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Background

Programs have certain functions that can be performed in the background while another application is active. If, for example, you're downloading a file from an online service, you can send that function to the background by making another application active. The downloading of the file will continue, even though you're now working in another application. This is just one example of functions working in the background.

You also can print files in the background while you work in another application by activating the Macintosh computer's Background Printing feature. The drawback to having a task completed in the background is that the background task and the active application use the same resources (processing power) to complete their tasks, which can cause sluggish performance in the foreground. Often the mouse will slow down, for example, or it won't react immediately when you move it. Future versions of the Macintosh **Operating System** , however, are being redesigned to enable background tasks to be completed with no effect on foreground activities.

Background Printing

When you **print** a document from an application, that application devotes all its resources to printing, and you have to wait until the document is printed before you can move on to your next project. If you don't want to wait, you have the option of printing in the **background** while you continue to work in the foreground. This is called Background Printing, and it is enabled by

choosing Background Printing from the **Chooser.** When Background Printing is activated, your application quickly saves a temporary version of your document to your **hard drive** and then works in the background to send that file to the printer. This enables you to work in your application in the foreground while the application spools the information to the printer in the background.

The drawback to printing in the background is that both the background printing and the active application use the same resources (the same processing power) to complete their tasks. Sometimes while a process is occurring in the background, you'll get sluggish performance in the foreground. Often times, the **mouse** will slow down, or it won't react immediately when you move it. Future versions of the Macintosh **Operating System** are being redesigned to allow background tasks to be completed with no effect on the foreground activities.

See Also
Background; Chooser; Hard Drive; Mouse; Operating System; Print

Background, Web Page

Many **home page**s or other documents published on the **World Wide Web** use colors or designs that appear behind the text and images in the content window of the **Web browser** displaying the page.

Some browsers, like **Netscape Navigator** , let the reader change the color of

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the background that appears on screen. (This is done in the "Colors" tab in the "General Preferences" item under the "Options" menu.)

Netscape enables users to either use the background color they have specified, or displays the background specified by the authors of the Web pages they are viewing.

The Web page author can set the background of a Web document by specifying the color in the page's source **HTML**:

<u><BODY BGCOLOR="#RRGGBB"></u>

where RR, GG, and BB stand for the amount of red, green, and blue, respectively. This system of color definition, the RGB model, specifies the levels of these base colors as a number from 1 to 256. To squeeze 256 levels into a two-digit number, HTML specifies hexadecimal, or base 16, notation.

In hexadecimal notation, the numbers 10 to 15 are represented by the letters A to F.Thus, 2A in hexadecimal is $((2X16) + 12) = 44$ in decimal (base 10) notation. FF is the highest two-digit number in hex notation, so to specify a pure red page, you use the sequence:

<u><BODY BGCOLOR = "#FF0000"></u>

For a white page, use

<u><BODY BGCOLOR = "#000000"></u>

and for a black page, use

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<BODY BGCOLOR = "#FFFFFF">

You may also use a GIF image in the background of a Web page you are designing. Background image are specified with an extension to the body tag, as follows:

<BODY BACKGROUND = "picture.gif">

Some background images are shown in the following illustration.

Netscape Gold's HTML editor eliminates the need for the author to use hexadecimal notation by providing a color palette. The author clicks on a color in the palette, and the background color is chosen. Numerical notation can still be used to specify a color, but base 10 rather than base16 numbers are used. Netscape's Web Starter Site provides ready-made designs for use as background images.

See Also
Home Page; HTML; Internet; Netscape Navigator; Web Browser; World Wide Web

Background Copying
See
Copying Files In the Background

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Backing Up

Although computers are quite reliable, there are occasions where they break down or where you experience a **system crash** , or worse yet, a **hard disk crash** . If any of these situations occur, it is possible that some or all of the data on your **hard disk** could be damaged or erased permanently. For that reason, it is essential that you make a copy of all your files and store them on an external hard disk or a series of **disks** for safekeeping. This is called backing up. This way, if you do have a serious system or hard disk crash, you can restore your important files, documents, and applications from this "backup" disk. Many people recommend that you keep a backup disk on-site, and keep a separate identical copy off-site in case of fire, theft, or natural disaster.

It is generally recommended that you back up your files at the end of each work day. There are a number of third-party back up **utilities** that are designed to make this task easy for you.

In essence, these backup utilities store the contents of your hard drive on a disk, and when you go to back up, it updates your backup disk with any files that were created that day. This gives you an up-to-date backup of the files. Whether you need to back up to disks or to an external hard disk depends on how much data you need to back up on a regular basis.

See Also
Backing Up with CD-ROMs; Disks; System Crash; Hard Disk; Hard Disk Crash;

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Utilities

Backing Up with CD-ROMs

There's little doubt that CD-ROM is the most familiar form of optical storage. (For the record, CD-ROM stands for *Compact Disk-Read Only Memory*.) CD-ROMs appear similar to audio CDs, and use the same basic technology. CD-ROMs are widely used to distribute software, especially multimedia and game software.

As the *read-only* in *read-only memory* suggests, CD-ROMs are not rewritable; they can only be used to store data once. In the early years of CD-ROM, disks were typically created by developers, and read ("played") in CD-ROM drives end-users. In the mid-90's, the cost of devices that could record (or "burn") CD-ROMs became more affordable to a wider range of users.

In 1996, recordable CD media can cost as little as $.015 (yes, one and a half cents) per megabyte, assuming that all 650MB of storage capacity are used when the CD is burned. (The street price of a single recordable CD is about $10.)

CD-ROM drives are relatively slow, and the process of recording a CD is substantially slower—it would take an hour (at the very least) to back up a 500MB hard disk onto a CD. Recordable CDs, or CD-Rs, as they're commonly called, are probably best used for archival storage or in conjunction with a tape backup system where the tapes are reused after a few months.

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Some vendors have begun to offer to burn CD-Rs from a Mac's hard disks. If you can't justify the price of a CD recorder for yourself, but you want a nearly indestructible copy of your valuable data, this sort of service may just be for you. Check a local BBS or newsgroup (if available) for leads.

See Also
Backing Up with Removable Cartridge Drives; Backup Hardware Options

Backing Up with Optical Drives

There are several variations on optical drive technology, but in general, optical drives offer substantially better data integrity than removable cartridge technology, at the cost (in some cases) of slower performance. Typically, optical drive media is cheaper per megabyte than removable drive media, but the drives themselves are substantially more expensive.

Magnetic Optical Drives

Perhaps the most successful optical drive type has been the *magnetic optical,* or MO, drive. MO drives offer the ability to read and write data on fairly inexpensive media, albeit more slowly than conventional hard drives—MO disks are less than half as fast as conventional hard disks.

In mid-1996, MO media is usually available in 128MB or 230MB disks in 3.5[IM] sizes, at prices from about $.07/MB to $.11/MB.

In 1996, Fujitsu introduced a relatively inexpensive MO drive that fits the

expansion bays of 5300 series PowerBooks—the first such device to work with this line of PowerBook.

Other Optical Drives

Research and development continues in the field of optical-based storage, and new devices using new technology seem to come out on a monthly basis. Many such devices offer hybrid CD-R/MO drives, or optical storage at hard-drive speeds, or fantastic storage size at prices approaching $.04 /MB. When considering such drives as a backup solution, be sure to examine closely the drive's speed (Some advertisements offers the meaningless statistic of the disc's RPM rate, for instance), and to weigh compatibility with other devices. A drive that uses proprietary media, no matter how cheap, is of little use if the drive is discontinued.

See Also
Backing Up with Removable Cartridge Drives; Backup Hardware Options

Backing Up with Removable Cartridge Drives

Removable cartridge drives are popular system for backup storage. All of the drive/cartridge systems discussed below use the same basic technology as hard disks to store data, and offer comparable performance:

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- **SyQuest Cartridges** —SyQuest cartridges have long been available as backup storage devices. A SyQuest cartridge (technically, a "Winchester cartridge") is a sealed packages that contains a platter like those found in conventional hard drives. The SyQuest drive itself contains the read/write heads, motor, SCSI and control circuitry, etc. Together, the cartridge and drive act like a conventional hard drive, and are nearly as fast.

  SyQuest drives and cartridges vary in capacity: early SyQuest drives supported 44MB cartridges; the most recent models of SyQuest drives accept cartridges of varying sizes from 44MB to 270MB per cartridge. As of this writing, SyQuest storage costs vary widely depending on the size of the cartridge—from $.22/MB to $1/MB.

  SyQuest drives are very widely used, especially in the desktop publishing industry. (Very often they are used to transport large files to and from printers and service bureaus as well as for storage.) Most, but not all, SyQuest drives come bundled with software to automate the backup process.

- **Bernoulli Drives** —These drives are very similar to SyQuest drives: the Bernoulli cartridge contain a platter in a sealed package, and the drive itself contains the read/write head, motor, and circuitry. Bernoulli drives are used in virtually the same situations as SyQuest drives, and in fact, there has always been stiff competition between the two formats, with the usual grousing by the advocates of each. (In

this writer's experience, SyQuest disks are the more common format.)

Bernoulli cartridges vary in size, from 35MB to 150MB cartridges. (Early versions of the drive support cartridges up to 90MB in size.) In early 1996, storage on Bernoulli drives cost .$60/MB–$1 (or more) per megabyte.

•   **Zip Drives** —In 1995, Iomega introduced the Zip drive. Zip disks use a proprietary format: they use a special platter encased in a thick, hard plastic shell that resembles a 3.5[IM] floppy disk. The disks are much sturdier than Bernoulli/SyQuest disks: Iomega claims that a Zip disk can survive an eight-foot drop without loss of data.

Zip drives, which are also available for Windows machines, became immediately popular. Today, there is a wide base of installed Zip drives. The drives themselves are inexpensive, and the cartridges, which hold 100MB of data, are also inexpensive—about $.20/MB (or less) as of this writing. Zip drives are nearly as fast as conventional hard drives. They're small, light, and sturdy, and consequently much more portable than Bernoulli and SyQuest drives. In fact, Iomega markets a carrying case for the drive, cables, and other related Zip paraphernalia.

There are some limitations to the Zip drive: they don't have power switches, and can't be turned off. Zip drives may only be used at location 5 or 6 of a SCSI chain—]they can't be set to any other position. You must connect your Zip drive to your Mac with a special cable

(included with the drive) rather than a conventional SCSI cable. (Some users on the **comp.sys.mac.hardware.storage** newsgroup have reported problems using the Zip drive and its cables with 5300-series PowerBooks.)

•   **SyQuest EZ Drives** —Introduced shortly after the Iomega Zip drive, the EZ competes in the same market as the Zip drive. EZ drives are essentially tiny SyQuest drives that accept 3.5[IM] cartridges and hold 135MB of data, placing EZ drives and cartridges in the same cost and storage capacity ballpark as the Iomega products. (As of this writing, EZ cartridges cost about $.15/MB.)

    SyQuest claims that EZ drives are twice as fast as Zip drives. Unlike Zip drives, EZ drives feature a power switch, and may be set to any (available) location on the SCSI chain. Anecdotal evidence by some users has suggested that the EZ drive is not as sturdy as the Zip drive; neither Iomega nor anyone else has provided any evidence of this.

•   **Iomega Jaz Drives** —In late 1995, Iomega released the "Jaz" drive. Jaz cartridges are a modified version of the Winchester cartridge, that is, the basis of the SyQuest drive.

    Jaz drives are moderately priced, and support 3.5[IM] cartridges that can contain 540MB or 1GB (1000 MB) of data. In early 1996, Jaz storage cost about $.10 to $.15/MB.

    The Jaz drive, like the Zip, is small, light and portable. Its speed (as

published by Iomega) is faster than that of the SyQuest EZ drive. It features a power switch, and may be set at any SCSI location.

See Also
Backing Up with Optical Drives; Backing Up with Tape Drives

Backing Up with Tape Drives

Tape drives have traditionally been the cheapest media for the recording of data—inexpensive tapes can hold large amounts of data. They're also substantially slower than other storage media, and in some systems, less reliable.

