook by using the **scroll bar** below the display window, and the type of object and size are listed in the lower window. The items dimensions (if it's a graphic) or duration (if it's a sound or video clip) are listed in lower window on the far right.

You add items to the Scrapbook by cutting and pasting them, and you can remove the currently displayed item by choosing **Clear** from the **Edit menu**. The difference between the Scrapbook and the **Clipboard** is the Scrapbook is a permanent storage place and Scrapbook items are written to a file that resides in the **System Folder**, whereas Clipboard items are temporary and are erased when another item enters the Clipboard or the computer is shut down.

To use the Scrapbook DA, follow these steps:

1. Choose Scrapbook from the Apple menu.
2. If you have an item that you've copied, you may enter that item into the Scrapbook by selecting Paste from the Edit menu.
3. The item will appear in the Scrapbook window as the current item and

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will be retained in the Scrapbook's memory for use at another time.

4. To use an item from the Scrapbook, find the item you want and choose Copy from the Edit menu. You may then close the Scrapbook and go to the document you want to use the copied item from and select Paste from the Edit menu to insert the Scrapbook item.

See Also

Clear; Clipboard; Copy; Edit Menu; Paste; QuickTime; Scroll Bar; Shut Down; System Folder

Screen Captures

Screen capture enables you to take a picture of the image on your screen and save it to your **hard disk** in **PICT** format. The first screen capture appears in your hard drive window as Picture 1. All subsequent screen captures are numbered as Picture 2, Picture 3, and so on. To capture a screen image (also referred to as a screen shot, screen grab, or print screen) press Shift-Command-3. The sound of a camera shutter tells you that a screen capture has been made. You can open screen captures in any program that supports PICT format, including **SimpleText** .

To create a Screen Capture, follow these steps:

1. Press Shift-Command-3.
2. Look in the main window of your hard drive for a document entitled

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Picture 1 (or Picture 2, 3, and so on, if this is not your first screen capture).

3. You can view your screen capture by opening it in SimpleText or any program that enables you to view and edit PICT images.

See Also

Hard Disk; PICT; SimpleText

Screen Captures (Keyboard Shortcut)

The keyboard shortcut to take a screen picture (also called **screen capture**, screen grab, or screen shot) is Shift-⌘-3. When you press these keys, you hear the sound of a camera shutter, and the screen momentarily freezes as the screen picture is taken. The picture is saved to your **startup disk** as a **PICT** file titled Picture 1 (if this is your first screen picture). If not, the pictures are numbered Picture 2, Picture 3, and so on.

To create a screen picture, follow these steps:

1. Press Shift-⌘-3.
2. You'll hear a camera shutter sound to signify the screen picture has been made.
3. The screen picture will appear as a PICT document on your startup drive named Picture 1.

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See Also

PICT; Keyboard Shortcuts; Screen Capture; Startup Disk

Screen Captures, Opening and Editing

You can create a screen capture (a photo of your screen) by pressing the keyboard shortcut Shift-Command-3. You hear the clicking sound of a camera shutter, and the capture is taken and placed on your startup disk. Your first screen capture is named Picture 1. Subsequent captures are named Picture 2, Picture 3, and so on. You can open a screen capture in a graphics program that supports **PICT** format, but you can also open screen captures in either TeachText (Apple's bare-bones text editor) or in SimpleText (the updated version of TeachText).

To open the screen capture, use the Open command, found on the File menu of **SimpleText** and TeachText.

When you have the screen capture open, notice that your text cursor has changed to a crosshair cursor. This enables you to make a rectangular selection of your screen capture and copy it to the **Clipboard**. From there you can paste this selection into the **Scrapbook** or any program that enables you to cut and paste from the Clipboard.

See Also

Clipboard; PICT; Scrapbook; SimpleText; TeachText

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Screen Capture Utility

If at any time you want to create a picture of what's on your computer screen, you can create what's called a screen capture. This screen capture is like taking a photograph of your screen and saving it to a file on your hard disk. The keyboard command to take a screen capture (also referred to as a screen print, screen grab, or screen shot) is Shift-⌘-3.

When you press this combination, you will hear the sound of a camera shutter, and the screen will momentarily freeze as the screen picture is taken. The screen capture is saved to your **startup disk** as a **PICT** file titled Picture 1 (if this is your first screen picture; if not, the pictures will be numbered Picture 2, Picture 3, and so on). The main advantage of taking a screen capture is that you get a full color representation of the screen, which you can resize, edit in a graphics program, and print out. A screen capture differs from Printing the Desktop in that it gives you a full-color file that you can manipulate in a graphics application, or cut and paste sections from within TeachText or SimpleText. If you Print the Desktop, it does just that; it prints a copy of what it sees to a printer.

TIP If all you need is a printout of the desktop, and don't need a file that you can edit or save, then you can skip the screen capture process altogether and choose Print Desktop from the File menu at the desktop with all windows closed.

There are also a number of third-party shareware utilities that add more

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precise control and additional features for taking screen captures, such as Flash It and Capture, both of which offer a wide variety of options. You can find both in the Utilities section of America Online or at a variety of Mac FTP sites on the Internet.

To create a screen picture, follow these steps:

1. Press Shift-⌘-3.
2. You'll hear a camera shutter sound to signify the screen capture has been made.
3. The screen capture will appear as a **PICT** document on your hard drive entitled "Picture 1".

See Also

PICT; Startup Disk

Screen Control Panel

Some of the newer Macs (such as the Performa LC 580's or the Performa 5200 series) that have the computer and monitor all in one piece have the **Screen Control Panel** to adjust the brightness of the screen since some models don't have external controls. The old Mac Classic and Classic II had a similar control panel called **Brightness** that did the same thing for those all-in-one units.

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See Also

Brightness; Control Panels

Screen Saver

Screen savers are **utility** programs that usually take the form of **control panels**. When screen savers were originally introduced, the idea behind a screen saver is that if you were to leave your computer unattended for a long period of time—for example, if you went out on an appointment, left your computer on, and didn't come back for two or three hours—then the fear would be that the image on-screen would "burn" into the phosphors of your monitor, forever damaging your screen. If you've ever used an Automatic Teller Machine at the bank, often you'll see the bank's "welcome" screen has burned in to the ATM's monitor screen and you can see a ghosted image of it even while you're viewing other sections on the ATM's monitor. However, most experts today will tell you that the phosphors now used in monitors don't allow screen burn-in to take place, so screen savers are more for entertainment purposes than providing an important screen protection task.

What a screen saver essentially does is keep things moving on your screen so that nothing stays still long enough to burn in. You can set a time interval for when you want the screen saver to kick in, like after a 10- or 20-minute period of inactivity. Some of the first screen savers were utilities that you had to launch, and they would black out the screen and display crude animations—of fireworks or outlines of geometric objects moving across your

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screen—to protect your screen.

To bring your computer screen back to normal, you just press any key or move the mouse. An added feature of many screen savers is password protection to keep other people from accessing your computer after a screen saver comes on. If, for example, you were to walk away from your computer, after a specified time the screen saver would come on. Normally, someone else could sit down at your computer and move the mouse or press a key to return the regular computer screen. But if you have your screen saver password protected, the person trying to access your computer is prompted to enter a password before the screen saver turns off and enables access to the computer. If the person doesn't have your password, your machine is protected.

Today's screen savers are mostly control panels, which enables them to start after a period of inactivity, rather than you having to remember to launch a screen saver utility before you walk away from your computer. Also, today's screen savers have become very popular, as they now offer quite extravagant visual entertainment, with full-color customizable screen savers, screen saver interactive games, sound tracks to accompany the screen savers, themed screen savers such as Star Trek; The Simpsons; Disney; and many more.

Probably the most popular screen savers come from Berkeley Systems (2095 Rose Street, Berkeley, CA 94709, (510) 540-5535, Web Site URL: <http://www.berksys.com>. Street Price of After Dark Collection: \$39.95) with

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their AfterDark Screen Saver collection.

The kicker here is that with today's more sophisticated monitors, many experts believe that screen savers are totally unnecessary and the worry over screen burn-in is a thing of the past. Besides, many new monitors have a built-in sleep mode that powers down the monitor and blanks the screen, and in System 7.5 and higher, you can use the Energy Saver Control Panel to do the same thing. That notwithstanding, the entertainment value screen savers provide has made them a very popular, in fact almost a "must-have" utility for every new Mac owner.

See Also

After Dark ; Control Panel; Monitor; Utility

Screen Shot

see

Screen Capture Utility

ScreenMovie

see

MovieTrilogy

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Screenscape

Screenscape is a commercial **desktop background pattern utility** from KiwiSoft that enables you to choose from a variety of background patterns. There are also a number of third-party background patterns that you can use with Screenscape that are available from the Macintosh Utilities Forum on America Online and at various FTP sites on the Internet.

See Also

Desktop Pattern

Script Editor

See

AppleScript

Scripting

Scripting creates programs that control other programs. The programs you create, scripts, can manipulate applications in sophisticated ways. By creating scripts, you can simplify complex tasks and integrate complex interactions among applications. You can generally execute a script with a simple double-click of the mouse.

In the past, scripting was one of the weak points on the Macintosh. Its

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graphical interface made it especially difficult to create scripts. Today, there are two major types of scripting on the Macintosh. In the first, you create scripts, or macros, that manipulate the user interface of an application just as if you were using the application directly. Your scripts move the mouse, click buttons, and enter text just as if you were using a mouse and keyboard. The biggest disadvantage of this scripting system is that they rely on the visual layout of an application to be consistent. If they expect a window to be in the upper-right corner of the screen, they direct their actions there even if the window is actually in the lower-left corner.

The most popular of these macro scripting systems is **QuicKeys**, from CE Software; **Tempo**, from Affinity Microsystems; and **Keyquencer**, a shareware program by Alessandro Levi Montalcini. Each of these programs enable you to record a series of user interface events as a macro and play the macro back at the touch of a key.

Because these programs mimic user input, they do not rely on any support from the application. Virtually any application, Control Panel, or desk accessory can be controlled using macros. As a result, this kind of scripting is especially useful for scripting programs (or parts of programs) that do not support the second kind of scripting, OSA scripting.

OSA stands for **Open Scripting Architecture**, a system-level scripting framework that supports multiple scripting systems. These systems take advantage of the MacOS's built-in support for scripting in the form of **Apple events**. Apple events are messages you can send to an application to get it to

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do something you want (or to ask it to send you some information). Most major applications respond to a wide variety of Apple events. Apple events are like a puppet's strings: If you pull them in the right ways, you can make an application dance.

Because Apple events interact directly with a program's core, they avoid the issue of user interface interaction completely. Scripts relying on Apple events generally are unconcerned about the physical layout of windows, menus, and controls, but rather deal directly with the actions that these controls initiate.

Fortunately, you don't usually have to deal with the gory details of Apple events directly when you create scripts. All the low-level details are taken care of by the scripting system you decide to use. The two major scripting systems for the Macintosh are Apple's **AppleScript**, and UserLand **Frontier** (also known as Aretha).

Each of these scripting environments provides a rich language you can use to control the system or other applications. By writing scripts in these languages, you can create a series of AppleEvents that pull the strings in the right way to get applications to do whatever you want them to.

Both AppleScript and Frontier have strong followings. AppleScript has the advantages of being supplied by Apple with the operating system. It also has a language that somewhat resembles normal human language. In fact, separate "dialects" of AppleScript exist for a number of languages, including English, French, and Japanese. In addition, many third-party tools exist for

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working with AppleScript, including Main Event's **Scripter**, Late Night Software's Script Debugger, and Full Moon Software's **ScriptWizard**. On the other hand, AppleScript can be slow at some tasks (especially handling strings of text), and it is not native on the Power Macintosh.

Frontier is native on the Power Mac, supports simultaneous **threads** of execution, and provides a centralized object database for storing scripts and data. Frontier also has excellent debugging capabilities built-in. On the down side, its language, UserTalk, is generally more difficult for non-programmers to grasp than AppleScript, and its current status as a free product means that support is handled by a group of volunteers (which may or may not be a disadvantage).

Before you can script an application using either AppleScript or Frontier, the application must be *scriptable*. This means it supports a sufficiently complete set of AppleEvents to enable scripts to access much of its functionality. For non-scriptable applications, you can side-step this problem to some extent using PreFab Software's Player, which provides user interface manipulation functionality much like a macro language from within AppleScript or Frontier.

Among the applications that *are* scriptable, some enable you to record your actions and play them back as a script. These recordable applications make script creation much easier by eliminating much of the difficult programming work.

Besides these system-level scripting systems, many individual applications

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support their own internal scripting language. Microsoft's applications, for example, use a dialect of BASIC for scripting. Many applications that used their own scripting language in previous versions have moved toward enabling scripting using AppleScript. Some applications provide a "scripts" menu that enables you to execute scripts directly within the application without having to resort to launching a separate script from the Finder. These applications are classified as attachable because they enable scripts to be attached to their basic functionality.

See Also

Apple Event; AppleScript; Frontier; Open Scripting Architecture; Scripter; ScriptWizard; Threads

Sculley, John

John Sculley was CEO of Apple Computer from 1983 until 1993. He was recruited to Apple from PepsiCo, where he served as president of Pepsi-Cola USA. During his time at Pepsi, Sculley was best known as the marketer who masterminded the "Pepsi Generation" advertising campaign that ushered in the era of "lifestyle" ads that sell a product by creating a feeling rather than directly selling the product's features.

After **Mike Scott** was forced out of his position as president of Apple in 1981, **Mike Markkula** reluctantly took an operational role in the leadership of Apple. Markkula preferred a less involved role, so the search for a new

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leader for Apple began. After a lengthy search and subsequent negotiation, John Sculley assumed the role of president and CEO of Apple on April 8, 1983.

Sculley was Apple founder **Steve Jobs'** choice for CEO, and initially the two got along well. The two led the company jointly through the final development and introduction of the Macintosh.

After the Mac's initial sales spurt tapered off, Apple was in tough financial times. The company needed to focus on the bottom line to make it through the difficult period. Unfortunately, Jobs had a habit of meddling in the smallest details of many projects, and was gradually seen as a liability to the company.

In a major power struggle, Sculley forced Jobs out of his operational role in May 1985. In September of that year, Jobs left Apple for good, angry that the man he brought in to lead Apple had forced him out.

Following Jobs' departure, Sculley managed to lead Apple through its difficult times and into a huge era of growth and innovation. By the early 90s, however, Apple was facing stiff price competition from other personal computer manufacturers. Sculley failed to properly manage the increasingly meager margins on Apple's products, and in June 1993, he stepped down as CEO, retaining the position of chairman.

In October 1993, Sculley left Apple to take the job of president and CEO of Spectrum Information Technologies, a small East coast start-up that made products that integrate computers with cellular phone and paging technologies. His stay with Spectrum didn't last long. When he learned of a

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number of ongoing investigations and lawsuits targeting Spectrum, he resigned and sued the company. They counter-sued, citing breach of contract, among other charges. In the end, Sculley and Spectrum dropped their lawsuits against one another, and Sculley moved out of the public eye.

Sculley is now president of Live Picture, a small company that develops and markets an innovative image editing application of the same name.

See Also

Jobs, Steve; Markkula, Mike; Scott, Mike

Sculpt 3D

As MacPaint represents 2D drawing in a historical place of honor as the first software of its kind, Byte by Byte's Sculpt represents 3D rendering and animation on the Mac. But there is a difference: while users of MacPaint still own it because of a reverence for its place in computer graphics history, owners of Sculpt 3D use it because of what it can still do, even after all these years and the advances in technology. It may not have all of the bells and whistles touted by the competition, but it remains a good choice for learning computer graphics processes, as well as still possessing tools that can help you craft some beautiful basic animations.

The Interface Sculpt has the classic 3D interface, a design which it was instrumental in turning into the accepted standard that lasted a long time. A TriView that represents the volume of 3D space from three look points and a

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Perspective rendered view dominate the screen.

Modeling Tools A vertex Pointer in the ToolBox allows you to select any vertex on an object for modification. It can be interactively pulled away from the object or treated with the modifications in the Scene/Actions menu. Modifications include resize, Extrude, Offset Surface, Subdivide, Trim, Intersect, Weld, Reduce, Fill, Reflect, Lathe, Twist, Loft, Bevel, randomize, Hide, and Reveal. Sculpt includes a list of primitive shapes that can be used as building blocks to sculpt more complex shapes: Sphere, hemisphere, Block, Prism, Disk, Circle, Cylinder, Tube, Cone, Terrain, and Text.

The Terrain Tool is one of the most complex and option filled you will find anywhere. It allows you to reference a TIFF or PICT image as an elevation map channel, and has user input controls for Texture, Dimensions, Elevation, and Terrain Type (Parallel or Planar, Cylindrical, and three Spherical object receptors). You could take a logo and have it appear as a 3D surface on a sphere quite easily with this tool. Nothing like it exists in other software.

Boolean Operations Sculpt allows for true Boolean adding, subtracting, and intersecting of selected shapes. Surfaces are divided into two groups, the Tool and the Object, and Boolean interactions are applied.

Texture Mapping Sculpt has a built-in attributes list (Dull, Shiny, metallic, Mirror, Glass, Solid Glass, Luminous, and Background). An extremely intricate Texture machine allows you to add new textures based on highly interactive designs that reference dozens of user set parameters, including graphics input.

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Lights Lights in Sculpt can be adjusted by altering their Color, Brightness, Beam Shape, and Projected Image components. A special “Sun Time” feature allows you to set the light to mimic dates of the year, down to the hour, minute, and seconds. A Fall-Off expert control allows you to design the lights’ fall-off parameters.

Rendering Once all of the parameters are set in the Rendering Preferences, rendering can commence. Single files or a batch of files can be targeted for rendering.

Animation Files can be batch rendered in accordance with the rendering settings. Sculpt 3D remains an image sculpting and rendering engine, with no features for keyframe animating. The only way to achieve animations from Sculpt 3D is to render files one at a time from different camera/target parameters. We have included it in the animation section of the book because it was instrumental in the development of most of the rendering and animation engines that have been introduced since it was born.

Other Special Features Sculpt includes measurement items called “Scrulers” that indicate the units of measurement set, and allow you to measure distances and objects in 3D space. A rotation arrow in the corner of the Perspective view animates the scene and allows you to see it from all perspectives as you orbit the virtual space.

File Load/Save Conventions Scenes can be loaded and saved as Sculpt 3D version 1, 2, and 4 (version 3 was skipped over), DXFs. Sculpt can open and render images in the PRIM (Photo Realistic Image Manager, Sculpt’s priority

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format), TIFF, and PICT formats. Sculpt has dialog called the DXF Scene File Machine that allows DXF files to be imported and exported. The unit of measurement and scale is set here.

SCSI

See

Small Computer System Interface

SCSI ID

See

Finding Out a Device's SCSI ID Number

SCSI Manager 4.3 Extension

This extension works with SCSI devices connected to your Mac. This latest update to the SCSI manager extension speeds up data transfers between SCSI devices by making them more efficient.

This extension is now built into the system on Power Mac models, so it is only necessary in non-**Power Mac** models.

See Also

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Power Macs; SCSI-3; Small Computer System Interface

SCSI Probe

SCSI Probe is a freeware utility (control panel) for system version 6.0 and higher (by Robert Pollack and found in the Macintosh Utilities Forum on America Online and at various FTP sites on the Internet) that is used for identifying and mounting devices connected to your SCSI port. SCSI also identifies the device type, vendor name, and the current version number of the SCSI driver for each peripheral.

A nice feature of SCSI Probe is the ability to assign a "hot key" that mounts SCSI disks. If, for example, you have an external removable tape drive (such as a Sysquest drive) and you insert the disk and it doesn't mount on the desktop, you can press the SCSI Probe "hot key" combination and it will send a mount instruction to the disk that will mount the disk and have it appear on the desktop.

When you open the SCSI Probe Control Panel, it shows you a list of all SCSI ID numbers and the device connected at each number (if any), the type of peripheral (disk, CD-ROM, CPU, and so on), the name of vendor for the product, the product's name, and the current version.

SCSI Probe also has three buttons: Update, which refreshes the SCSI Probe display by checking the SCSI chain to see which peripherals are connected; Mount, which mounts any disks that are not mounted, but are mountable; and

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Options, which enables you to set your "hot key" for mounting disks and other preferences for SCSI Probe.

See Also

Desktop; SCSI; SCSI Devices; Troubleshooting

SCSI-3

A new SCSI specification called **SCSI-3** provides a speed boost to input and output via new SCSI-3-compliant expansion cards that plug into the PCI slot on the Power Mac. SCSI-3 is still being discussed by standards committees, but a general outline of its contents is available. SCSI-3 would be backwards compatible with today's SCSI protocols (meaning that you would be able to plug in older devices into the new ports) as well as forwards-compatible with the several new interface designs and data transfer schemes in development (meaning that devices that support new connection schemes would also fit). SCSI-3 would break the seven-device limit of connectivity to support up to 127 devices on a single bus. In addition, you can attach new peripherals while your Mac is turned on (called **hot plugging**).

One of the biggest transitions within SCSI-3 is the switch from **parallel buses** to **serial buses** for data transfer. Three of the four SCSI-3 protocols in development rely on serial data transfer systems where data streams follow single file down a single wire, rather than concurrently down several wires as they do on parallel buses. New wiring systems resistant to

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interference plus new signaling schemes enable serial buses to perform at higher-clock speeds over longer cables than parallel buses.

Because the new serial design requires storage drive manufacturers to completely redesign their data transfer schemes, the first SCSI-3-compliant protocol being offered is based on a parallel bus. The new specification is called **Ultra SCSI**. Ultra SCSI has doubled the SCSI clock rate from 10 MHz to 20 MHz. This increased throughput doubles the speed of Ultra SCSI to 40 megabytes per second (Mps). The previous winner in the throughput race was **SCSI Fast and Wide** (also called **SCSI-2**), which could transfer data at 20 Mps. Power Macs currently support SCSI-2. SCSI Fast and Wide supports 32 data lines (although most implementations use only 16 lines).

Ultra SCSI is supported on Quantum and Seagate large hard drives (4.3GB drives) and Hewlett-Packard also endorses Ultra SCSI. The problem with Ultra SCSI is that it does not address the cabling sensitivity issues of the current SCSI protocol. Because of its very fast data transfer rate, Ultra SCSI requires single-ended 68- or 80-pin connectors (current SCSI requires 50-pin connectors), supports only one ground line for all data lines, and has a maximum length of 1.5 meters.

Another SCSI-3 protocol that is getting much attention is **Fibre Channel**. Fibre Channel is a serial system that uses fiber optic cabling as well as copper wires (such as telephone twisted pairs or coaxial cables). Fibre Channel would support copper cables up to 100 meters long and fiber optic cables up to 10 kilometers long. There would be no address switches or

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terminators because Fibre Channel would be self-configuring and hot-pluggable. Up to 127 devices could be attached with data-transfer rates of up to 100 Mps. Fibre Channel supports several connectivity designs, but the one supported by most PC manufacturers is called **Fibre Channel-Arbitrated Loop (FC-AL)**. In this cabling topology, devices on the bus are connected in a circle and “talk to each other” to determine the timing of data transfers. Quantum, Seagate, and Hewlett-Packard support Fibre Channel and plan to manufacture drives based on this protocol. You can also use Fibre Channel’s protocol for network cabling, since it supports proprietary protocols, such as AppleTalk, as well as more standard networking protocols, such as Ethernet.

IBM is competing against Fibre Channel with its serial data transfer protocol entry, **Serial Storage Architecture (SSA)**. SSA provides the same benefits as Fibre Channel at a slower data transfer speed (80 Mps) by using 9-pin connectors and 6-wire cables connected to two ports in pairs. Although SSA is supported by Windows and mainframe vendors, no Macintosh vendor has announced support for SSA for the Mac.

Apple is developing a new data transfer protocol code-named **FireWire** (also known as P1394, the preliminary IEEE specification number). FireWire enables data transfer rates of up to 12.5 Mps running at one of three speeds: 100 Mps, 200 Mps, or 400 Mps, over 9-pin cables similar to those used on home video games. The protocol would support up to 63 devices on a single bus (a branching chain topology from multiple computers), be hot-pluggable, self-configuring, and cables between devices can be up to 4.5 meters long. In addition, P1394 cables can supply up to 60 watts of power, letting you operate

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devices without a separate power cord. FireWire is evolving into an interface for multimedia devices, such as video cameras, digital still cameras, and video cassette recorders, since FireWire emphasizes the collection of real-time data. Sony is building FireWire connectors into its digital video cameras. The Sony camera uses a new compression format, called DVC, with 100-Mbps 1394 controllers to send digital images to the Mac. The P1394 specification is also replacing MIDI, since FireWire supports multiple streams of full digital audio along with MIDI-style control codes.

FireWire may be slower than Fiber Channel, but it is less expensive and its controllers are simpler to implement than other SCSI-3 designs. PCI expansion cards are available with FireWire for Power Macs from SCSI-adaptor companies such as Adaptec. By late 1996/early 1997, Macs will include a P1394 port with an internal and external connector or multiple FireWire ports, negating the need for PCI expansion cards.

See Also

Future Trends; Multimedia; Networking; Ports; SCSI

SDK

An SDK, or Software Development Kit, is a set of tools and information that helps programmers develop software for a technology. Apple, for example, releases a new SDK for most new parts of the MacOS as they are released. These kits contain sample code, APIs, and documentation to get a programmer

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started with the new technology. Other companies also release SDKs for their products. An SDK is available from Adobe for developing Photoshop **plug-ins**. Similarly, Berkeley Systems has an AfterDark SDK that gives programmers everything they need to know to develop modules for the AfterDark screensaver.

See Also

Application Programming Interface; Plug-In

.SEA Filename Extension

See

Compressing Files

.sea Filename Extension

The **.sea** (self-extracting archive) filename extension means the file has been compressed but has a built-in decompression engine that enables it to be decompressed even if you don't have the application that compressed it. This is a popular compression format supported by most **compression utilities** such as **StuffIt**, **DiskDoubl**er, and **CompactPro**, and **.sea** files appear quite often on **online services** or the **Internet**. You use a self-extracting archive when you're sending a file to someone and you're not sure if they have the software to decompress, or expand, the compressed file.

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By creating an .sea file, the decompression routine is built into the file. This is transparent to the user and adds only 5K to the file. The programs mentioned here have a checkbox or menu option to make your file a self-extracting one.

See Also

CompactPro; Compression Utilities; DiskDoubler; Internet, The; Online Services; StuffIt

Secrets of the Luxor

See

Myst

Sections in Word Processing

Sections can be thought of as subdocuments within a master word processor document. Each section has its own **formatting attributes** . To create separate sections in a document, insert a section break where you want the new section to start. You can divide a document into as many sections as you want, using different formatting for each section. Section properties include **headers** and **footers** , **margins** , page size and **orientation** and page numbers. If you want a section property, such as a header or page numbering, to carry through the entire document, create it as part of the

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master document rather than as part of a single section.

See Also

Word Processing

Select All Command

If you want to simultaneously select every item in the **active window** use Select All, under the **Edit menu**, and all items in that window, visible or not, are selected at once. If, for example, you have a folder and you want to delete all the items in the folder, but don't want to delete the folder, you can open the folder and use the Select All Command. It selects all the files within that folder simultaneously and you can drag them, as a group, into the Trash.

Select All also is available in most applications, where it usually appears under the application's Edit menu. You might use Select All if, for example, you're working on a letter in a word processor and you've decided you want to change the typeface you're using for the entire letter. You can click your cursor anywhere within your letter and choose Select All from the Application's Edit menu. This selects the entire text, even if it appears on multiple pages, so you can change the typeface and be sure that the typeface for entire letter changes at once.

To use the Select All command, follow these steps:

1. Open the window where you want to simultaneously move, or open,

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everything within that window.

2. Under the Edit menu choose Select All (⌘-A)
3. You can now move, or open, all the selected items at once as a group.
4. When your move, or other change is complete, simply click outside the selected area to remove your selection so you may return to other tasks.

See Also

Active Window, Edit Menu

Selecting Items

To select an item, **click** the **icon** for that item. The icon lets you know it is selected by. This darkening is called **highlighting** . Once you've selected an item, the next action you take affects it.

You can select multiple items by clicking the first item you want and then clicking any other item while pressing the **Shift key** . You can select as many items as you like as long as the Shift key is pressed. You can also select multiple items by dragging a **marquee** around the items. A marquee appears when you take the **arrow pointer** and **drag** a marquee around the objects you want to select. Any objects that fall within the area of the marquee are selected, as shown in the figure. You can select multiple objects with the

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marquee in an **icon** or list view of a window.

To select an option from a **menu**, click the menu and drag your **cursor** down the menu. A black highlight bar appears on the menu at the location of your cursor. When you highlight the **command** you're looking for, release the cursor and the black selection bar blinks to let you know you've made a selection.

If you're in an **Open** dialog box and you need to select a file from a scrolling list, click the name of the file you want to select. The file's name becomes highlighted using the color you've selected as your highlight color in the **Color Control Panel**.

You select text using the **I-Beam cursor**, which appears anytime you need to enter text. To select text, click at the beginning of the text and drag your cursor over the words, or letters, you want to select.

To select a file, folder, or disk in a Finder window, follow these steps:

1. Click the file's icon.
2. The icon becomes darkened, or highlighted, to let you know it's selected.

To select a file in an Open dialog or an application, follow these steps:

1. Click the filename in the list.
2. The file becomes highlighted in the list using the color you've chosen

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as your highlight color in the Colors control panel.

To select multiple files, follow these steps:

1. Click the first file you want to select.
2. Hold the Shift key and click the second file you want to select. You may add as many files as you like while still holding the Shift key.

To select multiple files using the selection marquee, follow these steps:

1. Click and hold the arrow pointer.
2. Drag the arrow pointer, which now produces a marquee, over the items you wish to select. Any items that fall within the marquee become selected. To deselect the items, click where there's no icon.

To select an item from a menu, follow these steps:

1. Click the menu and drag the cursor to the command you want to select.
2. Release the mouse at the desired command. A black highlight bar flashes to let you know you have selected the command.

To select text, follow these steps:

1. Click your I-Beam cursor at the beginning of the text you want to select and press the mouse button.
2. Drag your cursor over the text, or letters, you want to select.

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3. The text becomes highlighted to indicate it is selected.

See Also

Arrow Pointer; Click; Color; Command; Cursor; Drag; Highlighting; I-Beam Cursor; Icons; Marquee; Menu; Mouse Button; Open; Shift Key; View By Icon; View By Name

Self-Contained Movies

QuickTime supports dependencies. a QuickTime movie can contain pointers to clips in other movies. This makes the process of cutting and pasting movie clips much faster and easier (the operating system doesn't have to copy the actual information, only information about where the movie is located.) While dependencies make sense for ease of use, playback can suffer, because the system has to read information from a different location on the disk. It is also useless to send someone a movie that uses dependencies.

To solve this problem, you must make the movie self-contained. To do this in Apple's **MoviePlayer** program, first open the movie. Then choose Save As from the File Menu. The Save As dialog box (following figure) contains the following options: Save Normally (with dependencies), this creates another file that still contains pointers to the other movies; Make Movie Self-Contained, this option makes a new movie that contains all of the movie data and is not dependent upon the other files. The dialog also displays the difference in file size—a movie with dependencies is considerably smaller

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than a self-contained movie.

Note that that QuickTime editing programs Adobe **Premiere** and Strata's **VideoShop** create movies that are self-contained.

See Also

Dependencies; Flattened Movies; QuickTime

Self-Expanding Archive

See

Compressing Files

Separations

See

Color Separations

Serial Line Internet Protocol

See

SLIP

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Serial Port

The serial port of a Macintosh allows the computer to communicate **asynchronously** with devices such as modems, printers, and LocalTalk networks. Each Macintosh model has different configurations of serial ports. Many desktop models have two serial ports, one labeled as Modem, the other as Printer. (Performa models with internal modems only have one port, labeled printer). Newer PowerBook models have one serial port labeled printer/modem. More recent models have replaced the serial port with a **GeoPort**, which accepts serial devices but also lets the Mac use a GeoPort Telecom Adapter instead of an actual modem.

See Also

Asynchronous Communications; GeoPort; Ports, Types of

Serial Switch Control Panel

This control panel, found in Macintosh IIfxs and Quadra 950 models provides compatibility for some applications that use the printer or modem port. The only option in this control panel is to make the serial port Faster or More Compatible.

Serif

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See

Typesetting Terms

Servers

In networks where multiple Macintosh computers are joined together, certain pieces of software and/or hardware may be dedicated to the task of managing the distribution of information between individual computers. These computers, called Servers, are ideally dedicated to each task at hand. Each computer on the network that logs into the server is referred to as a "Client".

Technically speaking it is the software that "makes" the central computers a server. So, when not enough equipment is available to dedicate one computer for each server task, a single CPU can "serve" more than one piece of software, being both a File Server and a Calendar server, for example. It's customary to refer to the hardware as the "server", and the applications it's handling as the "server software".

Servers, File Servers A file server allows computer users to share disk files among networked computers. In practice, the File Server functions as a single hard drive that is attached to every computer on the network. Thus, other users can access files you save to the server. Because you may not want to share everything you save, File Servers usually have carefully controlled access, letting certain users and groups access certain folders and files

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within the server and blocking access to other restricted areas. Servers that are able to provide this service to Macintosh clients are referred to as AFP (AppleTalk Filing Protocol) servers. The actual server can be a Mac, PC or UNIX system, so long as the software supports the AFP protocol. Users may not even know that their server isn't a Mac, because the server's disk drive mounts on the desktop as if it were a Mac.

The most basic way to share files with another Mac user is to use the "Personal File Sharing" built into Macintosh system software since version 7.0. This combination of control panel and system extension allows you to share your hard drive with other users on your network. While very convenient, Personal File Sharing slows down the computer it is running on, does not provide very fast file transfers, and can only handle a small number of connected users at one time.

When sharing files with many people, and when speed is important, it makes sense to dedicate a computer to be a File Server, and provide it with AppleShare Server software (not to be confused with the Chooser Extension "AppleShare" which provides the ability to connect to any AFP server.). AppleShare Server turns the Macintosh using it into a dedicated file Server. Those computers and users being served are called "clients".

For better or worse, the computer providing the File Server services does not necessarily need to be a Macintosh. Most file servers popular on the Wintel platform, such as Novell NetWare and Windows NT also support Macintosh Clients. If you're a dedicated Mac user, you may want to consider using an

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Apple Workgroup Server. The current models are essentially PowerPC models with large hard drives (1-2 gigabyte), CD-ROM and DAT drives. Many also include the Apple Internet Server Solution package for the World Wide Web. Most include RAID software for disk mirroring although the RAID hardware must be purchased separately. The Workgroup Server 95 can also run A/UX system software. Upgrades are available to turn existing Quadra 900's or 950's to Workgroup Server 95 status. These kits must be installed by an Authorized Apple Service Provider and include PDS cards, appropriate software, and in some cases logic board upgrades.