A disk is a random-access device: the read/write head that reads the data on the disk can jump to any point on the disk quickly, just as you can put the tonearm down anywhere on a vinyl LP or skip to any track on an audio CD. To get to a particular point on a tape, the drive may need to spool through part of the tape—perhaps most of it—to get to the data you want to retrieve.

Different models of tape drive use different kinds of tape, but as a rule, tape drive media is very inexpensive. With compression, a tape drive can store large amounts of data—you can pay as little as \$.01/MB. Because tape drives are slow and cheap, they are used exclusively for backups.

As a result, almost all tape drives come bundled with fairly sophisticated automated-backup software, like Dantz's Retrospect Remote package. High-

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end backup software can back up all the machines on a local network, and allows the network administrator (or his lackey) to script sophisticated backup routines: backing up servers daily, and personal machines weekly, for instance, or half the machines one night, and the other half the next.

See Also
CD-ROMs; Hard Drives; SCSI

Backing Up Your Data
See
Backup Hardware Options

Backquotes

A backquote is a single quote mark that is printed backward. It looks like this (`). The backquote is also used to form the accent acute. On most keyboards, it shares a key with the **tilde** (~).

For example, the '90s requires the backquote before the 9. If you were to us a standard single quote, it would appear as '90s, with the quote pointed in the wrong direction. The backquote is sometimes referred to as a "curlyquote."

See Also
Accent Marks, Using; Backslash; Quotes

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Backspace Key

The Backspace key on a PC keyboard is the Delete key on a Macintosh keyboard and appears in the same place: in the upper-right corner of the keyboard above the backslash key. Using the Delete key has the same effect as a backspace key in a text editing situation—when using the I-beam cursor, it deletes the next character to the left every time it is pressed. It also deletes any selected text or graphic without making a **copy** in the **Clipboard** . The Delete key performs the same functions as the **Clear command** .

See Also
Delete Key; Clear; Clipboard; Command; Copy; Select

Backup Hardware Options

Nearly every computer user on every platform has some kind of lost file horror story: software glitches can corrupt files into unusability; hard drives can crash; equipment can be stolen. If you have only one copy of an important file, when it's gone, you're doomed. And no matter how lovingly you treat your Mac, no matter how careful you are, sooner or later your hard drive will quit, and its data may well be unrecoverable.

For this reason, it's important to make backup copies of files on a regular basis. In a business environment, where files are of critical importance, servers and even individual machines might be backed up daily, or several

times a week. An academic environment may choose to make backups on a weekly or biweekly basis. Home users can make decisions according to individual needs: anywhere from several times a week to once every several months.

Although I use "backup" in the limited sense—the precautionary making of redundant copies of files on your active hard disk(s)—very often your backup storage solution will need to be used for other purposes as well. For example, you may wish to use the storage device for archiving completed jobs that you will remove from your hard disk, or transporting large files from one machine to another.

The appropriate backup hardware varies according to circumstances. The questions to consider when shopping for hardware include:

- How much data will I regularly back up?
- What is the cost per megabyte of the long-term storage?
- How accessible must the stored material be?

Naturally, you don't necessarily need to choose one solution for all of your storage needs, and you may need to improvise new solutions in special situations.

Backup Hardware Speed

The speed of backup storage devices is rated in exactly the same way as conventional **hard drives**, using:

- **Transfer rate:** The rate at which the device moves data from the device to the Mac.

- **Seek time:** The average amount of time it takes for the device to move the read/write head from its current location to any arbitrary chunk of data.

Hard Disks and Floppies

There's no disgrace in compulsively making extra copies of important files by hand, and storing them on whatever media is at your disposal. If you're working on a *Maclopedia* entry, for example, you might want to store the MS Word file on a floppy disk, even if you know that your hard drive is scheduled for automatic backup later.

It's of little use, however, to store all such backups in the same place as the original file. Storing the archived copy in the same folder on the same drive as the original file won't protect you from a disk crash or malfunction.

Hard Drives

If you have a second hard drive, or access to a drive over a network, it's safe to store a copy of the file on the other drive. However, it's almost certainly impractical for you to back up every file you create by hand: hard disk space is too valuable (about $.30/MB to $.40/MB in 1996). Furthermore, hard drive space is limited: you can fit no more than six **SCSI devices** in a chain, and hence, no more than six hard drives.

> **TIP** If you've got plenty of empty space available on a disk other than your main drive, the second disk is probably the most convenient device for making a temporary backup of your disk when you're installing new system software or reinitializing your startup hard drive.

Floppy Disks: Pros and Cons

In the early years of the Macintosh, when 20MB hard drives were common and 80MB hard drives were considered enormous, it was common practice to back up entire hard drives onto floppy disks with software packages such as Norton Utilities. Nowadays it's impractical and expensive to back up an entire hard disk to floppies.

A relatively small hard drive requires more than 150 floppies to completely archive. Backing up such a hard disk from scratch would take at least 4-5 hours of active-disk swapping by the user, during which time both the Mac and the user are unavailable for other tasks. Floppy disks are moderately priced; in 1996, floppy storage costs from $.15 to $.30 per megabyte (or even more).

Some floppy-based software packages (such as the aforementioned Norton Backup) are able to make incremental updates to backup-archives, only storing files that have changed since the last backup. This may be practical for users with an established archive who rarely create large new files; unfortunately, few users fit this description.

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Floppies are fairly well-suited for the task of making backup copies of other floppy disks—usually, original program disks. However, it's fairly simple to backup floppies on faster, cheaper media using disk-image tools like Apple's DiskImage or the superb shareware package **ShrinkWrap** .

See Also

Backing Up with CD-ROM; Backing Up with Optical Drives; Backing Up with Removable Cartridge Drives; Backing Up with Tape Drives

Backup Utilities

There are a number of third-party utilities such as Norton Fastback (part of the Norton Utilities package) by Symantec (10201 Torre Ave, Cupertino, CA, 95104-2132, Phone (800) 441-7234. Web site at **http:// www.symantec.com**) Retrospect by Dantz Development Corporation (4 Orinda Way, Orinda, CA 94563. Phone: 510-253-3000. On the Web **http://www.dantz.com**) and Redux (by Focus Enhancements, Inc. 800 W. Cummings Park, Ste. 4500, Woburn, MA 01801) that help you back up the contents of your **hard disk** , so if you were to have a serious system or hard disk **crash** , your important files and applications would be stored on an external disk for safekeeping.

These backup utilities enable you to schedule a specific time to back up the contents of your disk and enable a wide range of customization for how you'd like your files archived onto a backup disk. You can also configure backup utilities to back up all Macs on a network.

Backup Utilities

Backup Utility	Developer	Benefit
Norton Fastback	Symantec	Backup of files/Archiving Makes backing up of your files easy by backing up selected files or all files. Part of the Norton Utilities Package.
Retrospect and Retrospect Remote	Dantz	Backup of files/Archiving for users on networks with large amounts of data to backup. Enables unattended automated backup. Supports wide range of devices and compresses backed up file. Ideal for tape drives.
DiskFit	Dantz Development	Backup of files/Archiving for single computers or users with small amounts of data to backup. Does not compress files, backs up to

		removable disks and scheduling automatic, unattended backup to a folder on the server or another hard drive.
Redux Deluxe	Focus Enhancements	Backup of files/Archiving Offers quick, easy, inexpensive backup for individuals to disks, hard disks, or removable media.

See Also
Backing Up; Crash; Hard Disk

Balloon Help

Apple created Balloon Help as a interactive way for new users to learn the Macintosh system. When Balloon Help is active, users can point to an item on the screen: a folder, icon, command, and so on, and a balloon, (styled after the comment balloons from comic strips), would appear with a brief description of the item the user was pointing at and how to use it. This way, if you're working in a program and you run across a feature you're not familiar with, you simply point to it with your cursor and an explanation would appear, as shown in the following figure.

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Balloon help is available at the **Desktop** and also in many applications that support Balloon Help. To activate Balloon Help, simply click and hold on the **Help** menu icon in the menu bar. (This is the second icon from the far right of the menu bar, with an icon of a question mark in a balloon.) Choose Show Balloons to active Balloon help, and then just point to any item on your screen to see a balloon help comment. To deactivate Balloon Help, select **Hide Balloons** from the Help menu.

To use Balloon Help, follow these steps:

1.   Choose Show Balloons from the Help menu in the menu bar (The question mark icon, to the left of the Applications menu on the far right of the menu bar.)

2.   Point to the item you'd like help with and if there is balloon help available for that item, a balloon will appear and will remain there until you move your cursor to another location.

To disable Balloon Help, choose Hide Balloons from the Help menu in the menu bar (The question mark icon, to the left of the Application menu on the far right of the menu bar.)

See Also
Applications Menu; Desktop; Help; Help Menu; Hide Balloons; Show Balloons

Balthazar

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A shareware utility that converts audio files from the .WAV sound format to System 7 sound files, and vice-versa. This software is shareware and available from online services.

See Also
.WAV

Bar Code and Magnetic Stripe Readers

Bar codes solve many problems, but usually don't come to mind when discussing personal computers. Supermarket checkouts leave the impression that bar codes require big, expensive hardware. To view bar codes on your Mac, you need to install the bar code font in your font folder in the System folder. To print bar codes, you generally need the resolution of a laser printer, but dedicated mailing label printers from CoStar and Seiko can print postal bar codes successfully with thermal printing technology.

A bar code represents an identification number for an item using patterns of lines and spaces. After the bar code reader decodes the number (as illustrated in the picture below), the computer looks up the corresponding item in its database. At that point, you have access to all the information about the item. In the supermarket, the decoded product identification number triggers the computer to enter the price into the cash register. At the same time, it deducts the item from the store's inventory.

The key to bar codes' usefulness is that they trigger the release of

information. Bar code readers simply automate entry of the identification number. You can do the same thing by typing numbers on a keyboard, or even by using a voice recognition system. Many bar code formats are in use, each adapted for the needs of that particular industry. The best known is the Universal Product Code (UPC) found on virtually all retail items. The Postal Service and legal industry use their own bar codes. Various formats, including three of nine (three sets of 9-digit numbers) and two of five (two sets of 5-digit numbers, as in UPCs), are suitable for vertical application developers.

Closely related to bar codes are the magnetic stripes on credit cards and ATM cards. The advantage of magnetic stripes is that you can change and update the information stored on the cards. Bar code and magnetic stripe readers typically are **serial port** or **Apple Desktop Bus devices** .

Magnetic stripes can store a fair amount of data and you can change that data whenever necessary. They are especially useful for pseudo-money systems (such as amusement park rides, mass transit, and so forth). In these applications, the end-user "buys" a certain amount of money and "spends" it by sliding the card through a reader, which updates the data on the card. They're also used at trade shows, such as MacWorld, to scan admission badges for mailing lists.

The following table provides an overview of the bar code and magnetic stripe readers available for the Mac.

Bar Code and Magnetic Stripe Readers for the Mac

Synex	Uniscan 300 Bar Code Reader Translates UPC, Code 39, EAN, Codabar, and 2 of 5 bar codes directly. ADB device, no driver software required. $279
DataDesigns	DD MagScan, DD MaxiBar, DD MaxiScan, DD MiniBar, DD ScanImage, and DD ScanPlus Magnetic stripe and bar code readers $395 to $3,950
Videx	DuraWand - Portable, pen-like bar code reader $495 for pen, $100 for software, $859 for complete system
Videx	OmniWand - Portable bar code reader and palette $1,235
Percon	Series 10 and Series 20 Bar code reader with light pen and cable. Can read magnetic stripe cards $540 to $605
TPS Electronics	TPS Bar code and Magnetic Stripe Readers Variety of readers. Magnetic

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stripe readers can record and verify data
stored on cards $369 to $2,795

See Also
Apple Desktop Bus; Keyboards; Mice

BASIC

A popular **programming language**   developed in the early 1960s.

BASIC was developed by John Kemeny and Thomas Kurtz at Dartmouth College
to help teach programming to students (the name is an acronym for
Beginner's All-Purpose Symbolic Instruction Code). In the early days of
personal computers, BASIC was the programming language of choice. If a
new computer couldn't be programmed in BASIC, its future was in serious
jeopardy, because most of the software that ran on those early computers was
written by the user. Today's cornucopia of commercial software offerings
didn't exist. Over time, most computer users stopped writing their own
software and the importance of BASIC diminished.

But BASIC is far from dead. **Microsoft**   has adopted it as the preferred macro
language for its applications, and in the **Windows**   world, Visual Basic is one
of the most popular development tools. After several very quiet years, the
Macintosh BASIC world is vibrant again.

Originally, BASIC required that each line of code be preceded by a line

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number. This was convenient in the days of punchcards, because the cards could be entered in any order—the line numbers would take care of the ordering. This simple BASIC program displays the words "Hello World!" 10 times:

```
10 FOR I = 1 TO 10
20 PRINT "Hello World!"
30 NEXT I
```

More modern versions of BASIC support a much richer feature set, including true functions and subroutines and block-style flow control statements (IF-THEN-ELSE, DO loops, and so on).

Traditionally, BASIC has been an **interpreted language**, which greatly limited the speed of programs written in it. Most of today's BASICs, however, provide **compilers** to generate **native object code**.

Over the years, the Macintosh has seen several versions of BASIC come and go. Today, there are three major competitors: **True BASIC**, Mainstay's **VIP BASIC**, and Staz Software's **Future Basic** II. All of these commercial environments provide a rich implementation of BASIC with full access to the **Toolbox**.

In addition to the commercial BASICs, Chipmunk BASIC (**http://www.rahul.net/rhn/cbas.page.html**) is a small freeware interpreter that is Power Mac native. It is similar to the versions of BASIC

that were included with early personal computers.

See Also
Future Basic; Interpreted Language; Toolbox; True BASIC; VIP Basic

Basic Rate Interface
See
ISDN

Basketball
See
Sports Games

Baseline
See
Typesetting Terms

Batch Processing
Applying a series of effects or changes to multiple files. This is particularly useful when working with a large collection of graphics or QuickTime files.

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There are some tools that provide automated batch processing functions, it is also possible to write AppleScripts to perform repetitive tasks.

See Also
AppleScript; deBabilizer; CD-ROM Movie Maker; Movie Cleaner Pro

Batch Transmission
See
File Transfer Protocols

BatchIt

BatchIt, from Gryphon Software, is the first true visual image processing system. You set it up like a chain of Tinker-Toy blocks, connecting various options together in a visual chain. The Image Processing chain links (called "tiles") can be saved, so that after a successful one is discovered and checked out, it's always available to process images in the future. Each of the Tiles assumes a task in the chain from among the choices listed below. The trick is to start out exploring and building a simple task, and then to expand to multi-processing image files. The visual blocks are much like those used to indicate steps in a programming language, which is exactly the point that BatchIt is making.

The BatchIt Tiles perform different tasks in the processing chain. They can

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process an entire image file (crop, change palettes and resolutions, apply a Photoshop Filter), extract specific data from an image, and also use the data from one image to apply it to another in the chain. Tiles are dragged from the Tile list and dropped in the work area. They require a minimum of 2.5 pixels between them, and they will not paste if you attempt an illegal operation. A marquee placed around a Tile group selects all of the tiles for movement or deletion. The tiles have female input ports and male output ports. Some tiles, those to be placed at the beginning of a chain, have only output ports, while those meant for the end of a chain have only an input port. As expected, data enters through an input port, and is sent on its way, after being processed. from an output port. Tiles are connected by pipeline *Links* that are interactively constructed by mouse selections (as long as the connection makes logical sense). You can type notes that refer to the Link by selecting it and choosing Get Link Info from the menu. The documentation walks you through several tutorial examples.

Tiles parameters are set by accessing their associated dialogs, usually by double-clicking on an appropriate button. Each Tile has a specific task, as explained below.

Blur—eliminates noise in selection.

Brightness/Contrast—Sliders on the Tile adjust these parameters.

Calculator—A pop-up menu lists options, and the Calculator obtains the desired data from the image.

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Color—Sets a color for processing.

Color Space—Sets the color space (RGB, HSC, CMYK, HSL).

Convolution—Applies a convolution matrix to the graphic.

Darken—Darkens the image by a set amount.

Depth—Provides bit-depth data to Tiles.

Flip—Flips the image horizontally or vertically.

Get Color Space—Gets the color space (RGB, HSC, CMYK, HSL).

Get Depth—Finds the most commonly used 256 (or less) colors in the images.

Get Image Size—Gets the data for the image size and passes it on.

Get Palette—Gets the color data of the image and passes it on.

Invert—Turns the image into a negative.

Lighten—Lighten the image with user-defined intensity.

Mixer—A digital mixer with four separate input channels and one output.

Monitor Depth—Views the images bit-depth.

Monitor Image—Enables you to view the image at any point in the chain.

Monitor Palette—Enables you to view the image's palette at any point in the chain.

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Monitor Value—Enables you to see the image value while it's being passed on to interested Tiles.

Open—Enables you to select batches of images for processing.

Palette—Your selected palette data for the image.

Photoshop Filter Emulator—Enables you to select a Photoshop filter and its options.

Resolution—Enables you to set a resolution, which is then passed to Tiles, such as Set Image Size and Set Canvas Size.

Rotate—Sets the rotation value of the image.

Save—Saves the images to a file. You can set all of the necessary parameters and data paths.

Set Canvas Size—Adds or decreases the space around the image.

Set Color Space—Enables you to alter the images color makeup (for example, RGB to CMYK).

Set Image Size—Enables you to change the image's height, width, and resolution.

Set Palette—Enables you to change image's palette type.

Set PAL Depth—

Set Resolution—Sets image resolution.

Sharpen—Sharpens the image to a set amount.

Sink Depth—Takes in bit-depth data.

Sink Image—Takes in image data.

Sink Palette—Takes in palette data.

Sink Value—Takes in image value data.

Splitter—Splits the image's Red, Green, Blue, and Alpha channels, and sends each on to a separate processing source.

Value—Enables you to set a numerical value (Inches, Centimeters, points, Picas, Pixels, Percent, None) which is passed on to other Tiles for processing.

Battery DA

If you're using a **PowerBook** and running **System 7.1**, you can check how much battery life is left by accessing the Battery D/A. This **Control Panel** (which has been replaced in **System 7.5** with the PowerBook control strip) displays a gauge made up of little bars reading from empty at left to full at the right. If all the bars in the gauge are highlighted, the battery is full. As the battery is used, the eight bars begin to turn white one by one until all the bars are white, indicating that no battery charge is left.

There is also a button you can use to put your PowerBook to **sleep** to conserve battery power.

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To use the Battery D/A, follow these steps:

1. Be sure to have a PowerBook running System 7.1 or later.

2. Choose Battery D/A Clock from the Apple menu on your PowerBook.

3. The amount of battery power left is displayed in a bar gauge reading from empty at left, to full on the right.

4. To put your PowerBook to sleep, click the System Sleep button.

See Also
Control Panel; PowerBook; Sleep Command; System 7.1; System 7.5

Battle Chess
See
Chess

Baud/BPS
A system of measurement indicating the speed at which a **modem** (or printer) can send and receive data, usually called *bps* or bits per second.

One baud equals one change of signal status or one data bit per second. At low speeds a baud and a databit are about the same. One character entered on a Macintosh keyboard consists of eight data bits or one *byte* of information.

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When characters are transmitted with a modem a start bit and stop bit are added to each set of eight bits. Therefore, ten bits are required to transmit one character.

At this writing, conventional modems can send and receive at rates of 14,400bps and 28,800bps, also expressed as 14.4Kbps and 28.8Kbps, respectively.

Other data transmission cables use *bps* to express the speed at which they handle data communications. **ISDN** lines, for instance, provide speeds of about 56Kbps to 128Kbps.

See Also
Asynchronous Transmissions; ATM; Data Communications Standards; Modem; Network; Internet; Shiva NetModem; SLIP; PPP; World Wide Web

BBEdit

A text **editor** from Bare Bones Software.

In its early days, the "BB" in BBEdit stood for "Bare Bones." This svelte editor was stripped to the bone—doing little more than simple editing—but fast and efficient for editing source code. BBEdit has gained a multitude of features that puts it in the upper crust of Macintosh editors. Despite the rich feature set, BBEdit remains true to its origins, and is still fast and efficient.

The following figure shows some of BBEdit's features in action. The pop-up

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menu at the top-left of each editing window displays a context-sensitive list of locations within the file. When editing source code, this menu shows all routines within the file; when editing HTML Web pages, it shows all headers and links within the file. Choosing an item from the menu enables you to jump directly to that location in the file.

The group window at the top right enables you to gather related files and manipulate them without having to search for the files each time you need to use them.

BBEdit is fully scriptable using **AppleScript**, **Frontier**, or any other **OSA**-compatible scripting language. There is even a menu displaying any scripts present in a special scripts folder in the same folder as the BBEdit application.

In addition to scripting, BBEdit's feature set can be augmented with **plug-in** extensions. Bare Bones Software released the complete API for creating extensions, and a wide variety of freeware and shareware extensions exist. These extensions extend BBEdit in almost unlimited ways. Extensions exist to manipulate files, send postscript to a printer, and convert between character sets. There is also an extension that can use PlainTalk to have the computer speak the text of the current selection.

With the rise of the **World Wide Web**, BBEdit has taken on another area of text editing: creating and editing **HTML** text for use on the Web. Several sets of extensions have been written for BBEdit to enable it to create and manage HTML files. The most popular of these is the BBEdit HTML Extension, by

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Lindsay Davies (**http://www.york.ac.uk/~ld11/BBEditTools.html**). In BBEdit 3.5.2 and later, these extensions appear as an easily accessible floating tool palette (see the following figure).

Editing web pages in BBEdit does not offer the near-WYSIWYG display of programs like Adobe's **PageMill**, but you do completely control the HTML tags and can preview pages in your favorite web browser directly from BBEdit.

BBEdit interacts well with other programs, such as the Symantec and Metrowerks **integrated development environment**s (IDEs), Frontier, and Internet tools such as Web browsers and FTP clients.

BBEdit comes in two versions: BBEdit and BBEdit Lite. The lite version lacks many of the advanced features of the full version, but has the advantage of being free. You can download BBEdit Lite from most online services, or directly from Bare Bones' Web site.

BBEdit is published by Bare Bones Software:

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BBS

Be

Beach Ball Cursor/Wristwatch

If you ask your Macintosh to complete a task that takes a few moments, the **cursor** will change into an **icon** of a wristwatch, usually with the hands spinning, to let you know it's not frozen and is processing your request. A popular cursor, used by many applications to let you know that you're going to have to wait a few moments before your request is completed, is a round spinning cursor that looks like a black-and-white beach ball. More and more applications are coming out with customized "wait" cursors that feature the

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company logo, the product name, or a small animation. A third-party add-on called ClickChange by DublClick Software enables you to customize the wait cursor and choose from a host of wait cursors with some clever full-color animation.

See Also
Cursor; Icon; Frozen

BeBox

See
Jean-Louis Gassée

BeforeDark

BeforeDark is a **shareware desktop pattern** utility that enables you to use up to a full 256 x 256-pixel image size to create complex background textures. BeforeDark is a stand-alone **utility** and it enables you to create, edit, and import **PICT** images for use as a background texture on your desktop. BeforeDark was later transformed into a commercial desktop pattern utility called **Chameleon** , which was released as part of the Seventh Heaven Utilities for System 7 by Logical Solutions.

See Also
Chameleon; Desktop Pattern; PICT; Shareware; Utility

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Bell 103
See
Modem Protocols/Modulation Protocols

Bell 212a
See
Modem Protocols/Modulation Protocols

Benchmark Tests

When people compare computers and the software that runs on them, they want something quantitative—speed, size, price, or a feature list. Benchmark tests are the primary tool used to evaluate speed. For the computer itself, tests such as **Speedometer** are commonly run, and you can get results measured in **MIPS** (millions of instructions per second) and **MegaFlOps** (millions of floating point operations per second). There are also test programs that rate the efficiency of the **compilers** and other development tools for the platform, as well as being able to compare how different models relate using the same benchmark test from the same compiler. **Dhrystone** and **Whetstone** are two of the more common compiler tests. A benchmark comparing two word processors might be how quickly you can spell-check the document or change all occurrences of "IBM" to "Apple."