Novell NetWare servers are a frequent choice for Mac/PC connectivity. They allow a PC to be configured as an AFP server, so that Macs can access it via AppleTalk. PC users can access the same server via Novell's IPX protocols, letting users share files between the two platforms. NetWare requires an Intel-based PC to run (386, 486, Pentium, and so on), but provides outstanding performance. When a limited number of users are connected to the server at one time, the AppleShare line compares favorably with Novell servers. As the amount of usage goes up, however, the Novell servers show dramatically better performance. Unfortunately, most of the setup and maintenance of NetWare servers must be done from a DOS based machine.

Servers, email An Electronic Mail server is a specialized type of server designed to handle electronic messages sent between users. Many email servers can handle both interoffice mail, and mail sent to outside people through the Internet. CE Software's QuickMail, Claris EMailer, and Microsoft Mail are some of the more common applications for interoffice and intra-

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office mail. They provide both client and server components that work on an AppleTalk network and can also send email through a gateway into the Internet. These email packages let you send files as enclosures to accompany messages you type, and even let you request a return receipt, so you'll know when your mail has been read. The recipient can save the enclosed file on his or her own disk. Each of these mail applications has its own method of use, but the general setup is the same for all. One Mac must be designated as the email server. It becomes a sort of electronic post office, storing messages and relaying them to their destinations. The email server can also be used to run other applications, but having to play mailman may cause it to slow down periodically as the mail is handled. If you have a choice of several machines, designate the fastest and most reliable one as the email server. Don't choose the one that is used for processor-intensive CAD, graphics, or database handling, or one that is used for games (which also monopolize the processor.)

Servers, Calendar A calendar server is an application consisting of a calendar and data file of appointments and other events entered by individual users for distribution to others within a company. **Now Up-To-Date** and **First Things First** are typical examples of networkable calendars. They allow executives to share calendars with their assistants, and administrators to plan department-wide events from a central location. Some systems have more advanced abilities to perform scheduling of meetings based upon the events stored in each person's calendar.

Servers, Print In normal operations, a printer can only handle one print

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"job" at a time. Thus, when several people try to print to the same networked printer, each one has to wait for the previous person's print session to end before theirs can begin. A print server provides a more intelligent method of capturing each print job. As each user attempts to print, the print server collects the print job that would otherwise be sent to the printer and holds it in memory. As the jobs come in, it queues them, sending them to the printer one after another. It is similar to the Mac's built-in print spooler, PrintMonitor, except that being an external device, it doesn't interfere with the individual computers operations at all. It doesn't tie up their RAM and doesn't slow down other processing, as an internal print spooler can.

Servers, Database The increase in networked computers has led to an increase in attempts to intelligently manage large volumes of data by using databases which allow many people access to the same data. These services are provided by database servers. Some database programs, such as Microsoft's FoxPro, use file servers to store common data and share the information between users. This type of scenario forces each database client to do all of the data processing work. Other database software, such as ACI 's **4th Dimension** , act as a true database server. 4D's database server intelligently communicates with the database clients using a client-server motif in which processing of data is distributed between the two machines. It also functions cross-platform, running on Windows 95 and Windows NT as well as Mac.

Server, Remote Access Remote access servers provide the ability to connect to the network from remote locations through the use of modems or

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other wide-area communications hardware. Generally these units consist of a specialized piece of hardware dedicated to the task. These devices are not computers, or even servers, but boxes to which you can connect modems and networks. One can also set up a Macintosh to be a remote access server with Apple's Apple Remote Access software and/or Apple's Multiport Remote Access Server hardware. The client computer makes use of Apple's Apple Remote Access (ARA) client software to connect to the remote access server. The Multiport server is a card that you put into a Mac, and then attach modems. It allows the Mac to communicate with several remote clients at once, each over a separate modem and phone line.

Server, Fax Fax servers provide the ability for each person on a network to send and/or receive faxes by computer without dedicating hardware to this purpose on each machine. These provide a tremendous savings to a large office, because the server requires only one or two telephone lines and fax modems that are then shared by the entire office, much as one fax machine is setup for an office, instead of placing one on each person's desk.

In addition to sending and receiving conveniences, fax servers provide for easy tracking of outgoing and incoming faxes without the need to check each individual computer. As with other server types, a Fax server can be composed of a specialized piece of hardware (Such as the Global Village OneWorld Fax Server) or can be composed of software running on a Macintosh (such as 4Site's Fax server).

Server, Modem Much in the way that a Fax Server shares a fax modem

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between people a network, a modem server shares the data transfer functions of a modem with each user. Each time a user needs to make an outgoing data call, the modem server forms a "virtual" connection to that computer, simulating a directly attached modem. This can result in large cost savings, since only a few modems and telephone lines can be effectively shared within a large offices.

Server-Side Imagemap

See

Imagemaps, Creating

Service Bureau Do's and Don'ts for Desktop Publishers

When working with a service bureau is it important to maintain a high level of professionalism by being well-informed and performing certain essential steps. The following is a list of "do's and don'ts" that will expedite prepress services.

- Fill out the service bureau worksheet or job order completely. These forms are available at the service bureau.
- Make sure that you and the service bureau are using the same software applications and that you have the same versions.

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- Prior to taking electronic publication files to the service bureau, discuss with them issues such as **trapping**, **overprinting**, **halftone screen ruling (lpi)**, and **color separating**. It is important to clarify who has the responsibility for setting up the software to perform these functions.
- Find out whether the service bureau prefers to work with native file formats or **PostScript** files. This can have a bearing on who performs trapping, sets screen rulings, and so on.
- Be sure to include all the computer files that are necessary to output your job. Do not include unnecessary files or duplicate files.
- Use the same font technology as that used by the service bureau. **Adobe Type 1** fonts are standard. Don't give your printer-font files to the service bureau. It is illegal.
- Make sure that you have a backup copy of all files.
- Don't be afraid to ask questions and clarify misunderstandings.
- Clearly label and number all disks or cartridges that you send to the service bureau.
- Provide a directory of files and their disk locations.

See Also

Preflight and File Hand-Off; Service Bureaus, Trade Shops, and Desktop Publishing

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Service Bureaus, Trade Shops, and Desktop Publishing

Service bureaus and trade shops provide output and other **prepress** services for **desktop publishing**. Service bureaus for DTP often developed from typesetting and **reprographics camera** houses which served the traditional graphics industry. The **imagesetter** is a primary piece of equipment for a service bureau. Imagesetters evolved from **phototypesetting** systems and are capable of very high output resolutions and good-quality **color separation**. The **Linotronic** is a well-known brand of imagesetter manufactured by Linotype-Hell. Imagesetters are also manufactured by Agfa, Tegra Varityper, Scitex America, and Optronics.

Trade shops, sometimes called color houses, are usually dedicated to high-end color reproduction. They often utilize expensive proprietary hardware and software dedicated to color scanning, color separation, electronic page imposition, and high-resolution output to **film recorders** capable of large formats. These high-end systems are known as **color electronic prepress systems (CEPS)**. Many trade shops are turning to less expensive **mid-range systems** based on off-the-shelf hardware and software.

See Also

Color Separations; Desktop Publishing and Color Electronic Prepress Systems (CEPS); Desktop Publishing Hardware; Image Scanning; Imagesetters; Preflight and File Hand-off; Prepress

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Sequencing

See

MIDI

Shaders

Shaders are mathematical algorithms used to apply colors and textures to 3D models. Shaders usually are limited in their output (a wood shader can produce only wood textures), but they usually produce high-quality results. Objects appear to have been carved out of the texture—the grain matches throughout the object, for example. Shaders and texture maps create surfaces on 3D objects. Which you should use depends upon the effect you want to create. It also depends on the library of shaders and textures you have available. One advantage texture mapping has over shaders is that you can simply create a new surface by drawing or digitizing the surface you need.

There are basic types of shaders (for example, "wood"), and each has parameters that you can adjust (the color of the wood, the size of the grain in the wood). 3D programs usually include a collection of shaders, and you might be able to purchase more, although very few software developers have released additional shaders for their products.

Why use shaders instead of texture mapping? First, shaders usually come with the program and are easy to apply and adjust. Second, they produce very

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high quality results; you would have to spend a lot of time scanning and adjusting parameters to produce a texture map wood that looks as good as that produced by a shader. Finally, and perhaps most important, because shaders are programs and not pre-scanned images, they can be more sophisticated in the way they cover a surface. Take, for example, a wooden bowl. A shader applies wood grain so that it appears to actually go through the surface of the bowl (from the outside to the inside surface). With texture mapping, the surface is applied to the object, and the grain outside the bowl will probably not match the grain inside.

A shader enables you to adjust predefined parameters, such as color or detail (for example, the size and waviness of the wood grain), **reflectivity** , **luminance** , **highlights** , **shininess** , **transparency** , and **refraction** of light through an object

See Also

Rendering; Texture Mapping

Shared Devices

Any device, such as a workgroup printer or a **network** modem, that can be shared is called a shared device. If, for example, you have four Macintosh computers connected to the same **printer** , this printer would be a shared printer, or a shared device. Your Mac can also be a shared device if you have a number of people on a network who can access files or folders on your

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machine.

See Also

Networks; Printing; Sharing Files; Sharing Setup

Sharing Files

If you have files on your Macintosh that other people in your office can access, you can share these files using **file sharing**. This enables you to let users on a **network** have access to files you have designated as shared files. The capability to share files is built right into the Macintosh operating system. With file sharing you can designate that users have access to all your files or just individual folders.

This sharing of files is controlled through the **Sharing Setup Control Panel**, as shown in the figure. This control panel enables you to initiate/disconnect file sharing, and it provides a level of security by password-protecting access to your machine. You will also need to name your Macintosh and assign yourself a username. This is done in the Sharing Setup Control Panel as well. This name will be used by other users on the network to access folders you've selected on your computer for sharing.

You can turn off file sharing at any time by clicking the Stop button on the Sharing Setup Control Panel. A dialog box appears asking you to enter how many minutes should elapse before you want file sharing disconnected. If you want file sharing disconnected, enter the number 0 at this dialog box.

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TIP If your computer has File Sharing turned on, but you're not sharing any files, you should turn File Sharing off. File sharing can slow your computer down, and slow down the entire network because the more users on the network, the more strain and traffic on the network.

If you want to enable access only to certain network users, you can decide which users have access in the **Users and Groups** Control Panel. Within this control panel, you can create a list of users who will have access to your files, and you can create groups of users with access as well. You may want, for example, to set up one group of users that will have full access to all your files, while you may want another group to just have limited access.

Each user with access is represented by an **icon** of a person's face. To create a group, open the Users and Groups Control Panel, and under the File menu choose New Group. This creates a group icon, and you can name this group. To add users to this group, drag the user's icon onto the Group icon, release the mouse button, and that user is added to the group. You can also double-click the group icon, which will open its window, and you can drag a user into the group. You delete users from a group the same way—double-click to open the group's window, select the user you want to delete, and drag the icon into the trash can.

You can set each person's access privileges by **double-clicking** this icon, which presents the Users and Groups options dialog box. In this dialog, you determine how much access they'll have to your shared volumes and folders when they log on to your Mac over a network.

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To add a new user to a group, choose **New User** from the **File** menu and a new icon for that user is created. Each user can be named (you can use their real names to help you keep track) and you can determine how much access each new user will have to your shared files and folders by double-clicking on the user's icon. This will bring up the **File Sharing Options** window where you can assign a user password, and if the user will have access to your shared folders.

You can also enable a guest (another user on the network that's not part of your regular users or groups) to sign on and have access to shared files. This is controlled through the "Guest" icon that appears in the **Users and Group Control Panel**. You can double-click this **Guest** icon to bring up the **Guest Preferences** dialog box that enables you to choose whether guests will be allowed to connect and have access to only the folders or volumes you have allowed everyone on the network access to.

After you've set up who connects and what their access privileges are, you can determine which file, folders, and disk you make available to them by choosing **Sharing** from the **File** menu . This brings up the **Sharing window** where you can choose, by using **pop-up menus** of users and groups, and a series of **checkboxes** , which users and groups have access to which folders on your Macintosh.

To use the **Sharing Setup Control Panel** to name your Mac, follow these steps:

1. Select the **Sharing Setup** from your **Control Panels** folder in the **Apple** menu.

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2. Under Owner name, type your name.
3. Type a password that will give you the ability to make changes to your setup if necessary.
4. Give you Macintosh a name. (Keep in mind that this name will be visible to other network users.)

To turn File Sharing on, follow these steps:

1. Choose Sharing Setup from your Control Panels folder.
2. Click Start to enable filesharing to begin.
3. Close the control panel.
4. In System 7.5 and higher, you can turn File Sharing on from the Control Strip.

To turn File Sharing off, follow these steps:

1. Choose Sharing Setup from your Control Panels folder.
2. Choose Stop, and when the dialog box appears, enter how many minutes until File Sharing disconnects. To disconnect immediately, enter 0 and click OK.
3. Close the control panel.
4. In System 7.5 and higher, you can also turn File Sharing off from the Control Strip.

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See Also

Checkboxes; Dialog Box; Double-Click; File Menu; File Sharing; Icon; Network; Pop-Up Menu; Sharing Command; Sharing Setup Control Panel; Sharing Window; Users and Group

Sharing Folders

If you are connected to a **network** , you can designate certain folders on your Macintosh as being available to others user on the network. After you have selected which folder, or folders, are to be available to network users, you can then set up a different level of access privileges for each group of users on the network.

There are, for example, some groups that you may want to have full access to this shared folder and the ability to create files, edit existing files, delete files, and so on, but there are other groups that you may want to grant the ability to view the folder, but not make changes or add to it. And there may be yet other groups that you don't want to have any access or even see this folder at all. You can make these determinations in the **Sharing Window dialog box** , which appears when you choose **Sharing** from the **File menu** . This dialog box lists each group and enables you to choose the level of access privileges through a series of checkboxes.

In the Sharing Window dialog box, you can toggle on or off the capability for a folder to be shared by clicking the checkbox marked, "Share this item and

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its contents." After you've made this folder available for sharing, you can choose who the owner (person in charge) of this folder will be. Normally, you would name yourself, but you can also designate a different network user to be the owner of this shared folder by choosing their name from the pop-up menu in the dialog box. If you choose a different user (other than yourself), this user will then have the ability to set access privileges for this shared folder.

You determine which users, or groups of users, will have access to your shared folder through this dialog box. The user or group's names will appear in a pop-up menu, and you can choose from three different levels of access for each user or group: the ability to See Folders, the ability to See Files, and the ability to Make Changes to these files. There is also a checkbox below this pop-up menu called "Everyone," where turning this on enables access to your shared folder by guests on the network. You can then designate the access privileges of guests the same way you did for users and groups.

See Also

Dialog Box; File Menu; File Sharing; Network; Sharing; Sharing Window

Sharing Setup Control Panel

The ability to share files with others is controlled from the **Sharing Setup** Control Panel. This control panel is divided into three sections; Network

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Identity (where you name your Mac, enter your name as owner, and assign a password); The File Sharing section where you toggle file sharing on/off; and the Program Linking section, where you toggle program linking on/off.

After you've entered your Network identity information, you can enable file sharing by clicking the Start button. If file sharing is already on, you can turn off file sharing at any time by clicking the Stop button under the file sharing section. A dialog box appears asking you to enter how many minutes before you want file sharing disconnected. If you want file sharing disconnected immediately, enter zero at this dialog.

To turn off File Sharing on the Sharing Setup Control Panel, follow these steps:

1. Choose Sharing Setup from the Control Panels submenu on the Apple menu (or System Folder).
2. Select Stop, then, in the dialog box that appears, enter how many minutes before file sharing is disconnected. To disconnect immediately, enter 0 and click OK.
3. Close the control panel.

See Also
Sharing Setup

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Sharing Window

The Sharing Window is the **dialog box** where you determine how much control users or groups of users **sharing files** and folders on your Macintosh have. Through the Sharing Window you can determine different access privileges for users or groups of users on the **network**, and you can designate that guests on the network have the same access.

You can, for example, enable a particular user to have the ability to see a folder's contents, edit these contents, **Trash** files, and add files of their own. You can then designate that a different user only be able to view the contents, but not edit or add files to that folder. And for another user, you can deny access to the folder entirely by locking them out.

In the Sharing Window dialog box, you can toggle on or off the capability for a folder to be shared by clicking the checkbox marked, "Share this item and its contents." After you've made this folder available for sharing, you can choose who the owner (person in charge) of this folder will be. Normally, you would name yourself, but you can also designate a different network user to be the owner of this shared folder by choosing their name from the pop-up menu in the dialog box. If you choose a different user (other than yourself), this user will then have the ability to set access privileges for this shared folder.

You determine which users, or groups of users, will have access to your shared folder through this dialog box. The user or group's names appear in a

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pop-up menu, and you can choose from three different levels of access for each user or group: the ability to See Folders, the ability to See Files, and the ability to Make Changes to these files. There is also a checkbox below this pop-up menu called "Everyone," where turning this on enables access to your shared folder by guests on the network. You can then designate the access privileges of guests the same way you did for users and groups.

There are two more checkboxes in this dialog box. The first, marked "Make all currently enclosed folders like this one," enables you to easily assign the same access privileges to folders that are enclosed within your shared folder. The last checkbox, marked "Can't be moved, renamed or deleted," should be checked if you don't want other users on the network to have the ability to move, rename or delete your shared folder. Most users leave this option turned on as a preventative measure.

To access the Sharing Window, follow these steps:

1. Select the hard disk or folder on your Macintosh that you want to make available to users on your network.
2. Choose Sharing from the **File menu**.
3. The Sharing Window dialog box will appear. The name of the shared disk or folder will appear along with a pop-up menu listing the users/groups and checkboxes for each level of privilege. By clicking a checkbox, you're enabling that privilege for the users whose name appears on the pop-up menu.

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See Also

Dialog Box; File Menu; Network; Sharing Files; Trash

Shareware Games

The concept behind **shareware** games is simple and strange. Basically, there are non-commercial games on the Internet that you can download to your computer and play for free... sort of.

The hitch is that you are expected, on your honor, to pay for the game by sending a check to the creator if you decide to keep it. Because the Internet is so vast, there is no real way to check if you paid for your copy or not, but the developers of these often amazing games rely on your checks to keep them making more. Many games that started out as shareware have ended up being huge commercial hits later in life. Wolfenstein 3D, the precursor to the Doom phenomena, started out as shareware, and two of the best arcade games available, Maelstrom and Apieron are shareware games created by Ambrosia Software.

Unlike demo versions of commercial games that give you only a taste of the action, most of the time, you get to play the entire shareware game before you decide if you want it. No teasers and tricks.

Because they must be downloaded, most of the best shareware games are arcade style and don't take up a lot of memory. Consequently, you can buy compilation CD's like CD Funhouse 10.1 from Wayzata and All the Best Mac

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Games '96 from Lazerworks with more than 500 games apiece on one CD. Often, the CD's cost less than the download time of getting them off the net. Of course, you are still obligated to pay the shareware fee for any game you actually use more than once or twice.

If you really want to check out the latest and hottest game before the masses get it and the big guys start making a lot of money off of it, try out the shareware areas like the Mac Games section of America Online (Keyword: MGM) and various Mac game areas on CompuServe.

Also, a good way to start is to use an Internet search tool such as Netscape to find lists of the best Shareware games. In addition to full games, a lot of cool stuff called patches, which can change the inner make-up of an existing game exist in Cyberspace including patches that insert Barney the purple dinosaur and Beavis and Butthead into Wolfenstein 3D instead of Nazis.

See Also

Multi-User Dungeons; Network Gaming; Online Live Games; Shareware

Sharing Command

If your Macintosh is being shared over a **network** and you are sharing your computer with other users, the Sharing command offers you control over access privileges to your folders, and it also gives you control of folders that you own on other shared drives.

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The Sharing command is found under the File menu at the Desktop level and this brings up the **Sharing Window** where you can choose, by using a **pop-down menu** of users on the network and a series of **checkboxes**, which users have access to which files and folders on your shared Macintosh.

To use the Sharing command to limit access to your files and folders, follow these steps:

1. Choose Sharing from the File menu.
2. The Sharing Window appears and you can choose a username on your network from the pop-up menu, and then choose their access privileges with the corresponding checkboxes.
3. When your choices are complete, close the Sharing Window.

See Also

Checkboxes; Disk; File Menu; Network; Pop-Up Menu; Sharing Setup

Sharpening

See

Image Manipulation for Printing

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Sharpening Controls in Scanners

Most image-editing programs offer some sort of sharpening controls, and most scans from the desktop need sharpening.

Some software applications, like Adobe Photoshop, offer more than one sharpening tool. The most subtle and controllable tool is “Unsharp Mask”, which allows you to adjust the amount of sharpening effect by moving a slider back and forth. It’s important to remember that your monitor is low-resolution, and an image that looks just right on-screen will probably be over-sharp and grainy when it’s output. Learning to apply the right amount of sharpening takes some practice, but the general rule of thumb is that sharpening should be subtle—the results should be visible, but just barely visible, on-screen.

Many common image-editing operations—resizing pictures, making tonal adjustments—can blur the image. For this reason, it’s best to save sharpening as the last step of the scanning/editing procedure.

See Also

Adobe Photoshop; Desktop Publishing; Scanners, Choosing

Shell

See

Framework

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Shockwave

Shockwave is a **World Wide Web browser** plug-in that enables browsers to play Director movies over the Web. The plug-in is installed into a browser that supports **plug-ins** (such as Netscape).

A special EMBED tag is added to the **HTML** file. When the HTML file is opened, the animation is first downloaded, and then played by the Shockwave plug-in. The animation appears within the browser window.

```
<EMBED HEIGHT=64 WIDTH=64 SRC="minislid.dcr">
```

An example of the EMBED tag used for Shockwave movies. The Height and Width and optional and define the size of the movie; you should use this as it enables the browser to display the rest of the page before the animation completes loading. The SRC parameter is the name of the movie.

If a browser doesn't support Shockwave, you might like to display a graphic in place of the movie. The NOEMBED tag can be used around such instructions; anything within the NOEMBED tags will be ignored by a Shockwave capable browser.

Shockwave is dependent upon an additional product from Macromedia called **AfterBurner** . AfterBurner compresses Director files into the Shockwave format for quick transfer over the Web. Even so, the current transmission speeds of **Internet** connections imposes a serious limitation on the scope of productions that can currently be viewed (you probably don't want to

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download a movie larger than 200K).

Shockwave supports most Director features, but not all. A serious consideration for applications running over the Internet is security. To minimize the chance of someone creating an unfriendly, **virus**-like application using Shockwave, the first version does not support any functions, such as system access and file I/O, that could be used to do anything devious. Hopefully, future versions will add such support along with security features similar to those found in **Java**.

Movies created for Shockwave should be small — no more than a few hundred kilobytes. The movie is turned into a Shockwave compatible movie by running it through the **AfterBurner** utility, which compresses the graphics and strips out all of the unneeded information in the file (including the uncompiled scripts).

Note: You cannot decompress an AfterBurner movie into a movie that Director can open.

See Also

AfterBurner; Director; Netscape; World Wide Web,

Shockwave, Afterburner

Macromedia's Shockwave is a **plug-in** for the **Netscape Navigator World Wide Web browser**. With Shockwave installed, Navigator is able to play

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Macromedia Director “movies” *inside* the Navigator window. Afterburner is the tool that developers use to put Director files on Web pages.

Macromedia’s commercial application Director is arguably the standard for creating multimedia presentations. With the easy-to-use, animation-friendly scripting language called **Lingo**, developers without extensive programming experience can create stand-alone interactive packages.

Afterburner is a freely distributed software package that allows developers to prepare Director files for distribution on the **Internet**. (Basically, this preparation consists of squeezing the files to as small a size as possible, to reduce load-time and conserve bandwidth.)

It’s probably easier for programming novices to create “interactive content” using the Director environment than by using **Java** or other high-level programming languages. In fact, it’s possible to create arresting animations with Director without doing any programming at all. Although Director is commercial software, Shockwave and Afterburner are free.

Unlike Java, Lingo and Director are proprietary formats...until Macromedia decides otherwise, Shockwave will be able to display content created by Director and Lingo rather than by other languages or applications.

You can find more information and download Shockwave and Afterburner for Macromedia’s Web site at <http://www.macromedia.com>.

For end users, there’s not much point in *not* installing Shockwave...after all, it’s free. Keep in mind that it will add about a one megabyte to Netscape’s

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RAM requirement after it loads.

Director is already firmly established as a tool for creating multimedia content, and it's likely that Director movies will quickly be used extensively on Web pages—more so on slick, commercial sites than on home-brewed home pages.

To install the Shockwave plug-in, simply put it in the Plug-ins folder in your Netscape folder, and restart Navigator...that's it. To use Afterburner to prepare your files for the Web, refer to the documentation that's distributed with Afterburner.

See Also

Afterburner; GIF 89 Animation; Internet; Java; Macromedia Director; Multimedia; Netscape Navigator; Plug-In; World Wide Web Browser

Shoot-Em-Ups

See

First-Person Perspective Shooters

Shooting Games

See

First-Person Perspective Shooters

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Shortcuts

See

Keyboard Shortcuts

Short-Run Printing

Now that we're all thinking in color these days, more and more business documents are printed in color. Documents like limited-run promotional fliers, brochures, and presentation materials are prime candidates for short-run color printing.

The new digital color presses—actually high-speed color printers and color copiers with Mac front ends—are capable of producing thousands of color pages per hour, at a cost ranging from 20 cents to \$2.00 per page. They can print single- or double-sided documents. Combined with new binding techniques, they can supply a dozen or a thousand reasonably high-quality color documents overnight.

Offset printing is still more affordable for longer print runs, offset print quality is higher, and the newer machines can't handle as many types of paper and card stock as offset presses. But print shops are finding their customers are generally happy with the results from machines like Agfa's **Chromapress**, Indigo's **E-Print**, and, for black and white work, Xerox's **Docutech** system.

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See Also

Chromapress; Docutech; E-Print

Show All Command

See

Hide Others Command

Show Clipboard

This command, found under the **Edit menu**, opens a window that shows you the current contents of the Mac's **Clipboard** (The temporary holding space for items that you are copying or cutting to paste elsewhere.) The contents of the Clipboard are the last items you **cut** or **copied** into the Clipboard. If, for example you Cut three folders from a window, when you ask to Show Clipboard, you'll see the name of those three folders. If you Cut or copied text, you'll see the text, or if you copied a graphic you'll see that graphic residing in the keyboard.

The Clipboard shows the contents as: none, if there are no items in the Clipboard. When you **shut down** any items in the Clipboard are be deleted. You may use the Show Clipboard command while at the **Finder**, and also in any application that enables you to choose Show Clipboard from the application's Edit menu.

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To use the Show Clipboard command, follow these steps:

1. At the Finder level, select Show Clipboard.
2. A window opens showing you the current contents of the Clipboard. If there are no item currently in the Clipboard, it displays the contents as none.

See Also

Clipboard; Copy; Cut; Edit Menu; Finder; Shut Down

ShowPlace

A simple 3D scene **modeler** developed by **Pixar**, ShowPlace uses **MacRenderMan** (which was bundled with ShowPlace) to **render** still scenes. The tool provides basic 3D primitives, such as a ball, a cone, and a small library of 3D objects. It is a very limited product. Also, the MacRenderMan software requires a lot of memory to produce even comparatively simple scenes.

Pixar no longer supports any of its Macintosh products.

See Also

MacRenderMan; Pixar; Rendering; Typestry

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Shift Key

The Shift key on a Macintosh keyboard has two functions: It acts as the key that enables you to type capital letters and access punctuation marks, as you would on a typewriter, and it's also used as a **modifier key** that is used in conjunction with other keys or actions in keyboard shortcuts or commands.

To type a capital letter, hold the Shift key and type the letter of your choice. To use the Shift key as a modifier key, you use it in conjunction with an action or other keys. If, for example, you've selected a file and want to select additional files, you can hold the Shift key and add additional files to your selection by clicking them. The Shift key is enabling you to add more items to your selection. An example of using the Shift key with other keys would be when you want to take a **screen capture** (a picture of the computer screen), you use the keyboard command Shift-⌘-3.

See Also

Command; Modifier Keys; Screen Capture

Shininess

Shininess defines the size of reflections caused by bright lights on 3D objects. While a highlight parameter adjusts the intensity of a reflection, shininess adjusts the size of the reflections.

See Also

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Highlights; Reflection Maps; Rendering; Shaders; Texture Mapping

ShrinkWrap

see

Decoding/Decompressing

Shut Down Command

When you are finished using your Macintosh and want to turn the computer off, it is recommended that you select Shut Down from the **Special menu**. By selecting Shut Down, some models of Macintosh, including all PowerBook models, turn themselves off. Other models (like the LC models, Quadra and Centris 610s, Quadra 605s) change the monitor screen to black and display the message, "It is now safe to turn off your Macintosh." If you get this message, to turn off your Macintosh, you'll have to switch the **on/off button** on the back of your Macintosh to the off position (down). You may also have to switch off your monitor, depending on your model of Macintosh.

Apple recommends that you always turn off your Macintosh by first selecting Shut Down, as this gives the Macintosh time to write any information it has been storing in **RAM** to your hard drive before the power is turned off. This protects your information and also resets the hard drive for your next start up.

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Starting in System 7.5, Macintosh models that have a **Power On key** can now also Shut Down by hitting the Power On key while the Macintosh is operating. While using your Macintosh, if you hit the Power On key, you'll get a message asking: "Are You Sure You Want To Shut Down Your Computer Now?" and offers you three choices: **Cancel**, **Restart**, or **Shut Down**. If you click Shutdown, it performs the Shut Down command of your particular Macintosh model. Clicking the Restart button performs the Restart Command. Cancel exits this dialog box with no command initiated. This warning dialog is a safety feature in case you accidentally were to hit the Start-up key on your keyboard.

Also in System 7.5 and higher is an Apple menu item called Shut Down, that lets you choose Shut Down from the Apple menu. By having Shut Down as an Apple menu item, you also enables you to make an Alias of the Shut Down Apple menu item and place it on the desktop, or anywhere on your hard disk for easy access.

To use the Shut Down command to turn your computer off, follow these steps:

1. At the Finder level, close all open programs and documents.
2. Select Shut Down from the Special menu
3. Depending on your model of Macintosh, your computer either: shuts down and turns off the computer , or it displays a message telling you it's OK to turn off your computer, and in that case, you'll have to switch the on/off switch in the back of your Macintosh to the off position.

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(down).

4. You can also choose Shut Down from the Apple menu in System 7.5 and higher.

To use the Shut Down command to turn your computer off from your keyboard (using System 7.5 or higher), follow these steps:

1. Close all documents and programs and hit the Power On key on your keyboard, located on the top right or top center of your keyboard (depending on which keyboard model you're using).
2. A dialog box appears asking you if you want to Shut Down your Macintosh
3. Click Shut Down. Depending on your model of Macintosh, your computer either: shuts down and turn off the computer, or it displays a message telling you it's OK to turn off your computer, and in that case, you'll have to switch the on/off switch in the back of your Macintosh to the off position. (down).
4. You can also choose Shut Down from the Apple menu in System 7.5 and higher.

See Also

On/Off Button; Power-On Key; RAM; Restart; Special Menu

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Shut Down Message

There are models of Macintosh computers (Classics and LC's, for example) that do not completely shut themselves off when you choose **Shut Down** from the **Special menu** . On these models, choosing Shut Down prepares the Mac to be turned off by parking the heads of the hard disk (this protects against the hard disk's read/write heads from touching the disk, which would destroy data, by moving the disk's head to a safe location. Another reason why you should never move your computer while it's running, shutdown first so the read/write heads are parked), saving any information in the Mac's internal memory, and resetting the Mac for the next startup. If your Mac is one of these models, you receive a message when you select the Shut Down command that reads, "It is now safe to switch off your Macintosh." After that message appears, you can switch the Mac's On/Off switch to the Off position.

See Also

On/Off Switch; Shut Down; Special Menu

Sid Meier's Worlds

Sid Meier is generally considered by critics to be the guru of all **strategy games**. His *Civilization* stands out as a milestone accomplishment in computer gaming. The first three titles to bear his moniker, *Colonization*, *Pirates!Gold* and *Civilizations* from MicroProse, focus on specific points in history with amazing attention to historic detail. Meier definitely had his

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history books open when he programmed Civilization, which brings you from the prehistoric era to today, Colonization, featuring the settlements of early America, and Pirates!Gold.

As time goes by, in Civilization and Colonization you move from rock weapons to the A-bomb as you attempt to keep neighborly relations with the inevitable other societies that crop up here and there. Pirates!Gold adds more of an adventure feel, putting you into battle on the high seas. Likewise, Vikings, a Meier endorsed strategy game from GTE Interactive, concentrates on the initial discoveries of the nomadic colonies and also incorporates war and adventure tactics.

See Also

Allied General; Chaos Overlords; Empire Deluxe; Pax Imperia; Spaceward Ho!; Strategy Games V for Victory; Warcraft

Silicon Valley

See

Cupertino

Sim Games

Sim (short for simulation) **Games** cover just everything from piloting a U-Boat submarine during World War II to fighting off Darth Vader's Imperial

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Tie Fighters in **Rebel Assault II** , a Star Wars adaptation. The most popular sims are flight simulators that allow you to engage in intense battle simulations against weather conditions that would fell even the Wright brothers.

The graphic detail on flight simulators like **F-A/18 Hornet** will leave you breathless. However, flight sims are not an easy shoot em up experience. They usually require that you master the massive flight manual that invariably comes with each game. However, after you learn to fly your Mac, it's generally pretty easy to switch from one flight sim to another. Space Sims like **Absolute Zero** from Domark, creator of the flight sims *Flying Nightmares* and **Out of the Sun** , are a spin-off genre that put you in navigational control of a starship.

Maxis-style Sim games give you the opportunity to play overlord in a variety of situations. One day you might be the owner of a high-rise tower, the next day you're the ruler of the world (in *SimLife*). *SimCity* (now released as *SimCity Classic*), debuted in 1989 and gave gamers the tools to create an entire city and oversee it as it progresses. *SimCity* appealed to a wide audience for a lot of the same reasons that **Myst** did, it was virtually non-violent and you could actually learn something during the gaming process. Since 1989, Maxis has released *SimEarth*, *SimTower*, *SimAnt*, *SimIsland*, *SimFarm*, and the much improved **SimCity 2000** as well as a scaled down children's version entitled *SimTown*.

See Also

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A-10 Attack; Absolute Zero; F-A/18 Hornet; Out of the Sun; Rebel Assault II; ; SimCity 2000; Wing Commander III

SimCity Classic

See

SimCity 2000

SimCity 2000

Maxis' **Sim games** create a virtual environment that responds to your every decision. In 1989, SimCity introduced us to the Maxis universe. Starting with nothing more than a terrain broken up into a grid, you build your city from the ground up. As you zone each individual square for industrial, residential or commercial buildings, artificial life (sims) move in and build factories or shopping malls accordingly. Soon, you are worrying about schools, water pipes, roads, highways, pollution and the like. SimCity 2000, released in 1993, pumped up the graphics to 3D, added a terrain editor so you could create your own landscape before you even start out, and an urban renewal kit with other styles of architecture including futuristic space-style homes and buildings.