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Berners-Lee, Tim

One of the inventors of the **World Wide Web.** The Web was proposed by Tim Berners-Lee at **CERN,** the European Laboratory for Particle Physics in Switzerland. Currently Berners-Lee is director of the **W3 Consortium** at MIT. Home page: http://www.w3.org/hypertext/WWW/People/Berners-Lee-Bio.html.

Bernoulli Drive

Superficially at least, Bernoulli drives and cartridges are similar to the **SyQuest** removable hard drives familiar to many Macintosh users.

The Bernoulli drive itself is an external **SCSI** device into which the Bernoulli cartridge is placed. A special driver enables the cartridge to mount and dismount in much the same fashion as a floppy disk.

Underneath, however, the differences are significant.

Unlike SyQuest cartridges, which use **Winchester** technology, Bernoulli

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cartridges are not hard disks at all. They utilize drive heads which move back and forth across a platter to read data but the platters in a Bernoulli cartridge are flexible. This flexibility is quite deliberate and allows the platters to take advantage of the **Bernoulli Effect** to keep the platters very close to the **read/write heads** with little chance of a head crash.

The platters inside a Bernoulli cartridge are spinning in a chamber filled with filtered moving air. This reduces the air pressure between the platter and the read/write head, which induces the Bernoulli effect, drawing the flexible platters towards the read/write heads.

See Also
Backing Up with Removable Cartridge Drives

Bernoulli Effect

Bernoulli's Law, named after its discoverer, Swiss mathematician and physicist, Daniel Bernoulli, states that the pressure exerted by a non-compressible fluid (such as air) in motion is inversely proportional to the square of its velocity. So the faster a fluid flows through a given space the lower the pressure felt by objects within or at the boundary of that space.

The Bernoulli Effect is the name given to the observed behavior of objects affected by this fluid flow.

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Beta Testing

After a piece of software under development by a software manufacturer reaches the later stages of development, it is often sent into what is called beta testing. Beta testing is done after the product is **alpha tested** by the compiler's in-house staff, and the software has been recompiled to a **beta version**. There may be a number of different Beta Versions as bugs are fixed and features are added or deleted.

The beta version is when out-of-house users test a pre-release copy of the program for bugs, software glitches, conflicts, and generally give their thoughts on the product. Sometimes **beta testers** give important feedback on what they like about the product and what areas they feel should be improved. Beta testers are encouraged to push beta software to its limits and to use it in a variety of taxing situations to help find flaws or bugs in the program that should be caught before the final product is compiled.

Beta testers are generally not paid for their work, but they are often offered a significant discount, or even given a full-shipping version of the software product after it ships. The feedback that the company receives from beta testers is often used to make last-minute changes or bug fixes to the product before the final version is compiled (referred to as the "golden master" or "going gold"). The gold master compiled at the end of the beta testing period is used to create the final shipping version sold to consumers. Theoretically, the shipping version shouldn't contain bugs and glitches. Hopefully these are caught and fixed in the alpha and beta testing stages.

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Beta Versions

Near the end of the development stage of a software or hardware product, a beta version of the product is compiled. This is compiled only after the original version of the new product, called an **alpha version** , has been thoroughly tested by the developer's in-house staff in a process called **alpha testing** . During alpha testing the software is tested and retested in-house to catch any bugs or problems with the product. After the problems are fixed and the bugs are found in the alpha version, the company recompiles the software into a near-final version called the beta version. This version is important because it is given to select members of the public to test the software or hardware product in their own environment to find any glitches or bugs in a real-world environment before the product is sold commercially. These select members of the public are called **beta testers** .

Beta software often goes through a number of versions as bugs are fixed and features are added or deleted. To find out which version of the beta software is being used, a beta tester can choose "About This Software" from the top of the Apple menu, and the application's splash screen will usually have the Beta version number listed. Also, the letter "B" is often used to denote a beta version. Example: Version 1.0b.

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Beta software is often prone to crashes and other conflicts as it is solely used for testing purposes and is not a final shipping version. Beta version also often contain "debugging" software built into the version to enable programmers at the software company to debug the software easily. This can add to the overall size of the beta version and greatly affect performance. When the beta testing stage is over and the final version is compiled, any debugging software is removed.

See Also
Alpha Testing; Alpha Version; Beta Testers; Beta Testing

Bézier Curves

Named after the French engineer who invented them in the early '60s for use in the body design of Renault cars, Bézier curves are defined by three points: a center point and two exterior, or control, points that control the shape of the curve but aren't on it. As seen in most PostScript drawing programs, these curves are defined by points with levers or "handles" coming off them. Users adjust curves by moving the handles.

Big Business

Offering more than a financial management system, Big Business bills itself as the "complete management system." It combines an accounting system

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with a relational database, giving you the capability to prepare and send quotes, schedule payments to vendors, and keep track of inventory and sales. It uses a series of toolbars and graphic interfaces and is designed to be networked with password protection, so that different users have access only to those functions they need or have been trained to use. The interface is occasionally confusing, as there are some icons that seem to be just for decoration.

The sales staff can use Big Business's client database and product database to create quotes for customers and to reactivate dormant accounts by checking to see who hasn't bought the product in 30, 60, 90, or more days. The warehousing and shipping staff can keep a close eye on inventory and re-order items as soon as a critical level is reached. The bookkeeper can use it to post receivables and payables and to write checks to vendors. It reconciles bank balances, but it doesn't do payrolls or 1099s or any type of tax forms, including sales tax.

There's a note function that lets users pass messages, reminders, and schedules back and forth with other Big Business users on their network. Dated notes can serve as an inter-office calendar. If, for example, you plan a meeting for 9 a.m. on November 8th, a dated note will cause it to appear on the calendars of all to whom you send it.

Big Business has some very powerful features that aren't relevant to all kinds of businesses but make it an ideal program for those who are involved in sales. The major feature is the ease of recording and maintaining client

contacts. Each customer has a card with contact, shipping, and billing information. A second card with the customer's sales history is linked to that card. Clicking a line entry for a previous sale brings up the invoice, so you can see exactly was what ordered. You also can see whether or not it has been paid, and if so, how long it took. The customer card is also linked to a customer folder with space to enter a call record, notes, and relevant personal information. (Many sales people use these cards to list the names of the customer's spouse and children, hobbies, or likes and dislikes.)

The customer card gives access to three kinds of customer information windows: quotes, sales orders, and invoices. The quote is a proposal to sell a product or do a job for the customer at a certain price. If the customer accepts the quote, you turn it into a sales order, which allocates the items to be shipped, specifies the shipping method, and subtracts the items from inventory. When the items are ready to be shipped, the sales order is converted into an invoice, which represents the actual sale and is posted into the accounting system. If you are preparing a quote for a customer, you can adjust the profitability of the job by simply typing in the profit margin you want to end up with. BB adjusts the selling price, based on the cost of the material(s) you use for the job, to reflect any profit margin you want.

Because Big Business can track so much data about your customers and vendors, finding exactly what you're looking for could be tricky, but, thanks to the QuickSearch function that lets the user specify exactly what information to look for, it's not. You can find all the clients in a particular city, all the bills larger than a specified amount, all the items you've

purchased from a particular vendor, or all the customers who have bought a specific item. Searches are based on fields, from which you create a "sentence." For instance, combing the fields "zip code," "begins with," and "021" would find all the customers in eastern Massachusetts.

Big Business isn't for everybody. It's ideal for certain kinds of businesses, specifically those that do a lot of telemarketing, those that carry an inventory of items for sale, and those who have pricing based on volume or competitive bids. It's not the most powerful accounting program, but the sales management tools make up for many of its weaknesses. The lack of a payroll function, however, might be a problem for many users. Perhaps a future version will include this, with a tie in to salespeople's commissions.

See Also
Financial Software; MYOB (Mind Your Own Business); Peachtree Accounting

Big:Calc Program

Big:Calc is the Macintosh calculator program designed especially for people with special needs. This talking calculator features big numbers and high quality speech. It works just like any other calculator program, but has the advantages of really big numbers and keys, and built-in speech. Big:Calc can be used alone or with databases, spreadsheets, or number programs. At the user's option, equations can be viewed vertically or horizontally. Users can enter data by mouse, keyboard controls, or by touching the numbers on an

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optional TouchWindow touch screen.

Dyslexic students who frequently reverse the order of numbers receive instant acoustic feedback on the accuracy of their typing. The layout, font color and size can be changed to suit the user's age and math needs, as well as his or her preference or visual requirements. The many speech options enable users to hear numbers, functions, or entire equations depending on what best meets their needs.

Binding Margins
See
Margins and Tabs

BinHex

A method of **encoding** Macintosh files so they can be transported across a network such as the **Internet**.

BinHex is a way of encoding files from 8-bit to 7-bit format while preserving file attributes. Macintosh files consist of both a "resource fork" and a "data fork." When Mac files are transferred to other operating systems, everything in the resource fork has to be moved to the data fork in order for the file to be stored in the other operating system's directory.

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BinHex encoding converts a binary file to a 7-bit format while preserving attributes such as the resource fork. It can be used to encode any type of file, including word processing, graphics, spreadsheets, and software applications. BinHex'd files are signified by the extension ".hqx"—a common sight on Mac **FTP** sites such as **software archives** .

The shareware application BinHex is used to encode BinHex files, whereas BinHex or **StuffIt Expander** can be used to unencode the files.

See Also
Encoding Files; FTP; Internet; Mac Software Archives; Stuffit Expander; World Wide Web

Bit Depth
See
Color Resolution

Bit-Smoothing, See Printing Technology, PostScript Lasers, Halftoning

Bitmap Image
Bitmap image describes a digital image created by a scanner or painting software that has a specified number of **pixels** per inch. Bitmap images are also called raster images and must be converted to halftones or stochastic

screens to be printed.

See Also
Prepress; Printing Methods, Digital

Bitmap and 3D Object Formats

The development of computer graphics over the years has not always taken place in a planned manner. Software developers have introduced new products without taking the time to structure their software so that it is friendly towards similar software already on the market. When software packages can communicate with each other in some manner, we say that they can "handshake". One of the major factors that allows different computer graphics software packages to handshake is how they incorporate and address, read and write the data that describes graphics, 3D objects and animation. This is important to consider when purchasing a piece of computer graphics software for two main reasons. The first is that some formats are associated with a deeper representation of the data than others, so the computer graphics artist needs to have the highest data standards in mind for archiving work at the highest quality level. The second reason to dwell on the importance of file formats is that often a computer graphics artist will use several different pieces of software to accomplish a task. Each package in a group of packages may offer a needed tool or an effects capacity for the project at hand, where no one piece of software may hold all of what is needed. When that's the case, accurate handshaking has to exist between

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different software alternatives.

There has been an ongoing debate in the industry over whether it is best to enforce a file standard for each of the main areas of concern for computer graphics: 2D images, 3D objects, and animation. Everyone looks longingly at what was accomplished with electronic music with the implementation of the MIDI standard, even though there are some disagreements over the potentially negative outcomes of that decision (For instance, are sixteen channels of sound enough for today's production needs?). Most of us can also remember the time when there was a world class argument going on concerning the establishment of a standard for videotape recording and playback, and the resultant demise of the Betamax format in favor of VHS. There's lots of money to be made in reinforcing a standard, especially for the company or companies that own the patent on it. So where does that leave us as far as computer graphics is concerned?

At the moment, and for the foreseeable future, it leaves us just about where we started. There will be no single standard for any of the three main areas of computer graphics at any time soon, though there are several options that professionals in the field seem to gravitate towards in all three areas.