If your people are really unhappy, they will riot and start fires, destroying property. And you always need to be on the lookout for natural disasters. If

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you want a real challenge, check out the included preset scenarios in SimCity 2000: clean up after the San Francisco Earthquake or the put out the infamous Oakland Hills fire. If you finish them in time, you get to add the cities to those you have unlimited access to play around with. Maxis' other titles build on the SimCity premise, allowing you to build everything from a high rise tower to new life forms. When you start to grow weary of city life, check out SimTower, SimEarth, SimFarm, SimAnt, SimLife, A-Train and a children's title, SimTown. SimCity Enhanced was a failed attempt to jazz up the format with multimedia and merely proved that what's not broken doesn't need to be fixed.

See Also

Afterlife; Sim Games

SimEarth

See

Sim Games, SimCity 2000

SimLife

See

Sim Games, SimCity 2000

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SimTown

See
Sim Games

SimTower

See
Sim Games

Simple Mail Transfer Protocol

See
SMTP

SimplePlayer

SimplePlayer is an application that enables you to view and make simple cut- and paste-type edits to **QuickTime** movies. SimplePlayer has been replaced by **MoviePlayer** in current system software.

See Also
Cut; MoviePlayer; Paste; QuickTime; System Software

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SimpleText

SimpleText is a "no-frills" text editor that enables you to create and edit simple text documents. SimpleText is a replacement for Apple's **TeachText** , which was introduced with the original Macintosh. Although TeachText did little more than enable you to type some text and **save** the document, SimpleText adds some features that make use of some of Apple's latest technology while still being a small, simple application. SimpleText is installed with a **System Install** and is often used for viewing **Read Me files** that accompany software programs and/or **shareware** and **freeware** applications.

When you launch SimpleText, it opens a blank text document with a blinking **cursor** . After you've typed some text, you can choose a **font** , size, and style (bold, italic, and so on) from SimpleText's **menus** . SimpleText also enables you to imbed a recorded message into a SimpleText document using the Apple **Microphone** (for Macs that have audio input capabilities). If you have Apple's **PlainTalk** enabled on your Mac, you can also ask SimpleText to speak aloud any selected text within a SimpleText document.

SimpleText enables you to open any **PICT** document (such as **screen captures**) and supports Apple's **drag and drop** feature.

See Also

Cursor; Drag and Drop; Font; Freeware; Menus; Microphone; PICT; PlainTalk; Read Me Files; Save; Screen Captures; Shareware; System Install; TeachText

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Sip and Puff Switch

A breath-activated switch which can be triggered by sipping or puffing on a straw. Used by motion-disabled people to access a computer or other device. Often used with scanning software and an onscreen keyboard as a replacement for a regular keyboard.

See Also

Co:writer; Freedom; Scanning

.sit Filename Extension

The .sit filename extension means the file has been compressed using either Aladdin System's **Stuffit** or the shareware version of StuffIt. This file extension tells others to unstuff (decompress) the file using StuffIt or StuffIt Expander.

See Also

Compression Utilities; .sea Filename Extension; StuffIt

SiteMill

SiteMill is an application by Adobe Systems Inc. that helps manage the contents of a **World Wide Web site** on a computer that has been set up to function as a **Web server** .

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SiteMill also includes software for authoring **Web pages** that eliminates the need to enter many **HTML markup tags**, an activity that can be time-consuming and repetitious (this software is also sold separately by Adobe under the name PageMill). After creating a Web document, you can preview it easily using SiteMill software and then **upload** the document to either your or your **Internet service provider**'s Web server.

SiteMill is especially helpful in facilitating the process of checking for and correcting broken **hypertext links** that join Web documents to one another. A link is created by making a hypertext reference to the destination file and specifying the **URL** (Internet address) of that file using either an **absolute** or **relative path** name.

If the documents contained on a Web server are moved from one folder to another, some (or all) of the links pointing to those documents will become incorrect. Rather than having to alter all the links one by one, SiteMill summarizes errors in a list and allows a **Webmaster** to correct any link errors quickly using the Mac's drag-and-drop technology.

Both SiteMill and PageMill have the advantage of being particularly well integrated with the Macintosh interface, in contrast to other HTML editing programs, which are based on the UNIX or Windows operating systems. PageMill is a little limited in its scope of HTML that it can create, but is good for beginners or simple projects.

See Also

Absolute Path; Client; HTML; Internet; Internet Service Provider; Markup

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Tag; Relative Path; URL; Uploading Files; Web Browser; Webmaster; Web Page; Web Site; World Wide Web

Size Box

This box enables you to **drag** a window to resize it. The size box is in the lower-right corner of every **active window** and is marked by an **icon** of a small box on top of a larger one. As you drag the size box, an outline of the window moves with you to give you an idea of how big, or little, your resized window will be.

To use the Size Box to resize a window, follow these steps:

1. Click the size box in the lower-right corner of any window, and drag in the direction to which you want the window resized.
2. When you reach a desired size, release the mouse.

See Also

Active Window; Click and Drag; Icon

Sketch!

Sketch! is a modeling and rendering tool. It does not support animation, but its modeler is powerful and complements tools, such as Electric Image.

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Models are created and arranged in a scene window. You can switch between a 3D perspective and views from above, beneath, and at the sides of your scene, but you can't have multiple windows on the scene. A pen tool (which draws **Bézier curves**, also called **splines**) creates basic two-dimensional shapes, which are extruded or lathed. A pencil tool, for drawing freehand shapes is also available, but the pen tool provides much greater control. Because the work area is presented as a three-dimensional space (see figure) Sketch provides drawing planes—a two-dimensional grid—on which you draw the basic shapes. This plane can be moved in any dimension to create multiple cross sections that are then *skinned* (covered with a surface.) Sketch! does not support Boolean operations, but a curve can be treated as a hole on the face of another curve, effectively cutting a whole in that surface.

After a 3D object has been created you can edit individual splines that make up the 3D object. Using the Putty Tool, any spline can be moved in 3D space. For new users this is the most fascinating feature, but new users would be best served to avoid this feature and concentrate on getting their 2D cross sections right instead. It is very difficult to create accurate 3D shapes by simply clicking and dragging.

Perhaps one of the most unique features of Sketch! is the Match Backdrop feature. This feature enables you to use a scanned photograph for the background of your 3D model. Using Match Backdrop, you can have your model cast shadows on the image, and objects in the image appear to cast shadows on the model. This is done by aligning the model on the background,

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and then adding extra objects that represent the objects in the scanned image, but which aren't rendered in the final scene. These new objects cast and receive shadows, but aren't visible in the image!

Sketch! also includes Sketch!Net, a method for accelerating rendering time by distributing rendering across several machines on a network. You can use up to sixteen machines, and there's no extra charge for using the rendering engines (unlike some packages which offer this feature at an extra cost).

See Also

3D; Animation Master; Extreme 3D; Infini-D; Modeling; Network Rendering; Ray Dream; StrataVision

Sleep Command

This command, used on Macintosh PowerBook computers and PCI-based Power Macintosh models running System 7.5.2 and higher, is designed to put your computer into a **sleep mode** to preserve battery consumption or energy, in the case of desktop models, without turning off the computer. When a PowerBook is in sleep mode, found under the **Special menu** in PowerBooks, the hard drive spins down (which saves battery consumption, and the monitor is turned off, and the PowerBook go into a mode where battery consumption is at its lowest, without turning the PowerBook off. You can wake a PowerBook from its sleep mode, by pressing any key and the monitor

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redispays and the drive spins up, enabling you to working again almost instantly.

To put a PowerBook into Sleep Mode, follow these steps:

1. Choose Sleep from the Special menu. You can also select the Sleep Mode from the **Battery DA**, or you can use the Sleep keyboard shortcut: ⌘-Shift-Zero. You can also set a timer to put your PowerBook to sleep after a specified time of inactivity. This timer is set in the **PowerBook Control Panel**.
2. To Wake the PowerBook from sleep, press any key.

See Also

Battery DA; Control Panel; PowerBook; PowerBook Control Panel; Sleep Mode; Special Menu; Spin Down

Sleep Mode

To conserve battery power, **PowerBooks** and PCI Power Mac models of Macintosh computers can go into a sleep mode, which essentially spins down the hard drive, dims the screen; and places the Mac into a sleep state. Enough power is used to keep whatever was last in memory still in memory. Sleep mode does not turn the Mac off, it just winds it down so the absolute minimum of battery power is being exerted. To "wake" a Mac from its sleep mode, all you have to do is press any key, and it springs back to life, or "awakes."

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The reason the drive spins down and the screen dims is that these are two areas that put a considerable drain on the battery, and by putting these features to into sleep mode, you save battery power for when you using the computer and don't waste it while it sits idle. You can program a PowerBook to go into sleep mode after a predetermined length of inactivity, or you can put the PowerBook into sleep mode at any time by choosing Sleep from the **Special menu** . You can also put the PowerBook into sleep mode from the PowerBook's **control strip** .

To put a PowerBook into sleep mode, select Sleep from the Special menu.

To wake the PowerBook from its sleep mode, press any key and it "wakes up."

TIP For System 7.1 users, you can enter the sleep mode from the **Battery DA** found in the **Apple menu** . To enter sleep mode, click the System Sleep button.

To set the time interval for automatic sleep mode for a PowerBook, follow these steps:

1. Choose the PowerBook Control Panel from the Control Panels folder.
2. Switch the button to Custom mode and the dialog box will expand with additional features.
3. Use the slider, by clicking and dragging the slider, to set how many minutes until the system sleeps. There is a separate setting for determining how long until the drive spins down, and how long until

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the screen dims.

See Also

Apple Menu; Battery DA; Control Panels Folder; Control Strip; PowerBook Control Panel, Press Any Key; Special Menu

Slide Scanners

Slide scanners are desktop scanners designed to handle photographic slides and (in some cases) medium-format transparencies. Most of the color photography used for color printing is delivered and stored in transparency—rather than print—format, and slide scanners offer a convenient way to deal with slides.

Because a slide's image area is small, slide scanners scan at high resolution, to allow you to substantially enlarge the scanned image. Slide scanners also allow you to scan slides without removing them from their mountings—rarely possible with a transparency-adapted flatbed scanner.

However, slide scanners can be excruciatingly slow. Although this may not be the case with every model on the market, it would be best to try and test the particular model you want to purchase before you put down your money.

See Also

Drum Scanners; Flatbed Scanners; Handheld Scanners; Office Scanners

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Slide Shows, Running

Your Mac can display your presentation as a slide show, using your computer as a screen or using it to drive an LCD projection panel, external monitor, or video projector. When you run the show, the slides, with their text, art, and graphics, occupy the whole screen. All the tools, menus, and other screen elements are hidden, so that they don't distract the audience from watching your show. The computer effectively turns into a slide projector for the duration of the presentation... unless you have some other program running in the background that could interfere. Be sure to disable calendar programs that might flash a reminder of a later appointment in the middle of your show, or automated email retrieval programs that might dial your modem.

Using your computer to display the program has many advantages. You save the time and expense of creating slides. You can play movies and sounds during a slide show, and use special effects, such as transitions and builds for variety. You have more flexibility, as you can change your presentation right down to the last minute, or keep certain slides hidden unless you have extra time to fill and decide to use them. You can rehearse your presentation and save the timings, so that the slides automatically advance as you speak.

If you are running the show from a PowerBook, you might want to load just the run-time version, PowerPoint Viewer, rather than the full program. It comes on a separate floppy or in a separate folder on the CD-ROM version of Microsoft Office. If your PowerBook has a black and white screen, be sure you've checked your presentation on it for readability. Some templates are

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better than others for black and white or grayscale display. Also, if you're running from a PowerBook, keep the transitions simple and avoid QuickTime clips or complicated effects that could slow down the show.

See Also

PowerPoint; Presentation Software

S/Link

S/Link is a batch audio conversion utility that converts sound to the following audio formats: **SND**, **AIFF**, **.WAV**, **VOC**, **MOD**, **IFF**, **OMF**, **Sound Designer I**, **Sound Designer II**, **SoundEdit** , and **QuickTime** movies.

It can open just about any audio file. You can then specify the desired conversion settings, or select a portion of the file to convert. Additionally, S/Link can open any file containing a sound. Specify the desired conversion settings and it will convert an entire folder. You can also select a portion of a file for conversion.

Synclavier

Price: \$249

Phone: (603) 448-8887

See Also

File Formats

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SLIP

SLIP stands for Serial Line Internet Protocol, a way of establishing a temporary, low-speed connection to the **Internet** through a dial-up **modem**.

Both SLIP and **PPP** (Point to Point Protocol) accounts are designed to work with much slower connection methods than the dedicated network connections to the Internet enjoyed by government, educational, and nonprofit organizations. But because they work with low-cost modems, SLIP and PPP provide decent performance in normal situations to large numbers of people.

SLIP is simpler than PPP and thus more prevalent; however, PPP is more carefully designed and more flexible. Both, however, support popular and widely used **MacTCP**-based programs such as **Anarchie**, **Fetch**, and **TurboGopher**.

Three different programs provide SLIP connections for the Macintosh: **MacSLIP** from Hyde Park software, **VersaTerm SLIP** from Synergy Software, and **InterSLIP** from InterCon Systems. **InterSLIP** is available as freeware on the Internet. If you do not have an Internet connection, you can obtain the software when you establish an account with an **Internet service provider**, or from the disk that accompanies *Internet Starter Kit* by Adam Engst.

When establishing an account with an Internet service provider certain information in order to configure SLIP or PPP, as shown in the following

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table.

SLIP/PPP Information

<i>Subject</i>	<i>Question</i>
Phone number	What number do you call to connect to your server?
Login name	What is the SLIP or PPP account login name?
Password	What password should you provide when logging in?
MTU/MRU	What is the maximum transmission/receive unit size?
Header Compression	Should you use RFC 1144 TCP Header Compression
Login Procedure	What should you expect to receive from your host machine and how should your machine respond when logging in?
IP address	What is your IP number (if a Manually addressed account)?
Gateway Address	What is your gateway IP number?
Domain Name Server	what is the IP number of your primary domain name server?

Some SLIP hosts cause a computer “timeout” to occur if your computer has been idle for a certain amount of time while connected to the Internet. This might be considered a courtesy, especially if you are paying for connection

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time and forget to disconnect before leaving your workstation.

If your connection hangs up before you are finished (and if you use manual addressing, where you specify an **IP address** when you dial in), simply switch back to the InterSLIP Setup or other SLIP setup control, disconnect, and then reconnect. If, however, you use server addressing (in which the server assigns an IP address to you each time you log in), you must quit all active MacTCP programs before you reconnect via SLIP. Otherwise, your MacTCP program (such as a **Web browser**) will get confused when you reconnect with a different IP address than you had before.

See Also

Asynchronous Data Transfers; Internet; InterSLIP; MacPPP; Modem; Network; Packets, Parity; PPP

Slow Keys

The Slow Keys function, found in the **Easy Access** control panel, helps prevent handicapped users from making accidental **keystrokes** by letting the user hold down a keystroke for a moment before it is registered. This way, if the user accidentally presses the wrong key, it doesn't register 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 specifies in the Slow Keys **dialog box** within the **Easy Access Control Panel**.

To enable slow keys, follow these steps:

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1. Choose Easy Access from the Control Panels folder (from the Apple menu).
2. Click to enable Slow Keys. You can also request that a clicking sound be made to confirm a keystroke.
3. You can adjust the keystroke acceptance delay to your personal preference. Close the control panel to activate Slow Keys.

See Also

Control Panel; Dialog Box; Easy Access; Keystrokes

SLR

SLR (Single Lens Reflex) refers to the way the camera provides a preview of the picture. With a single lens reflex camera, you are actually looking through the lens—a mirror diverts the light to the view finder. SLR camera design makes it possible to change the **focal length** of the camera lens and still accurately frame your picture.

See Also

Digital Still Cameras; Focal Length; Range Finder

Small Caps

See

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Typesetting Terms

Small Computer System Interface (SCSI)

The Macintosh can have up to seven peripheral devices attached to its processor. Macintosh manages the physical placement of storage devices through its SCSI bus.

What Is SCSI and How Does it Work? Macintosh uses the *small computer serial interface (SCSI)* protocol to link hard disks and other peripherals to the computer. The SCSI bus provides high-speed parallel data transmission. All internal and most external hard drives are called *SCSI devices* because they connect to the Macintosh through the SCSI port. Each Macintosh has one SCSI port and one internal 50-pin ribbon connector to connect any internal hard drive. Thus, if you are using more than one peripheral device, such as scanners, CD-ROM, external and internal hard disks, etc., you must loop them one to the other in a *daisy chain* configuration. Up to seven peripheral devices can be chained together, including the internal hard disk.

You must terminate the SCSI devices to keep the signal traveling between the devices from echoing back after reaching the end of the chain. This is done by using a *terminating resistor*. Most SCSI devices have built-in terminators, and are thus called *self-terminating*. Both the first and last device on the chain must be terminated.

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Every SCSI device has an ID number by which it is known to the Macintosh. Each device in the chain has a unique number from 1 to 6 (the computer is automatically 7 and the internal hard drive is automatically 0). This SCSI address specifies its priority on the SCSI bus. The higher the number, the greater the priority when two devices vie for computer attention at the same time. All software on the Macintosh uses the SCSI IDs to locate volumes and files. Norton Utilities knows the rules for SCSI identification and connections and checks that they are correct as part of its analysis.

To keep your Macintosh operating correctly, turn on every device in the SCSI chain each time you turn on the Macintosh. If your Macintosh does not recognize a peripheral on the chain, check the SCSI ID to ensure that each device has a unique ID. Most peripherals have a dial on their back panels where their SCSI identification is set. Look at this dial to verify that the SCSI ID is a number from 0 to 7, but not 0 or 7. You can also run software utilities, such as Show SCSI, which display the Macintosh's records of how the SCSIs are connected. Most of these types of utilities are available as shareware from User's Groups or Bulletin Boards such as Prodigy or CompuServe.

How the SCSI Bus Works The SCSI bus accommodates many different peripherals. The Macintosh needs to know which peripheral it is addressing. The solution to this problem is a protocol whereby the device that begins the communication is called the *initiator*—typically the Macintosh, and the device the communication is being sent to is termed the *target*—usually a hard disk. The SCSI bus uses seven different operating modes, called *phases*, by which information is passed back and forth between initiator and target.

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- **Bus-free phase:** When no peripheral device is using the bus the bus-free phase indicates that the bus is available for use.
- **Arbitration phase:** The initiator gains control of the bus, thus shutting off any other use of the bus for the duration of the communication.
- **Selection phase:** The initiator calls the address of the target device. The target device acknowledges the call.
- **Command phase:** The initiator sends the commands it wants accomplished to the target. The target devices acknowledges the receipt of the command.
- **Data phase:** The target device sends the requested data to the initiator.
- **Status and message phases:** The target device sends two types of status and message information completing the data transfer and exiting from the bus.

The SCSI bus is controlled by a SCSI chip which operates in two modes—*normal* mode which uses the computer to manage the communications operation and *pseudo-DMA (direct-memory access)* mode which data can be transferred between peripherals bypassing the computer. During normal mode operations the SCSI driver software manages the communications process between the computer and the SCSI device. This mode of operation places a burden on the computer which has to manage this operation (run

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the software). The overhead slows down the performance of the Macintosh. Thus, the Macintosh also uses pseudo-DMA mode after the software initiates the data transfer to actually perform the data transmission. Pseudo-DMA mode uses the embedded codes in the SCSI chip to manage the operation, leaving the computer free. The SCSI chip uses one of its internal registers (called the *Bus and Status* register) to control the reception and passing of data between peripherals.

The Macintosh does continue to monitor the performance of the SCSI operation, checking the SCSI chip's Bus and Status register for the status of the operation.

See Also

Fast and Wide SCSI; FireWire; Peripherals

Scripting

The term scripting was introduced with HyperCard, and referred to programs written using the HyperCard programming language HyperTalk. The term scripting was probably used so that people didn't think they had to learn programming.

HyperTalk is an English-like programming language that is reasonably easy to learn. It is, however, still a computer programming language. If you already know a computer language like BASIC, then you should have no trouble learning HyperTalk, but if you have never written a program before,

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it will take a while to learn how to do that.

Scripting languages add flexibility to multimedia authoring tools. They enable you to add calculation routines and complex interactions to projects.

HyperTalk spawned several other scripting languages. Allegient's **SuperCard** has a scripting language called SuperTalk, which is a superset of the HyperTalk language. Lingo is the scripting language for Macromedia's Director. It is still classified as a scripting language, but it is very different from HyperTalk. Other multimedia authoring tools, including mTropolis and Oracle Media Objects, also contain scripting languages.

Apple went on to produce AppleScript, a scripting language that is similar to HyperTalk but designed for use across the operating system and with different applications. AppleScript can automate complicated processes, such as updating databases.

See Also

AppleScript; HyperCard; Frontier

ScriptX

ScriptX is a multimedia language developed by **Kaleida Labs**, a joint venture of Apple and IBM. ScriptX is both a development environment (a tool for creating multimedia productions) and a delivery platform (software to playback the production). Applications are developed in ScriptX, and *players*

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that support the ScriptX language were to be developed for standard platforms (Mac, Windows, and so on), as well as **set top boxes** for interactive television. ScriptX incorporated features that catered to different standards. Graphics, for example, could be stored in multiple formats and then displayed according to the quality of the platform—a television set has a much lower screen resolution than a computer monitor.

Unfortunately, although ScriptX showed tremendous promise, and Kaleida Labs shipped a development platform for ScriptX, there were no end-user tools; programs that had the ease of use of something like Macromedia **Director** or **Oracle Media Objects**. Developing in ScriptX presented the same challenges as developing in a programming language. In a sense, that's all it really is; a programming language with features that are designed to cater to the development of multimedia presentation. Apple and IBM failed to agree on how to solve this problem, whether to develop their own end-user tools or wait for other companies to supply them, and eventually decided to disband the company and each take parts of the language for possible use in future products.

Scroll Bars

Anytime a **window** has more items or information than can fit on-screen, scroll bars appear, as shown in the figure. If the information in the windows extends beyond the left or right side of the window, the bottom scroll bar appears enabling you to scroll to the left or right to find the additional files

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or information. If the information extends beyond the top or bottom of the window, a scroll bar appears on the right side of the window enabling you to scroll up and down to reveal the additional items or information.

You can scroll around a window three different ways:

- Grab the scroll box and drag it in the direction you want to go. When you release the scroll box, the window jumps to that location.
- Use the scroll arrows at each end of the scroll bar. To scroll up, click and hold the up arrow that appears at the top of the window. To scroll down, click and hold the down arrow that appears at the bottom of the window. The same goes for the left and right scroll arrows, click and hold on the arrow that points in the direction you want to scroll.
- Click in the path of the scroll bar and the window jumps in that direction one screenful at a time.

See Also

Window

SmartKeys

There are significant differences between typing on a typewriter and typesetting on a Macintosh. SmartKeys, a freeware control panel developed by Maurice Valaski, helps typewriter users make the jump to Macintosh by changing common typewriter keystrokes into typesetting

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keystrokes. On a typewriter, for example, it is proper to put two spaces between sentences. But on a computer only one space is required. When you have SmartKeys installed, it removes the second space. In all, SmartKeys fixes six common areas where typewriter conventions need to be replaced with typesetting or computer conventions. This way, a typist can type in the format they're accustomed to while the document they're typing is converted to typesetting conventions.

The six SmartKey functions are as follows:

- **Quotes:** Converts straight "dumb" computer quotes and apostrophes into curly quotes and curly quotation marks used in typesetting.
- **Space:** Removes the second space between sentences.
- **Dash:** Converts two dashes to an "em dash" used in typography.
- **Ligatures:** Converts common letters pairs, like Fl and Fi, into more elegant ligatures that combine the two letters to keep the dot on the small "i" and the serif on the small "l" from interfering with the capital "F."
- **Kill Doubled Caps:** If you type two capital letters next to each other followed by a lowercase letter, SmartKeys interprets this as a mistake and lowers the second capital letter for you.
- **Shifted Punctuation:** When using the **Shift key** for capitalization, it's easy to accidentally type a greater than (<) or less than (>)

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mathematical symbol instead of a period or comma. SmartKeys shifted punctuation replaces the mathematical symbols greater than and less than with the appropriate punctuation.

See Also

Control Panel; Freeware; Shift Key

SmartSketch

Because of its wealth of basic figure libraries and **Drag/drop** capabilities, SmartSketch is an excellent vector drawing program with a selection of very unique, high-end features. The single most applauded feature in SmartSketch is its ability to show you a full anti-aliased view of a vector drawing. This is a feature not found in any other vector drawing package. This double feature, smoothing (for the graphics) and text smoothing (for text), can be left on if your system has enough RAM and is fast enough, so that you will never see a jagged edge in a graphic or text block. SmartSketch has 17 EasyArt libraries, collections of topical **clip-art** in vector format that can be drag-dropped in place on the editing page. All the EasyArt subjects are editable, so any part of an object can be resized, rotated, or reshaped. SmartSketch offers no gradient tools and has no function for automatically translating bitmaps to vectors. Its smooth drawing tools, however, add ease and functionality when hand tracing bitmap art.

Included with SmartSketch are **EasyArt Libraries** , groups of images in a

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cartoon style. Libraries can also be created from your own selection of created work.

Without making a big deal about it, SmartSketch offers one of the most intuitive Bézier editing functions of any vector drawing program available. While on-screen line segments are being moved with the cursor, sliding down their length and then moving them allows them to become curved Bézier sections. No control levers are provided, but none are needed to intuitively get the curve to behave as needed. In addition, SmartSketch has a smooth freehand function that acts to translate all freehand graphics into smoothed curves when smoothing is turned on.

Each of the selections in the toolbox has an associated submenu list of options. The Pencil tool, as an example, has color, line type (dashed, and so on), line option (straight, freehand, oval, rectangle) and line width settings. The Paint Bucket Fill tool has options not found in competitive packages, allowing you to fill non-closed areas with color. Almost everything that is needed as far as drawing/painting options is provided in the toolbox without asking the user to access commands from the menu bar.

SmartSketch supports export saves in PICT, Illustrator 88, EPS with preview, and AutoCAD DXF, and SmartSketch format saves of the page (preserving all of the SmartSketch data).

Smart Quotes

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Typographer's quotation marks, like the “66 & 99” ones we all learned in grade school, curve around the quotation they enclose. These are also called “curly” quotes. The typewriter was designed with only one all-purpose quotation mark, sometimes called "**straight**" **quotes** . Because the computer keyboard is designed to be as much like the typewriter keyboard as possible, it has the straight quote key (").

Because computer type fonts include typographer's quotes, but the key combination required to use them is awkward, most **word processors** and other programs let you choose to use “smart quotes.” This is a function that automatically replaces the straight quotes with the appropriate curly quotes. It also replaces the straight **apostrophe** with a single curly quote.

One caveat about using curly quotes: when you're exchanging documents with **PC** or **UNIX** users, sometimes curly quotes will get translated to strange characters. This also happens when using curly quotes in **email** messages.

See Also

Apostrophe; Word Processors

SMPTE

SMPTE (Society of Motion Picture Television Engineers) is a **time code** format that indexes frame based sequences of images (whether on film or video). It uses a format of HH:MM:SS:FF where HH=hours, MM=minutes, SS=seconds and FF=frame number. SMPTE works well with film where there

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are exactly 24 frames per second. **NTSC** video is more of a problem, because NTSC is not really 30 frames per second; it's 29.97 frames per second. Because SMPTE has no provision for fractions smaller than a frame, errors start to appear (i.e. differences between the actual frame number and the number assigned using SMPTE). To solve this problem, a system called *drop frames* is often used. The video is numbered as if it is 30 frames per second, but when the error becomes large enough, a frame number is dropped. In this way, while the frame numbering may be slightly off the exact frame time, but the hours minutes and seconds figures remain correct.

See Also

NTSC; Striped; Time Code

SMTP

A protocol or set of standards designed to allow the transfer of **electronic mail** reliably and efficiently on the **Internet** .

SMTP (Simple Mail Transfer Protocol) performs the essential task of sending mail across various parts of the Internet.

To transport mail from sender to recipient, the message has to go through a number of intermediate machines called mail servers. Each one of the mail servers has to OK the transmission until the final destination is reached. If one of the machines cannot send the message along for some reason it will be "bounced" back to the sender, usually with detailed information about where

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the problem occurred.

All popular email **client** s support SMTP, including **Eudora** , **QuickMail** , and **Netscape Navigator**. To support SMTP in QuickMail, you need to buy and install a gateway as well.

For more information, see the Internet Working Group Request for Comments (RFC) 821 (<ftp://ds.internic.net/rfc/rfc821.txt>).

See Also

Electronic Mail; Eudora; Gopher; Netscape Navigator; QuickMail; World Wide Web

SND

SND is the **Resource ID** for a sound file. The file contains digitized sound, and was the first sound file format for the Macintosh. Storing sounds as resources has its advantages: the sounds can be stored inside the file in the **resource fork** , and it's very easy to use a program, such as **ResEdit** , to add or remove sound resources from the file. This is a great way, for example, to add sounds to a **HyperCard** stack.

Sound resources must be loaded entirely into memory before they are played. That's no problem for a small sounds, but if you have a 1MB sound, there is the possibility that there may not be enough memory available to load and play the sound. If there isn't enough memory, nothing happens; the sound is

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simply not played.

For long sounds, consider using the **AIFF** file format to save sounds. It's possible to **stream** an AIFF file, and AIFF is also cross-platform.

See Also

AIFF; WAV

Snootz Math Trek

This program, for ages 6-10, should probably be named Logic Trek, or Sequencing Trek, for those are the skills it teaches. Nothing in these games uses numbers. Instead, kids are introduced to doing things in sequence, as when they help Foozle get dressed. His outfits must be assembled in a particular order. Sequences are acoustic in the Street Music game, which requires that kids listen and repeat (by clicking the sources of) a series of sounds. Other games include fitting geometric shapes into frames (as seen in the figure), hide and go seek, using a grid and compass points, and a jazzed-up version of the very old game Nine Men's Morris.

The colorful animation and funny sounds make these games appealing, and most of them have two or three levels of difficulty, so kids will be able to play with them a bit longer than otherwise. The geometry puzzles do repeat, but other activities are more random so the program can be enjoyed more than once or twice.

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See Also

Bumptz Science Carnival

Society of Motion Picture Television Engineers

See

SMPTE

Socket Number

A socket number is an 8-bit number that uniquely identifies a socket. A socket is an addressable entity within an AppleTalk node. With AppleTalk, there are 256 potential sockets. Numbers 0 and 255 aren't used, so there are actually 254 possible socket numbers. Numbers 1-127 are reserved for special Apple system use, and 128-254 are pooled resources, available for use by applications. Socket numbers are assigned for transactions, and returned to the pool when the transaction is finished.

See Also

Logical Address

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SoftPC

SoftPC, from Insignia Solutions, (2200 Lawson Lane Santa Clara, CA 95054 Phone: (408) 327-6000. On the Web at <http://www.Insignia.com>) is a software utility that gives your Mac the capability to run applications originally designed for **Microsoft DOS** for PCs by opening a separate window on the desktop where you can launch DOS-compatible applications in a software emulation mode. SoftPC comes with a version of MS/DOS already installed. SoftPC operates in two modes: Real mode and protected mode, which enables you to run applications that are designed to take advantage of extended DOS memory. Both of these are designed to emulate an Intel processor within the Macintosh environment. Operating in the protected mode enables you to utilize extended DOS memory. Other features include support for VGA graphics, MS-DOS 5.0, and CD-ROM Extensions, and Novell NetWare.

The advantage of SoftPC is you can access DOS-based software from your Macintosh without buying a separate computer. The draw-back is the software emulation runs DOS software at a slower speed than it would on a PC.

See Also

Microsoft DOS; SoftWindows

Soft Return

A soft return is a line break that the word processing program inserts when

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the end of the line reaches the right hand margin. It's indicated by an **invisible character** . The location of soft returns changes automatically if you change the width of the margins or insert or delete text. On a Macintosh, text wraps automatically onto the next line, inserting a soft return. A **hard return** ends the paragraph. Non-Macintosh word processors use a combination of a carriage return and linefeed (CR/LF) at the end of each line. When you import text into a Macintosh word processor, you might need to remove these characters so that the text will wrap correctly.

See Also

Paragraph;Word Wrap

Software Archives

See

Macintosh Software Archive

Software, Business Applications

See

Business Applications

Software Development Kit

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See
SDK

Software, Educational, Adult

You're never too old to learn, and there's plenty of software to interest the adult with a thirst for knowledge. CD-ROMs cover the full range of subjects from astronomy (*Scientific American Library: the Planets*) to zoology. Other programs teach you art, golf, photography, cooking, crafts, and even (a must for "mouse-potatoes") physical fitness. Better Homes and Gardens Guides to Gardening, Home Planning, and Great American Cooking let you lead a more elegant life. **Digital Gourmet** and **Digital Bartender** cover the basics of food and drink preparation.

Hobbies are well-represented on the software shelves. Whether your passion is baseball cards, comic books, or dogs, there's a program to help. *The ComicBase* not only has an encyclopedia of information and prices of over 50,000 comics, it tracks the value of your collection. *The Wizard of Dogs* is an interactive guide to dog care and training, with comprehensive information on health, grooming, socializing, training, and much more. Ever wondered what goes on behind the curtain? Check out **An Insider's View of Magic**, from HarperCollins with TV's Harry Anderson.

As for sports, there's golf, skiing, martial arts, and *Active Trainer*, which comes with a tape measure and fat caliper to assess your body mass, and over

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85 minutes of video footage that teaches you what exercises you need and how to do them. Get golf tips from *Breaking 100*, or advanced tips from *Breaking 90*. Get the lowdown on golf courses all over the country in **Sportware's Golf**, along with golf etiquette, instruction, and course architecture. The sound effects on this CD will transport you right into a summer day. If you dream of turning pro, try **PGA Tour Golf**. Or how about mountain biking with *SingleTrak Mind*, or for something really wild, **Maniac Sports!** Bungee jumping, kayaking, surfing, sky diving, and more.... Learn the history, the equipment, and the techniques, and then go for broke. **QuickTime** movies pause so you can decide what to do next. One more cartwheel, or is it time to...oops. It was time to land.

Health topics are a natural for interactive programs. There's *Body Works*, *Nine Month Miracle*, **A.D.A.M. the Inside Story**, half a dozen different health and medical encyclopedias, even some programs to help you relax. Wilson Learning's *Keep Your Cool* teaches you to do just that, with a carefully plotted series of lessons and exercises in relieving stress.

Lawrence Productions *Job Success* and *Job Readiness* series teach you how to put together a resume, how to handle job interviews, and how to get ahead once you've gotten the job.

And finally, there are programs to teach you to use other programs. Personal Training Systems has software to explain **System 7.5**, to teach you the ropes of **ClarisWorks**, or Intuit, or **Microsoft Office**. MacAcademy offers videotapes to watch while you sit at the Mac, to train you in any of

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several dozen programs.

See Also

ADAM; ClarisWorks; Microsoft Office; System 7.5

Software, Educational, K-6

Software for the K-6 set is, unfortunately, more geared toward “skill drills” emphasizing speed in solving arithmetic problems, and phonics exercises. One of the better ones is MECC’s Math Munchers Deluxe. Animation and funny sounds keep children interested while they work on math problems from simple addition through fractions and decimals.

History and science explorations are popular topics for this age group, and there are many programs available. EcoAdventures teaches students about endangered plants and animals in the rainforests and the oceans. The Oregon Trail is a historical simulation of a trip across the country by wagon train. Other programs introduce astronomy, dinosaurs and fossils, geography, and music.

Beginning readers will benefit from the many childrens’s books available as interactive CD-ROMs. The stories are narrated, with words highlighted on the screen as they’re spoken. Most of these stories are bi-lingual, commonly Japanese/English or Spanish/English. All have colorful illustrations with hidden “buttons”. When the child clicks on the picture and hits one of the buttons, something happens. Each page of the story may have anywhere

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from six to a dozen or more different buttons, each with sounds and animation. They're not marked in any way, so it's necessary to explore. Several companies publish these interactive books, among them Brøderbund "Living Books" and the Learning Company's Reader Rabbit Interactive Reading Journey.

Conversation with Gene Longo

Gene Longo's title is Home Learning Manager at Apple, and his job is to use Apple's traditional lead in school computing as a way to get people to buy Macs for the home.

Maclopedia: What did you first use a Mac for?

Gene: Oh gosh, back in '84, when I was working for a dealership—and this is pretty embarrassing—it was to use the desktop publishing to create a resume to send to Apple.

Maclopedia: So did you get the job?

Gene: Yes! I worked in education in the field, with kindergarten through 12. I started as an MSR and supported Virginia, Maryland, and D.C., and then I became an account exec. I came to Apple headquarters in 1993, to sort of marry working in the dealership and working in the field, to build a bridge between the education and the home markets.

Maclopedia: How are you helping folks learn at home with the Mac?

Gene: We're working closely with the K-12 organizations, and we've formed

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the Home Learning Advisory Council. We brought in twelve learning experts from around the country, and we meet semiannually to establish those bridges. They have really driven the things we've brought to market, such as the family computing workshops. They were getting a lot of questions like, "Should I buy a computer for the home, and if so, what kind?" This tool was to help parents.

Because there might be some real credibility issues if Apple presented the workshop directly, they said, "Give us the tools, and we can control the message." So we put together a Just-Add-Water kit with a presentation, parent materials, invitation templates, flyers, interactive CD-ROM, for the schools to put on the workshops. The school calls an 800 number and the school itself hosts the event. We give them a script. We made it a solutions message, not a sales message, very thematic, like, how to do research with multimedia tools and the Internet, and here is how kids would write reports. We show parents the new tools, and the light bulb goes off. You'll see the presenter showing an electronic encyclopedia, and you can see they are amazed. We have on average 80 parents a night, but we've had up to 300 parents, and grandparents, at 1250 workshops so far, and we've just launched Phase II for 5,000 more schools. It's a good time for the schools to talk about their technology plans, or bond referendums, or budget.

Maclopedia: Is Apple making any strategic alliances in this area?

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Gene: Yes, we have a strategic alliance with the Public Broadcasting System called Bring Learning Home, and around that we have alliances with Scholastic, National Geographic, and the Computer Learning Foundation, a clearinghouse for schools and parents, to foster technology—they have a newsletter and an annual computer learning contest every October. We're setting up a Web site for all the partners. We're underwriting PBS where they take their educational programming from Sesame Street to Where in the World is Carmen Sandiego? and they wrap a service around it for community centers, daycare centers, and parents—a form of TV outreach. We're going to 100 markets this fall.

Maclopedia: What trends do you see in learning products for the home?

Gene: We're seeing a flood of companies developing stuff around the Internet for kids. Every day we come across something new. Ensuring that schools have access is a problem, but homes are easier because the new computers come with modems built-in these days. One neat new product is a kid's Web creation tool from Vividus, the folks who made Cinemation; like KidPix, it's easy to use, and lets you create your own home page. Surfwatch and Yahoo are creating a kids' site called YaHooligans; that'll be really hot. And we are working on putting together a kids' Internet kit, a software bundle to be marketed at retail.

Maclopedia: Do you think these Internet terminals are going to catch on in the home market?

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Gene: I don't know if you are going to see these Internet appliances come in. Our advisory council had really mixed feeling about those. In the home computer market, some industry experts say the pace is slowing down, but we see people ramping up the price points, buying higher price tags, more memory, faster CD-ROM, a lot more life and extendibility.

Beginning artists and writers can make good use of the computer, just as professionals do. KidPix and similar graphics programs help young Picassos turn their ideas into art. Brøderbund's Amazing Writing Machine and Davidson's KidWorks turn out books, stories, essays, poems, and journals, complete with artwork.

Reference materials for the early grades tend to be topic-specific. There are Encyclopedias of Science and Nature, Animals, Mammals, Plants, the Solar System, and so on. A few more general works include a CD-ROM version of David Macaulay's excellent *The Way Things Work*, Macmillan's *Dictionary for Children*, and several good atlas programs.

See Also

Juilliard Music; Mavis Beacon Teaches Typing; MayaQuest; Oregon Trail; Rock, Rap 'n' Roll; Rosetta Stone; Student Essentials

Software, Educational, Grades 7-12

Education is serious business for students in junior high and high school. At this age, kids are learning foreign languages, doing research papers, and

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studying for the achievement tests they need to score well on in order to get into college. Of course, there are all kinds of programs to help them in these endeavors. Language programs such as **Rosetta Stone** or *Zingo Lingo* will teach basic vocabulary and help with pronunciation. **MayaQuest** teaches Spanish as well as the geography of Central America and archaeology of the Mayan Empire. Junior High and High school students don't necessarily need their math or language arts programs sugar-coated into game formats as younger kids might, but that's not to say that a program can't be interesting and fun. The excellent MECC "trail" programs (**Oregon Trail** , Yukon Trail, and so on) are examples of educational software for older students that's fun and keeps them motivated to learn, without unnecessary fooling around.

Teens with an interest in theater will probably find a lot to like about MECC's *Opening Night*. They can direct plays using the scenery, props, and cast of characters provided on this two-CD set. *Hollywood* is a similar, but simpler program, with a cartoon format. Young musicians may enjoy the **Juilliard Music Adventure** , or might prefer to **Rock, Rap 'n' Roll** . Interactive Physics programs will intrigue the science-minded teen, whereas the **Cartoon Guide to Physics** may help de-mystify the subject for the rest of us.

The tools a high school student needs to succeed haven't really changed all that much. Among the basics are a good dictionary and a good encyclopedia, a Thesaurus, and some way to organize and write neat term papers. Novell has put all of these into one package, along with **WordPerfect 3.5** , and other goodies. **Student Essentials** is a truly useful package. If you prefer a

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different word processor, the other components of the package are also available separately. Both Compton and Grolier publish CD-ROM encyclopedias, updated annually. Most word processors include a spell checker and Thesaurus, but for definitions and pronunciation, Webster's is still the standard. Random House Webster's Dictionary is a good choice. And for those last minute book reports, Monarch Notes covers the classics, including works by 226 different authors.

With the computer becoming more and more part of everything we do, one of the most important skills anyone can have these days is typing. Programs such as **Mavis Beacon Teaches Typing** will have your kids up to 50 words per minute in a few weeks. It's a skill that will come in handy in college, too. Speaking of college, choosing one and getting accepted is the focus of the last two years of high school. This is the time when kids prepare for, and take the SAT, ACT, and achievement tests that determine their future. Kaplan and Princeton Review are two of the biggest names in test coaching. Both have released software to help students score higher on the SATs and similar tests. Princeton's *College Advisor* is another popular tool, with details on over 1200 colleges, plus information on the admissions process from the essay and recommendations to securing financial aid.

See Also

Juilliard Music; Mavis Beacon Teaches Typing; MayaQuest; Oregon Trail; Rock, Rap 'n' Roll; Rosetta Stone; Student Essentials

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Software FPU

Software FPU is a **freeware** utility that fools certain software applications that require a built-in FPU (Floating Point Unit) into thinking a real FPU is installed in your computer. This enables you to run software that would normally require an FPU without having one installed.

It works this way; when you launch a program that needs an FPU, the software takes a look at the system's configuration, and if it doesn't see an FPU, it displays an **alert box** stating that the program requires an FPU, and then the program **quits**. With Software FPU loaded, when you launch an application, Software FPU tells the application that the computer has an FPU installed, and the software, thinking an FPU is installed, launches. FPU-intensive tasks are much slower than they would have been with an FPU installed.

Software FPU does not increase the speed or emulate the function of an FPU. It's job is to fool applications that need an FPU into thinking there is one. Pretty clever.

See Also

Alert Box; Floating Point Unit (FPU); Freeware; Quit

Software Handshaking

See

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Modem Cables and Connections

Software and Hardware Errors

A user error generally results in the machine doing something different than you wanted. By contrast... If your error involves a system crash, such as a bomb, “Unexpected Quit”, or any other crash your problem is not a user error—you’ve run into a software or hardware error.

Although the information in these error messages (for example, ID=1, or “out of memory”) appears to a good clue toward your problem, it usually isn’t. When the system software sees something it doesn’t like, it takes over and sends you one of these messages. Because the computer can only tell you the last thing that went wrong, it’s nearly impossible to tell where the things *first* went wrong just by looking at what finally got the system software’s attention.

The presence of these boxes should serve as a notice to you to start looking for a software or Hardware error.

When you get this type of error, make a note of which number comes up on screen and what the error message says. While a Type -39 may not mean anything to you, it may mean something to a technical support person.

The one exception to this rule is the “Sad Mac” error codes that occur immediately upon startup. This error is usually caused by a bad memory

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SIMM, and the code will tell you which board is bad. See the chapter on hardware troubleshooting for details

Software Errors While the most obvious component of your computer system is the hardware, virtually everything your computer does is controlled by software. Most pieces of hardware, including external hard drives, CD ROM drives, printers, scanners, and network connectors use their own software to tell your computer how to communicate with them.

Software errors result from intrinsic bugs in one piece of software, or from normal commands in multiple programs giving your computer conflicting instructions. Chances are that the authors of each of your software packages didn't have the opportunity to test their software with every type of computer setup, so no piece of software can work for everybody without minor adjustments.

Also, bugs frequently appear only in combinations of several pieces of hardware or software, making problems even harder to track down.

Software errors frequently occur when you use an older pieces of software with a newer piece of software or hardware. Virtually every piece of commercial software undergoes numerous updates after it is first released. Sometimes the updates fix bugs users discovered, other times the updates allow older software to work with newer computers or pieces of hardware.

After you discover a bug or incompatibility, check with your software company to see if an update is available. Often times, they won't send out

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notices of the update, and the only way to receive the update is to call and report the problem. Online services are a particularly good way to keep informed of these updates.

The best clue that you have found a software conflict is a completely reproducible problem. If the exact same sequence of actions always causes a crash, you almost certainly are experiencing a software problem.

Hardware Errors Hardware errors occur when something is physically wrong with your computer: a faulty chip on the logic board, blown capacitors, dust on a read/write head, a torn cable, and so on. Since hardware failures affect components used throughout your computer, they'll cause problems in various unrelated functions of your computer.

Hardware failures usually occur in the components subject to lots of wear, such as floppy drives, printers, and mice. While consistent, reproducible failures are the hallmarks of software trouble, intermittent failures should point you toward hardware failure. Since most of the computer's hardware is tested and/or used during startup, if you can successfully get to the desktop, most of your hardware is fine.

All the major hardware components are automatically tested on startup, so the best clue of a hardware problem is getting the "Sad Mac" bomb and error tones ("**Chimes of Death** ") immediately upon turning on your computer. Pressing the Interrupt and Restart buttons simultaneously, or pressing the interrupt button during power on will always cause a **Sad Mac** . It's no cause for alarm.

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If a problem appears suddenly and seems to affect ALL aspects of your computer's operation, you very likely have a hardware problem. Sometimes if you have a problem with an external storage drive, the computer will boot but that drive won't be mounted.

Network Errors Network errors are a fairly new phenomenon for Mac users. This type of error involves a problem with the cabling or other network hardware between two computers. You'll run into these problems when using applications such as email, networked file servers, or anything else that depends upon interaction between computers.

Network cabling is subject to the same principles that govern all hardware - unless you've been putting stress on it, chances are it won't fail spontaneously. Check the obvious—that the cables are still plugged in—then check the software.

The first thing to do is determine if the problem is with the computers, or with the network itself. True network troubles usually show up as similar problems occurring randomly on nearly several of the computers on a network. They should also follow the logistics of the physical wires of the network. A problem that suddenly appears on just one computer, even if it involves network services, usually is a problem with that computer, not the network.

Of course, a problem with the computer acting as the server will appear to be a network problem, because everyone's computer will be affected—but it's actually a software or hardware problem with that computer.

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Solving the Problem Hardware problems can be tricky to solve and are the least common, so it's usually best to start by looking for user and software errors unless you have a *very* strong suspicion that the hardware is at fault. Aside from requiring more electronics knowledge, hardware troubleshooting also carries several liabilities. Both software and hardware problems can cause you to lose your data. Backup your files onto some other storage medium before you begin troubleshooting.

Safety Computer equipment is designed to be safe for normal use, but when you open the case, you put both yourself and the equipment at danger unless you take the necessary safety precautions. The high voltages and currents present in computers are the major danger to you. Power supplies and monitors are the most dangerous components. Don't disassemble these unless you're a qualified technician. The high voltage potentials in you, caused by static electricity, are the major danger to your equipment. If you don't know how to use a wrist grounding strap and follow other static avoidance techniques, don't take your Mac apart.

Because of the danger to both you and your computer, opening and altering the hardware of your computer system usually voids the manufacturer's warranty.

Where to Go From Here Once you've identified which area your problem is in, read the appropriate entry here for advice on how to identify and solve your problem. If this doesn't seem to help, next check into online services for advice from users with similar setups. Chances are someone has seen, or

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heard of a problem like yours before and can point you in the right direction toward solving it.

If you still can't find the answer, or you're running out of time, it may be time to use a consultant. Computer consultants deal with computer conflicts daily and are often in touch with major software and hardware vendors, keeping abreast of potential problems. While hiring a consultant is not inexpensive, if your business is losing money quickly because of computer errors, it may be well worth the expense. Ask other computer users or contact the manufacturers of your software and hardware for referrals to a good consultant. Most consultants belong to a local Macintosh User's Group. By attending the meetings you can often get free advice from these experienced professionals.

Software, Installing

See

Installing Software

Software, Special Needs

From its beginning, the Macintosh was designed with the needs of disabled users in mind. One of the features designed into the first Mac 128 was the capability to speak written text. In 1987, Berkeley Systems obtained a small

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Federal grant to develop the Mac's built-in Macintalk into a utility that would let blind, visually impaired, and dyslexic people use the computer. The result was **outSPOKEN**, an easy to use screen reader that works with nearly all Mac software. Users can listen as they write, have text spoken back to them, and even use the Mac's menus and icons by steering the cursor over them. This is accomplished by pressing the keys on the numeric keypad. (On the **PowerBook**, a key re-mapping program enables the user substitute a corner of the regular keyboard, toggling back and forth between typing and cursor control.) People with partial vision may be helped with **Close View**, a utility that's part of the Mac's Easy Access utility. It magnifies the screen to make the type easier to see.

Of course, people are "differently abled" in many different ways. Many Mac users can read the screen with no difficulty, but moving a mouse or typing on a regular keyboard is out of the question. For these people, there are high-tech and low-tech solutions ranging from a simple mouth stick to an optical sensor that tracks the movement of a dot on the user's forehead. The mouthstick is a device with a mouthpiece and a sturdy stick. The users simply bite down on the mouthpiece and moves their heads to press keys with the stick. A plastic guide over the keyboard helps guard against typing mistakes. Word prediction software such as Don Johnston Company's **Co:Writer** also helps make the writing process easier.

Both *Head Mouse* and *Madenta Tracker* use optical sensors to track movement. They require no wires or headgear, just an adhesive dot that's placed on the user's forehead, chin, eyeglasses, or even a finger or foot, or whatever the

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user has best control of. These devices will enable you to draw, play games, or use the computer in any way that anyone else can. There are extra large keyboards and also extra small keyboards for people with limited movement but good fine motor control. There are switches that send Morse code, and switches that have a simple “yes/no” function. And there’s software to work with all of these devices. The most common program puts a keyboard on the screen so the switch user or mouse-alternative user can type by pointing to the letters on-screen. Discover:Screen works with most word processing software, as well as with the Internet and commercial online services, opening a new world for people who might not otherwise be able to get online.

People who can’t use a keyboard for typing may soon be able to dictate their words directly into the Mac. **MacinTalk Pro**, System 7’s speech recognition extension makes voice input a reality. Articulate Systems is the leader in this field. Their *Voice Navigator*, which only handled menu commands, has been replaced by *Power Secretary*, which takes dictation as well as carrying out your commands. (Now, if it could only make coffee...).

Making coffee isn’t an impossibility either. The X-10 environmental control modules and switches lets your Mac turn on the coffee maker, the TV, a lamp, or other electrical device with a single click, a very useful tool for those who can’t get out of bed. This system can accept up to 256 different switches, keyed to a map on the Mac. Selecting any one and clicking will turn the associated device on or off.

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The Mac's capability to speak has led to still another use—as a replacement for one's own voice. Perhaps the best-known user of this feature is physicist Stephen Hawking, who uses a **PowerBook** attached to his electric wheel chair to give lectures all over the world. Dr. Hawking writes his speeches ahead of time, of course, but the Mac can also be used for spontaneous conversation with the help of programs such as **Talk:About** and **Co:Writer**. **Talk:About** lets the user have real conversations instead of simply pointing to a menu of canned phrases of wants and needs. With the addition of the **Co:Writer** word prediction software, users can create new sentences quickly enough to make the conversation flow smoothly. There are also simpler speech programs to get started. **Freedom** is a HyperCard stack that contains pre-programmed phrases, and allows you to add your own by simply typing them in. With **MacinTalk Pro** installed, you can select from a menu of voices to find the one that's most appropriate.

The bottom line is that there's a special solution to any special needs access problem. The best place to find out what's available is at <http://www2.apple.com/disability/disability.html>. The following table is a helpful reference to the entries in this book to special needs software and hardware.

If you have difficulty with...

Reading the screen

Try using...

outSpoken, CloseView

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Typing	Large keyboard, Tash Mini-keyboard, Head Pointer and onscreen keyboard
Using the mouse	Joysticks, switches, Head Pointer
Speaking	Freedom, Macintalk Pro, Talk:About
Hearing	Flashing Menu Bar (Set sound level to zero to make menu flash for alerts)
Writing	Co:Writer

See Also

Co:Writer; Freedom; outSPOKEN; Talk:About

Software, System

Your computer, **mouse**, **keyboard**, CD-ROM drive, and monitor are all hardware. What you see operating on-screen is software. Software is a set of instructions for performing tasks on your computer. The software that loads into your computer when you **startup** your Macintosh is the Macintosh **system software** from Apple, along with any third-party extensions or applications/documents in your Startup folder. This system software is designed to run on Macintosh brand computers and provides the interface you see when working on a Macintosh. The **desktop**, the **trash can**, files, folders, and icons are all part of the system software.

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When you want to type a letter or design a graphic, you open software applications. Applications are also often referred to as programs. Smaller applications that perform particular tasks, such as repair or compression, are called utilities. Applications, programs, and utilities are all terms to describe software.

See Also

Desktop; Icons; Keyboard; Mouse; Startup; System Software; Trash Can

Software for Teachers

See

Teachers, Macintosh and

Software Upgrades

Macintosh computers require System software in order to access Mac hardware and run software applications. In 1994, with the introduction of System 7.5, Apple gave their Macintosh operating system a name: MacOS.

Upgrading to a completely new version of System software can involve many changes, including upgrading hardware and versions of software applications. If you are happy with your current System software features and performance, consider what features are available in a new version of System software or in a System update release before purchasing or

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installing the upgrade. In general, new System software releases offer consistent backward compatibility with most software applications and work on Macintosh computers with at least 4MB of memory, although 8MB is preferred (and is required on a PowerMac). If you are considering adding more System software to your Mac, make sure that you have enough memory and hard drive space available for all System software and any applications you intend to use with the new technologies.

See Also

Bug Fix Update; Major Release; Minor Release; Registration Card

SoftWindows

SoftWindows, from Insignia Solutions, (2200 Lawson Lane Santa Clara, CA 95054 Phone: (408) 327-6000. On the Web <http://www.Insignia.com>) is a software utility that gives your Mac the capability to run applications originally designed to be used with the **Microsoft Windows 3.1** operating system for PCs by opening a separate window on the desktop where you can launch Windows-compatible applications in a software emulation mode. The advantage is you can access a wide range of Windows software from your Macintosh without buying a separate computer. SoftWindows comes with Microsoft Windows 3.11/MS DOS 6.22 Operating System already installed.

Another advantage is that you can **copy** and **paste** information and items between these Windows applications and Macintosh applications. The draw-

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back is that the software emulation runs the software at a slower speed than it would on a PC.

Insignia Solutions recently announced a new version of SoftWindows, called SoftWindows 95 that enables Mac users to run Windows 95 software on their Macs. SoftWindows also comes with a new TurboStart™ feature that enables Power Mac users to launch Windows 95 in a fraction of the time it takes a regular PC. SoftWindows also comes with the Microsoft Windows 95 pre-installed.

See Also

Copy; Microsoft Windows; Paste

Sony Multiscan 17sfII

See

Monitors, Common Models

Sound, Adding

See

Presentations, Adding Sound with Astound

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Sound App

Sound App is a shareware program by Norman Frankes that plays AU and .WAV sound files. Sound App can be used as a **helper app** to play AU files, which are used widely on the **World Wide Web** .

See Also

MoviePlayer; QuickTime; SoundMachine; .WAV

Sound Designer II

A sound digitizing and editing application developed for editing 16-bit sound, and bundled with any of Digidesign's sound-digitizing hardware products. Sound Designer uses an interface that resembles **SoundEdit** ; the digitized sound is displayed as a wave form, which can be edited by selecting segments and cutting and pasting. You can add effects to the selected portion of the audio, and plug-in modules are supported.

Sound Designer II includes a pen tool for editing the wave form—you draw over the wave form to remove pops or other defects in the sound.

Digidesign, Inc.

3401-A Hillview Avenue

Palo Alto, CA 94304-1348

Price: \$1295

Phone: (415) 688-0600

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Web: <http://www.digidesign.com/>

See Also

Audiomedia II

Sound Digitizing

The Macintosh model will determine the quality you get when digitizing sound. If you own an older Macintosh (such as a Macintosh IIci), then you have no built-in sound recording hardware and will need something like the **MacRecorder** . Several models with built-in sound digitizing hardware (such as the Quadras) support only 8-bit sound recording. All **AV Mac**'s, Power Mac's and some 68040 Macs (the PowerBook 500's for example) can record and playback sound in 16-bit. This is referred to as CD quality because **CD Audio** disks are 16-bits.

When converting an analog sound wave into digital data, the quality of the sound is determined by **bit depth** and **sample rate** . The higher the bit depth and sample rate, the higher the quality of the sound. That also means that the size of the audio files grows much larger too.

Considering that many sounds are only played back through the small internal Macintosh speaker, often it makes sense to record sounds at 8-bits, 22kHz (an acceptable average quality) rather than at 16-bits, 44.1kHz. Sampling at very low rates (8-bits, 8kHz) is not recommended because of the poor quality, but you should experiment to determine what works with the

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sound you are recording.

Prior to the AV Macintosh, Macs accepted mic-level signals. All models now support line-level audio. While this is an advantage in many respects, it does mean that most microphones cannot be used without a microphone pre-amplifier. The Apple PlainTalk microphone has a built-in preamp.

To record audio, you need an audio recording and editing application. There are several shareware applications, such as **Ultra Recorder**, **SoundStudio Lite**, **SoundEffects**, **Sound Sculptor** and **Sample Editor** . Commercial sound applications include; **AudioShop**, **Deck II**, **DigitTrax** and **SoundEdit Pro** . The application you use depends upon your requirements. If you only want to record a sound effect, your requirements will be different than if you want to record a band (where applications like Deck II or DigiTrax would be best.)

If you want to import an audio CD song into your Macintosh you can open it using almost any **QuickTime** application, provided that you have QuickTime and **Sound Manager 3.0**

One thing to remember is that even if you only need a 22kHz sound, recording at the highest quality possible, editing and then **downsampling** (converting to the lower rate) results in the best sound.

See Also

Bit Depth; Downsampling; Sample Rate

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Sound Control Panel

This control panel enables you to control the overall volume of your Macintosh and your system alert sounds by using a slider to move from softer (at the bottom) to louder (at the top).

The Sound Control Panel is also where you select what sound will be your system's alert sound (to 'beep' at you anytime the Mac needs your attention). You can choose alert sounds from the window to the right of the alert sound volume slider. (

insert figure 4S.sk here

To choose an alert sound, follow these steps:

1. Choose Sound from the Control Panels submenu in the Apple menu (or System Folder).
2. Click the name of the sound on the right side of the window. The alert sound will play once to let you hear how it sounds.
3. Close the Sound Control Panel to confirm your choice.

You can click the Add button to add sounds of your own. When you click the Add button, the recording dialog box comes up, which enables you to record your own alert sounds and name them, by using Apple's built-in, or external microphone (depending on which model you have).

To record your own alert sound, follow these steps:

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1. Make sure a microphone is connected to your Mac. Some Macs have built in microphones, as do some Apple monitors. If not, you can connect a microphone via the input jack on the back of your Mac marked with the icon of a broadcast microphone.
2. Choose Sound from the Control Panels submenu on the Apple menu (or System Folder).
3. Click the Add button to bring up the Recording dialog box. This dialog box has similar controls to a standard tape player; record, stop, pause, and play. Plus you have a meter to show you how much input you're getting from the microphone.
4. When you're happy with the alert sound you've recorded, save the sound by clicking the Save button. You'll be prompted to name the sound, and after naming it and clicking OK, this new sound will appear in window listing all available alert sounds. Click the name of any sound to hear it.

You can also choose, from the pop-up menu Sound In, what source to record from (you could record from a CD-ROM audio disk or microphone), and you can choose Sound Out to choose a device to playback recorded sounds and choose the playback quality of recorded sounds.

See Also

Apple Menu; Control Panels

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SoundEdit 16

Originally developed by Farallon as a digitizing and sound editing application for 8-bit, 22KHz audio, over the years SoundEdit 16 has been upgraded so that now it supports **CD** quality (16-bit, 44.1KHz), and you can even open and edit **QuickTime** movie sound tracks. SoundEdit 16 cannot control an audio CD, but it is possible to open a CD audio track and convert it to a QuickTime movie.

Sound is digitized and edited in a waveform window. You select, cut, copy, and paste sections of the audio track. The number of tracks that can be opened at once are limited only by disk space and available RAM. SoundEdit 16 provides basic mixing capabilities—you can choose multiple tracks and mix them together, adjusting their relationship and the volume of each track. This is acceptable for mixing sound effects, but if you want to perform complex mixing, either **Deck II** or **DigiTrax** would probably be a better choice.

SoundEdit 16 offers 3D frequency displays, which look amazing on-screen (and may be useful for scientific research comparing different sounds), but they're of limited use to most digitizing and editing applications. SoundEdit 16 also comes with a CD containing sound effects and music clips.

Macromedia

600 Townsend Street

San Francisco CA 94103

Price: \$379

Phone: (415) 252-2000

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Sound Manager

The Sound Manager is a free extension from Apple that enables applications to record digital audio from your Mac using the Mac's microphone. The latest version of Sound Manager (Version 3.1) adds support for 16-bit digital CD-quality audio, native code for increased performance on Power Mac models, which enhances performance as much as 7-fold, redirection of sound to third-party hardware cards, the capability to continue to work while alert sounds are playing, and support for plug-in audio compression and decompression software. The Sound Manager is an extension, but it also includes a special version of the Sound Control Panel as well.

SoundMachine

SoundMachine is a shareware (\$10) sound player application by Rod Kennedy that processes audio files downloaded from the World Wide Web.

SoundMachine supports both .AU-variants and AIFF files. It can record sounds, and offers great control over playback; you can pause, play sounds backward and forward at different speeds, and so on. SoundMachine also supports the queuing of multiple sound files to be played in sequence.

All of SoundMachine's player controls are very neatly organized into a small control dialog box.

SoundMachine supports Balloon Help/Apple Guide, and the balloons provide a

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detailed description of the function of each of the buttons on the control panel. Some of the more interesting buttons include:

- The “Format” button (on the right end of the middle row), which allows you to change playback format (for example, from AIFF to .AU) *during* playback.
- The “Loop” button, which enables you to play selections in a repeating loop.
- The “Sampling Rate” popup menu, which enables you to change the playback speed on the fly.

See Also

AIFF Files; .AU Files; Helper Applications; Multimedia; Netscape Navigator; Web Browser; World Wide Web

SoundMaster

A utility that can be programmed to play different sounds when different system actions occur, such as ejecting a disk or restarting the computer.

Sound in PowerBooks

Most PowerBooks, except the 100, 140, 145, 145B, and 170, have built-in monaural microphones. The 100 and the 150 don't have sound input

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capability. The 140, 145, and 170 originally shipped with external microphones that plugged into the sound-in port in the back. The 145B has a sound port, but did not come with a microphone.

Most PowerBooks also have sound out ports. This port is stereo in most models, although it is mono in the original PowerBook 100, the Duo 200 series, and the Duo 2300c. The Duo Docks also have a mono sound-out port. All PowerBooks have at least one speaker, and the PowerBook 500s have built-in stereo speakers.

The 500 and 5000 series PowerBooks support CD-quality sound at 16-bit, 44 KHz sampling with the use of an external microphone, provided the microphone supports it. You can use the Sound control panel to switch to 44 KHz on that microphone. However, because the Sound control panel can't record in stereo, you have to use a multimedia authoring application such as Farallon's SoundEdit Pro or Opcode Systems AudioShop.

SoundScape

A control panel that plays bird calls at random intervals. Use it to unnerve your cat. It is a shareware title available on the Internet.

Sound Sculptor

A shareware sound editing application that offers a surprising number of

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tools and features, including pitch bending and a wave drawing tool. The program creates synthesized sound using oscillators, filters, and other synthesizer processes. Available from online services.

See Also

AudioShop; Sample Editor; Sound Edit; SoundEffects; SoundStudio Lite; Ultra Recorder

Sound Siphon

A utility that extracts any `snd` sound resources from a file and saves them as System 7 sound files.

See Also

ResEdit

SoundStudio Lite

A shareware sound recording and editing application. Can record to disk and save in standard sound formats, including `AIFF`. The shareware fee is \$10 and the software is available from online services.

See Also

AudioShop; Sound Sculptor; Sound Edit; SoundEffects; Ultra Recorder

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Sound Tracker

A player application for MOD files, a music file format similar to MIDI that was originally developed for the Amiga.

See Also

MacMod Pro; MIDI; MOD

Spacebar

The spacebar inserts a space between words, just like the spacebar on a typewriter. It is occasionally used with the **Option** or **Command** key in a keyboard shortcut in an application. If, for example, you're working in a word processing application and you press Option-Shift-SpaceBar, a non-breaking space is inserted.

A popular application keyboard shortcut is to press the ⌘ key and the spacebar to turn your **cursor** into a magnifying glass in order to zoom the magnification of a page.

See Also

Command Key; Cursor; Option Key

Spaceward Ho! 4.0

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Spaceward Ho! goes beyond giving you the chance to simply create a town or manage a feudal village (as in **Warcraft**) and lets you form an entire galaxy of up to 150 planets. **Spaceward Ho!** is a great improvement on the space **strategy game** format (also see **Pax Imperia**).

You start out with an initial civilization which generates income that enables you to make starships. As in other strategy games, every management decision you make directly affects your chances at interplanetary domination. For example, if you aren't letting your people advance as much as those of the other players, you may be in for some serious trouble. Make sure you keep track of how much money you will need for such things as weapons and various high level technical advancements. **Spaceward Ho!** also includes a network play mode so you can play against others over the **Internet** or a **modem**.

See Also

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

Spam

Spam is 1) A tinned pork product whose letters are an acronym for Spiced Pork and Ham. Spam was immortalized in a routine by the British comedy troupe Monty Python in which the word "Spam" was repeated over and over by a waitress reading off a menu. On the **Internet**, Spam has come to mean a

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particular repetitious or **bandwidth**-consuming act of absolutely no redeeming value. 2) To send an unsolicited advertising message or other inappropriate listings across the Internet to huge numbers of **newsgroups** and **mailing lists** .

See Also

Bandwidth; Flaming; Internet; Mailing Lists; Netiquette; Newsgroups

Spatial Compression

Compression technique used to compress the original image to as small a size as possible. This often used in combination with **temporal compression** , where a frame is compressed based on the difference between it and the previous frame in the sequence.

See Also

Asymmetrical Compressors; Compressor; Symmetrical Compressors; Temporal Compression

Spatial Enhancement

The human ear and brain evolved to hear in three dimensions. Motion picture and home theater systems use multiple channels, with speakers behind as well as in front of the viewer, to stimulate it. Concert halls are designed so the music echoes off the rear and side walls, and surrounds the

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listener. But, although we hear the world in a 360-degree panorama, multimedia **speaker** systems are flat. The sound source is arranged on a single plane, and the speakers are so close that room echoes disappear.

Your brain can “hear” behind you by paying attention to minute timing differences between sounds that enter the ear directly, and those that have to flow around the head and outer ear shell. (That, by the way, is why ears have such a convoluted shape.) It’s possible to predict these timing differences, and apply them electronically. When done properly the effect is astonishing: sounds come from the screen, but also from the sides and even behind you. Music sounds like you’re in a concert hall, and not just listening to speakers. Professional recording studios have joysticks so they can position individual tracks anywhere around the listener.

Labtec Spatializer and NuReality Vivid 3D equipment contains circuits to simulate this effect in multimedia systems, available either as speaker systems or add-on **amplifiers** .

Because multimedia soundtracks are premixed, the circuits can’t place individual instruments around the listener. All they can do is apply a generalized widening effect. Sounds that never had an acoustic reality—electronic music and fantasy environments—profit the most from this processing. Real-world instruments and symphonic music can sound good or bad, depending on how you set the processor’s controls. Narrations and dramatic voices sound artificially reverberant.

In short, these enhancement technologies don’t do anything to help you

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hear the soundtrack better, and are of little use in training or business applications. But they're a heck of a lot of fun when you're playing games.

NuReality, 2907 Daimler Street, Santa Ana, CA 92705, 714-442-1080, fax 714-852-1059, <http://www.nureality.com>

Labtec Enterprises, 3801 Northeast 109th Ave, Vancouver, WA 98682, 360-896-2000, fax 360-896-2020

See Also

Speakers

S/PDIF

Sony/Philips Digital Interface Format. A digital I/O connection that uses standard RCS phono jacks. Low-end DAT recorders and audio cards, such as Digidesign's **Audiomedia II**, use this interface.