2D Picture Formats

The two groups represented here are vector graphics and bitmap graphics. Vector graphics come in several flavors, although vector drawing itself is the topic heading. Vector graphics are represented as directional data in the computer, meaning that a vector drawing can be described by notating the

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length and direction (curve) of each component (linear segment) of a drawing. Vector graphics can be saved in a much smaller space because the information needed to describe a very complex vector drawing comprises fairly small files. Vector graphics always print out at the highest resolution of the printer, so vector drawing is the format of choice for desktop publishing. The other 2D picture formats, called raster or bitmapped files, take much more data to describe, and hence need much larger file sizes. Bitmap graphic data has to describe not only every picture element (pixel) on the screen in terms of its location, but for professional 24bit graphics the data must also describe the color and luma (light or brightness) information as well. Each pixel in a bitmap drawing must be described by from two (black and white) to thirty-two separate pieces of data. Pixels, the lowest denominator of a bitmap picture, are rectangular or square in shape. For that reason a close zoom in on them shows their stair-stepped or jagged edges. Bitmap graphics are used for any medium that is based on video because this stair-stepping doesn't matter in a medium that has far less resolution than printed copy demands.

There are relatively few vector file formats compared to the number of raster file formats in use. Vector formats include Postscript, EPS (Encapsulated PostScript), and a number of additional vector formats remain particular to specific software. Bitmapped graphics however, the main vehicle for transmitting picture information in the computer graphics realms, has at last count) around fifty specific formats. Some formats are identified as Mac specific and some as specific to other platforms, though the

tendency now is to make all formats cross-platform translatable. "TIFF" ("TIF" in many Windows environments) is the highest quality format of choice for DTP work, while a format like BMP (bit-mapped picture) is identified with Windows and MS/DOS platforms. The GIF format was initiated by Compuserve, IFFs are Amiga specific, and the PICT format has long been identified as the Mac choice (some Mac software still writes and reads only PICT files). Most 2D graphics programs contain lists of file formats they can either or both read and write.

The JPEG format is a special case. It is what we call a "lossy" format because of the way that it saves data. In JPEG (and that includes PICT JPEGs), groups of pixels are read at one time, and the format determines if there are repetitive patterns that can be digested as a whole, with certain guesses made about how the pixels overall are grouped. Even with the highest quality JPEG (high quality = less compression), this "guessing" causes the loss of a certain number of pixels. This is not noticeable except in the case of human faces and gradients. In these two cases, there can be a visible banding in certain parts of the image. In the case of images of the human face or large gradient areas, it is not advisable to use JPEG, or if you do, always use the highest quality setting. A caution overall is to use the highest setting at all times, which often reduces the file size by at least 25%. The second caution is to avoid loading in a JPEG, working on it, and then saving it out as a JPEG again. All that does is to emphasize the lossiness in areas where it's likely to occur.

All of this can also be repeated when it comes to 3D object formats, except that the names of the formats are different. 3D object formats describe where a

point on an object is in Cartesian XYZ space, what shape the polygons are, and where the polygon's "normal" (an imaginary line perpendicular to the plane of the polygon and usually drawn from its center) is pointing. Some 3D object formats also contain data about the objects color and other attributes, as well as what axis it sits on and its relative real-life size. The format that has come to be a near-standard for translating 3D data amongst different software and even different platforms is DXF, a format that started out as CAD specific. There are, as confusing as it may sound, different flavors of DXF. Some contain more data relevant to the object than others. Most 3D software nowadays contains internal translators that allow you to import/export 3D object and scene files in a number of formats, so that a 3D scene might be modeled in one software environment and rendered in another. Although there are a number of 3D translation packages in the Windows environment, there are none on the MAC side. For this reason, a MAC-centric artist/animator has to look at the specific 3D software being purchased for its capability to read/write other 3D object formats if that is a considered need.

When it comes to 2D raster or bitmapped graphics however, the Mac is blessed with a high quality stand-alone piece of software that is known for its options in translating and processing all of the best known formats. Equilibrium's DeBabelizer is aptly named, since its mission is to bring some sense of order and handshaking to the sometimes confusing and inhospitable realm of multiple graphics format conversion. It solves most of the problems encountered by the computer graphics artist and animator who needs to translate one 2D graphics format, and even several animation formats, into

other formats. DeBabelizer addresses common and uncommon 2D raster graphics formats. DeBabelizer works in one of two ways, either as a format conversion engine or as an image processor in the intermediate step between input and converted output.

File Formats

DeBabelizer 1.6 has the capability to access the following file formats on the **Mac:** Clipboard, EPSF (grayscale and color, with or without PICT preview), MacPaint, Photoshop, PICS (animation), PICT 1 & 2, PixelPaint 1.0, Quicktime movies and stills, RIFF (BW, Grayscale and RGB), Scrapbook, Startup Screen, System 7 picture icons and previews, TGA (Truevision/Targa 8, 16, 24, 32, compressed and uncompressed), TIFF (all formats including Thunderscan compression), Thunderscan.

On DOS/Windows: BMP (compressed and uncompressed), Dpaint Anim, Dr. Halo, EPSF (Grayscale and color), FLI/FLC (Autodesk Animator), IMG (Ventura Publisher GEM), Lotus Pic, MSP Type 1 (Microsoft Paint), PCC, PCP (B&W PC Paint), PCX (PC PaintBrush color and B&W), Pictor, TGA (TrueVision/Targa 8, 16, 24, 32 bits, compressed and uncompressed), TIFF (Grayscale and color, also with LZW compression), WPG (WordPerfect Graphics).

General— JPEG, Abekas digital video, BOB, GIF (interlaced and non-interlaced), Pixar, raw Custom, Raw RGB, RLE (Compuserve), QDV, PhotoCD.

Apple Series —Apple II and IIGS (paintworks)

Commodore —Commodore 64 (Koala, crunched, packed, uncompressed).

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Amiga Technologies —IFF ILBM (HAM, SHAM, DHAM), IFF (1 to 8, 16 and 24 bit, PBM).

Atari Series— Degas, NEO, Spectrum.

Silicon Graphics— Image files.

Sun Microsystems— SUN rasterfiles.

XWindows— XWD screen dump.

Cross-Platform Work

There are several ways to access non-Mac system disks for translating files. You can connect DOS/Windows systems and Macs via a network cable (see your manuals for directions and needed hardware and software). You can also send files over a modem from one system to the other. The simplest way to get DOS/Windows files into a Mac is to use the Mac's compatibility for reading DOS/Windows disks. These can be floppy disks or removable media (like the new Zip drive cartridges).

Batch Processing

DeBabelizer supports full batch processing features, You can select image processing effects or simple format conversion, target a list of files, and set the processes in motion. The batching progresses automatically.

Other Features

You can use any of the Photoshop filters in your Photoshop filter folder

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simply by telling DeBabelizer where they are in its preferences dialog. In addition to this, DeBabelizer has its own collection of image processing tools. Among these is the capability to change all of the incidences of any color in the image, finding the palette index number of any paint color, altering index numbers, painting tools, complete file info dialogs, overlaying text on the image, changing resolutions and DPI settings, scaling, dithering, generating animations and more. This software is not meant for beginners.

Bitmapped Graphics

Scanned images are probably the most common kind of bitmapped graphic. These graphics are made up of tiny dots (represented by **pixels** on the Mac's screen), each in a particular location and each a particular color. Each dot can be modified without affecting the dots around it.

Depending on how fine the grid of dots within the image is, those dots may be visible as squares—this is what's meant by the term "pixellated." If a bitmapped image is created and then viewed or printed at a larger size than the original file, the dots again become apparent. The image looks coarse and "jaggy."

The file size of bitmapped graphics is related to the resolution and size of the image—the larger the image and the higher the resolution, the larger the file.

Vector graphics are the alternative to bitmapped graphics; these are defined in terms of lines, curves, and fills—complete objects—rather than in

terms of pixels.

See Also
Pixel; Vector Graphics

BIX

Acronym for BYTE Information Exchange. This online commercial information service is now owned by General Videotext Corporation, but was previously the online arm of BYTE magazine.

BIX is among the oldest of the **commercial online services** and has a direct connection to the **Internet** . This makes it easier to send and receive Internet **email** than from other services. You can **FTP** files from Internet **host** s, **telnet** into BIX from the Internet, and read **Usenet** news with the popular UNIX nn Newsreader.

The Internet discussion areas on BIX provide an excellent place to talk about exploring the Internet. Instead of storing the file on the BIX host machine and requiring an extra step to download it, BIX has set it up so that files are automatically dumped to your Mac via **ZMODEM** or whatever transfer protocol you normally use to download files from BIX. Queueing up files and then downloading them when you're done can be more efficient than sitting through each successive download, especially if the **modem** is slow.

To send email to someone on the Internet, you type the Internet email address

instead of the BIX username. Sending mail to BIX is equally easy. Simply append @bix.com to the end of the BIX username and send it.

To get an account on BIX, have your modem dial 800-695-4882 or 617-491-5410 (use 8 data bits, no parity, 1 stop bit, full duplex). Press Return a few times until you see the Login: (enter "bix") prompt, and then type bix. At the Name? prompt, type bix.net. If you prefer, you can also telnet to BIX to sign up.

BIX has relatively high rates, but there is a special price for frequent users.

See Also
Commercial Online Services; Email; FTP; Host; Internet; Modem; Telnet; ZMODEM

Black Type
See
Typesetting Terms

Black Box 2.0
This is a small collection of high quality filters. There are ten in all: Carve, Cutout, Drop Shadow, Glass, Glow, HSB Noise, Inner Bevel, Motion Trail, Outer Bevel and Swirl. These are all warp filters in that they impose new graphics

parameters and elements on the selected graphic. Each is highly user configurable, and also contains a movable preview window.

Carve / Cutout: These two filters are very similar. Carve takes the selected area of a graphic and makes it appear that the selection is carved out of the surface. Cutout takes the selection and makes it appear that the graphic has a hole cut in it. Shadow orientation and depth, color, picture density, light direction and bevel width and shape are all addressed in Carve. Cutout allows you to change the Shadow offset blur, opacity, depth, color and the background color. Each filter has a list of defaulted selections to get you started exploring.

Drop Shadow: This is the opposite of a cutout in that the selected area seems to be raised above the surface of the image. You can set the shadow depth, opacity and color.

Glass: Unlike glass effects in other plug-ins, the Black Box glass effect appears as a much more organic overlay, and can be endlessly configured to achieve whatever degree of mechanical or organic look is desired. Refraction, light source, flaw thickness and spacing, opacity, color, bevel width and highlight sharpness and amount are all adjustable. This is a great filter to use when rendering water, and can also be used to fabricate lava and other materials.

Glow: This effect adds a halo glow in your choice of color, opacity and size around any graphic selection. Use it to produce angelic halos and coronas around digital stars. Fade amounts are also configurable.

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HSB Noise: This effect sprinkles noise around the selection, augmented by your choice of hue, saturation and brightness variations.

Inner Bevel / Outer Bevel: Several types of bevels are supported. User configurations adjust color, shadows, and bevel sizes. An inner bevel is a carved bevel while an outer bevel pops out of the screen. Outer bevels make great multimedia buttons.

Motion Trail: This is a directional smear. Pixel length, opacity and direction can be configured.

Swirl: This is the most alluring filter that Black Box offers, and no other plug-in package duplicates it. Swirls are defined disturbances in the selected graphic, and can be used to mimic hair or watery wavelets. Amounts, direction, disturbance amounts, sizes and opacity can be configured by the user.

Blackletter Typefaces

See
Typeface Categories

Bleed

In the graphic arts, a bleed is any printed image that runs off the edge of the

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page. Photographic images, background patterns and colors, and accent graphics are the most common bleed elements in graphic design. For a bleed to occur, the image must physically extend about one-eighth of an inch beyond the trimmed edge of the page. A bleed contributes to the overall visual impact of a page design by breaking up the framing effect of margins to increase dynamic tension.