See Also

AES/EBU; I/O Connectors

Special Menu

The Special menu, which appears at the **desktop** level, enables you to:

- Organize your **icons** with the **Clean Up** command

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- Delete files from a disk with the **Empty Trash** command.
- Initialize a disk by using the **Erase Disk** (Command-E) command.
- Eject a mounted disk by using the **Eject Disk** command.
- **Shut Down** and **Restart** your computer.

Note: On PowerBooks and PCI PowerMacs, Sleep is also on this menu.

See Also

Clean Up; Desktop; Eject Disk; Erase Disk; Empty Trash; Icons; Restart; Shutdown

Specular Collage

See

Collage

Specular Highlight

See

Highlight

Speech Recognition

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A number of models of Power Macintosh computers, as well as non-Power Mac models denoted with an AV (for AudioVisual), are capable of recognizing spoken commands. These commands are sent to the Macintosh through the Mac's built-in or external microphone (depending on which model and monitor you have, as some monitors have the microphone built-in).

Apple's voice recognition technology is called **PlainTalk**, and it is enabled through a series of system **extensions**. Through PlainTalk, your Mac responds to your spoken word to carry out a variety of Finder level commands and other commands that are common among applications on the Macintosh platform, such as Print, Quit, Copy, and so on. PlainTalk works by using AppleScript technology to carry out simple **macros**. These macros are stored in the Speakable Items folder within your **System Folder**.

Items in the Speakable Items folder are simple macros created with Apple's **Speech Editor** that enable you to assign a spoken word to a command within the Mac's interface. You can, for example, assign the spoken words "open find" to have your Mac **launch** the **Find File** dialog box. Any macro can be performed from a spoken word using this PlainTalk technology.

See Also

AppleScript; AV Macs; Commands; Extensions; Find File; Launch; Macros, PlainTalk; Power Macintosh; Speech Editor

Speak All Command

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Used in AV Macintosh Computers, the Speak All command uses the AV Mac's PlainTalk technology to have the Macintosh verbally speak selected words or paragraphs.

Speakable Items Folder

Macros for commands you want to activate using the voice recognition capabilities of **Power** and **AV Macs** are placed in the Speakable Items folder. When Apple's **PlainTalk extension** is enabled you can use the Mac's **microphone** to enter spoken words to control certain commands of your computer.

Speech Editor creates the macros you assign to a spoken word command. For example, you can assign the spoken words "Open Find" to **launch** the **Find File** command.

See Also

AV Macs; Commands; Extensions; Find File; Launch; Macros; Microphone; PlainTalk; Power Macs; Speech Editor

Speakers

The original Macintosh and **Mac Plus** had built-in speakers that were entirely appropriate for their use. They were close to the user, faced the right direction, didn't overpower the small black-and-white picture, and had sufficient range to handle the system beeps and occasional **Talking Moose**

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with no trouble. But as the Mac gained multimedia power, its speakers haven't kept up.

The speaker system in modern Macs has about the same quality as a cheap motel alarm clock. It's squeezed in with no attention to acoustics, and frequently points away from the user. This isn't necessarily bad design on Apple's part. With **modular Macs**, the CPU might be placed under the desk, or even in another room: it doesn't make sense to waste resources on good speakers in that box.

Third-party add-on speakers can help you get more out of your Mac. By putting the source close to your ears, they create what recording engineers call a "nearfield sound": this cancels out acoustic problems in the room, and enables you to hear more of what the original soundtrack or software designer had in mind. Because the sound is localized near the **monitor** screen, the speakers help you focus your attention and block out external noises. And because the speakers are close to your ears, they don't have to be very loud to create a full impression. Because a lower volume is radiated in the room, office colleagues get *less* out of your Mac so they can concentrate on their own work.

The typical configuration consists of two identical-looking plastic or wooden boxes, somewhat shorter than the monitor and about a third as wide. One box contains just a loudspeaker; the other also has an **amplifier** and some controls. The amplifier unit plugs into your Mac's **headphone jack** and a power source, and both units are placed next to the monitor. To avoid

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interference with the monitor, speakers must have **shielding** .

Because a primary goal is just to put the sound source in the right place, even a low-cost solution can help a lot. Radio Shack's #40-1359 system (\$30/pair) doesn't have much better components than the Mac built-ins, but is easy to mount next to a monitor. The nearfield positioning lets you hear more of what the little speaker can produce.

Better speakers can be had for \$100/pair, and will genuinely improve your Mac's sound. High-quality ones start around \$300/pair, and—although they're not as loud or rugged—can approach the sonic quality of professional broadcast systems. If you already have a good stereo system in the room and your monitor sits on the CPU, you might not need an additional system for multimedia: connect one of the stereo's inputs to the Mac's headphone jack, and adjust the relative levels through the **Sound Control Panel** and the stereo's volume control (see the figure).

When they're properly balanced, you'll get directional cues from the computer's speaker mixed with extra high and low notes from the stereo.

See Also

Spatial Enhancements; Speaker Hookup; Speaker Selection; Speakers, Wireless

Speakers, Buying

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Very few decisions in audio are as subjective as “what speaker sounds the best?” Even the highest-quality studio systems add their own artifacts, so choosing the right speaker often is a question of which artifacts you like. Specifications—particularly those on consumer products—don’t help. Frequency response means nothing without corresponding descriptions of linearity and distortion, and the pretty response curves in some systems’ advertising have little to do with real-world acoustic devices.

Phrases like “digital-ready” are an insult: speakers are inherently analog, and the cheapest clock radio speaker is as digital as the fanciest studio monitor. Even meaningful terms like porting (which allows stronger bass) won’t tell you much, because so much depends on the actual speaker design.

The best way to choose a speaker is by listening. If you can, bring the system to your computer and audition your favorite programs and multimedia discs. Set the speakers to a normal volume, and listen for naturalness, a clear rather than muffled sound, intelligible voices, and distinct (as opposed to boomy) bass. These specific characteristics are part of any good speaker. Turn the volume down and make sure you still hear these things. Then turn it up and check for harshness and rattles.

If you have to evaluate speakers in a store, control as much of the process as possible. Play a CD you know well and have heard recently on a good system. Stand close to the speakers and set them to a normal volume. Never try to compare more than two systems at once. Don’t be pressured to a particular brand or price range, unless you personally hear a distinct improvement. If

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you're considering **subwoofer** systems, be sure you also bring vocal or spoken-word CDs: these designs sometimes sacrifice the critical midrange, and human voices can get lost or sound artificial. Incidentally, the best multimedia speaker systems don't necessarily come from computer stores. Home theater has very high standards, and a store specializing in that technology may be able to sell you appropriately **shielded** speakers from a surround-sound system.

Make sure the controls are located where you'll be able to use them; and if you share your office with someone else, a headphone jack can help ease tensions. If you're going to be using the speakers with an external **CD-ROM drive**, look for a second set of inputs: external CD audio doesn't appear on the Mac's output connector, and requires additional cables. If a speaker is otherwise ideal but lacks those inputs, you can use a small mixer or switch box from an electronics store. (Don't use a Y-connector for this purpose, because wiring the Mac and CD-ROM outputs directly together can add distortion.)

See Also

Spatial Enhancement; Speakers, Wireless

Speakers, Connecting

Every Macintosh has an audio output jack, with an icon that resembles a loudspeaker. Early models had monaural outputs, but since mid-1993, all

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desktop systems and most PowerBooks have been equipped with stereo sound even if they have only one front-panel speaker. A standard eighth-inch miniature phone plug, the kind found on portable stereo headphones, fits the jack perfectly.

You can plug headphones directly into the back of your Mac for private listening (you might have to turn off the internal speaker in the **Sound control panel**). Speakers require more signal strength, so multimedia systems have an **amplifier** mounted in one of the speaker boxes. A cable runs from the back of the Mac to the amplifier/speaker, another cable runs from it to the other speaker, and a third from the amplifier to the power source—usually a wall-mounted transformer, similar to those supplied with cordless phones. The speaker system's instructions should tell you whether the amplifier unit goes on the left or the right side of the video monitor, but the choice isn't critical except unless a program has left-right directional cues. Proper cables for Mac built-in audio are almost always supplied with the speakers, even if there's no mention of Macintosh on the box. If you have a third-party **AudioMedia** or **NuMedia** sound card, you'll need different connectors. The icon in the figure identifies the proper jack to use during a typical speaker hookup.

Three-piece speaker systems usually put the amplifier in the **subwoofer** box. In this case, run a cable from the Mac to the subwoofer, and then a wire from the subwoofer to each of the monitor-mounted speakers. A similar arrangement applies to four-piece systems with a separate amplifier unit: cable goes from the Mac to the amplifier, and from there to each of the

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speakers.

You can also connect a Mac to a standard stereo amplifier to play through larger audiophile speakers, a home theater unit, or a meeting-room PA system. Use the *line*, *tuner*, or *tape* input of the amplifier. In most cases this will be a pair of phono jacks. Appropriate cables are available from any electronics store; two choices are Radio Shack #42-2475 and #42-2481. So-called Audiophile, premium, or oxygen-free cables won't add anything to the sound quality.

Some amplifier or home theater connections can experience an annoying hum, usually caused by conflicts between various electrical grounds. If the hum is coming from a cable-tv system, the best solution is to isolate the tv cable. The Web page <http://www.tiac.net/users/jcrose/cablehum.html> details various cures. If the hum is between two audio-only components, an audio transformer (such as Radio Shack #270-054) can help.

See Also

Amplifiers; Speakers, Wireless; Subwoofers

Speakers, Sources

Many so-called multimedia speakers are merely relabeled generic designs, often from offshore sources, with no thought given to how they'll be used. On the other hand, the following manufacturers have actually tried to create a product that's appropriate for Mac multimedia. Quality varies greatly

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between individual models within a brand, and manufacturers not listed may also create good products, so a careful selection process is very important.

Advent, 25 Tri-State Office Ctr., Lincolnshire, IL 60069, 800-477-3257, fax 708-317-3836

Altec Lansing Multimedia, P.O. Box 277, Milford, PA 18337, 800-648-6663, fax 717-296-1222

Apple Computer, One Infinite Loop, Cupertino, CA 95014, 800-776-2333

Audiophile, 7416 Washington Ave South, Eden Prairie, MN 55344, 800-727-6863, fax 612-944-8335

Audix Corporation, 24981 Calle Arenal, Lake Forest, CA 92630, 714-588-8072, fax 714-588-8172

Bose Corporation, The Mountain, Framingham, MA 01701, 800-444-2673, fax 508-879-3965

Cambridge SoundWorks, 311 Needham St., Newton, MA 01468, 800-367-4434, fax 617-527-3194

Koss Corporation, 4129 N. Port Washington Rd., Milwaukee, WI 53212, 800-872-5677, fax 414-964-8615

Labtec Enterprises, 3801 Northeast 109th Ave. , Vancouver, WA 98682, 360-896-2000, fax 360-896-2020

NEC Technologies Inc., 1414 Massachusetts Ave., Boxborough, MA 01719; 800-

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632-4636, 508-264-8000.

Radio Shack, 1500 One Tandy Center, Fort Worth, TX 76102; 800-843-7422

Roland U.S., 7200 Dominion Circle, Los Angeles, CA 90040-3696. 213-685-5141, fax 213-722-0911

Sony Electronics Inc., One Sony Dr., Park Ridge, NJ 07656; 1-800-222-7669

Yamaha America, 6600 Orangethorpe Ave., Buena Park, CA 90620; 800-301-7076, fax 714-228-3913

See Also

Spatial Enhancements; Speakers, Buying; Speakers, Wireless

Speakers, Shielding

A loudspeaker is essentially an electric motor: it works by passing current through a coil in a magnetic field. Instead of turning a shaft, the coil vibrates a diaphragm. (There are a few non-magnetic speakers, but good ones are too big to be practical for multimedia.) The coil must have very little mass so it can respond to changing sounds, which means the magnet has to be correspondingly bigger. And that's the problem.

The image on your computer monitor is also controlled by magnets, which sweep the electron beam across the screen. A nearby speaker magnet can interfere with this sweeping and distort the picture with rainbow-hued

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bulges. (In extreme cases, it magnetizes part of the monitor so the distortions stay even after you've moved the speakers. If this happens, **degauss** the monitor.)

Multimedia speakers are shielded to protect the picture. Stray magnetism is kept away so the image stays pristine. Actually, “shielding” is a misnomer: instead of a bulky ferric shield, speaker manufacturers use extra magnets, strategically placed, to focus the field in the right place. Generally, any speaker system intended for multimedia has sufficient shielding to be placed near a monitor.

The exception is **subwoofers** . These need immense magnets—often weighing a few pounds—to do a good job, and most are too big to live on your desktop. While it's unlikely that an unshielded subwoofer will interfere with your picture, its large flat top is a tempting storage space. It's safe to keep papers and CDs there, but not floppy disks or backup tapes.

Picture monitors also radiate magnetic fields. Although these are too weak to interfere with a speaker, they may cause noise in other audio equipment. Nearby microphones and radios can be affected, often with a high-pitched whine. Changing the position of the components a few inches can help this kind of interference.

See Also

Speakers; Subwoofers

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Speakers, Wireless

If you need to hear your Mac from across the room—or even down the hall—consider a wireless **speaker** system. These consist of three units:

- A high-frequency transmitter that plugs into the Mac's **audio output**.
- Two combination receiver-**amplifier** -speaker units that can be placed up to 150 feet away.

Unlike wireless television remote controls, the speakers don't have to be able to "see" the transmitter: the signal is broadcast through the air, and can pass through walls or floors. These systems may be impractical with a PowerBook: because most transmitters use the electrical wires in the walls as an antenna, they must be plugged in.

Wireless systems from Recoton and Radio Shack are convenient and flexible, but are expensive (\$180 to \$250) and don't offer the same audio quality as similarly priced wired systems. They can be handy for presentations, training, and temporary setups.

Recoton Corporation, 2950 Lake Emma Rd., Lake Mary, FL 32746, 407-333-8900

Radio Shack, 1500 One Tandy Center, Fort Worth, TX 76102, 800-843-7422

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Special Characters

See

Special Symbols

Special Delivery

Special Delivery is a scriptless multimedia authoring tool that can create presentations, kiosks, or other multimedia projects. Projects in Special Delivery are made up of slides that are navigable via buttons that can jump to any other slide in the project. In many respects, Special Delivery is more like a presentation program, such as Adobe **Persuasion**, than a multimedia authoring tool, such as Macromedia **Director**, that is oriented towards interactive presentations.

To create slides, you arrange objects, such as **QuickTime** movies and graphics, in the Layout View window. These objects must be placed in frames, which are called *portals*. Any object can be treated as a button; a button is something that triggers an event. An event might be the playback of a QuickTime movie or a transition to another slide. More than one event can be triggered by a button. All events are attached to objects in the Button View mode.

There are four categories of events that can be triggered in Special Delivery: Navigation, which takes you to a slide; Data, which controls movies; Portal,

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which hides or shows an object; and Presentation, which provides overall control, such as sound adjustment. To add an event to an object, choose an event from the Button menu and draw a line from the button to the object. If, for example, you want to start a QuickTime movie, the action is drawn from the button to the QuickTime movie. For navigation, a line is drawn from the button to anywhere in the slide. By default, the Button View only displays a rectangle representing each object, which can make it difficult to see what you are doing. You can, however, choose to see a preview of the objects, which helps in designing projects.

The whole presentation can be viewed in a thumbnail view, which displays small images that represent the individual slides. The order of these can be changed by clicking and dragging them, although this only effects the presentation if you are viewing the slides sequentially.

Buttons in Special Delivery can flash when they are clicked or light up when the cursor is over them. You also can set up delayed links, so that there is a pause before an action is triggered. Special Delivery also includes a Note View for creating speaker notes.

Special Delivery's strength lies in producing multimedia kiosks and presentations. You can't create your own art or animation, but you'll have no problem producing interactive presentations. The program is easy to use, small, and fairly efficient. All graphics are stored outside of the presentation file, so they must be included if you send your presentation to someone else. Special Delivery also includes a Player that can be distributed with

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presentations.

Currently, Special Delivery is not PowerPC native.

A presentation is Special Delivery. The presentation window (left) previews the slides that make up the presentation while the Button View (right) is used to add events to buttons.

Interactive Media Corp.

Los Altos, CA

Price: \$399

Fax: (415) 324-4590

Phone: (415) 948-0745

Web: <http://www.imcinfo.com>

See Also

Astound; Digital Chisel; Director; Persuasion

Special Symbols

Many **fonts** have built-in special symbols and characters, such as the [tm] symbol, the accents in the word résumé, or the ¢ symbol, that are accessed using **modifier keys** (a combination of the Option key and another key). Special currency symbols such as the British pound symbol (£) or the Japanese yen symbol (¥) are considered special symbols. To find the keystroke combinations for these special symbols, use the **Key Caps DA** and

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hold different modifier keys to reveal the location of special symbols in the Key Caps keyboard display window.

To use the Key Caps DA to add special symbols, follow these steps:

1. Choose Key Caps from the Apple menu
2. Select the font you're using from the Key Caps menu
3. Press the Option key, Command key, Shift key, or Control key to have the Key Caps keyboard reveal the location of special symbols.
4. You can then press the keys on your keyboard that correspond with the keys on the Key Caps keyboard to access special symbols, or you can click the keys in the Key Caps keyboard with your arrow pointer.
5. After you have determined the keystroke combination for a special symbol, you can return to your document and press that keystroke combination to insert the symbol of your choice.

The following tables lists the special symbols you can enter into a document.

Special Symbols

<i>Sequence</i>	<i>Result</i>
Option-1	[ue]
Option-2	[tm]

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Option-3	£
Option-4	¢
Option-5	
Option-6	§
Option-7	¶
Option-8	•
Option-9	ª
Option--	-
Option==	[ne]
Option-q	œ
Option-w	
Option-e	´
Option-r	®
Option-t	†

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Option-y	¥
Option-u	..
Option-i	^
Option-o	∅
Option-p	
Option-a	å
Option-s	ß
Option-d	
Option-f	<i>f</i>
Option-g	©
Option-h	·
Option-j	
Option-k	°
Option-l	¬

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Option-;	… (ellipsis)
Option-'	æ
Option-z	
Option-x	
Option-c	ç
Option-v	
Option-b	
Option-n	~
Option-m	μ
Option-,	
Option-.	
Option-/	÷
Option-\	«
Option-Shift-Q	Œ

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Option-Shift-U	..
Option-Shift-O	Ø
Option-Shift-P	
Option-Shift-A	Å
Option-Shift-'	Æ
Option-Shift-C	Ç
Option-Shift-V	
Option-Shift-?	¿
Option-Shift-+	±
Option-Shift-- (dash)	—
Option-Shift-8	°

See Also

Fonts; Key Caps DA; Modifier Keys

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Spell Check

Word processors , desktop publishing programs , and some other text-centered applications include spelling checkers as part of the program. These work by comparing the words in the document against a dictionary of as many as 100,000 correctly spelled words. If there's no match, the word is assumed wrong and the closest correct word is suggested. You can replace the misspelled word with a click, or ignore it. If the word is correct but not in the dictionary, you can add it to your own custom dictionary, keeping different custom dictionaries for different jobs.

This figure shows the spelling dialog box from **Microsoft Word** . Note that you can choose to change just the word selected or change every occurrence of the misspelled word.

Spindler, Michael

Michael Spindler was CEO of Apple Computer from 1993 until early 1996. Before that, Spindler served as COO.

Spindler, who the press often called “Diesel” because of his no-nonsense approach to management, oversaw the successful transition of the Macintosh from the original 68000 architecture to the Power Macintosh. He also led Apple in its move to license the Macintosh operating system to clone makers.

In February of 1996, Apple's board of directors asked Spindler to step down

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after several quarters of poor performance and management difficulties. He was replaced as CEO in February 1996 by **Gilbert Amelio** .

See Also

Amelio, Gil; Sculley, John

Spool File

A temporary spool file is created when **background printing** is enabled and you choose to **print** a document. When you choose to print a document with background printing on, a spool file is created inside the **Print Monitor Documents** folder in your **System Folder** . That file is sent to the printer to be printed in the background while you continue to work on another task in the foreground. After the file prints, this temporary file is deleted.

Besides the ability to print in the background, you also have the ability to change the printing order of spooled files in the Print Monitor dialog box. If, for example, you're printing a number of files and you want the file you last sent to the printer to move to the head of the line and be printed next, you can re-arrange the printing order of the spooled files in the Print Monitor window. The Print Monitor window, accessed through the **Applications menu** while documents are being printed in the background, enables you to edit the printing order or to cancel any spooled file waiting to be printed, as shown in the figure.

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See Also

Applications Menu; Background Printing; Chooser; Print; Print Monitor; System Folder

Spooler

Spooler is a term used to describe any program that enables you to **print** documents in the background. Apple's built-in spooler is enabled by **background printing** in the **Chooser**. Spooling takes place when you have background printing enabled and choose to print a document. A temporary copy of your document is created, or spooled, and sent to the printer so your document can print in the background while you continue to work in the foreground. There are also a number of third-party spoolers available that enable background printing and management of spooled documents to be printed.

See Also

Background Printing; Chooser; Print; Spool File

Sports Games

You might get the impression, looking at the sports games that are available for the Macintosh, that statistically people who buy Macs only play golf. There are already great golf games currently available for the Mac: **Links**

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Pro CD for Macintosh and **PGA Tour Golf III** . In addition, Blue Sky Entertainment is currently working on a game of full-motion enhanced street golf more akin to miniature golfing.

Slowly, companies seem to be noticing that there is a hole in the marketplace and adding to the numbers. But, the one good thing about not having an overabundance of titles is not having to guess which title is best. With sports games, there is really no more than one choice for any given category. GTE's NCAA Championship Basketball will possibly prove that sports games, when done well, are as profitable as coming up with the next **Doom** or **Myst** .

In addition to **PGA Tour Golf III** (see the following figure) and **Links Pro CD for Macintosh**, **4D Boxing** from Electronic Arts offers blocky, but accurate animated ringside action for those into the sport. Also, two football titles give you the chance to coach, **PlayMaker's PlayMaker Football** and **Merit's Tom Landry Strategy Football** are not quite an action fan's dream, but they will suit someone interested in the strategy behind the game.

On the whole, if you want real action, you'll want to write some letters to bug Electronic Arts into creating a Mac version of the awesome PC title **FIFA Soccer** .

See Also

Links Pro CD for Macintosh; PGA Tour Golf III

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Sportware's Golf

See

PGA Tour Golf III

Spot Color

Spot colors are usually PANTONE Matching System inks printed as solids or tints, but the term can be used to describe any color printing that is not **process color**. Sometimes spot colors are added to process color printing, resulting in six or even eight-color print runs.

See Also

Color Printing; Process Color

Spreads

See

Color Trapping

Spreadsheets

If it weren't for spreadsheets, the Macintosh might not exist at all. In the late 1970s, Apple's main product—the Apple II—was considered a hobbyist's

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curiosity, appropriate only for nerds. Dan Bricklin's *VisiCalc*, one of the first commercial software packages for microcomputers, changed that. It looked like an accountant's reconciliation pad on the Apple screen, but could automatically change sums and percentages each time you entered a new number. It was revolutionary, and so handy that business executives started buying Apple II computers for high-level corporate planning and **what-if** projections. The influx of cash let Apple develop the first Mac, and VisiCalc became the model for every spreadsheet that followed.

Ironically, the original Mac's small screen and limited memory weren't suited for business-class spreadsheets. *Lotus 1-2-3*, running on IBM PC clones, quickly became the standard. It drove the sale of many early **MS-DOS** computers, and contributed to Microsoft's tremendous market-share advantage over Apple.

As more powerful systems with larger screens came along, the Mac's built-in graphics enabled programmers to add powerful charting and other graphic functions to their spreadsheets. Once again, the advantage tipped to Macintosh, and a bevy of Mac programs appeared (including *Ashton-Tate Full Impact*, *Informix Wings*, *Microsoft MultiPlan*, *Lotus Jazz*, and *Lotus 1-2-3*). Of those, 1-2-3 is the only spreadsheet still on the market, but Lotus has halted further development of the program. Yet another irony: 1-2-3 now dominates MS-DOS and Windows, and Microsoft's **Excel** has become the leading spreadsheet for the Mac!

Spreadsheet history might be convoluted, but the software exists to simplify

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the management of numeric data. If you've ever prepared an expense report or set a family budget, you've already mastered the basic concepts (see figure). Items are entered in horizontal **rows**, and assigned to vertical **columns** for different categories. Individual **cells** can hold text or a number, or they can be told to display the sum of all the numbers in a row or column. It's like a page of accounting paper with a built-in calculator.

The figure shows SpectreCalc, an incredibly low-cost **Hypercard Stack** by Justin Higgins (the \$5 shareware fee includes a complete mini-**works** program). It's filled out as an expense report, entering data in the first four columns. The program calculated the horizontal totals in column F, and the vertical ones in row 15. Cell F15—spreadsheets always identify their cells by column and row—contains the grand total. A salesperson could quickly prepare this card without doing any math, submit a printout, and—assuming JR's business is worth the expense—expect to get \$918.25 reimbursed. (SpectreCalc is shareware from SpectralDesign and can be downloaded at <http://www.digitalnation.com/sd.>)

Along with sums and other calculator operations (including exponentiation and logarithms), most spreadsheets also include prebuilt **functions** for the following:

- Statistics (such as deviation, trend lines, Fisher transformations, and kurtosis).
- Finance (such as future value, various depreciation schemes, and internal rate of return).

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- Date and Time (letting you do things like “add 28 hours to 4:00 pm, April 2, 1997”).
- Math (such as geometric functions, factorials, and matrix algebra).
- Boolean algebra.

Built-in graphing routines let you turn straightforward columns of business numbers into persuasive charts. All current programs allow easy **import** and **export** of data to **wordprocessors** and **databases**, as well as other spreadsheets, and all have extensive **online help** .

The choice of Macintosh spreadsheets has remained stable for a while, split between the small-business sized **integrated** module in **ClarisWorks** , and the monstrous (up to one billion elements in a project) Excel. Despite the differences in power, both programs use a similar philosophy for entering and manipulating data: essentially they follow a model that hasn't changed since VisiCalc. A mid-1996 entry from **Casady & Greene** , **KISS** , automates and hides many spreadsheet functions to simplify the interface and make it more Mac-like.

Most spreadsheets have elaborate text functions, so you can tell a cell to automatically include words from other cells, change its case, or replace one word with another based on specified criteria. Because they also can sort by multiple **keys** and criteria, they can manage databases. The figure below shows a multipage spreadsheet in Excel, combining financial analysis and inventory control. It could be extended to include **point-of-sale** , **accounts**

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payable , and anything else the business needed.

There's a constant and lively discussion of spreadsheets and their functions on the comp.apps.spreadsheets newsgroup.

Spreadsheet Notation Spreadsheets—and almost every other Macintosh mathematical tool—use a standard way to specify operations. While + and - obviously mean “add” and “subtract,” other symbols may be hard to find or differ from the math you learned in school. The following *operators* are used by spreadsheets to speed data entry and accommodate a limited keyboard:

<i>Character Displayed</i>	<i>You type</i>	<i>Mathematical meaning</i>
*	*	multiply (“3*4” means <i>three times four</i>)
/	/	divide
^	shift 6	exponent (“2^3” means <i>two to the third power</i>)
E		scientific notation (“3.2E3” means 3200)
	option +	not equal to
<	shift comma	less than
>	shift period	greater than

Templates Templates are like **stationery pads** for **spreadsheets** . They

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contain pre-built **formulas** , tables, and charts to solve common problems ranging from lease/buy decisions to typefitting in a book. You can type in data that makes sense for your situation, see the result immediately, and save that version of the spreadsheet as a file; the template remains unchanged so you can use it again.

Templates usually come with a program and additional ones are sold by third-party suppliers to solve specific programs, but there are also thousands of them available as **freeware** . An **Internet search** with the name of your program and “template” can yield pages of solutions, ready for you to open in your spreadsheet.

See Also

Absolute/Relative Referencing; Borders; Formatting; Formula; Formula Bar; Function; Spreadsheet; Templates

Spreadsheet Fill

See

Fill, Spreadsheet

Squizz of Power

Human Software's Squizz of Power is a splashy image warping plug-in for Photoshop. It requires about 4 megs of RAM over and above what it takes to

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run Photoshop, and it should probably be reserved for Power Mac owners because of its complexity and speed requirements. It works in two modes, grid and brush. In the Grid mode, Squizz overlays a grid on the entire image or a selected area of an image. The brush mode allows for more organic warping controlled by mouse movements. Forget about multitasking with any other software while Squizz is on screen. It won't allow it. Squizz is also a plug-in for Photoshop only, and won't show up as a filter in other software.

Grid Mode In Grid mode the actual grid can be toggled on or off. When off, it works the same, so you'll have to remember what points are being moved. The advantage of this toggle is to see a better preview. In grid mode, a variable sized grid is placed over the image selection. Points on the grid are selected with a special Squizz pointer (multiple points can be selected while holding down the Shift key while clicking with the mouse). Symmetry can be turned on with a mouse click, forcing horizontally or vertically symmetrically spaced grid points (or both horizontal and vertical points) to react at the same time. This is effective when you want to expand or contract a large area of the selection in a symmetrical manner (like an expanding or contracting balloon). As points on the grid are moved, corresponding areas of the underlying image selection are stretched to match the direction and placement of the altered points. Grid warping is a standard option for most warping/morphing programs. When the warped preview matches the desired warping look, the effect is applied.

Brush Warping This is a new method for warping not offered by other software, and the feel is much less mechanical. Imagine having a paint

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brush that warps an image in the direction you paint in, and you get the idea of this Squizz choice. The only difference is that the brush has an icon that looks like a spraying paint canister. Setting the size and opacity of the effect gives you control over the way the surrounding pixels respond to the Squizz mouse movements. A special undo option causes the brush to work in reverse as you paint, undoing movements in a flowing fashion. A recall button snaps the image back to its original form before warping was applied. Previewing can show the altered image or the original image so you can compare the two. Squizz is an excellent choice for plug-in warp effects in Photoshop.

Stack

The stack is a section of an application's memory that stores local variables and function parameters. Together with the **heap** and globals, this makes up an application's total memory partition.

The contents of a stack are stored in stack *frames*. You create a stack frame, which is simply a series of values pushed onto the stack, every time you make a function call. The stack frame includes the function parameters and any local variables created by the function, as well as the return memory address, so that the code can jump back to correct place in the calling routine. The frame stays in existence while that routine is executing. The frame is discarded by removing all of its values from the stack when the routine ends.

As a result, the stack is a dynamic data space. Every time you make a function

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call, a new stack frame appears. Every time a function returns, a frame disappears. Curiously, the part of the stack that is lowest in memory is called the top of the stack, because that's where a new stack frame appears. The stack is a last-in, first-out (LIFO) pile. It is like a stalactite hanging from the ceiling of a cave—you add new stack frames at the tip (low in memory), making the stack a little longer, and you take them off the tip, making the stack a little shorter.

For the most part, stack management is transparent. When you compile your application's code, the **compiler** creates the necessary machine-level commands to create and destroy stack frames.

Unless you specify otherwise, the System sets the size of the stack for you when your application is started. Most of the time, the default size is fine. If your application makes unusual demands on the stack, the stack can grow down in memory to collide with the **heap**. This can cause disaster as the stack frames stomp all over your application's heap.

See Also

Compiler; Heap

Stand-Alone Modelers

Stand-alone modelers concentrate on one thing, creating 3D models. They are not meant to be final rendering platforms nor are they designed to handle animation tasks. Normally, they leave everything but modeling to the

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software that they export to. Amapi, from Yonowat, is an excellent case in point, although the modeling software from Pixar, marketed by the Valis Group, is a bit more extensive. Each has its differences in term of tools and interfaces, but each is dedicated to the same primary task, 3D modeling.

Amapi from Yonowat The first thing that you notice about Amapi is that its interface is nothing like any other 3D software that you own. Sliding your mouse to the right toggles among three separate tool sets, any member of which is activated by a mouse click. Everything in Amapi attempts to follow the modality of a 3D virtual reality environment. Objects are “placed” upon a workbench in the center of the screen, where they are worked on. You don’t have to place them there, but you are somehow convinced that that’s where they ought to be. The global environment can be rotated by using the arrow keys to spin around the workspace. Test rendering takes place when you hit the return key.

Amapi has three ToolBoxes, and you select them by sliding the mouse to the right of the screen. They are: Construction, modeling, and Assembly. The first ToolBox allows you to select Amapi primitives and place them on the Worktable. The second ToolBox has tools that allow you to interact with your objects to shape them further, and the third ToolBox has tools for grouping and welding objects together (or separating them apart). Every tool in Amapi works interactively with the object on-screen, from moving and rotating to pushing and pulling control points.

Lights You can place lights in Amapi to visualize preview renders, but this

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is just a test, because you would normally save light placement for the final rendering software.

Other Special Features Although Amapi comes with a manual, the real way to master it is to work through the five interactive on-screen tutorials: Getting Started, Self Training, Lasso, Smoothing, and Shell.

File Load/Save Conventions Amapi imports include Amapi, DXF, PICT, Text, IGES, QuickDraw 3D, and Illustrator files. Exports include Amapi, DXF, CADrender, Atlantis, Text, RayDream, 3DGF, Caliray, KPT Bryce, IGES, FACT, Explore, Amapi-1, STL, QuickDraw 3D, Illustrator, and RIB.

Pixar's Showplace Pixar's Showplace, marketed by the Valis Group, is one of the most exquisite and option loaded modelers around. It has enough modeling options to keep you exploring for a long time. Each of the modelers comes with its own option laden dialog. They include:

1. Blinds—3D Venetian blinds in various types, customized by height and width adjustments.
2. Simple Shapes—Box, Cone, Cylinder, Disk, Hyperboloid, Paraboloid, Rectangle, Sphere, and Torus.
3. Curtains—Can be adjusted by Number of Folds, Depth of Folds, and a Closed to Open slider.
4. Fireworks—Can be adjusted by Flecks, Tri-Flecks, Blobs, Time since Explosion, Number of Sparks, Gravity.

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5. Lissajous Explorer—A full 3D modeler in itself, dedicated to sculpting Lissajous curved surfaces with adjustable parameters.
6. Terrain—A full digital terrain modeler, with over a dozen adjustable parameters.
7. RoomMaker—A room modeler with toggles for floor and ceiling. This four walled room, seen from above, accepts your placement of doors and windows. A 3D model is then created from your interactions.
8. Stair Generator—A straight or spiraling staircase. You control height, width, depth, number of stairs, Step up to Next Stair, and Percentage Overhang.
9. Type Gizmo—A full featured 3D type engine, that gives you control over Font, Sizing, beveling and depth of Bevel.

In addition, Showplace can import DXF and Illustrator files for modeling. Controls are also present for creating objects from scratch with extrusions and lathing. Showplace can also function as a full scene and model renderer, as it has its own libraries of textures and includes light generation and placement.

Lights You can place three types of lights: Distant, Point, or Spot. Lights can be adjusted as to Color, Angle, Intensity, and Penumbra (depending on the kind of light). Shadows are rendered by quality: Low, Medium, High, Extra, Gonzo.

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Other Special Features The lathing operator is one of the fastest around, giving you bezier tools to produce an outline and then lathing it on an axis. A shaded view pops up almost instantaneously on a PowerMac. Showplace is still considered as a stand-alone modeler because it has no animation features of its own.

File Load/Save Conventions Showplace saves only Showplace and Stationary file formats, but imports DXF and Illustrator formats, in addition to Showplace files.

Standards, See Desktop Publishing Color Standards, Desktop Publishing Industry Standards

Star

See

Xerox PARC

StarDate/Expresso

StarDate is the PIM for Trekkies. It's a combination calendar, address book, and to-do list with a StarTrek: the Next Generation motif. The calendar pages feature designs identified as Deep Space, Romulan, Klingon, and the like. There's even one with the Enterprise console. Expresso is a similar PIM, also from Berkeley Systems, but a little less weird. It has twenty different

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calendar backgrounds, which range from pale pastel designs to a cowhide motif featuring a hilarious animated cow. The cow pops up in various disguises with appropriate sounds. In the figure below, you can hear the surf.

Both programs use the same basic “engine,” which gives you a to-do list, phone list, and a notepad with post-'em notes that you can attach to your calendar. System 7.5's Stickies make this last feature sort of redundant, but Espresso's notes are available at the click of a button. The to-do list lets you set priorities for your items, and you can enjoy the satisfaction of clicking them off when they're done. The address list is quickly searchable by clicking on the initial of the last name, or by typing even a couple of letters from the name in the “Find” box.

These are all fairly standard features for a calendar program. What sets Espresso and StarDate apart is their ability to turn your calendar into a Screen Poster and display it constantly as the desktop. When you want to know what the date is, or when your next appointment is, or what you're doing Saturday night, just click on the Flashback button and the screen will pop to the front. When it's not active, it sits there behind any open windows and behind your icons, and you can still read whatever's written on it. You don't have to put your clients, or your life, on hold while your calendar program opens.

See Also

Personal Information Managers

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Star Trek

See

Daedelus Encounter

Star Trek: 25th Anniversary

See

Daedelus Encounter

Star Trek: The Next Generation: A Final Unity

See

Daedelus Encounter

Startup Disk

The disk that your Macintosh starts up from is called the startup disk. This is the disk that contains the Macintosh **system software** on it. Generally, your internal **hard disk** is your **startup** disk, but you can request that another disk be the startup disk by choosing Startup Disk from the **Control Panels folder** and designating that a different disk become the startup disk (see the

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following figure). The disk that you designate must have a copy of the system software on it that works with your model of Macintosh. More than one disk can be a startup disk, and it's not unusual to have different startup disks with different versions of the system. Many users do this to test a new system before making a full commitment to it, as the new system might have certain incompatibility problems or bugs at first. This "dual-startup disk" was very popular when Apple introduced System 7 and some System 6 software was not yet "System 7 Savvy."

To assign which disk is your startup disk, follow these steps:

1. Choose Startup Disk from the Control Panels menu.
2. The dialog box lists any mounted disks. To select a disk as a startup disk, click the icon of the disk you want to designate as the startup disk, and choose the Startup Disk Control Panel.
3. Upon **restart** , the computer looks at the disk you designated as the startup disk for the system software to startup from. If that disk does not have the proper system software, the Mac then looks at other mounted disks in search of system software from which to start up.

See Also

Hard Disk; Icons, Restart; Startup; Startup Control Panel; System Software

Startup Items Folder

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The Startup folder is a folder in the **System Folder** where you can place items you want to **launch**, or execute their particular task, each time you **start up**. If, for example, you have a particular application that you use every day, such as FileMaker Pro, you can place an **alias** (⌘-M) of the FileMaker Pro application in the Startup Items folder. The next time you start your Macintosh, FileMaker Pro is launched and ready for use. You can also put documents or aliases of documents in the startup folder and it will both launch the document and open the application that created the document at startup. Basically, anything you put in this folder is opened at startup, as if you have **double-clicked** it yourself.

You can place a variety of items in the Startup folder, such as sounds that you want to play each time you start your Mac, or you can even have it play a **QuickTime** movie at startup. If for some reason you don't want the items in your Startup folder to open, hold down the Shift key just before the **desktop** appears during startup and the items in the Startup Items folder will be bypassed. The desktop appears after all the **extensions** and **control panels** have loaded. The startup screen disappears, and in a few moments the desktop starts to appear. It's during this pause between the startup screen disappearing and the desktop appearing that you should hold down the Shift key to bypass any startup items from launching.

See Also

Alias; Control Panels; Desktop; Double-Click; Extensions; Launch, QuickTime; Startup; System Folder

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Startup Manager

Startup Manager is a commercial third-party utility from Now Software that enables you to control which **extensions** load into your system during **startup** and the order in which they load. Startup Manager, which is part of the **Now Utilities** suite of system enhancements, also offers a host of other features for customizing the display and loading of extensions into your system.

See Also

Extensions; Extensions Manager; Now Utilities; Startup

Startup Movie

When your Macintosh **starts up**, you are greeted with the standard, "Welcome to Macintosh" **startup screen**, but you can choose to startup with a **QuickTime** movie instead by placing the QuickTime movie in your System Folder and **restarting** your Mac. To have a startup movie play, you must have the QuickTime extension installed in your extensions folder.

To have a QuickTime movie play during startup, follow these steps:

1. Rename the QuickTime movie, "Startup Movie."
2. Drag this newly renamed QuickTime movie into your System Folder.
3. Restart your Mac and the movie plays during startup. If the movie

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runs out before startup is completed, the movie displays the last frame of the movie on your screen until the desktop appears.

See Also

Extensions; QuickTime; Restart; Startup; Startup Screen

Startup Screen

When you **start up** your Macintosh, you are greeted with a startup screen. The default startup screen reads, "Welcome To Macintosh" and has a small artist's rendition of the original Macintosh.

This startup screen is displayed while your **extensions** and **control panels** are loading into the system. If you are using System 7.5.1 or higher, this startup screen appears only momentarily and then disappears to be replaced by the new MacOS startup screen. This new startup screen is displayed during the loading of extensions and control panels.

Although the default startup screen displays each time you start up your Mac, you can create your own startup screen in any graphics program that supports **PICT** resource file formats and have it displayed at startup rather than the "Welcome to Macintosh" or "MacOS" startup screens. If you do not have a graphics program that supports the PICT resource file format, you can use Apple's resource editing utility **ResEdit** to manually replace the default startup screen with any regular PICT format graphic.

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To create your own startup screen, follow these steps:

1. Open a graphics application that supports the PICT resource format. A program such as Adobe Photoshop is ideal for designing your custom startup screen because it supports the PICT resource file format, and you can create your document size in pixels, although any program that supports these functions can be used. Create a new document sized at 640[ts]480 pixels (which is the standard display size for a 13- or 14-inch monitor).
2. Design your startup screen in the program, and when finished choose **Save As** from the **File menu** .
3. To work as a startup screen, it is absolutely critical that you name your file StartupScreen (Just one word with no spaces, and the "S" in Screen must be capitalized).
4. After you've named the file, you must save the file as a PICT resource file, not a PICT file.
5. After you've properly named the file StartupScreen and you've saved it in a PICT resource format, drag this file into the System Folder and restart your Mac. If you've followed the steps outlined here, your new startup screen will appear at startup, just after the **Happy Mac** .

If for some reason your startup screen does not appear, and the standard default screen appears, re-check to make sure you named your file StartupScreen (no spaces and the S in Screen is uppercase) and that you

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saved the file as a PICT resource and not as a standard PICT file.

See Also

Default; File Menu; Happy Mac; PICT; ResEdit; Save As; Startup Sequence

Startup Sequence

When you startup or **restart** your Macintosh, the computer has an order or sequence it goes through to find a system to start up from. The computer looks for a system in the **disk drive** first. If your Mac has an additional internal disk drive (like many Mac SE models did), it searches there second, and then it searches for an external disk drive. If it doesn't find a system at any disk drives, the computer looks to the **Startup Disk Control Panel** to see if a startup disk has been selected by the user. If one has been selected, it starts up from that drive; if not, the Mac continues its search for a startup disk by looking at the internal drive for a system, and then at the **SCSI chain** for the highest numbered SCSI device, and if it still doesn't find a system, it returns back to the internal drive for another search there. If the Mac still doesn't find anything, it continues to search up and down the SCSI chain. While the computer is searching desperately for a disk to startup from, the monitor displays an icon of a disk with a **flashing question mark** to alert you to the situation that the computer cannot find the system software to startup from.

See Also

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Disk Drive; Flashing Question Mark; Restart; SCSI Chain; Startup Control Panel

Star Wars

See

First-Person Perspective Shooters, Rebel Assault II

Stationery Icons

To protect a file from being permanently edited, you can request that the file become a **Stationery Pad** (a template). When you select this option, a stationery icon appears, as shown in the figure. The stationery icon looks like a note pad with a dog-eared lower right corner. You create a Stationery Pad by selecting a file and choosing **Get Info** (⌘-I) from the **File menu**. Within the Get Info window there is a **checkbox** for the Stationery Pad feature. The stationery pad icon appears in the Get Info when the Stationery Pad feature is checked. This is the Mac's way of alerting you that this document is set up as a template. When you launch a stationery pad document, you are actually opening an untitled copy of the document. When you save the document, give it a different name than the original stationery pad, so the original is left intact.

See Also

Checkbox; File Menu; Get Info; Save

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Stickies

Stickies is a **System 7.5** and higher utility that appears as an **Apple menu** item. Stickies enables you to create on-screen "Post-it" type notes in a variety of sizes and colors and "stick" them anywhere you want on your **desktop**. Although this may seem to be a one-trick pony, Stickies has a lot of features. You can, for instance, select any **font**, size, and style for a sticky note and print it. In fact, you can choose to print the active note, or you can choose to print all notes at after. Stickies keeps track of when the note was created and when it was last modified (just like the system does for regular files), and you can access this information from within the Stickies application.

Another nice feature of Stickies is that you can **drag and drop** selected information between Stickies and other applications that support Apple's drag and drop technology. You can also drag text from a note right onto the desktop where it is assigned an **icon** as a text clipping. You can import this text clipping as text into other applications. You can also import text into Stickies or export text from a Sticky Note to be imported into another application. If you import text into Stickies and the text takes more room than the Sticky can display, the Sticky Note adds scroll bars for you.

You can customize the size of any sticky note by dragging the lower-right corner of the note (the note's size box) to your desired size, and you can choose a color for any Sticky Note by choosing the color from the Stickies' color menu, as shown in the figure.

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Stickies is a popular item to have an alias of in your **Startup Items folder** , so when you startup your Mac, Stickies launch and open on your desktop.

To create a Sticky Note, follow these steps:

1. Choose Stickies from the Apple menu.
2. Choose New Note from the File menu.
3. A blank Sticky Note appears with a blinking cursor, ready for you to enter text. You can change the color of the note by choosing a color from the Stickies Color menu, and you can resize the note by dragging the **size box** in the lower right-hand corner.
4. Stickies remain running as an application until you choose Quit from the Stickies **File menu**.

See Also

Apple Menu; Desktop; Drag and Drop; File Menu; Fonts; Icons; Size Box; Startup Items Folder; System 7.5

Stickies Tips and Tricks

Stickies has much more flexibility than may appear at first glance, including incorporating some word processing features. It enables you, for example, to import any plain text file directly into a sticky note using the Import Text command. The text file open in a new note window, in the font

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and style you've defined as your default.

Stickies also has a set of navigation keyboard shortcuts. You can use Command-left arrow or Command-right arrow to go to the beginning or end of a line of text. (Even **SimpleText** doesn't support that.) The Home and End keys on extended keyboards move you to the beginning and end of a note. Command-down arrow sends you to the end of a note and places your cursor there as well. This is a quick way to add material to the end of an already lengthy note: Press Command-down arrow and start typing.

To keep desktop clutter to a minimum, Option-click a note's zoom box and the note collapses to a single line (Select this as the default in the Preferences setting to skip the Option key). You can also choose a collapsed note as your default note style. When a new note is created, the note window appears collapsed but opens as soon as you start typing and expands to the length of your text.

If you want to constrain the resizing of a note to one direction, hold down the Shift key as you drag. You can do this with text in the note, and the text will reflow to fit in the box.

When you close a note, a standard dialog box appears asking if you want to save the note or close it without saving it. Instead of clicking the Don't Save button, press Command-D to close without saving.

You can also set a Sticky note as a stationery document (a sort of a template). Make a new note, go to the Note menu, and choose Text Style. There you can

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assign font, style, and size. Then go to the Color menu and choose the color of your note. You can even include text that you need every day, such as "To Do List" across the top of the note.

When you're done, choose Export Text from the File menu and select the Save As Stationery checkbox. Give the note a name, click the Save button, and watch as a separate note file is created. Now, whenever you want to use that note style, double-clicking the stationery document launches Stickies and creates a blank sticky note with the attributes you specified.

See Also

SimpleText; Stickies

Sticky Note

See

Stickies

Still Video Cameras

In the late 1980s, several companies sold still video cameras. The Canon Xapshot is probably the best known, but Sony also sold such cameras. These stored their photographs on a small, internal floppy disc, and had **composite video** out plugs for connecting to a television set. The companies marketed these cameras as replacements for slides and slide projectors.

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By connecting these cameras to a **video digitizing board** , it was possible to capture these images and use them on the computer.

Unfortunately, the image quality of these cameras was much lower than the quality of the current digital cameras (mostly due to the compression limitations caused by the floppy disc recording technology). Canon offered a non-consumer camera that captured and stored double the amount of information captured by the Xapshot, resulting in an image similar to that of the current low-end digital cameras, but this camera cost over \$2,000 and required an addition piece of hardware to capture the images (the camera didn't offer video out).

The current **Digital Still Cameras** offer much better quality at a price competitive with the video cameras.

See Also

Digital Still Cameras; PhotoCD

STiP Professional

STiP Professional (Screens, *Trees* and *scrIPTable Player*) is a multimedia authoring tool that creates cross-platform (Macintosh and Windows) interactive titles. STiP uses the same flow chart metaphor for creating presentations as found in **Authorware** (perhaps its closest competitor) and other products, but it is unique among tools that use this metaphor in that it also includes a powerful programming language.

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Presentation elements, including graphics, video, and audio, are imported into the program, and there are also simple drawing tools within the program. Surprisingly, the programming language STiP provides is unlike the scripting languages found in **Director** and **HyperCard**, so it may take you longer to learn than other programs.

Despite a slightly unusual interface, this program is useful for those developing cross-platform titles. A demo version is available from MacVonk's Web site.

MacVonk Canada Inc.

940, 6th Ave. S.W.

Suit 850

Calgary, AB Canada

Price: \$1295

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Fax: (403) 232-6425

Phone: (403) 232-6545

Web: <http://www.ccinet.ab.ca/macvonk>

See Also

Multimedia Authoring

Stitcher

The Stitcher is a utility that is part of the **QuickTime VR** Authoring Tool. It

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merges several sequential images of a scene to create a single panoramic image.

See Also

QuickTime VR

Stochastic Screens

Sometimes called FM (Frequency Modulated) screens, stochastic screens are a way to print **continuous-tone** images that differs markedly from the **halftone** method. Unlike regular halftone dots which are spaced evenly, stochastic dots are randomly placed in the image area and are quite small in comparison. In stochastic screens, the screen angles and screen frequency are not relevant, and **moiré** patterns are eliminated. Stochastic screening is often used in high-fidelity **color printing** because it is easier to print more than four colors. Stochastic screens require very precise production techniques and expensive high-resolution plates.

See Also

Digital Halftones; Halftones

Stop Bit

See

Asynchronous Communication

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Storage

Early electronic data storage media were not particularly robust. The stern warning on those *punch cards*—do not fold, bend, mutilate or spindle under penalty of law—was deadly serious. An extra hole in such a card could render all the data on the card useless.

Magnetic tape was considerably more robust. Early personal computers, including the Apple II, often came with a distinct port into which you could plug a standard audio-cassette recorder for use as a data storage device.

Tape drives, however, have one significant design flaw—they are not a random access medium. To get two pieces of information, one of which is at the beginning of the tape spool and the other at the end, required the tape to wind the entire tape spool past the stationary read/write heads.

The disk drive, a combination of a spinning platter and moving read/write heads, was the breakthrough that changed data storage forever. Although being able to access information on a disk very quickly was a great advantage, the capability of randomly accessing information stored on a disk made the idea of online, immediately available data realistic.

This random data access is possible because a disk drive's read/write heads can move back and forth across the face of a disk while the disk is spinning. Data stored close to the center of a disk is, in practical terms, no further away from the read/write heads than data stored at the very edges of the platter.

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The first disk drives used giant floppy disks 8 1/2 inches 14 1/2 inches. The first hard disk drives were developed by IBM in 1973 under the code name **Winchester** . Despite advances in speed and capacity, the modern hard disk is still a recognizable descendant of that original Winchester technology.

See Also

Backups; DAT; Disks and Drives; Hard Disk; RAM

Storyboard: Artist and Quick

Animation design begins with the storyboard process. Keyframes are illustrated and notated, and a global view of the production is laid out. Traditionally, this has been hand work, accomplished with pen and ink and a constant referencing of the script. Power Production Software is attempting to change all of that with its two storyboarding packages: Storyboard Artist and Storyboard Quick. Of the two, Storyboard Artist is the more full-featured software, though Quick may serve as both an introduction to Artist and a satisfactory alternative for lower end productions and needs. We will concentrate on Storyboard Artist.

The Interface Storyboard Artist allows you to design frames of a storyboard that can be printed out or saved as digital files. The interface is designed to allow you instant access to tools without cramping the picture area.

The Placement Methods There are three ways to place images in a Storyboard Artist frame: By using the presets from the included libraries, by

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drawing on the frame with a pen tool, and by importing graphics from your own image database. Each of these methods, or a mix of all three, allow you the maximum creative tools with which to design a professional storyboard of any planned animation or digital slide sequence. All object types can be moved forward or backward in the display stack.

1. Preset Method

Storyboard Artist comes with its own image libraries of characters, backgrounds, and 2D objects, all ready for placement on a storyboard frame. All of these graphics are accessed through a pop-up menu with visual icons. Storyboard graphics are open to rotation by clicking on any one of four rotation icons on the interface, one of the software's most unique and useful time-saving features. If you import character that fits your need, but does not appear in the perspective desired, you can select different perspectives of the same object by clicking on the rotation icons. Running figures turn in space, objects in a room are seen from different angles, and background scenes are altered. Text blocks can also be added to the frame.

2. Hand Drawn Method

The software has a pencil tool that allows you to draw in a storyboard frame. Once drawn, the new 2D object can be colorized and filled with a pattern, and saved to the library. This is useful for altering characters and filling in details needed in a specific project.

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3. Import Graphics Method

PICT files (including numbered sequences) and QuickTime movie files can be imported into a Storyboard Artist frame. Once imported, they can be resized like any other graphic element. This means that you could just as well import frames from grabbed video as you could graphics, and layer everything in one composition.

Frame Controls Frames can be added to or duplicated on the storyboard at any time, and selected members can be deleted when necessary. Frames appear in the Sequence window for access and previewing. A “TV Safe” dimensioning box can be overlaid on any selected frame to allow you to see where to place characters. Navigating to a specific frame is aided by the visual stamps of the sequence members.

Captions Captioning is a standard need when creating a storyboard, whether to delineate the narration or to reference other things that should be paid attention to. Storyboard Artist includes targeted captioning for each frame in a sequence.

Sounds Clicking in the Sound Channel on the timeline allows you to import sound that will begin at that point. Sound files can also be recorded directly, as long as you have the right hardware on your system. There are two sound channels on the timeline that can be interactively mixed.

File Load/Save Conventions Storyboard Artist can export EDLs (Edit Decision Lists). PICT files, and numbered PICT files, can be imported, as well

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as QuickTime movies. Objects and Frames (in either vector or bitmap formats), and Projects can be exported. Project exports can be as PICT File series, Quicktime, or PowerPlayer (an on-board player).

Frame slide shows can be run while within the software. Current Frames can be saved to File and Clipboard, and selected Objects can be saved to PICT or Clipboard. QuickTime movies can also be linked to specific frames for playback and display.

Strata Studio Blitz

Strata Blitz's interface design allows the maximum room for crafting and editing a scene, while at the same time giving you access to all of the tools. Strata has mastered the drag-drop texture technique, and to that end includes all of the textures in a visual display as well as in a verbal list along side of it. Blitz has been designed so that all of the commands are accompanied by visual icons, and naming conventions follow the logical expectation of common language rather than the jargon common only to engineers. All of this creates a more gentle and faster learning curve for new and experienced users.

Modeling Tools Blitz has a full set of modeling tools (including Metaballs, Surfacing, Skinning, and four Swept Surfaces: Extrude, Path Extrude, Lathe, and Sweep), and includes the capability to allow for spline based modeling.

Boolean Operations Blitz has one of the easiest to understand Boolean

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modeling modes around. After the Boolean modular is brought up, you choose a target object and the “drill” object from a list of all of the objects in the scene. Three alternatives are listed: Union, Intersection, Subtraction. Selecting “OK” performs the task.

Texture Mapping This is another area where Blitz sparkles. In addition to having the capacity to design any of your own textures, Blitz allows you to adjust the way that they map onto the object (Planar, Decal, Cubic, Cylindrical I and II, and Spherical). The drag-drop feature is also tied to Apple’s QuickDraw 3D, allowing you to see a representation of the texture mapping while still in the edit mode.

Lights Spotlight and point lights can be placed in the scene. Both have associated dialogs that allow you to set intensity, Color, Seven Default Gels (Horizontal Blinds, Jungle Canopy, Magenta Wash, Sunrise/Sunset Wash, Vertical Blinds, and Windows). Custom gels can also be incorporated. A gel makes it appear as if the light is being strained through the Gels shapes. Full Mapping procedures can be targeted to a gel (Planar, Decal, Cubic, Cylindrical I and II, and Spherical), with horizontal and vertical size controllers. Tiling and light textures can also be applied for customizing the Gel sets, and more expert features are offered to control the Lights down to the most basic projection and mapping levels.

Rendering A full rendering module is included, with adjustable user sizes and resolutions, quality controls, and special effects renderers that apply rendered “media looks” to the scene (Art Deco, Chalk, Crackled, Dry Brush,

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Fur, pencil, Seurat, Soft Oils, Van Gogh, and Watercolor). When animated, the media effects filters produce startling painterly effects.

Included Libraries A CD-ROM packed with 3D object and extra textures ships with the software. Also included is a large library of drag-drop textures and other graphics.

Animation Strata Blitz utilizes a keyframe animation system with easy to master visual controls. the timelines between keyframes can be manipulated as well as components of the keyframes themselves.

Other Special Features Blitz has one of the most exquisite particle animation modules around. With it, you can Atomize (with adjustable sliders for Detail, Instability, Energy, and Life), Explode (with adjustable sliders for Force, Gravity, and Life), and Shatter (with adjustable sliders for Tumble, Gravity, and Life) any selected object. It's always best when targeting objects for particle dispersion that you first break them up into smaller polys, or else you'll have large shards floating around (unless that's your desire). Blitz includes a Morphing module that does not demand that source and target items in a morph have the same number of polygons. Two alternate morphing possibilities are included: morph into particles and then recombine to form the target shape, and straight polygonal morphing. StrataVision 3D is Strata's medium end rendering software, sold separately from Blitz.

File Load/Save Conventions Files can be opened as Strata Pro, 3DMF, DXF, EPSF Preview, IGES, Illustrator, MiniCAD+, PICS, Strata Image, Strata Clip,

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Super3D, Suspended Rendering, and Swivel 3D. Saved formats include Strata Pro, 3DMF, DXF, EPSF, PICT, Strata Image, Strata Clip, TIFF, and VRML. In addition, DXF 3D objects can be imported and placed in a scene.

StrataVision

StrataVision is an all purpose **3D** tool that offers modeling, animation, and rendering features. It is a sister product to Strata's more expensive **StudioPro** , which has a similar interface, but offers many more features.

Strata launches with a single window view of the 3D world you are working in, but you can open other windows and change their orientation to your preference. Strata can be a little awkward to navigate. Positioning windows the way you want them can often be difficult. When using the window rotation tool, for example, there's no visual feedback as you drag of how far you have rotated the model inside the window.

Strata supports basic primitive objects: sphere, cube, cylinder, and cone. These can be edited in the 3D Sculptor, shaping and forming an object by clicking and dragging individual **splines** (the curves that define the shape of the object). Strata imports **EPS** files, and it also enables you to draw and edit spline curves (although you must do this in the 2D editor, because there's no pen tool available in the main tool box). In addition to **lathing** and **extrusion** , StrataVision also can **sweep** objects.

StrataVision includes a **Boolean** editor (one of the few under \$1,000

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modeling tools that does). The Boolean editor adds or subtracts one object from another to create new, more complex shapes. Unfortunately, it can be difficult to use, because you have to choose objects from a text list of the objects, and it's easy to choose the wrong one! Strata also lacks a palette with numeric and positioning information.

StrataVisions animation controls are implemented through a Sequencer window, which displays the **key frames** for the movement of the selected object. The Sequencer window only displays the selected object. Strata also displays the path of the object on the other windows, so that you can actually see where the object is going to move relative to the current position of other objects in the model. StrataVision supports plug-in extensions that alter the animation effects.

See Also

3D; Animation Master; Extreme 3D; Infini-D; Modeling; Network Rendering ; Ray Dream; Sketch!

StrataType 3D

Those users with any **StrataVision** or **Strata 3D Pro** experience are going to be immediately attracted to this software because its interface is so similar to the Strata flagship 3D products. This is a very high end font rendering package, although version 1.0 has no animation capabilities (Strata would prefer that you port the output from this package to its more full featured 3D

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packages for animation purposes). StrataType 3D produces 2D renderings for video and DTP applications, and also creates 3D objects for the **Strata Studio Pro** and StrataVision artist and animator.

The StrataType 3D toolbox contains four basic tools: the selection arrow (used to select and move targeted objects), rotation tool, text icon, and the camera icon, which triggers rendering mode selections.

The rotation tool allows you to grab a text object and rotate it in any of the XYZ planes. Visible handles around the selected object are grabbed and moved. The rotation tool can also be used to move the entire object from the center point.

Clicking on the text icon and then on the view screen triggers the StrataType 3D text dialog. Any **TrueType** or **PostScript** font in regular, bold, or italic settings can be used as the text object's building font. An input area allows for the spelling out of your text block. A separate letter spacing input box allows you to adjust the distance from one letter to the next. A visual library of 3D extrusion options can be viewed via a slider, and a 3D extrusion format selected. A 3D effects library is also viewable by slider. It contains selections that display the typography in different 3D positions, around the varied axis in an arc, on vertical and horizontal planes, as a wave, and other choices. Selecting one of these options places your text data in that shape on the view screen. You can also edit the extrusion choices by altering both the extruded depth and the degree and shape of the 3D beveling to customize the text object. When the dialog is closed, your chosen text line with the applied

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shape and extruded bevels is written to the view screen in a preview mode.

The camera icon triggers the rendering options dialog. Rendering options range from draft, to good, better and best, in either full color or grayscale. Anti-aliasing can be checked on or off, and super sampling (how many times the data is read for finer anti-aliased rendering) can be selected as either medium or high (slowest setting but best quality). Texture detail can be set to low, medium, or high from a separate list. Complete sizing and DPI settings are included.

Textures Taking advantage of Apple's **QuickDraw 3D** technology, all textures in StrataType 3D can be drag-dropped on the object. The same texture menu Strata Studio and StrataVision users have become familiar with is included in StrataType 3D. A visual display of the textures enables you to select the desired texture from the library of options. Displayed textures can be edited and customized, and new textures added to the library when needed. New textures can be created from your own graphic images, or from a list of procedural algorithms (Polka Dot, Marble, Mixer, Stone, and Wood). A special texture Options menu allows you to alter the way that the selected texture is mapped to the object.

Lighting A lighting dialog controls the direction of any chosen light, its color, gel setting (which may include projected pictures), gel color, light type, and shadowing intensity. New lights can be added and edited whenever desired.

Backgrounds New backgrounds can be selected from a list or constructed

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from your own saved graphics. The listed backgrounds can be edited and altered as to color and bit depth, and any background may be targeted as an alpha channel (a grayscale overlay whose intensity of lights and darks effects the color images visibility).

Imports StrataType 3D can open StrataType 3D, StrataClip 3D, PICT, and Illustrator 3.0+ file formats. A list of exceptions to the Illustrator option are listed in the manual.

Exports Finished renderings can be exported as EPSF, Strata Image, PICT, and TIFF. Objects can be saved as DXF, StrataType, EPSF, PICT, StrataImage File, StrataClip 3D file, or a TIFF. StrataClip 3D is a file format used by Strata on its StrataClips CD-ROM, the files of which can be opened by calling Strata and paying the suggested fees. A few StrataClip objects are included as samples with StrataType 3D.

Strategy Games

Political strategy games like **Warcraft: Orcs and Humans** place you in charge of feudal towns and work on much the same cause and effect premise as **SimCity**. In **Warcraft**, from Blizzard Software, you are in charge of building a town, which is then populated with peasants who work, fight, and play within the confines of the town. As in the Maxis games, your townspeople interact with each other while you are not watching. In **Warcraft**, they can even be killed, so you need to pay close attention.

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Sid Meier, generally heralded as the greatest of all strategy game makers, has been responsible for great strategy games such as Civilization, Colonization and Pirates! Gold, all published by MicroProse.

Although simulation games often incorporate aspects of political and battle tactics, strategy games put you in charge of entire societies that must be controlled and protected.

War strategy games, such as Allied General and the V for Victory series from Three Sixty, recreate famous battles from World War II. If you make the right or wrong moves, you can change history and have the Nazi's win World War II or cause the North to lose the civil war. U-Boat and the new sequel U-Boat II: Drumbeat, which put you in command of a World War II submarine, incorporate a sim aspect, allowing you to navigate the sub and learn about underwater battle tactics and strategy. U-Boat puts you in charge of various missions in Europe, whereas Drumbeat has you offshore from Key West up the East coast of the United States, monitoring merchant ships.

Strategy games are by no means limited to simply controlling and watching the results of your decisions being carried out by computer generated characters. These games make you think on your toes and engage in fierce battles. When played over a network, the feeling of outsmarting an opponent gives you the type of thrill you get from a good game of chess.

See Also

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Allied General; Chaos Overlords; Empire Deluxe; Pax Imperia; Sid Meier's Worlds; Spaceward Ho!; V for Victory; Warcraft: Orcs and Humans

Strategy Games of the World

See

Classic Collection

Streamline

When you need to use your favorite bitmap illustration in a vector environment, you need to translate it to a vector format. That's where Adobe Streamline comes in handy. High contrast bitmap images translate very well as two and four color vector graphics, while bitmap images with a lot of detail in separate color areas must be translated to higher level vectors, perhaps with as many as 256 colors. It is with the more complex bitmaps that you run into potential problems, as each small area of color has to be translated to a vector shape. It's always wise to translate the graphic in a bitmap program first, repainting it to a lower number of colors when possible. Streamline has controls that address every situation, from simple to complex.

Settings and Conversion Setups The first step in the process is to tell Streamline what you want the vector graphic to look like in terms of shape and color. A Settings dialog enables you to select a number of preset

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possibilities or to customize and name your own set. If a preset is chosen, its complete data breakdown, in term of each setting, is listed. You can customize the setup in the Conversion Setup dialog, so that when you return to the Settings dialog, the complete transformed data is listed as well. The Conversion Setup dialog sets the exact number of colors the vector graphic will have, the conversion method, accuracy, and line options. A preview button shows you these settings applied to the on-screen bitmapped graphic.

Conversion The Convert command starts the translation process. A counter keeps track of the number of polygons generated. Each color must be converted separately, so if you have chosen a sixteen color vector rendering, the program has to separate the bitmap into sixteen colors and render each set in turn. When it is finished, the rendered vector art appears on-screen in place of the bitmap. An Undo command returns the graphic to its bitmap data if you're not satisfied.

Post Editing Shape and Color After the rendering meets your approval, you can use other tools in Streamline to finalize the new artwork. Selecting any one or a group of vector areas from the artwork displays their control points. Selected graphic elements can be cut, copied, pasted, or smoothed (which rounds off the shapes). In addition, by selecting an area and accessing the Custom Color or Paint Style dialogs, any element of the vector can be re-colored. When everything is complete, the new vector art is saved to disk.

File Load/Save Conventions Streamline can open **TIFF**, TIFF compressed,

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PICT, MacPaint, and Photoshop (2 and 2.5) images. Finished vector art can be saved as Adobe Illustrator, PICT, or DXF formats for either the Mac or IBM platforms.

See Also

Illustrator; Photoshop

Street Atlas USA

Street Atlas USA is a street atlas of the United States from DeLorme on **CD-ROM**. Street Atlas USA has loaded in the names of every street in the US, including Hawaii and Alaska. With multiple levels of zoom on the map, you can plot a route to the corner store, or the corner of the state, or anywhere else you'd like to go.

Street Atlas USA provides a highly-detailed, seamless map database of the entire country. Users can zoom in on every city, town, and rural area in the United States. The database contains more than 12 million street segments and 1.1 million geographic and man-made features, such as mountains, rivers, lakes, and prominent monuments.

The atlas has 16 levels of zoom, going from the top one showing the whole United States at once, to level 16, showing an area about 4000 by 2000 feet. In addition to street names, Street Atlas USA also shows attractions, airports, major hills, rivers, and so on.

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Also, Street Atlas USA has a built-in search engine that can scan for street names, major features, such as rivers, or attractions, zip codes, and phone number exchanges. With a built-in labeler, you can take notes directly on the map as you plot out a route, or simply mark down where important things are.

Street Atlas USA will run on a Macintosh Powerbook with a CD-ROM drive, so it can go along on drives to Grandma's and bail you out when you're lost from going over the river and through the woods. If you don't own a portable computer, Street Atlas USA can also print out its maps at any level of detail. Street Atlas USA is published by DeLorme Mapping.

See Also

CD-ROM

Street Fighter

See

Hollywood-Games Connection

Striped

Video tape that has **time code** displayed in a section of the image. This is used to preview the video and note clips and edit points (pieces of video that are to be digitized or edited).

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See Also

SMPTE; Time Code

Stripping

Although it's the subject of a lot of jokes in the publishing trade, stripping is actually a fine craft. Printing plates are made by exposing chemically treated plate material (metal or special plastics) to light through film negatives. Today much of that film comes out of the **imagesetter** all in one piece, but that wasn't always the case. Strippers are the people who line up and attach smaller pieces of film to create composite films that can be used to make printing plates.