See Also
Printing Terms

Blessing a System Folder

The folder on your **startup disk** that contains the System and Finder files is called the Blessed folder. Any folder that contains these two files, will have its icon changed to a folder icon with a small Mac in the middle of the folder, that looks similar to the **happy Mac** you see when you first boot your Mac. The System File and the Finder File are stored in a folder called the System Folder and it is the blessed folder. If for some reason you moved the System File and the Finder File out of your system folder and put them into a different folder, this new folder would then become the blessed folder, even though it is not named System Folder. The name System Folder is used to help you locate your Mac's System Files, but the folder that has the small Mac icon on the front of the folder, is the blessed folder and it contains both your System File and your Finder File.

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When you **startup** your Macintosh it will look for the "blessed folder" to find the necessary software to startup from.

To create a Blessed folder, follow these steps

1. Create a new folder by choosing New Folder from the File menu.

2. Drag the **System File** and the **Finder File** from your system folder into this New Folder.

3. A new folder icon with a Small Finder Icon on it will appear on the folder indicating that this is the "Blessed" folder containing the System and Finder files.

See Also
Boot; Finder File; Happy Mac; Startup; Startup Disk System; System File

Blind Transfer
See
File Transfer Protocols

Blinking Question Mark Icon
When you **start up** your Macintosh, it does a diagnostic check and looks for **system software** to load. If your Mac finds working system software, it

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displays a **Happy Mac** icon and loads the system. If the computer cannot find a working version of your system software, it displays a **disk icon** with a blinking question mark, alerting you that it cannot find a working system to startup from, as shown in the figure. If, for example, the system file is damaged or if one of the key system files (such as the Finder file) has been accidentally moved outside the System Folder, your Mac cannot startup from this system and will flash a blinking question mark icon instead of a Happy Mac, telling you it can't find an operable system to startup from. The Disk Tools disk (part of your system software disks from Apple) has a skinnied down version of the system on the disk, and you can insert this disk to startup your Mac. After your Mac has started up from this disk, you can look at your system to see if there is a valid System Folder on the disk you are trying to startup from.

See Also
Disk Icon; Extensions; Happy Mac; Startup; System Software

Bliss Paint

There is some question whether this software is more of a painting or an animation program. Its painting tools are global environments (called "**distributors**") and brushes (called "**scribblers**") that produce color-cycled animated paintings in 256 colors. (The screen has to be set to a 256 color mode for you to appreciate Bliss paint's animation output) To capture the flavor of Bliss Paint's '60's psychedelic foundation, you only have to quit

the program. A sign appears telling you how long you have "blissed out". The blissful animations can be viewed on your monitor, or saved as QuickTime movies or single PICTs. In addition to its scribblers and distributors being selectable from on-screen lists, Bliss Paint lets you control the graphics with keyboard commands. Colors are assigned letter keys, while shift and option key alternatives change the waveforms and random/mouse directional choices. Number keys are used to control the oscillator speed settings, while oscillator ranges (wide/narrow and light/dark) are controlled by option-letter combinations. Other less intuitive key assignments control other color models. A full keyboard map of these input assignments comes with the program. Alternate disks packed with animations, scribblers and distributors can be purchased separately (Geometric Bliss, Waves of Bliss, and Bliss Gallery).

Bliss distributors set the path on the rendering screen that the scribblers will be directed towards. The "corners" distributor, as an example will place the chosen scribbler brush (i.e., the "sea anemone" brush) on the corners of the rendering screen. Otherwise, you can place brushes with the mouse. A brush selection area marks the spot where a chosen scribbler begins to grow. A full animation recording facility allows any Bliss animation to be written out as a QuickTime movie, and screen sizing controls are included.

Bliss Saver is a complimentary program, using Bliss Paint cycled animation paintings as screen savers. Unlike other screen saver utilities, Bliss Saver allows you to interact with the on-screen animation via keyboard hot keys, changing the colors of the cycling animations. Bliss Saver comes with its

own set of animations, but you can use animations you've created in Bliss paint as well. The only caveat is that screens must be set to 256 colors, as neither Bliss Paint nor Saver work in 16 or 24 bit modes. Normally Bliss Saver is placed in the startup file, where it works automatically when it senses screen inactivity. It may also be placed outside of the startup folder, and started manually.

Blood Bath

See
First-Person Perspective Shooters

Blown Away

See
Hollywood Games Connection

Blue Meanies

Apple's **System 7** project was a huge undertaking. By the end of the development process, there were close to 1,000 people working on the project. In a project that large, with many separate pieces of software that must come together into a coherent whole, it is sometimes difficult to keep

everything together.

Apple helped avoid some of the problems by forming a software integration team whose job it was to oversee the technical side of the development process and to make sure that everything worked together properly. This small group of talented programmers was known as the *Blue Meanies*.

The Blue Meanies are often erroneously given credit for writing *all* of System 7. Although their contribution was crucial to the success of the System 7 project, they were only a small fraction of the total group of people working on the project.

See Also
Macintosh, History

Blue Screening

Used frequently in video and film production, blue screening is a method of compositing two images. Typically, this technique places an object or person over a background image (for example, a TV weatherman appearing in front of a weather map). First the foreground object (the weatherman) is shot in front of a single color background (originally blue, many are colored green). This results in a picture of the weatherman and a single background color. Using special software (and/or hardware) this background color is made transparent, and the background image (the weathermap) becomes visible where the blue area in weatherman image was.

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The QuickTime video editors **Premiere** and **VideoShop** both provide blue screen effects. You choose the color in the first clip that is transparent using an ink dropper. Rather than just choose a single color, the programs enable you to specify a range of colors around the original color using a slider. Unless the original clip was created using graphics software, this is required because the color in digitized video is never completely consistent, no matter how well-lit the background. The smaller this range is, the more realistic your final image.

When producing your blue screen video, it's important to provide a clean video signal and to light the background evenly and brightly. The more pronounced the difference between the background and your foreground object, the better the effect.

See Also
Compositing; Video Digitizing

Bold

See
Boldface

Boldface

Boldness, applied to **type**, designates a heavier, blacker version of a **font**. In

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the early days of Macintosh, the application's Style menu would enable you to apply any of six different styles to your **bitmapped** font. You could set your pages in Geneva Bold, Times Italic, Cupertino Outline, and so on. The Mac would automatically adjust the bitmap as needed, making it 20 percent wider for a bold character, applying a 12 degree right slant for italics, and so on. These styles were reasonably satisfactory on the existing **dot matrix printers** of the time.

When **laser printers** and **PostScript** outline fonts came into existence, they required a different method for specifying type. The PostScript font descriptions were written separately for each style within the font family. You'd have, for example, a font called Bookman. And with it, you'd have Bookman Bold, Bookman Italic, Bookman Light, Bookman Narrow, and even Bookman Demibold Condensed. There are also fonts that are darker than normal bold. These are designated "Black."

To make matters more confusing, you can still apply menu styles to your already styled fonts. The figure shows the results of applying the Bold style to two already dark fonts, Arrus Bold and Arrus Black.

See Also
Fonts; Typesetting Terms

BinHex File
See

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Encoding Files

Bjarne Stroustrup
See
C++

Bomb
See
Crashes, System

Bomb Icon
If your system experiences a **crash** or **freezes**, an **alert box** with an icon of a bomb might appear telling you, "Sorry, a system error has occurred." This is the standard bomb alert box; it's letting you know that your system is frozen, or "bombed," as it's often called. In this alert box you have the choice of choosing Cancel or **Restart**, as shown in the following figure. Unfortunately, the Cancel button never works, and, depending on how bad the system crash was, the Restart button may not work either. Usually you have to manually restart your Macintosh by pressing the Control-⌘-PowerOn key.

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Bookmark CD

Boolean Query

A Boolean query is a feature of **a Wide Area Information Server (WAIS)** that provides a search for two related keywords joined by Boolean operators such as "and," "or," or "not" that appear in a search string. Boolean queries make search engines more focused and powerful.

Boot

Boot is a popular computing term that means **starting up** your computer. The term boot is used as a synonym for the word start that originates from

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the saying "to pick oneself up from one's bootstrings". If, for example, someone tells you to boot up your computer, they're telling you to startup your computer. If they tell you you're computer won't boot, it means your computer won't start. If you're using your computer and you need to restart, you'll often hear **restarting** referred to as **rebooting** . Boot and start mean the same thing; it's just computer lingo.

See Also
Reboot; Restart; Starting Up

Boot Disk

Your boot disk is another term (in computer jargon) for your **startup disk** . Your startup disk is the disk that your system software is on and your Macintosh **starts up** , or boots from. Boot is basically a synonym used in the computer world for "start." So your boot disk, is your startup disk. And your startup disk is the disk your Mac starts up from. That disk contains the necessary system software to startup your Mac.

See Also
Startup; Startup Disk

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Boris Effects

Boris Effects is a set of plug-in effects that work with Adobe **Premiere** and Data Translation's **Media 100** . This set is notable for its 3D effects. The effects can be adjusted over a length of time by setting **keyframe** locations. The **plug-ins** provide a good preview of what they do, but they can take a long time to create the final movie effect.

Artel Software
Premiere $350
Media 100 $695
email: byamnitsky@aol.com
Phone: (617) 566-0870

See Also
Premiere; QuickTime

Boxing Games

See
Sports Games

BPS

See

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Baud/BPS

Brain Games

See
Puzzle Games

Breakout

Breakout was an early successor to the Pong video game. In Breakout, a ball is bounced off a paddle, controlled by the player, to smash out bricks in a wall opposite the paddle.

When **Steve Jobs** was working for Atari, he accepted an offer from Atari's head, Nolan Bushnell, to create the circuitry for this then new game. The task turned out to be beyond Jobs' skill level, so he turned to **Steve Wozniak** . Woz and Jobs worked feverishly to get the game done on a very tight deadline. Despite Woz's full time job at Hewlett Packard, he managed to get a working prototype done in four days.

Jobs paid Woz $350 for the project, which he claimed to be half of the total they were paid by Atari. Only years later did Woz learn that Jobs had actually been paid $5000 for the project.

Ironically, Steve Wozniak's design was never used by Atari. His design was so

clever that no one at Atari could figure out how it worked and therefore couldn't test it. In the end, Atari redesigned the whole game.

Breakout has shown up in interesting places since then. One of the best is an **Easter egg** in System 7.5. Dragging the words "secret about box" from any drag and drop-aware application (such as SimpleText or Note Pad) onto the desktop reveals a simple breakout game with the names of system engineers on the blocks (see following figure). Note that this Easter egg works only with the original System 7.5, not 7.5.1 or later.

See Also
Easter Egg; Jobs, Steve; Wozniak, Steve

Breakout in System 7.5

Breakout (designed originally by Steve Wozniak's for Atari) has shown up in interesting places. One of the best is an **Easter egg** in System 7.5. Dragging the words "secret about box" from any drag and drop-aware application (such as SimpleText or Note Pad) onto the desktop reveals a simple breakout game with the names of system engineers on the blocks (see the following figure).

BreakThru

BreakThru resembles another Alexey Pajitnov creation, the **Puzzle game**

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Tetris . Using the mouse, you remove colored blocks to tear down a wall. To make things more difficult, more blocks are constantly being dropped from the top of the screen, building the wall back up. Strategy is involved in eliminating all of one color at any given time, for example you can only destroy a block that is touching one of its own color, but as many are touching in a sequence are destroyed with one mouse click.

If you time it right, you can, for example, eliminate all red blocks on the screen in one click. As levels progress, spiders drop from the top of the screen. They hold blocks up and away from like colors. Also, tin cans and boulders are introduced that cannot be destroyed by the mouse. Bombs destroy anything next to them and rockets clear a straight path depending on the direction they are pointing. BreakThru is a definite time-stealer and will keep any brain teaser fan captivated for countless hours. Like other puzzle games, the simplicity of the title never really becomes monotonous, only more addictive as you try for that high score.

See Also
Puzzle Games; Tetris Gold; Troubled Souls; Zoop

BRI

See
ISDN

B

Bridges

Bridges amplify **network** traffic in a fairly similar manner to repeaters or hubs. However, in addition to boosting the signal level, bridges are semi-intelligent devices that can look at each message they receive and decide which side of the bridge a message is addressed to. By analyzing each message, bridges only let messages cross that are intended for a computer on the opposite side. This type of device is very useful when slower connections, such as telephone lines, are used between networks. If a bridge has, for example, nodes A and B on one side, and C and D on the other, a message passing from A to B doesn't cross the bridge, and therefore doesn't slow down the functions of C and D.

A special type of bridge, the multiport bridge or switch, is gaining increased popularity on **LANs**. The switch can separate network traffic into multiple smaller segments by quickly examining only the source and destination portions of network traffic, and keeping traffic isolated to the ports for which the traffic is destined. Because of their limited range of functions, a switch can often work more quickly and more economically than can a router for network segmentation.

> Hubs can not translate protocols between the individual ports — they can not, for example handle EtherNet traffic on one port and LocalTalk traffic on another. Translation tasks must be performed by a Router.

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Brightness

See
Monitors, Image Quality

Brightness Control Panel

This **control panel** was developed for Macintosh computers that were self-contained units with a built-in monitor (the Mac Classic and the Classic II) or had monitors that did not have external brightness dials. The brightness control enables the user to change the brightness from maximum to minimum by **dragging** the **slider** until you reach the desired brightness.

See Also
Click and Drag; Control Panel; Slider

Brøderbund Software

See
Art of Magic, KidPix, Living Books, Logical Journey, Math Workshop, Myst

Browser

See

B

Browser (Programming)

A browser is a special kind of **editor** designed to enable you to see patterns and interrelationships in source code and easily manage large sets of code.

The browser included with **Symantec C++** (see figure) is typical of many browsers. The browser window includes a number of separate panes, each containing a certain kind of information. Browsers are best suited to managing **object-oriented programming** projects. Thus, they are often called *class browsers* after the class construct used in that programming methodology.

In this example, the upper left pane displays all of the C++ classes in the current project. The classes are displayed, using an outline style similar to the list views used in Finder windows, according to their position in the class hierarchy. The upper-middle pane shows all of the member functions of the class highlighted in the first pane (CApplication in this example). The large source pane in the bottom of the browser window displays the source code for the function highlighted in the second pane. The final pane, in the upper right, displays the data associated with the highlighted class.

Although this arrangement might seem confusing, it closely matches the way in which object-oriented programs are designed and makes viewing and editing the code much easier than it would be in an ordinary editor. In a

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browser, the actual *file* that contains a certain bit of code is much less important than how that code fits into the whole of the project.

Most browsers are tailored to viewing one type of code within one development environment. In fact, the Symantec C++ and **CodeWarrior** browsers are fully integrated into their host **IDE**. One major exception is **Object Master** , from ACIUS. Object Master works with all major development environments.

See Also
CodeWarrior; Editor; IDE; Object Master; Object-Oriented Programming

Brush Typefaces
See
Typeface Categories

Bryce
Need a photograph of a majestic mountain or a rocky canyon but don't have the budget to send out a photographer? Then perhaps you should consider Bryce, a 3D modeling and rendering tool designed to produce stunningly realistic images or virtual landscapes. Starting with 3D models or basic terrains, or using a terrain editor to start from scratch, the user adjusts the height and detail of surfaces, adds sky and fog effects, and can even import

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DXF models to complete the final image. The results are always amazing, although the realism depends upon how carefully you adjust the different parameters.

Other features include: rock generation capabilities, multiple light sources (such as spot lights, radial diffusion lights, and slide projection of PICT images), and **boolean** rendering that can subtract one object from another to create very complex shapes.

Bryce features the unique interface design of Kai Krause. Always unusual, never boring, the interface may slow you down when you first start using the program — expect to spend a few hours figuring out which way is up. Also, if you don't own a Power Macintosh, expect to upgrade soon if you plan to use Bryce regularly.

Bryce produces great images, but if you want to use the images with models created in another 3D program it's probably best to either import the models into Bryce (a problem if you need animation; Bryce doesn't support it) or to export the image and **composite** the scene with the model created in the other program.

See Also
Compositing, 3D

Budgeting, Finance Programs

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One of the main reasons for using a financial management program is to set up and maintain a budget. Budgets are organized based on an individual's or family's income and expense categories. Typical finance programs, such as Quicken, allow you to enter budget amounts for some or all of the categories and subcategories you use.

You can create a budget automatically from your existing data, or you can enter amounts individually for the categories you want to budget. You can also create multiple budgets to work out different budgeting scenarios. After you've entered budget amounts, you can create reports and graphs to compare your actual income and expenses with your budget. You can also have Quicken monitor and display your budget status "as you go," so you can always see exactly how you're doing.

Before you create a budget, think about what areas you need to watch. If you typically spend money on clothes or entertainment, and then have to scramble to pay the rent, these are areas to watch very closely. If you break even every month, but can't seem to save, a budget entry for savings may be helpful. Remember to include all of your income, as well as all of your expenses, even if you choose to assign a large part of it to Miscellaneous. Quicken provides you with a list of suggested categories, from which you can choose the ones you want as budget entries. There are headings for fixed expenses such as rent and loan payments, and for flexible expenses.

Budget reports can be viewed as lists of expenses and income, or as a chart like the one shown here. Quicken updates the chart every time you make an

entry in any of your accounts. You can also create "What-if" budgets, based on changes (plus or minus) in your income, fixed expenses, or other situations. Quicken, and most financial programs, will let you keep as many different records as you have hard disk space for. (Alas, there's no category for a new hard disk.)

See Also
Financial Programs; Quicken

Bug

An error in hardware or software that leads to unexpected or unwanted results.

Software errors can be classified into two types: logic bugs and coding bugs.

Logic bugs involve errors in the algorithm, which is the series of steps you use to accomplish a task. The programming code itself might be perfect; it just does the wrong thing. A good analogy is trying to make a chocolate cake from a recipe that doesn't include chocolate. No matter how well you follow the recipe (the cake-making algorithm), you won't end up with chocolate cake.

Coding bugs, on the other hand, are errors in carrying out the algorithm. Adding eggs to your cake recipe before removing the shells, for example. This type of bug runs the gamut from simple misspelled words and

punctuation to memory leaks and bus errors.

Admiral Grace Hopper, the original developer of the COBOL programming language, liked to tell a story about the first *real* computer bug. A technician working on the Harvard Mark II computer tracked a problem they were having to an actual insect that had been caught between the contacts of a relay deep in the heart of the computer. The logbook of the incident (containing the bug itself) was on display for many years at the Naval Surface Warfare Center. This is often cited as the source of the term "bug" in this sense, but the word has in fact been used to mean a disruptive event as far back as Shakespeare's time.

See Also
Debugging; Debugging Tools

Bug-Fix Update

A bug-fix update is a special case of a minor upgrade that fixes just one (or a few) problems that were encountered when the software went into more widespread usage. Some companies (such as Microsoft) add a letter to the end of the version number to indicate a bug fix update, for example, 5.1a; other companies (such as Claris) append a third digit, for example, 4.0v4. Bug-fix updates are usually available for free from the company, either via mail or from their online support areas.

See Also

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Major Software Release; Minor Software Release; Registration Card

Bulging Trash Can

A bulging trash can icon indicates that items are in the Trash. To delete the contents of the Trash, choose Empty Trash from the Special menu at the top of your desktop. This will delete the contents and return the normal trash can icon to indicate an empty trash can.

See Also
Delete; Desktop; Empty Trash; Special Menu; Trash

Bullet

See
 Printing Terms

Bulletin Board Systems

A bulletin board system (BBS) is an online communication system that allows exchanging of messages and other communications.

BBSs are easy to access, the only requirements being a computer, a **modem** connected to the public telephone system, and freely available software such

as ZTerm. Some require a fee for access.

Bulletin boards provide discussion, games, news, and **shareware** . Some are small and run by hobbyists, while others are extensive commercial operations. Others are run by companies to permit the exchange of information between employees. Still others are launched by hobbyists.

Typically, users dial in to a BBS using the telecommunications program of their choice, although many BBSs provide their own software. When you connect for the first time you register with the systems operator (sysop) of the BBS. Then you can leave a message on the BBS addressed to "All" that introduces you to the other users, or read already posted messages.

Message areas are grouped by topic, for example, "General," "Singles,", or "Television." Some BBSs only circulate messages locally, whereas others "echo" them to other BBSs.

See Also
Commercial Online Services; NCSA Telnet; Telnet

Bump Maps

Bump maps use a graphic to create the illusion of a raised surface on a 3D object, usually with just a black-and-white image. The darker or the lighter areas of the graphic represent the higher and lower portions of the surface. While not useful for creating major modeling effects, bump mapping makes

it possible to add little details that otherwise would be tedious to create with the **modeler** —for example, raised rivets on a spaceship.

See Also
Rendering; Texture Mapping

Bumptz Science Carnival

This CD-ROM program from Theatrix is rated for kids 6-10. Maybe, if you're 6, you will instantly know what to do and how to do it. But we grown-ups have to read the instruction manual.

There's not much on-screen help in this program, only the most basic directions for most of the activities and in this parent's opinion, the puzzles are hard to solve. That said, it's a challenging, but engrossing set of puzzles for kids in the middle grades. The theme is a trip to an amusement park, generally a good place to study physics. The puzzles deal with magnetism, light, and buoyancy, and there's also an animated explanation of the physical laws that govern these qualities, along with simple experiments that can be done at home or in the classroom. As the figure shows, the science is serious, but the program is fun.

The experiments help kids relate the scientific principles to real objects. There are three levels of difficulty, with the highest being enough to make most grown-ups stop and think. The animation is cute, and the sounds are great. **Snootz Math Trek** is similar, but deals with logic rather than

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physics.

See Also
Snootz Math Trek

Buried in Time
See
Daedelus Encounter

Burning or Pressing a CD-ROM

It's now possible to buy a CDR (**CD-ROM**-Recorder) for less than $1,000 that can burn a CD. This device uses a special blank, writeable CD-ROM and a high-powered laser that burns information onto the blank. This is a write-once procedure. If the process goes wrong, and it sometimes does, you have wasted a disc. Recorders start at under $1,000 (for double-speed recorders), and go up to many thousands for faster recorders. Blank discs cost about $7.00-$10.00 each. Because of the time it takes to set up and actually write the disc, most service bureaus charge between $35-$50 per disc (the charge may go down in quantity).

By comparison, pressing requires sending the data away to a pressing plant. There, a master dics is made from which the discs are injection molded—or pressed. The set up charge is very high (around $1,000), but after that the

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individual discs cost less than $2.00 each. Most pressing plants offer a package of mastering plus the first 100 or so discs.

The advantage to burning is that you can burn as few or as many as you need, whereas pressing is only cost effective when you need over 100 discs. This comparison is dependent upon the cost of the CD blanks, and the time (and labor) used to burn the individual discs. Also, using a burner you can create a **multisession** disc. This involves writing data to the disc at different times. The primary advantage of this technique is that you can add information to an existing disc. This is not possible with a pressed disc.

Writeable CDs (those created using a CD-ROM recorder) are estimated to have a shorter lifespan, from 70 to 100 years depending upon the materials used in the disc, than pressed discs. Writeable discs come in several colors. In general, the gold discs are believed to have a longer shelf life than the green discs. This lifespan may be shorter if the disc is not handled correctly, exposed to high temperatures or UV light, or otherwise mishandled. The laser the computer uses to read the CD is of very low power and cannot harm the data on the disc, even after thousands of reads. CDs should last at least until it's time to replace them with a storage medium of even greater size. Already, **DVD (digital video disc)** technology promises storage capacities much higher than standard Cds.

One important point, even if you are going the pressing route, being able to burn some test discs is vital in the development process.

See Also

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Bushnell, Nolan

Nolan Bushnell is the founder of Atari and Steve Jobs' employer during the formation of Apple Computer. Bushnell was an entrepreneur who sparked the video game craze with the game "Pong." His follow-up to Pong, **Breakout** was designed by **Steve Wozniak** .

See Also
Apple Computer, History; Breakout; Jobs, Steve; Wozniak, Steve.