See Also

Imagesetters

Stroustrup, Bjarne

See

C++

Structure

In **programming** , a structure is a **variable** that can hold a collection of

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different kinds of information together in a single variable. The name structure varies in different **programming languages** ; in **Pascal** , structures are called records. Structures are useful when gathering related information. A programmer of a payroll application, for example, might create a structure to hold each employee's information: name, address, social security number, salary, and so on. Each of these individual parts of the structure are different (some are text strings, some are numbers, and so on), but they can all be grouped into a single structure.

See Also

Pascal; Programming; Programming Language; Variable

Student Essentials

Novell knows what students need. Within two CD-ROMs, they've put together a package that includes practically all the software a high school or college student needs to be successful in the academic arena. It may even help with social life, because it contains a set of Internet tools to let you surf the **Web** and put up your own **home page** (Internet access not included).

First, there's a word processor. Because Novell did the choosing, it's **WordPerfect 3.5** . This word processor is as full-featured as anyone could want. It even does **HTML** conversion for Web publishing. Among the features that make it especially convenient for students, it includes language modules for writing in French, German, and Spanish. Each language module

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has both a spelling dictionary and thesaurus, so you can do homework in four languages. (Other modules are also available, even for such uncommon languages as Swedish, Turkish, Flemish, and Icelandic.)

Next, there's an encyclopedia. **Compton's Interactive** , to be specific.... This is one of the most popular interactive reference tools ever, with over 35,000 articles, 7,000 pictures, 100 full-motion videos, 3D animation and presentations, music and sound clips, an atlas, US and world timelines, and an idea generator to help you get started on your research.

Can't find the right word? Use the Thesaurus, part of Random House Webster's Electronic Dictionary and Thesaurus. Sure, there's a spelling checker built into the word processor. But this one, accessible on the Apple menu from any program, gives you the meaning, the spelling, the etymology and pronunciation of the word.

The next piece of the package is Bookends, a bibliographic tool, to help with term paper references. And to print the term paper as beautifully as possible, choose from one of 100 Bitstream/TrueType fonts. Next, there's Student Assist, a personal information manager that's geared to student needs. It keeps your class schedule, assignments, appointments, calendar, to do lists, addresses and phone numbers, and even more information cross-referenced, and accessible at a click. It's a great way to get, and stay, organized.

Finally, the Internet toolkit includes **Netscape Navigator** , the leading Web browser, and Envoy, an electronic document publisher that preserves the look and feel of your WordPerfect documents, no matter where you send

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them.

If you're a liberal arts major, this package is all you need. If your future lies more in the math and science area, consider adding a scientific calculator (or using the one that comes with **System 7.5**) and possibly some special purpose software like Interactive Physics, or maybe **Myst** or **Descent**. After all, you can't study *all* the time.

See Also

HTML; Netscape Navigator; WordPerfect

StuffIt

StuffIt is the original Macintosh **compression** program written by a high school student named Raymond Lau. StuffIt was originally distributed as a **shareware** program, but now it is a commercial software program called StuffIt Deluxe distributed by Aladdin Systems (<http://www.aladdinsys.com>). (There is still a shareware version of StuffIt, StuffIt Lite, that has a stripped down set of features and is available from most online services.)

StuffIt Deluxe enables you to compress selected files, combine multiple files into one compressed archive, password protect compressed files so they cannot be "unstuffed" without the proper password, and create **self-extracting archives** (.sea). The amount of compression (savings in file size) is different for each type of file. Graphics files (especially in TIFF format) seem to compress quite a bit, and it's not uncommon to have a TIFF

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graphic to compress to 95% of its original size. Text files also compress well, but printer fonts (which already use an internal form of compression), application files, and sound files don't compress nearly as much.

Conversation with Raymond Lau

Ray Lau invented StuffIt, the most popular compression software in the Mac world, when he was a teenager. He's now a grad student at MIT.

Maclopedia : What was your first experience with a Mac, or, from your early experiences, what stands out?

Ray: My first exposure to a Mac was the original Mac 128K back in the April of 1984. What impressed me the most at the time was the ease with which a printer, the original ImageWriter, can be set up. You just plug it in and pick Print and it worked! My prior experiences with computers were with a wide assortment of home computers (e.g. the Apple II, the Commodore 64, etc.) and in no case was one able to just plug in a new peripheral and have it work immediately. Of course, other early positives included the WYSIWYG nature of MacWrite (the only word processor at the time), the sharp monitor (albeit in black and white), and the mouse-based interface. A big negative at the time was the constant floppy swapping. This was before there were hard drives, so you had to keep your system files, applications, and data files on floppies. Of course, things would never fit on just one 400K floppy, hence the need to constantly swap each time you did anything.

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Maclopedia : How did you get the idea for StuffIt and what were your experiences as you developed it?

Ray: The Macintosh was still a new platform in '87 and many enthusiasts, myself included, had an insatiable appetite for trying new software. We would frequent CompuServe, GENie, the local BBS, and so on. The dominant compression utility for the Mac back then was PackIt III. PackIt was somewhat slow, but it was missing one feature which I, and many others, longed for. Namely, to get to say the fifth file, you had to wait for it to decompress the first four files. There was no way to skip around. An acquaintance with whom I frequently exchanged files by modem showed me several compression utilities on the DOS platform which did allow the user to skip around and to also to list an archive's contents. The seed for a new application was thus firmly planted. During the summer of '87, the first version of StuffIt was created. As an added bonus, the algorithm I had decided to implement also compressed files better than PackIt III. By fall, .sit had become a dominant Macintosh standard.

I would say that there were two particularly memorable experiences during my subsequent work on StuffIt. The major one was of course, the initial effort to establish the product as a standard. The other memorable experience, or rather series of experiences, was the transition from a shareware to a commercial product. The lessons learned here are too numerous to list. I've learned several lessons about creating a decent piece of software. Perhaps the most important

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is: If it isn't easy to use, people will not use it. StuffIt was born in a power-user environment, and quite a few interface enhancements and feature set simplifications were needed along the way. How many jokes have been made about the difficulty of programming a VCR? Along the same lines, there is something to be said about polish. By this I mean that a good piece of software should be pleasant and smooth to use. I am a self-professed utilitarian, but I've now come to believe that the extra effort needed for the final 10 percent is a must for a good product. Putting the finishing touches on a piece of software has also taught me some of my own limitations. I am not that good of an artist, but fortunately, in an advanced society like ours, specialization is the norm and not the exception.

Maclopedia : How did you get the word out about your creations?

Ray : To this date, I am surprised that word got out at all. Certainly, I wasn't a major marketing and distribution powerhouse. All I did was post the early versions on CompuServe, GENie, Delphi, and several local BBSs. At some point, several New York based BBSs started accepting uploads in .sit, and shortly thereafter, one of the commercial services and then the others followed. Why things worked out is a question to which I will probably never learn the definitive answer. Some of the favorable factors included: 1) The dominant driving forces behind the online community at the time were what might be considered the Macintosh power users, who were more receptive to adopting new standards if technological merits warranted, and 2) The previous

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standard, PackIt III, did not appear to be actively supported, whereas I exhibited a clear willingness to continue supporting StuffIt.

Maclopedia : Can you tell us about some of the engineers you've met or worked with, to give us a glimpse behind the scenes of the culture that spawned the Mac?

Ray : My personal experiences with people who worked for Apple itself were far and few in between, so I am going to take some liberty and instead mention a fellow programmer who is a true hacker in the Macintosh tradition. This person is Leonard Rosenthal, who Aladdin, my publisher, was fortunate enough to have hired. This was a person who would never tire of playing with the latest system software enhancements Apple has to offer, who would come up with trick after trick, and who knows almost everyone in the Macintosh software engineering community. We met via email, exchanging ideas and comments about each others' products. Because we lived in different cities, it wasn't until years later that we met in person. But Leonard would have an answer—be it the correct answer, a decent guess, or a referral to someone else in the know—to every Mac-related programming question I had ever sent his way. And best of all, he would respond very promptly to email. Leonard is also one of the truly best prototypers I've seen. You give him a new API from Apple and within short order, he will have some neat demo employing the new technology.

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Maclopedia : Where do you see the Mac's strengths now, and where would you advise the company to go in the future?

Ray: Despite the arrival of Windows 95, I still believe that the Mac remains a smoother, easier, and more pleasant to use platform. Sure, there are some features in Windows which the Mac lacks, but consider doing something as mundane as simple file sharing between two computers on anything but a Mac. The few features which the MacOS lacks can be easily implemented by Apple. I would say that the Mac's greatest strength is probably the loyal support of its users. It is hard to put a finger on exactly why there is an almost cult-like following among many. Perhaps this is so because of its elegance or maybe even because of its status as the alternative OS. Nevertheless, the following needs to be maintained. I guess I am admittedly a power user, so I may not be in the best position to judge how Apple can maintain this loyalty.

As far as my loyalty is concerned, I would say that Apple needs to maintain favorable price/performance profiles, particularly at the high performance end of the scale (Pentium Pros are pretty damn impressive in performance at a reasonable cost), maintain a competitive position in terms of software availability (this unfortunately seems to be a particularly vulnerable area), and aggressively roll out improvements in the MacOS, especially in terms of reliability and performance in multitasking environments (I reboot my Mac several times a day due to crashes. I reboot my Sun UNIX based

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workstation once every few weeks).

When you create an .sea, a small decompression utility is embedded within the stuffed file, adding 5K to the file. This utility enables the recipient of the file to unstuff it, even if she doesn't own Stuffit. Self-extracting archives are very popular on **online services** and on the **Internet**, and **America Online** has adopted Stuffit as its compression utility of choice.

If you upload multiple files, AOL's software stuffs (compresses) these files, and if you download a stuffed file, AOL's software unstuffs it for you.

You can tell a file is stuffed if the filename extension .sit follows the filename. If, for example, you compressed a graphic file named "fish" with Stuffit, it would then be named "fish.sit" to alert you, or anyone else, that the file was compressed using Stuffit. If the file was compressed as a self-extracting archive, the filename would be either "fish.sea" or "fish.sit.sea".

A **freeware** utility called "Stuffit Expander" was introduced a few years back by Aladdin Systems that enables you to unstuff any Stuffit file by dragging the **icon** of the stuffed file and **dropping** it on the icon of the Stuffit Expander. The nice thing is, this expander decompresses most any compressed file you drop on it, not just Stuffit files, so it's not uncommon to see this utility out on a user's **desktop** for instant decompression. Or, as I'm sure Aladdin Systems would prefer, Unstuffing.

See Also

America Online; Compression Utilities; Desktop; Drag and Drop; Freeware;

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Internet, The; .sea Filename Extension; Shareware

StuffIt Expander

Freeware program by Aladdin Systems, Inc. that expands **compressed** or **encoded files** downloaded from the **Internet** .

One of the Internet's main benefits is the availability of software held on **host** computers such as **software archives** . Users can download this software to their own **client** computer. Usually the software is encoded or compressed to facilitate transportation. Such files can then be decoded or decompressed with Stuffit Expander, which is itself a freeware program available on the Internet.

Stuffit Expander will expanded files encoded with BinHex 4.0, which have the file extension “.hqx,” as well as the compression formats used by Stuffit (“.sit”) and CompactPro (“.cpt”).

A related application, DropStuff with Expander Enhancer, provides Stuffit Expander with native PowerPC decompression code and allows it to expand a wider range of files than it could otherwise.

Both DropStuff and StuffIt Expander can be downloaded from <ftp://ftp.aladdinsys.com/pub/>.

See Also

Client, Compressing Files, Encoding Files, Host, Internet

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Style Sheets

If you do anything with a word processor beyond writing the most basic letters or term papers, learning to use style sheets will save you many hours otherwise spent in formatting text. Style sheets let you maintain consistent formatting through long documents, or through multi-document projects. Aside from being easier to read and follow, a consistently formatted document looks more professional. Whether you're working on a newsletter, a report to stockholders, or a lost cat poster, appearance matters. It tells your reader, "Hey, I know what I'm doing here."

A style sheet lets you apply character and paragraph formats all at once by selecting the text and then selecting the appropriate style to apply to it. With just a mouse click, you can turn a random page of text into 12 point Palatino Bold italic in magenta, set flush left, single spaced, with the first line indented .2", space before 12 pt, space after 6 pt. Isn't that easier than applying all of those attributes one at a time, and remembering them all so that you can assign them to the next similar block of text? Obviously, it is. All of the current versions of stand-alone word processors and DTP programs use style sheets. Works programs, unfortunately, do not.

A style sheet is a collection of style definitions. Each style definition, which is usually just called a style, refers to one very specific set of attributes. Typically a style sheet will include one or more styles for headlines, one for text, and as many as are needed for table heads, tables, and captions. Reformatting the document is simple after styles are assigned. Suppose

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you're working on a book like this one, and you decide that subheads, rather than being set in bold face, will be set in italics. Going through the manuscript and changing each one could take days. But, assuming that you have properly assigned the definition to all of the subheads, if you change the style definition, every one of the subheads will update to reflect the change. If you have created styles that are based on other styles, changing the original will change every style based on it, as well.

When you open a new document, unless you've already specified a style sheet to apply to it, your page will be set in the style called Normal, or possibly Untitled or Default, depending on the program. This style applies your word processor's default font, size, and other characteristics when nothing else is specified. If your new pages always start out with 12 point Geneva, set flush left, and single spaced, then those are your default settings. Each word processor sets its defaults differently. In Microsoft Word 6, they're defined in the Font dialog box shown in the figure. In Word Perfect, you choose a font and size from the Font menu in Preferences.

There are two kinds of styles that you'll be concerned with: character styles and paragraph styles. Character styles define *only* the character itself—its font, size, color, and so on. In the preceding sentence, for example, we applied a character style to the word “only.” Paragraph styles define these things and also the position of the words on the page, including alignment, indents, whether to hyphenate words, whether to apply widow and orphan controls, and how much space to place between paragraphs. Paragraph styles always apply to the entire paragraph. Styled text (text which has styles

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applied to it) carries the style information as an invisible part of the document. If you copy styled text into a new document, the styles will be copied along with the text and added to that document's style sheet.

See Also

Styles in Word Processors

Styles in Word Processors

Styles, Applying to Text Styles can be applied in several ways. The most obvious is to select the name of the style from the list of available styles, and then, when you enter text, it will appear in the chosen style. Some word processors, notably Microsoft Word, place a style list on the toolbar for quick access. You also can find the style list in a dialog box. An easier way is to let the first style you apply set the styles for the rest of the document. Often, a paragraph formatted with a particular style is routinely followed by another paragraph that also has a particular style. In a newspaper story, for example, the headline is followed by a byline and then the text of the story. After you create the style for the headline, using the “next style” option lets you define the byline style as the one that always follows the headline. Then, assign the text style as “next” after the byline style. When you press Return after typing the headline, the word processor will automatically apply the next style, which is the byline style, and so on. Text is most often followed by more text, so the style you'd specify there would be “next” style, “same” style.

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Styles, Creating When you create styles for a style sheet, you'll more often be concerned with paragraph styles than with character styles. Paragraph styles apply to the entire paragraph, while character styles only apply to an individual character or word. There are also "override" styles, which are changes you make to a document by adjusting the ruler settings, or by choosing a new font, or type size or style from the menu. These take precedence over the styles you have previously applied.

Each word processor creates styles in a slightly different way, and all of them give you at least two ways to do it. One way, that's generally available in all word processors, is to open the Style dialog box. It may be located on a Style menu, as in Nisus Writer, or under the Format menu as in Microsoft Word 6, or the Custom menu in WriteNow 4.0. Create a style from scratch by selecting its attributes from the Style dialog box.

The "next" style or "style for following paragraph" is a handy feature. If you're going to be working with a document that uses several levels of headings and subheads within the text, you can save time by letting the heading style include the information that the next style to apply is the text style.

By doing so, you don't have to stop and change your style after you've entered the heading. You can go right on typing. Similarly, the text style generally uses the "same" style as the style for the following paragraph, so you can keep writing without going back to the style sheet. You can even format a table, without returning to the style list, by starting with the table

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heading style, making the next style the table style, and the next from that the table caption style.

The other way to create a style is by example. First, create your document by using the basic text formatting techniques to change the default text style, including its font, alignment, spacing, and so on. When you have achieved a style you want to preserve for future use, select a piece of the text as an example. Open the paragraph styles dialog box and select New. You'll see the attributes of your new style displayed. Name it and click OK to save it.

Styles, Modifying After you've assigned a style to a piece of text, that doesn't mean you're stuck with it forever. You can modify the paragraph style you've assigned by changing its attributes. You can modify a piece of text within the paragraph, without changing the rest of the paragraph, by applying a character style, or you can make a one time change, without disturbing any of the rest of the formatting, by using an override style.

You can think of these three different kinds of styles as being three levels of priority. Paragraph styles have the lowest priority. They are the basic margin, indent, font, size, and style settings that are saved and used to format the paragraph. They can be saved, copied from one document into another, and redefined. When a paragraph style is redefined, every instance in which that style appears in the document will be updated automatically.

Character styles have the next higher level of priority. They let you define a font, style, color, or size for a key word or phrase. Use a character style to preserve the original format of any piece of text that you don't want to

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change when you redefine the underlying style. Like paragraph styles, character styles can be saved, redefined, and copied into other documents. They also update automatically when they are redefined.

Override styles have the highest level of priority. As the name implies, an override style overrides both paragraph and character styles that have already been applied. Override styles are used for a one time, one place change. They can't be saved as styles, and they don't apply to any text except that which has been selected to be overridden.

To modify an existing paragraph style, open the Style dialog box and look for a button labeled Edit or Modify. Make the changes you want and click OK to confirm them. Every paragraph to which the style was applied will change automatically to reflect the modification. Microsoft Word gives you a shortcut to accomplish this. Modify a piece of text. With the text selected, click the style listing on the toolbar.

You'll see a dialog box, like the one in the figure, titled Reapply Style asking you whether you want to change the style to match the selection or reapply the existing style to the selected text.

See Also
Style Sheets

StyleWriter Extension

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This is a printer driver necessary for **printing** to an Apple **StyleWriter** . The StyleWriter printer driver is accessed through the **Chooser** on the **Apple menu** . To select a StyleWriter as your printer, simply **click** the StyleWriter **icon** in the Chooser window.

See Also

Apple Menu; Chooser; Click; Icon; Printing; StyleWriter

Stylus

See

Graphics Tablet

Submenus

Some **menus** items have a black triangle pointing right. This tells you that the menu has a submenu. When you drag the **cursor** over a **menu item** with a black triangle and pause, a submenu menu appears, enabling you to choose an item from a list. If, for example, you're working in a word processor and want to change the point size of your type, you look on the Text menu. You may see menu items named Font, Size, Type, and so on, and beside each one is a black right-pointing triangle. If you select Size, a listing of available sizes pops up, and you can **drag** your cursor directly to the size you want. Releasing the **mouse button** carries out your size change.

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To use a submenu, follow these steps:

1. Click and hold a menu item that has a right-pointing triangle.
2. A submenu pops up. Drag your cursor directly to the item in the pop-down menu you want to select.
3. Release the mouse button to make your selection.

See Also

Cursor; Drag; Menu; Menu Item; Mouse Button; Pop-down

Sub-Pixel Averaging

Any program that creates bit-mapped images generates **pixels** (the smallest elements that make up the picture). When generating these images—whether creating them from models in a 3D program, resizing a graphic in a graphic imaging program, or applying an effect in a QuickTime editing program—the software has to choose the color for each pixel; however, the color is only an approximation of the what the color should be. Sub-pixel averaging creates a more accurate color by calculating the colors of different areas that the pixel covers in the image and averaging them.

If, for example, a 3D program generates the same image at 72 **dpi** and 144 dpi, then one pixel in the first image would be represented by four pixels in the second image. By averaging the color values of the four pixels at 144 dpi, a more accurate color is calculated for the single pixel in the 72 dpi image.

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Sub-pixel averaging improves the appearance of images, but takes longer to create.

See Also

Anti-Aliasing

Subscribing to a Newsgroup

See

Newsgroups, Subscribing

Subscript

See

Typesetting Terms

Subtractive Color

Subtractive color refers to the **process color** model (CMYK) in which 100 percent **cyan**, **magenta**, and **yellow** combine to make black. Due to impurities in printing inks, this black is not a true black but more of a very dark brown. For this reason, true black ink is added to process colors for printing and is represented by the “K,” which stands for **key color** .

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See Also

Color Printing; Color Separations; Process Color

Subwoofers

It takes a large speaker to make a low note. As frequencies go down, bigger masses of air have to be moved for the same loudness. The laws of physics insist that a speaker small enough to mount next to a monitor isn't capable of full bass. Fortunately, those same laws make it harder to tell where the low notes are coming from.

Multimedia manufacturers take advantage of both these facts with three-piece systems. Two small **speakers** are placed near the monitor to handle midrange and treble, while a third bass speaker is hidden out of the way. You get a directional, stereo signal centered around the video screen with all the oomph of a large bass cabinet.

Subwoofers can be added to any speakers, and make a satisfying upgrade for serious multimedia users. A few three-piece systems use very tiny satellite speakers near the monitor, and a tuned subwoofer that attempts to carry some of the midrange signal as well. These can be impressive in demos with carefully-chosen music, but be unsatisfactory when playing midrange-heavy, voice-oriented multimedia.

The high and low signals are separated electrically at the subwoofer. This complicates wiring slightly, because you have to run cables from the CPU to

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the subwoofer, and then from the subwoofer to the speakers. In most cases the **amplifier** is also located at the subwoofer, which puts the controls in an awkward place—often, under a desk or in a corner of the workspace. A more sophisticated biamplification system, used in high-end auto sound and a few multimedia systems, has separate amplifier-and-control unit you can place on your desk. Wires go from the CPU to the control unit, and then to each of the three speakers.

Physical location can make a big difference in subwoofer efficiency. The best place is the corner of a room, where large wall surfaces reflect and reinforce the bass signal. This might not be practical in a computer setting, and most subwoofers come suggestions for alternate placement.

It's best to test many locations to see which will sound best. If you're reluctant to move a heavy loudspeaker around the room for testing, put the speaker near the computer keyboard (close to where your ears would be), play some music, and move your head to each potential speaker location. See which provides the fullest bass. It may seem silly to crawl around, sticking your head into corners of the workspace, but a similar strategy is often used by professionals.

See Also

Speakers, Buying; Speakers, Connecting; Speakers, Shielding

Suitcase

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Suitcase is a font-management **utility**, from Symantec (10201 Torre Ave, Cupertino, CA, 95104-2132, Phone (800) 441-7234 Web site at <http://www.symantec.com>) that enables you to use and organize fonts outside the Fonts folder within your System Folder. One of the main benefits of Suitcase is that it enables you to create font sets. You can create a set of fonts for a particular task or for particular client job if you're a designer, and you can open and close these sets on demand through Suitcase.

If, for example, you are working on a design job for a client, and her logo uses the fonts Frutiger, Commercial Script, and Helvetica Inserat Roman, you can create a set containing just those three fonts, and when you're working on her jobs, you can have her font set temporarily open. This way, if you don't use those three fonts on a regular basis, you don't have to have them open all the time, but when you need them, they're easily accessible.

Suitcase offers a host of other font management utilities, including viewing and renumbering **font ID numbers** (in the latest version, 3.0, this renumbering is temporary and is done automatically), creating and renaming font sets, viewing the contents of a particular suitcase, and creating empty suitcases. Suitcase also enables you to set a preference that puts Suitcase in the Apple menu, and you can request that it be the top item on the menu.

In the latest version of Suitcase (version 3.0) you can now designate specific fonts to be open when a particular application is launched. You could, for example, designate that only Helvetica and Times be opened anytime you

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launch Stickies.

See Also

Font; Font Utility; Master Juggler; Utility

Suite Programs

See

Works Programs

SuperCard 2.5

Allegient's SuperCard is very similar to **HyperCard** (read HyperCard, Metaphor), with several powerful additions. SuperCard supports color graphics within the application and has its own color paint tools. Although a HyperCard stack can only be displayed in one window, a SuperCard project can contain several windows, each containing a different collection of cards. This makes it possible to create much more complicated and interesting projects.

SuperCard suffered a period of poor support after its original publisher (Silicon Beach Software) was purchased by **Aldus**, and Aldus didn't really know what to do with SuperCard. The product was then sold to **Allegient Technologies** who has done a lot of work to support and improve it. They recently have shipped a Windows Player and **Marionet**, an Internet

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scripting collection of routines.

SuperCard's language, SuperTalk, is a superset of **HyperTalk**. Most HyperTalk instructions work directly in SuperCard, but SuperTalk adds several new language instructions which are unique to SuperCard's special features. For an introduction to scripting, read **Scripting**.

SuperCard also supports most HyperCard **XCMDs** and **XFCNs**, making it possible to add functionality to SuperCard.

Definitely consider SuperCard if you have a complicated project that requires color or multiple windows.

See Also

HyperCard; XCMDS

Superscript

See

Typesetting Terms

SuperTalk

The scripting language used in **SuperCard**. It is a superset of the scripting language **HyperTalk** (the language used in HyperCard).

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See Also

Scripting; SuperCard; XCMDs

Supra SupraFaxModem

See

Modems

Surround Sound

See

Spatial Enhancement

Swap and Select

“Swap” and “Select” are two separate but connected programs from Human Software. Each addresses the color parameters of your selected graphic. Both Swap and Select require about 8MB of RAM on top of that required to run Photoshop. It’s absolutely essential to any process that adjusts the color of an on-screen graphic that your monitor is color corrected to begin with. Kodak and other companies market various utilities that do this as part of the startup sequence. The older a monitor becomes, the more chance there is that its color display does not represent the true colors of an image for either

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video or print applications, no matter what color correction resides in the startup sequence. Keep this in mind when working with the following software, and any other software used to color adjust an image. Swap and Select looks as if it were designed for PAL screens, and its interface may not be totally visible on many RGB monitors. All that will be hidden, however, are non-essential parts of the interface.

Swap Human Software's Swap is used to color correct either RGB or CMYK images in Photoshop or other software that accepts Photoshop plug-ins. When the initial Swap screen comes up, two choices are presented: Gradation and Swap. Gradation works only on CMYK (Cyan, Magenta, Yellow, and Black: associated with the four color printing process) palettes, while the Swap option works on RGB (Red, Blue, Green: associated with three color video signals) and CMYK. The two choices have different interfaces. The Swap interface has what appears to be convolution controls (called "equations"), while the Gradation interface has four separate control splines for adjusting each of the CMYK gradation curves respectively.

Swap's Gradation choice works only with a CMYK picture, although you can translate RGB to CMYK, adjust the Swap gradation curves, and retranslate to RGB. RGB colorization methods are different from CMYK, however, and discrete changes may result. If you check all of the CMYK boxes next to the four CMYK curves, changes made on one curve will be applied to all others. All curves checked simultaneously will be altered exactly the same, giving you global as well as plate-by-plate control over adjustments. Adjusting the CMYK curves either singly or in groups changes the visual preview,

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allowing you to make exacting changes numerically and by eye. Numeric indicators next to each CMYK curve indicate the extent of the levels being changed. Image effects such as solarization and inverses can be created as well as color adjustments. Curve points are adjusted by clicking on them and moving them up or down with the mouse. Each curve, called a LUT spline, has five default points that can be manipulated. You can also add or delete points on the curve. Each plate can be turned off so that you can view singular plates or any desired mix.

The Swap option allows you to adjust the image color by applying a convolution equation, presented as a matrix of numbers that can be altered. As with Gradation, the preview shows the visual results of all manipulations. The best way to gain mastery over adjusting the convolution matrix is to see how it is configured when you use one of the preset library settings. These are available only for CMYK pictures, and include duotones, tritones, and other colorization effects. As you select each one, the matrix table changes accordingly and the preview screen is updated. The Swap plug-in manual, though small, covers the technical applications possible with this software quite fully, although only experimentation and time will give you a real feel for what it can do.

Select “Select” from Human Software is a high-end CMYK global and selective color correction plug-in for Photoshop and other Photoshop plug-in compatible software. It has both a Gradation and a Selective mode. The Gradation mode can be compared to Swap, except that selections of color can be taken from an eye-dropper tool so that targeted colors can be specified

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more exactly. RGB users know that colors meant for the video screen have much more tolerated variance than those targeted to print, hence software like “Select” is not as important for video use as for the delicate color balances DTP user’s need and demand.

Both Swap and Select enable you to save and recall each of the CMYK color curves in the Gradation mode (just check the square next to that curve’s screen), so you can build up an effects library on your own and apply it to later projects. As in Swap’s Gradation mode, Select’s Gradation curves can have points added (Shift and click) and deleted (Command click). The Selective CMYK mode of Select gives you more precise control over each targeted color in the graphic, and allows you to choose that color with an eye-dropper tool right from the visual display. Before and after images are shown, so that it’s always possible to compare the alterations. A reset button brings all changes back to zero. Color boxes indicate the before and after colors, and the preview writes these alterations to the after image. A standard RGB color picker responds to mouse clicks in the before/after color boxes. There are six possible color changes that can be targeted at any one time. Blends are added to the color changes in either a cubic or a square choice. The cubic option applies the changes more globally across the image.

Because of its CMYK dedication, Human Software’s Select is obviously geared more towards the DTP artist. It applies color changes so finely, however, that RGB artists (video output oriented) should also consider it as an essential tool. An RGB image can always be translated to CMYK and back again, and the color transformation capabilities of this software are of a very high quality.

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Sweeping

See
Modeling

Switches

See
Bridges

SYLK

See
Import/Export, Spreadsheet

Symantec AntiVirus for Macintosh (SAM)

SAM consists of an application and an INIT. The INIT sits on your Macintosh and scans inserted disks and monitors other activities that viruses use to infect files. When SAM encounters a known virus, it stops it and notifies the user with an alert box. In the case of an infected floppy disk, the user's only allowable response is to eject the disk.

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When SAM is confronted by a suspicious activity of an unknown nature, an alert box is displayed and you can choose what action to take. Allowing the action lets it proceed just this once. Denying the action prevents it from completing. The Learn function adds this action to SAM's database of allowable activity so that it doesn't have to ask you again. While monitoring the Mac's operation against known viruses is useful, showing a dialog every time some possibly legitimate but suspicious-looking activity occurs can be irritating to experienced users and cause unnecessary panic among novices.

While all antivirus utilities can scan disks with driver-level compression, SAM also has the ability to scan compressed archives created with StuffIt and Compact Pro. Furthermore, SAM can detect viruses in HyperCard stacks. SAM supports the entry of code strings that allow it to detect (but not remove) new viruses.

Symbols

Many fonts include symbols such as bullets, foreign characters, mathematical symbols, and other nonstandard characters. There's also a font called Symbol, which contains the Greek alphabet in upper- and lowercase, as well as other common symbols. These can be combined with regular fonts when necessary to describe equations, or when a particular symbol is needed. *Dingbats* are a kind of symbol used by typographers to denote the end of a section or chapter.

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Several other fonts, such as Zapf Dingbats and Cairo, provide other symbols, some of which can be used for fun.

SYM File

See

Debugging Tools

Symantec C++

An **Integrated Development Environment** from Symantec.

The name Symantec C++ is a bit of a misnomer, as this development environment includes much more than just a **C++ compiler**. Symantec C++ is centered on the Symantec Project Manager (SPM), an IDE that includes several compilers and linkers, a source code **editor**, and a **browser** (see the following figure). This environment is the successor to the very popular THINK C product.

The Symantec Project Manager uses **Apple Events** to communicate with several other tools, including an **interface builder**, **Visual Architect**, and a high-level symbolic **debugger**. Visual Architect takes advantage of Symantec's C++ **framework**, the **Think Class Library** (or TCL).

Symantec C++ includes a multitude of tools other than the C++ compiler that

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gives it its name. Symantec **Caffeine** , a **Java** compiler, is the latest addition. Also, several third-party compilers have been written for the Symantec Project Manager.

Symantec's IDE has a number of very nice features. Project windows (at the upper right in the figure) are customizable and show a great deal of information about each file in the project. Projects also contain subprojects that are automatically brought up to date and built when the parent project is compiled. This enables the IDE to handle complex projects that traditionally have been very difficult to handle with an IDE.

The Symantec Project Manager enables you to create option sets that you can save with your projects. If you find yourself toggling between two groups of preferences (for debugging and nondebugging version of an application, for example), this can be a real time-saver.

Symantec C++ is a subscription product distributed on CD-ROM. The CD-ROM includes an electronic **toolbox** reference, **THINK Reference** , and THINK Pascal, a 68K-only Pascal IDE no longer supported by Symantec.

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See Also

C++; IDE

Symmetrical Compressors

Compressors can be divided into two broad categories of performance: symmetrical and **asymmetrical** .

Symmetrical compressors take approximately the same amount of time to compress and decompress a video sequence. This means that they can be used to capture video in real time. The **Apple Video Compressor** is asymmetrical.

See Also

Apple Video Compressor; Asymmetrical Compressor; Compression

Synchronous Communication

Transmissions between computing devices can take place either synchronously or asynchronously. In a synchronous transmission, data transfer can take place at very high speeds through the use of electronic clock signals to break the transmission into strictly defined intervals. This type of transfer is not supported by most modems, and is generally found in Macintosh environments only when connecting a high speed wide area networking device, such as an ISDN terminal adapter or a T-1 CSU/DSU to a

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network router. As ISDN modem lines become more readily available, we can expect to see more telecommunication software that supports this option.

See Also

Asynchronous Data Transfers; Asynchronous Communication

Synthetic Fonts

Why buy fonts when you can just mix up your own? Products like FontChameleon allow users to synthesize fonts based on a set of master outlines that can be stretched and otherwise altered to look like classic designs or like nothing in this world.

By saving the settings used to create fonts, users can recreate them at any time—there's no need to store them on your hard drive when you don't need them. This technology is particularly useful when sending electronic documents to other users, who don't have to have the fonts you used—only their descriptions so they can make their own versions. The description files are tiny (only a few kilobytes) and can be embedded in documents.

The quality of fonts created this way can't match that of true designed fonts, but the technology will certainly come in handy in these days of electronic distribution of documents.

See Also

Buying Fonts; Fonts

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System 7.0

Apple's System 7 was a new release of the **System Software** and the first major overhaul of the Mac's operating system since **System 6** was introduced in 1988. System 7 was a giant step forward for the Macintosh operating system, and it included a variety of important technologies and features, including:

- A redesigned **System Folder** that included system subfolders to help organize the system. In System 6, all items in the System Folder floated freely. In System 7, they are segregated into separate folders to make working with the System much easier. In System 7, control panels are stored in the **Control Panels folder**, extensions are stored in the **Extensions folder**, Preferences are stored in the **Preferences folder**, and so on.
- In System 6, **fonts** and **desk accessories** (DAs) were manually loaded into the System file using the **Font/DA Mover** utility. System 7.0 makes the Font/DA Mover virtually obsolete because you can store fonts in the System folder, and DAs (which appear on the **Apple menu**) can be installed by dragging the DA (or almost any application) into the **Apple Menu Items folder**.
- System 7 also introduced **aliases**: a copy of an icon that looks and works like the real document or application but is actually a pointer to the real application. The advantage is you can have these alias

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pointers anywhere you want and as many as you want because they take up so little room. You can put aliases of applications in your Apple menu, out on your **desktop** ; virtually anywhere you'd like.

- System 7 introduced an enhanced look for **icons** and enabled full color icons for documents and applications, and most notably it enabled you to **copy** and **paste** icons between the Get Info boxes of files and folders without the use of Apple's **ResEdit** resource editing utility. Other Finder enhancements enable you to choose the font you want your names displayed in and to have your fonts snap to a staggered grid.
- Some of the Apple Menu Items were updated, including the **Scrapbook** , the **Chooser** , and a more advanced **Find File** function was added that can be accessed through a standard key command (Command-F).
- **File sharing** and networking capabilities were added as standard features in System 7.
- A **label menu** was added enabling you to color-code items for visual organization. The folder icons are now a solid color and are easily colorized using this feature. You can use the standard colors or create custom label colors, and you can give the labels a name. The new Find Function of System 7 is capable of finding similarly labeled items.
- System 7 introduced **Balloon Help** , an interactive type of help

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feature designed for beginners that enables you to point at an object and have a cartoon-like balloon appear with simple explanation of what the selected item does. Balloon Help is accessed from the **Help menu** in the **menu bar** .

- In System 7 you have the ability to see icons in **list views** , and determine in which of the three available sizes you want to view these icons. You can also jump to any file in a list view (or icon view, for that matter) by pressing the first letter of the filename. If, for example, you're looking at a window with files named after the calendar months, the name at the top of the list would be April. To jump to September, you press the letter S, and the window jumps to the first alphabetical file that starts with S.
- In System 6, you could have only one application open at a time. If you wanted multiple applications open, you had to turn on **MultiFinder** . System 7 made the MultiFinder environment permanent, enabling you to have multiple applications open and be able to return to the Finder at any time without quitting an application.
- In System 7, Apple added the capability to use Apple's new font technology called **TrueType** , which enables you to resize fonts to any size on-screen and to printers that supported True Type with smooth clean output. TrueType fonts include both the printer font and the screen font in one suitcase.
- A new printing architecture was introduced with System 7 that enable

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faster printing and printing of documents in the background while you worked. This **print spooling** was already available through third-party utilities, but Apple built it in as part of System 7.

- System 7 introduced **Publish and Subscribe** which enables you to link certain items in documents together, so if you updated the information in one document, the other document would be updated for you. If, for example, you create a graphic and place it in 15 other documents using Publish and Subscribe, any edits or changes to the graphic would also be made in the 15 documents in which the graphic was placed.
- System 7 added **32-bit addressing** , which enables you to use more than the 8MB limit for system RAM imposed by System 6. System 7 also introduced **virtual memory** , which enables you to use the available hard disk as if it were RAM.
- There are dozens of other small enhancements (such as a new gray trash can icon) and other speed and productivity features, plus updated control panels, extensions, and system add-ons that make up System 7.

See Also

32-Bit Addressing; Alias; Apple Menu; Apple Menu Items; Balloon Help; Chooser; Control Panels; Copy and Paste; Desk Accessories; Desktop; Extensions; File Sharing; Find File; Font/DA Mover; Help Menu; Icons; Label Menu; List Views; Menu Bar; MultiFinder; Print Spooling; Publish and Subscribe; ResEdit; System Folder; System Software; System 6; TrueType

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System 7.0.1P

System 7.0.1P is the **Performa** model version of System 7.0.1. The System 7.0.1 update was introduced to support the **Quadras**, **PowerBooks**, and **Mac Classic II** models. There were Performa versions of the Quadras and the Mac Classic II that needed this update that included a minor enhancement for Macs with a **floating point coprocessor** (FPU).

Apple added the letter P to the System update's name to denote it was for Performa models. The two systems are identical, with the exception being that the Performa models have certain features, which Apple added for the home market, that didn't appear in non-Performa versions of the software. These Performa-specific features include:

- A Documents folder and an Applications folder where the computer defaults to when users use an **Open** or **Save dialog box**. If, for example, the users create a new document and want to save it, when they choose **Save** or **Save As** from the **File menu**, the documents folder opens by default. If the users go to the **Open menu** to open a new application, the Applications folder opens by default. The Documents folder is where the documents new users create on a Performa are stored. Apple marketed Performas to the first-time home computer users and feared the new users would lose their files or not be able to find the applications, so they encouraged the users to save all documents they created into one folder by making it the default.

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- A built-in **Launcher** palette makes frequently used applications and documents available by **clicking** the large tile's icons. Apple was concerned that first-time computer users would not be able to find their documents or applications, so they made the Launcher a standard feature of the Performa System to keep users from digging through folders on their **hard disk** .
- Apple set the **monitor depth** settings default to 256 colors, whereas in other Mac systems, the default was Black and White, and users have to find the Monitors extension and change the monitor depth setting and choose a bit depth to color to see color on the screen.
- **Application hiding** , which hides all other applications if the user chooses a different application. It is a fool-proof way of invoking the Hide Application command any time the users choose an application.
- A file **backup** application with the Performa System called Apple Backup that offers only two choices: to back up the System Folder (because Apple didn't send out system disks with Performa models) and back up the entire disk. This enhancement is not packed with features, but it is very easy to use. If a Performa users need to retrieve files from a backup disk, they can use Apple Restore to get the files back.
- A simplified version of the **General Controls Control Panel** was added to the Performa System to enable easier selection of **desktop background patterns** for Performa users.

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- Apple thought children would be big users of these at home Performas, so they included an extension called **At Ease** that put a new interface over the standard one. This interface, which consists of a giant file folder with square tiles, gives one-click access to specified applications and documents, making it easy for children to use the computer. This also prevents children from accessing important items such as the **System Folder** or Application folders where they might accidentally delete files, application, support files, or move important system files out of the System Folder. At Ease is a kind of buffer zone that lets anyone turn on the computer and use the programs without having to learn the interface or worry about damaging the system.

System 7 also comes with a separate Apple utility called the Compatibility Checker, which searches your installed system and hard disk (on System 6) and gives you a list of which applications and extensions are compatible with System 7 before you installed the system update.

See Also

Application Hiding; At Ease; Backup; Control Panel; Desktop Patterns; File Menu; General Controls; Hard Disk; Launcher; Mac Classic; Open and Save Dialog Boxes; Open Command; Performas; PowerBooks; Quadras; Save; Save As; System Folder

System 7.1

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System 7.1 was a significant update to **System 7** that included new features, bug fixes, and enhancements to existing features, including:

- An enhanced version of Apple's **QuickTime** extension (version 1.5).
- The addition of **WorldScript** , which enables the Mac interface to be customized for foreign languages.
- The addition of a separate **Fonts folder** where fonts are installed by dragging them into the folder itself, or by dragging the fonts onto the icon of the **System Folder** . The system places the fonts in the font folder for you, and enables you to install fonts while other applications are running.
- An updated **PowerBook Control Panel** that includes a slider to controls how long a period of inactivity will be before the PowerBook goes to **sleep**.
- Memory-handling enhancements, including the addition of a third memory control in the **Get Info box** of an application. This box states the minimum amount of memory, as determined by the software developer, that this program can operate with. In systems prior to 7.1, there were only two boxes: suggested size and preferred size.
- **System Enablers** , which are of no use to users but are critical to Apple because this is how Apple updates the system each time a new model is introduced without designing an entirely new system to work on that particular model. In the past, Apple had to issue updates to

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make certain systems work on certain models, but by using these enablers, existing systems can be patched into other models by creating a small enabler file for each model. Your computer cannot run System 7.1 without an enabler for your particular machine.

Note: System enablers are of great use to systems administrators, who are responsible for maintaining multiple Macs that otherwise would have different versions of the OS running on them.

See Also

Font Folder; Get Info Box; PowerBook Control Panel; QuickTime; Sleep; System 7; System Enablers; System Folder; WorldScript

System 7.1.1

System 7.1.1 is an update of the **System Software 7.1** known as Macintosh Hardware System Update 1.0. This update came in the form of an **extension** that addressed a number of areas including:

- The ejection of **disks** at **shutdown** .
- Fixed a bug that hampered high-speed modem transmissions.
- Enhanced performance in low memory situations
- Fixed a bug in the system's internal clock to make it more accurate.

See Also

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Disks; Extensions; Shutdown; System 7.1

System 7.1.2

System 7.1.2 came in as another hardware system update (HSU) and addressed bugs, compatibility problems, and high-speed modem transmission problems in certain models. This update also included:

- A newly updated version of **Disk First Aid** (version 7.2).
- The **AutoRemounter** extension that reconnects you to a **network** if you have a **PowerBook** that goes to **sleep**.
- An update to the **Sound Manager**.

See Also

AutoRemounter; Disk First Aid; Network; PowerBook; Sleep; Sound Manager

System 7.1.3

System 7.1.3 came into being as System Update 3.0. This update was a hardware bug fix and enhancement package released by Apple for **Systems 7.1, 7.1.1, and 7.1.2**. In addition to addressing a number of bugs, 7.1.3 included an update of all the **system enablers**, as well as:

- The capability to see small versions of the real **icons** of the files in

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Open and Save dialog boxes.

- A new version of Apple's bare bones text editor **TeachText** called **SimpleText** .
- A new version of **Apple HD SC Setup** (for formatting Apple **hard disks**).
- A number of updated **control panels** for both desktop Macs and **PowerBooks** .
- The updates and bug fixes found in Apple's System hardware updates 1.0, 2.0, and 2.1.

See Also

Apple HD SC Setup; Control Panels; Hard Disks; Icons; Open and Save Dialog Boxes; PowerBooks; SimpleText; System 7.1; System Enablers; TeachText

System 7.1P

This is the **Performa** version of the **System 7.1** operating system except that it contains a number of Performa-only features designed for the at-home, first-time computer user, including:

- Apple's **At Ease** interface, an interface offering one-click access to documents and applications through a series of large tiles. It also limits access to the Finder, which protects the **System Folder** and

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applications from being accidentally deleted.

- Apple's **Launcher** Control Panel, which works similarly to At Ease, but the Finder is active and the launcher floats above the **desktop**.
- A **General Controls Control Panel** with an easy to use desktop patterns picker.
- A Documents folder and an Applications folder that appear as the default in **Open and Save dialog boxes** so new users can more easily find the documents they create and find applications to launch without digging through folders.
- The **Monitors Control Panel** default setting is color/256 colors, rather than black and white on standard systems.
- A backup program for **backing up** the System Folder or all files on the disk.
- **Application hiding** so when a user switches applications, the other application is hidden from view.

See Also

Application Hiding; At Ease; Backup; Desktop Patterns; File Menu; General Controls Control Panel; Hard Disk; Launcher; Open and Save Dialog Boxes; Open Command; Save; Save As; System Folder

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System 7.1P2

This **Performa** version of hardware system update (HSU) 2.0 for the System 7.1P and 7.1.P1 operating system is identical to the standard System 7.1.1, except that it contains a number of Performa-only features designed for the at-home first time computer user.

See Also

Peformas; System 7.1P1

System 7.1P3

This **Performa** version of the **hardware system update** (HSU) 3.0 for the **System 7.1P** , 7.1.P1, and 7.1P2 operating systems is identical to the standard System 7.1, 7.1.1, and 7.1.2, except that it contains a number of Performa-only features designed for the at-home, first-time computer user.

See Also

Hardware System Update 3.0; System 7.1P

System 7.5

System 7.5 is an update to the Macintosh operating system that introduces a range of enhancements and new technologies, along with the usual bug fixes and performance tweaks. The new features of System 7.5 included:

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- A built-in **hierarchical submenu** for the **Apple menu** activated through the **Apple Menu Options Control Panel** , which enables you to toggle the submenu feature on or off. It also add up to three folders to the Apple menu that contain **aliases** of the most recently used documents, applications, and servers, so you can relaunch a document, application, or remount a **server** without searching for the files themselves.
- An electronic version of post-it notes called **Stickies** , which enables you to have on-screen notes in your choice of size and color.
- Macintosh's **Drag and Drop** technology, enabling you to drag and drop items between applications, including the Finder.
- A new version of the **NotePad DA** that adds a host of new features and functionality, including drag and drop, the capability to create longer notes, and print notes.
- The capability to use **AppleScript** to automate certain tasks of the Finder.
- A total re-work of the online help system called **AppleGuide** , which offers interactive on-screen help and walks you through features and functions.
- A greatly improved **Find function** , with more flexibility and a new interface.

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- A **menu bar clock** that incorporates into the new **Date and Time Control Panel**. The menu bar clock is a reworking of the widely popular **shareware** menu bar clock extension SuperClock that was a staple on many users' machines.
- A larger collection of **desktop background patterns** utilized through a new utility/application called Desktop Patterns.
- A larger and updated **Jigsaw Puzzle DA** that enables you to copy and paste your own **PICT** graphic into the DA to use as a puzzle.
- An alias of the **Control Panels folder** that appears on the Apple menu itself and enables you to have instant access to individual control panels when the Apple menu submenus are activated.
- A new **PowerBook** feature called the **ControlStrip**; a thin, floating palette that enables one-click access to a range of commonly used PowerBook features.
- An updated **Scrapbook DA** that accepts sound and video clips. The Scrapbook also gives you on-screen info on the items it contains (such as dimensions of the file, size of the file, format of the file, and so on).
- A **Numbers Control Panel** to enhance the Mac's use in foreign countries. This control panel enables you to configure the Mac to display numbers and currency in popular foreign formats. There's also a **Text control panel** enabling you to choose from different text formats for languages that write from right to left, top to bottom, and

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so on.

- The **WindowShade** feature that started life as a popular shareware utility. WindowShade enables you to roll-up a window so only its **title bar** is showing, much like you would roll up a traditional window shade, by double-clicking the window's title bar, even within applications. WindowShade's options are accessed through the WindowShade Control Panel.
- An enhanced ability to make multiple selections with a marquee (**clicking and dragging** with the **arrow pointer** cursor produces a rectangular marquee around objects in active windows). Now you can use the marquee to select items in a **list view** , rather than just the **icon view** , as in previous versions of the system.
- A freeware extension called the **Extensions Manager** , which was created by an Apple employee but not officially supported by Apple. This extension enables you to choose which extensions load into your system at **startup** and to create sets of extensions for different purposes or users.
- A new control panel called the **Auto On/Off control panel** that enables you to set a startup and **shutdown** time for your Macintosh, even if you're not there.
- The **QuickDraw GX** extension, which adds a wide array of printing, font management, typographic, and other features, including a new

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printing architecture that enables you to have printer drivers on your desktop where you can drag and drop items to be printed. QuickDraw GX incorporates a version of Adobe Type Manager (ATM) called ATM GX that is used for smooth display of fonts on-screen and for output. QuickDraw GX adds Apple's updated version of **ColorSync** (version 2.0), which is aimed at giving users a color matching system for achieving more predictable results when working in color. QuickDraw GX also opens the door for high-end typography with features such as use of ligatures, precise letter kerning, and a host of advanced typography features accessed by using specially designed GX enhanced fonts.

- The **MacTCP and TCP/IP** system extensions (which were sold separately) with System 7.5 for use with the **Internet** .
- An enhanced version of the **General Controls Control Panel** that enables you to protect the **System Folder** from being accessed or renamed. You can also protect your applications folders. This is particular useful if children are using the machine.
- Version 8.0 of the **LaserWriter Driver** (besides the GX version of the LaserWriter Extension), which offers enhanced printing and a new print spooling extension.
- The **PC Exchange** extension, which enables you to read, write, and format PC disks.

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- An updated **Monitors Control Panel** so you can change monitor resolutions on-the-fly without having to restart your machine.
- **PowerTalk**, an electronic mail and messaging feature for use over networks.

Other enhancements in System 7.5 include faster copying of files, faster switching between applications, and faster displaying of menus.

See Also

Apple Menu; Apple Menu Items Folder; Arrow Pointer; Auto On/Off Control Panel; Click and Drag; ColorSync; Control Panels; Control Strip; Desktop; Extension Manager; Find File; General Controls Control Panel; Icon View; Jigsaw Puzzle; LaserWriter Driver; List View; Mac TCP; Monitors Control Panel; Note Pad DA; Numbers Control Panel; PC Exchange; PowerBook; PowerTalk; QuickDraw GX; Scrapbook; Shutdown; Submenus; Stickies; System Folder; Text Control Panel; Title Bar; WindowShade

System 7.5.1

This update of **System 7.5** includes bug fixes and a set of enhancements, including:

- **File sharing** performance boosted by as much as 400 percent by updated file sharing features.
- An updated **LaserWriter driver** (version 8.2) that includes

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enhanced PostScript fax capabilities.

- An improved version of the **Launcher** utility, now included with System 7.5, that enables you to add items to the Launcher by dragging and dropping them on tiles in the Launcher itself, rather than adding them items to the **Launcher Items folder** within the System Folder. You can also choose from three different-sized tiles in this enhanced version of the Launcher.
- A new **startup screen** that replaces the familiar "Welcome to Macintosh" startup screen and features Apple's new Mac OS logo, which was introduced for use with Macintosh Clones. A status bar has been added to this startup screen to show the startup loading procedure.
- Improved performance from **QuickDraw GX** .
- The ability to shutdown from the keyboard by pressing the PowerOn key while the computer is running. When the PowerOn key is pressed, a dialog box appears asking, "Are you sure you want to shut down your computer now?" The dialog box offers you the choice of shutting down or restarting.

See Also

File Sharing; LaserWriter Driver; Launcher; Launcher Control Panel; PowerOn Key; QuickDraw GX; Restart; Shutdown; Startup Screen; System 7.5

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System 7.5.2

This update to **System 7.5** , was introduced on the new **PCI-based Power Macintosh** line and the **Performa 5200** and **6200** series. This update includes bug fixes and enhancements, including:

- A **native PowerPC** version of the **SCSI manager** for increased SCSI performance.
- The addition of the **Energy Saver Control Panel** .
- The **Control Strip** , formerly available only to **PowerBook** users, adds one-click access to a number of commonly used features.
- A new **Sound and Displays** Control Panel.
- OpenTransport was supported.

See Also

Control Strip; Energy Saver Control Panel; Native Software; PCI-based Power Macs; Performa; PowerBook; SCSI Manager; Sound and Displays Control Panel; System 7.5

System 7.5.3

This update of **System 7.5**, **7.5.1**, and **7.5.2** offers significant performance and stability enhancements, including:

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- The capability to create a universal **System Folder** that boots any model of Macintosh from the Mac Plus through the PCI-base Power Macs and PowerBook 5000 series.
- The addition of more PowerPC **native** components of the system that enhance overall system performance on PowerPC-based Macs.
- Comments in **Get Info** message boxes are no longer erased when **rebuilding the desktop file** .
- An update, version 1.1, of Apple's **Open Transport** networking and communication technology, which allows inclusion of Nubus-based networks and infrared and **PCMCIA-based** network connections on Mac models capable of supporting those features.
- An enhanced version of Apple's **QuickTime** that offers a variety of high-end video features including a 256-color format that has been added to Cinepak, enabling high-quality video playback without any color remapping. This version also supports the Apple MPEG media system, providing expanded MPEG support.
- An updated version of **QuickDraw GX** that enables better printing from color inkjet printers and adds support for Apple's new Color StyleWriter Pro inkjet printer.
- An updated version of **QuickDraw 3D** that provides better memory management.

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- A version of **AppleGuide** that adds the capability to print out AppleGuide help documents.

This version of the **system software** reportedly fixes nearly 2,000 bugs and incompatibility problems within the system, and Apple claims it is the most stable system yet. It updates all previous versions of System 7.5 including System 7.5, 7.5.1, and 7.5.2.

See Also

Apple Guide; Get Info; Native Software; PCMCIA; QuickDraw 3D; QuickTime; Rebuilding the Desktop; System Folder; System Software; System 7.5

System 7 Pack!

This is a set of System 7 **shareware** enhancement utilities for System 7.0, 7.0.1, or 7.1 created by Adam Stein of Insanely Great Software. System 7 Pack! adds a number of speed and customization enhancements including:

- The capability to change **command keys** and the names of certain menu items.
- A **Quit** menu item for the Finder so you can quit the Finder (although you can do a forced quit at the Finder without this utility by pressing Option-Command-Esc).
- The removal of the animated zoom rectangles that appear when you open a window (by removing this animation, the window is more

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quickly opened).

- The capability to remove the word "**Alias** " from an alias icon's name.
- The capability to increase the speed at which you copy files in the Finder.

A shareware product called SpeedyFinder offers many of the same kind of enhancement features as the System 7 Pack! including: removing zoom rectangles, speeding copying of files, and a host of cosmetic updates.

See Also

Alias; Command Keys; Shareware

System 7 Pro

System 7 Pro is a **System 7** update that includes a number of enhancements and updates that appear in the shipping version of System 7.5. This update was packaged separately by Apple and marketed as System 7 Pro because it contained some long-awaited enhancements for higher-end users such as updates for **QuickTime** , **PowerTalk** and **AppleScript** . System 7 Pro also included the updates from the Apple Hardware System Update version 2.0.1.

See Also

AppleScript; PowerTalk; QuickTime; System 7

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System 7 Tune-Up

The System 7 Tune-Up was introduced by Apple as a bug fix for **System 7** or **7.0.1** designed to fix a number of problems users were experiencing. The tune up addressed four main areas:

- Faster and more reliable **printing** from within System 7 or 7.0.1, including new StyleWriter and LaserWriter drivers, plus a new version of the Chooser.
- Better memory management resulting in fewer out of memory messages.
- More memory available to applications when the computer is not connected to a network. A new version of the File Sharing extension is installed as well.
- Fixed seldom seen bug that in some rare cases could cause files or entire folders to disappear.

System 7 Tune-Up also contains an extension called the System 7 Tuner.

This update is available for download from the Apple forum on America Online.

See Also

Network; Printing; System 7; System 7.0.1

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System 8 (Copland)

Scheduled for release early 1997, System 8 (code-named Copland, after the famous composer Aaron Copland) is Apple's next major rewrite of its **system software**. It will be the first complete overhaul since **System 7** was introduced. Apple has noted that Copland will be aimed at addressing two major areas: user efficiency and raw speed.

Although the features that will appear in the shipping version of System 8.0 are subject to change by Apple at any time, some of the features slated for Copland are as follows:

- A major cosmetic facelift for the Macintosh interface will be included along with ability for different users to have different interfaces. You will also be able to have one interface for children, another interface for novices, and a separate interface for more advanced users, all on the same machine. Copland will also add themed interface looks that can be selected to suit a particular users tastes for their working environment.

The standard interface update reportedly includes new 3D files and folders, a redesigned desktop, more built-in user control of the look of the interface, new menus, and a new typeface to replace the current system fonts of Geneva, Chicago, and Monaco.

- Reportedly 95 percent of Copland's code is to be PowerPC **native** code, which will mean dramatic increases in the speed of PowerPC-based

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computers.

- Apple is incorporating limited forms of protected memory to enable better overall system reliability by protecting the memory one application uses so it doesn't interfere with another open application. Copland is also going to be Apple's first step into pre-emptive **multitasking** , in which you have different applications sharing different operations more efficiently than they currently can. These long-awaited features are limited versions of what will reportedly appear in **System 9** (Code-named Gershwin, also named after a famous composer, George Gershwin).
- Much of Copland is being written as a series of modules, which enables Copland to run on nearly any Macintosh, including Macs with only 8MB of **RAM**. However, as more RAM is added, Copland's overall performance will increase.
- A number of system **extensions** , such as **QuickDraw GX** , **QuickDraw 3D** , **PlainTalk** , **QuickTime Conferencing** , and **QuickTime VR** will be built into Copland.
- Copland will add the capability to automate routine tasks for users.
- Copland will have improved and enhanced **windows** , **open/save dialog boxes** , and desktop management features that will enable even greater ease in managing your files.
- **OpenDoc** technology will be included in Copland, which enables

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software developers to create components or modules that will add functionality to applications. If, for example, you have a word processor and wish it could create Postscript graphics, you could install a module that would add this feature to your Word Processor. This will enable you to customize applications to have only the features you actually need, enabling two users to use the same application but with different features.

- Copland will have updated **networking** capabilities enabling it to plug-and-play into most existing networks, which offers significantly greater ease in setting up and administering networks.

See Also

Extensions; Gershwin; Multitasking; Native; Networks; OpenDoc; QuickDraw 3D; QuickDraw GX; QuickTime Video Conferencing; RAM; System Software; System 7

System 9 (Gershwin)

System 9 (code-named Gershwin after the composer George Gershwin) is a major System Software revision slated to follow System 8 (**Copland**) that will introduce full preemptive **multitasking** on the Macintosh. Multitasking is the capability to have multiple applications processing simultaneously. You could be, for example, copying a group of files on to a disk, performing a Photoshop CYMK conversion, performing a large spreadsheet calculation,

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and printing several documents from different applications, all at the same time, while you work in yet another application. Although this is literally true in 7.5, it will occur much more cleanly and efficiently in System 9. System 9 is expected to be released sometime in 1998.

See Also

Copland; Multitasking

System and Desktop Management Utilities

There are a number of third-party system and desktop management utilities available that offer diagnostic, customization, and performance enhancements to the Macintosh. They include **compression** utilities, software and hardware diagnostic tools that diagnose and repair common **system** software problems, system add-ons that enable you to customize the functionality and look of your system, and many other attributes.

Some of these utilities are stand-alone applications, and others are extensions or control panels added to your system. Many of these are **shareware** or **freeware** products as well as commercial utilities.

See Also

Compression; Freeware; System; Shareware

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System Disks

When you buy a Macintosh, the **system software** is pre-installed at the factory for you, and with the exception of some **Performa** Models and the PowerBook 145B, you receive a set of system disks that contain the Macintosh operating system. These system disks may be a set of **disks** (at last count it took 14 disks) or your system disks may be contained on one **CD-ROM disk** . Either way, the contents are the same, as they contain **Apple's installer** and the files necessary to do a complete system software install on most models of Macintosh. The installer looks at your model of Macintosh and installs the proper software for your particular model. If you have the CD-ROM version of the system disks, you see a 14 folders on the CD-ROM named for each of the 14 system disks.

If your system disks come on floppy disks, you'll see a disk named "Install me first!" and then depending on which version of the system software you're using, the disks will be named, Disk 2 of 14, Disk 3 of 14, and so on. These disks will appear on the CD-ROM version of the system software as folders.

Having this **backup** copy of the system software is important for a number of reasons: If for some reason your current system becomes damaged or corrupted, you can install a new system from the system disks. Also, if you want to make a different disk your **startup disk** , you can install a clean system from these disks. There are items on the system disks that do not get installed in every Macintosh, and sometimes the only way to access these files is to find them on the system disks. **QuickDraw GX** and **PowerTalk** , for

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example, require a separate installation.

If your model of Macintosh did not come with a set of system disks, all is not lost. You can download the current system from an **online service** (such as America Online), or you can download the system disks from Apple's Web site at <http://www.apple.com>.

See Also

Apple Installer; Backup; CD-ROM; Disk Tools Disk; Disks; Online Services; Performa; PowerTalk; QuickDraw GX; Startup Disk; System Software

System Error

See

Errors, System

System Files

Files with code for the operating system of your Macintosh are called the System files. The two primary system files are the System file and the Finder file, and they reside within the **System Folder**. These two files work together and are necessary to startup and operate a Macintosh. The System file is the core of the Macintosh system and contains the basic programming instructions the computer needs to operate. The Finder file contains the interface code that creates the look and feel of your Mac (the **desktop**,

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windows, icons, the trash can, and so on) plus the programming instructions for tasks such as file management, creating folders, icons, initializing disks, and all the tasks handled at the Finder level.

Although most of the System file's instructions are locked within the system file, there are a few items the user can alter. If, for example, you are using **System 7** or higher, you can double-click your system file to see the sound files your system uses. You can **double-click** a sound to hear it, remove the sounds by dragging them out of the system (where the system can no longer access them), or add sounds to the system. You'll also see the keyboard layout for your particular Macintosh in the System file.

If you purchased your Macintosh in the United States, the standard U.S. keyboard layout is installed, but you can drag layouts for other countries into the system file. Before System 7, the System file was used to store your fonts, desk accessories (DAs), Fkeys, and sounds. With the advent of System 7.1, these extra files are now separate folders within the System Folder. In System 7.5, the only files you're likely to see within the System file are the system sounds and the US keyboard layout.

Many people refer to any file that resides in the System folder (such as control panels, extensions, printer files, preference files, and so on) as a system file.

See Also

Copland; Desktop; Icons; System 7; System 7.5; System Folder; Trash Can; Window

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System Folder

When you **start up** your Mac, it searches for a disk with a System Folder containing the **system software** the Mac needs to startup and operate. This disk is called a **startup disk** . The System Folder contains the System file, Finder file, and other system resources such as **Extensions** , **Control Panels** , **Preferences** , **Apple Menu Items** , and **Fonts** . If a System Folder has a working version of the system software inside it, a small icon of a Mac appears on the face of the folder

The System Folder also enables you to add additional functionality to your system by adding **extensions** . These extensions can add a variety of features to your Macintosh and are available from commercial sources and as **shareware** and **freeware** extensions. Extensions can be used to customize the look of your Mac or to add certain features that are not available in the system. To add an extension to **System 7** or higher, drag the extension onto the System Folder icon and release the **mouse button** . A **dialog box** appears asking you if you want to the system to place the file in the appropriate area. If you click OK, the file is placed where it will load into the system at the next startup, adding this new feature or functionality to your system.

In System 7 and higher, the System Folder has its own set of subfolders within the System Folder for keeping things organized. They are:

- **The Apple Menu Items folder** , which enables items in this folder

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to be accessed from the Apple menu.

- **The Preferences folder** , which stores the preferences for the Finder and most applications.
- **The Fonts folder** , which stores fonts that you want loaded into the system at startup.
- **The Startup folder** , which enables you to have certain programs open after startup.
- **The PrintMonitor Documents folder** , which temporarily stores files being printed in the background.
- **The Launcher folder** , which stores files, or aliases of files, appearing in the Launcher Control Panel.
- **The Extensions folder** , which stores extensions loaded into the system during startup.
- **The Control Panels folder** , which also stores extensions loaded into the system during startup, but has separate interfaces for controlling certain aspects, preferences, or options of extensions.
- **Other folders** : Some applications install their own folders into the System Folder that are necessary as support files to the application itself.

See Also

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Desktop; Icons; Control Panels Folder; Dialog Box; Extensions; Extensions Folder; Folder; Fonts; Mouse Button; Preferences Folder; Shareware; Freeware; Startup; Startup Disk; System Software; Trash Can; Windows

System Heap

System heap is a term used to refer to the amount of memory set aside to operate the system. To find out how much memory is set aside as a system heap on your Mac, from the Finder choose **About This Macintosh** from the **Apple menu** . (It should be the top item on the menu.) You see a listing for **System Software** and the amount of memory set aside for the system heap, followed by a bar graph representing the system heap. The amount of the heap being used appears darkened in the bar graph.

If you want to set aside a larger amount of memory for the system heap than the system gives you by default, you can alter it by using a utility. (There are commercial and shareware versions of system heap utilities.) With the introduction of **System 7** , adjusting the heap manually became obsolete as the system heap adjusts itself to add more memory to the system heap anytime the system requires it.

See Also

About This Macintosh; Apple Menu; Desktop Level; System 7; System Software

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System Software and Versions

The software that contains the code for starting up and operating your Macintosh is called the System Software. This software is developed by Apple Computer, and the System Software is stored in a folder on the Mac called the **System Folder**, which holds the two primary system files: the System File and the Finder File. The System File itself is the core of the Macintosh system and contains the basic programming instructions that the computer needs to operate. The Finder File contains the interface code which creates the look and feel of your Mac **desktop** plus the programming instructions for tasks like file management, creating folders, icons, initializing disks, and all of the tasks that are handled at the Finder level.

The System Software is constantly being updated and tweaked by Apple to add features, fix bugs and compatibility problems, and add additional functionality to the system. When Apple has a major system overhaul, they will jump to the next higher round number. For example, in 1988 when Apple introduced System 6, they soon released Maintenance bug fixes and minor updates called System 6.1, System 6.2, etc. all the way to System 6.8. When they overhauled the system completely, they jumped to **System 7**. Then the maintenance updates and minor enhancements came as System 7.0.1. When a more significant update came out, it jumped to System 7.1. Then minor updates at 7.1.1, 7.1.2, and finally 7.1.3, then a significant update came out that jumped to **System 7.5** and then the minor updates started all over again, with System 7.5.1, System 7.5.2 and 7.5.3. When Apple releases its next major

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overhaul in late 1996, the system will jump to System 8 (Code named **Copland**.)

Most minor bug fixes and small enhancements are offered for free by Apple through Apple Dealers, major online services, and from Apple's web site on the Internet. Major updates are packaged and sold by Apple through commercial avenues.

See Also

Copland; Desktop; Icons; System 7; System 7.5; System Folder; Trash Can; Window

System Switcher

Apple warns you not to have two System Folders on the same startup disk because the Mac won't know which system to startup from, and the ensuing confusion caused erratic behavior, a system error, or the inability to startup at all. But if you have a situation where you want two systems on the same disk for a legitimate reason, the **shareware** utility System Switcher enables you to have two **System Folders** on the same hard disk.

An example of users wanting two System Folders on the same disk occurred when Apple introduced **System 7**. Many users had applications that only worked with **System 6**, so they would want their Mac to startup with System 6 and other times with System 7. This was useful for evaluating and testing the new system before making a total commitment to update the system.

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See Also

Shareware; System 6; System 7; System Folder

System Update 3.0

System update 3.0 is a hardware bug fix and enhancement package released by Apple for **System 7.1** , **7.1.1** , and **7.1.2** . The bug fix addressed a number of bugs and updated all the **system enablers** , but it most notably added some enhancements to the system such as:

- The capability to see small versions of the real icons of files in **Open and Save Dialog Boxes**
- A version of Apple's bare bones text editor **TeachText** called **SimpleText** .
- A new version of **Apple HD SC Setup** (for formatting Apple hard disks).
- A number of updated control panels for both desktop Macs and PowerBooks.

Another benefit of this update is that it includes the updates and bug fixes found in Apple's system hardware updates 1.0, 2.0, and 2.1.

See Also

Apple HD SC Setup; Open and Save Dialog Box; SimpleText; System 7.1; System

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Software; System Updates

System Updates

System updates have been available for Mac computers since the introduction of System 7.0. Such updates are traditionally free and offer performance improvements, bug fixes, and new versions of System software components (such as printer drivers, QuickDraw GX, and PowerTalk). These updates are available on most online services and on Apple's ftp site at <ftp.info.apple.com>.

System Version

See

Macintosh, Listing System Version

SysX

See

INIT 9403

SyQuest Cartridges

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See

Backing Up with Removable Cartridge Drives

SyQuest Drive

Syquest Drives utilize cartridges that can contain up to 44MB of data. Disks are coated with a nickel-cadmium slurry, and spin over 4,000 rpm to get rid of dust before settling in at a 3260 rpm operating speed. Although the drives are initially expensive, disks are fairly cheap, making this an economical way to add space to your hard disk. The following figure shows a SyQuest drive.

See Also

Disks and Drives; ZIP Drives