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BUSINESS SOLUTIONS

Business Applications

The keyword for business and industry in the '90s is "productivity", and the main reason that even small home-based businesses can't function without a computer today is the need for increased productivity to maintain a competitive advantage in the marketplace. With the right software, your computer can handle virtually any office task from mailing a personalized letter to every client to paying the monthly bills and keeping track of appointments, tax payments, and inventories. It doesn't require coffee breaks, vacations, or a uniform allowance.

What's Out There

Business software includes word processors, bookkeeping programs, databases, and spreadsheets to keep track of all kinds of information, and even desktop presentation software that delivers your sales pitch. In addition, there are specialized business applications (see **Big Business**) that combine sales, marketing, inventory, and finance into one package,

swapping information between its various functions.

Project planners and flowcharting programs help keep work on track and make it easy to see who's responsible for the various parts of a project. Other specialized software helps you brainstorm concepts and organize ideas. Programs such as **Inspiration** help you turn ideas into action by making it easy to organize them graphically or in outline form. Of course, you don't need to be a business tycoon to use and benefit from these tools.

Conversation with Steve Ruddock

Steve Ruddock handles public relations for Claris, the spin-off company that sells Apple software such as ClarisWorks, FileMaker, ClarisImpact, and the Claris Emailer.

Maclopedia: When did you first use a Mac?

Steve: May first, 1986, I left Hewlett-Packard and began work at Regis McKenna, Inc., on the Apple account, and I used a Mac for the first time that day. Like so many, I was immediately and permanently addicted to the graphical desktop/mouse experience, even though that first machine was a 128KB Mac! Shortly thereafter, I went out and bought my first Mac [of three], an SE, and immediately caused domestic strife staying up until 3 AM playing Rommel vs. Patton.

Maclopedia: How did you find your way to Claris?

Steve: As part of the Apple PR team at Regis McKenna, Inc., I actually wrote

the first two press releases announcing creation of and naming of Claris in April/May 1987. In late '88, I added supervision of the Claris account to my responsibilities, working closely with Bill Campbell, John Zeisler, and other founding Claris execs. In April 1989, the original Claris PR manager, Dan Rampe, went for an extended assignment with Claris UK. On Tuesday he asked if I would be interested in the job; on Wednesday I said yes; Thursday I interviewed with Zeisler over drinks at Ming's; Friday, Zee offered me the job, and I accepted.

Maclopedia: What's it like to work at Claris, and how is the atmosphere different from Apple?

Steve: Claris is the best place to work that I know of, and I say that having worked at very good companies like HP, RMI (and sort of Apple). Claris is the most people-oriented, least bureaucratic, open-communications fostering environment I can imagine. Guys like me can walk into the CEO's office and kibitz if we want. It's also the perfect size: approaching a quarter-billion dollars in annual revenue, but we're small enough so you can be aware of and add value to lots of projects and processes going on throughout the company. It's also great to work on behalf of products that we all feel passionately about, and that we use in the same way millions of normal people do very day.

Maclopedia: So what exactly do you do to publicize a new product?

Steve: The FileMaker 3 launch is a good example. It's Claris' most important

product by some measures. We sell more units of ClarisWorks than FileMaker, but FileMaker is the single most important revenue-generating product, and if you measure a product by how critical it is to the user, and how passionate they get about it, FileMaker is right up there with any application you can think of. There are hundreds of thousands of people, individuals with their own businesses, for whom FileMaker is the mission-critical application. I encounter dozens of people who have a small business, two or three people, and the automation of their business is half a dozen FileMaker databases, to track their catalog, price lists, and so on. I am biased, but I think FileMaker is the most beautiful prototypical Mac product—all these graphic views of your data.

So the launch of FileMaker 3 was the most important in Claris history. We began work on that a year before the product shipped, and we held a couple of events at MacWorld in January 1995, a fun press party in the penthouse of the Fairmont hotel. This is the place where, according to legend, JFK slept with Angie Dickinson, and every Democratic president since Harry Truman has stayed there. We had 250 editors from the Mac and trade press around the world, and we pretty much put down in black and white what we were going to do in terms of building relational capabilities into FileMaker. We said, it's not coming out until late 95, but we want to be open about what we are doing. It didn't make sense to safeguard this news.

We held a briefing for the Claris Solutions Alliance members, a group

of 500 independent developers of solutions. Ninety percent of them are FileMaker developers. These guys are essential to our business, building real world solutions with FileMaker, and they have to know what the future of the product is. We realized it would be difficult to keep it a secret once we told them, so we just put our cards on the table in January 1995, and in the ensuing nine months, every three months we'd go out to the top 25 publications and give them an update and beta software in progress. Along about October or November, we did a mass distribution of the beta, which was frozen at that point so all the reviewers could see that, see what it could do. We got a lot of "First Look" reviews in the November 1995 timeframe, and ended up shipping on December 15, 1995. It was far and away the most successful first couple of months we have ever had.

We've done a good job of communicating to users that this was coming, and we showed the upgrade path, and we shipped it on time. Press reaction was great. In the first 30 days of calendar year 1996, FileMaker won 10 awards from Mac and Windows publications. Now January is the intense award-giving month of the year, so we can't extrapolate. Still, that's got to be impressive. And what the editors were saying was as good as we could want, if we were writing the reviews. "The easiest to use is now relational, and still easy....You could find another Mac database, but why bother?"

In 1990, we surveyed our installed base and asked what they would like to see. "We need it to be cross platform." And we did that in 1992 with

FileMaker 2, and they wanted multiple table, relational capabilities, and we have done that with FileMaker 3, making them actually easy to use. Relational databases are good for situations when you have one customer with many invoicers or one invoice with many products, so you have all these one-to-many and many-to-one relationships.

Maclopedia: How well are Claris products breaking into the Windows market now?

Steve: In the past few months, FileMaker has emerged as arguably the clear #2 Windows database behind Access. Roughly half the FileMaker units sold are FileMaker Windows…which of course equates to FileMaker having about a 90% market share on the Mac, and 10% on Windows, but we are making progress in the right direction.

ClarisWorks Win is also moving in the right direction. Claris came late to the Win market, and we have found it to be expensive to get the word out, get distribution, and there is lots of inertia in that market. It takes more than great products. But we're serious about being a cross-platform leader. In fiscal year '96 we will sell more than 1 million Win units, or roughly 80/20 split Mac versus Win units.

Maclopedia: So ClarisWorks is getting more popular, too?

Steve: In fiscal year '96 we are on track to make and sell something on the order of 2 million units of ClarisWorks. The Software Publishers Association does these surveys of software sales, and they recently

published the 1995 findings. One of the headlines was overall Mac software revenues declined by 13%. The brunt of that decline was taken by Mac spreadsheets and word processors, which is to say, almost entirely Excel and Word; they declined by 30%. One of the contributing factors is that ClarisWorks is, for the vast majority of people, a preferable solution for basic productivity for word processing and spreadsheets. It has made significant inroads against the bloated products, which are not really written for the mainstream user.

Maclopedia: How does ClarisWorks compare with Microsoft Works, which was also based loosely on the old AppleWorks?

Steve: The main difference is that ClarisWorks was designed from the ground up as one application using frames and Microsoft Works dates back to a series of different modules that were sort of stapled together. When you went from one application to another in Works, you were really quitting one and opening another, whereas in ClarisWorks, if you are in a word processing document, and you click the spreadsheet frame, your tools all change. Now Microsoft Works has been getting better, thanks to the ClarisWorks challenge. The other issue Microsoft has is that Word and Excel sales are so important to them that they may not want to make Microsoft Works so great. If I am correct, and Word and Excel are losing sales to ClarisWorks, then improving Microsoft Works would only erode the Word and Excel sales even more.

Maclopedia: Some of us still like MacWrite.

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Steve: MacWrite is still selling. It's not a huge seller, but there are people who like MacWrite, and it continues to sell in some quantities around the world. I think the trend for new users entering the market is to look at more robust solutions. In ClarisWorks, the word processor is more robust than MacWrite in many cases, and soon will be in many ways. There are no plans to discontinue MacWrite, but it is also true that we haven't had a major rev since the System 7 transition.

Maclopedia: Where does ClarisImpact fit, in all of this?

Steve: ClarisImpact is doing well. We have the cross-platform version shipping now. It's in a touchy category of structured business graphics, pioneered by Visio on Windows. We struggle to communicate that it is more than just presentations. The real beauty of Impact is that you can create network diagrams, time lines, calendars, without ever having to run a rectangle tool or use line segments because it has all these intelligent assistants who interview you and draw all that for you. You can change the styles globally, too. And there's a cool new feature called Data Draw that sucks data out of FileMaker and puts it into an org chart, with the click of a button or a calendar.

Maclopedia: What can you tell us about web and net directions for Claris?

Steve: The Internet is a platform upon which our products will work in increasingly robust and creative ways. We include HTML stationery and shortcuts with ClarisWorks 4; FileMaker 4 works over the Web, it's very popular for putting up live FileMaker files. Go to the Claris home

page, and you can access half a dozen FileMaker databases at www.claris.com. And we have a number of interesting Internet things coming up. ClarisWorks 5 is going to be an Open Doc container, and we may put parts of CyberDog into ClarisWorks so you could distribute ClarisWorks documents that include frames that are CyberDog parts, with either static or dynamic stuff, so I could distribute a ClarisWorks document to a bunch of people and have CyberDog go out and download a satellite picture of the current weather, and put that in.

Word processing includes everything from writing letters and doing homework to preparing camera-ready newsletters and publishing books like this one. There are also specialized word processors that do particular tasks, such as formatting a film script or screenplay, and even a program that puts your ideas on index cards. If you have a business associate or penpal in a foreign country, use a translator program such as **Power Translator** to translate your letters and other documents into French, German, or Spanish.

If you don't know what to say, use one of the **LetterWorks** customizable letters. Topics include Sales, Legal, Business, and Personal letters. Consulting and Personnel ReadyWorks supply all the necessary forms, worksheets, proposals, appraisals, and contracts to run a business. These can also be customized as needed.

Integrated "works" programs such as **ClarisWorks** combine several different kinds of applications into one. Typically, the works program will include a word processor, telecommunications software, a spreadsheet, and

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some kind of database. It may also have drawing and/or painting capabilities. A works package's modules usually contain fewer features than full applications. For example, Microsoft Works contains a word processor, spreadsheet, and so on, but those functions have fewer features than Microsoft's standalone applications that provide the same functionality. Often home users will find Works programs sufficient, while business users may require the features provided by a full application such as those included in **Microsoft Office.** Office is a bundle of separate applications, plus an "Office Manager" that sits on the menu bar and gives quick access to the four modules included: **Word, Excel, PowerPoint,** and **Mail**. Each is a separate program within the Microsoft package. Users have the option of installing all or some of them, and although they support each other, they don't have to be used together; see the following figure.

Desktop presentation programs such as Microsoft **PowerPoint**, Gold Disk's **Astound**, and Adobe **Persuasion** turn your Macintosh into a self-contained table top projector and screen, running slide show or multimedia programs you create, complete with special effects and sound. These are especially good for delivering sales presentations and for any sort of meeting in which a lot of information has to presented in an orderly and attractive format. They also help you to organize your ideas and even create the outlines and handouts for your speeches.

What Package Do You Need?

Choosing the right software to run your business, or even to handle your

household books, correspondence, and appointments, requires doing a bit of research. Start here, by reading the sections that relate specifically to the jobs you want to do.

- Consider the level of complexity of the programs you need. If you're buying software for home use, you may not need all the bells and whistles of a program such as Microsoft Word. If your business requires complex accounting, but only basic word processing and a simple database, consider a combination of a works program for general use and a specialized accounting program that can be tailored to precisely suit your needs. If your business is freelance writing, you may need several different word processors to satisfy your clients' requirements, but only the easiest possible PIM and checkbook programs.

- Before you buy, look for demonstration versions of software you're considering. Many of these are available online or in shareware collections, such as those produced on CD-ROM by BMUG or the Boston Computer Society. Many software dealers will let you try out programs in the store. It might even be worthwhile to rent time on a Mac at a service bureau to try working with a particular word processor, graphics, or DTP program, because these tend to be the most expensive software purchases you make.

Bibliography

For more specific information on business applications not found here,

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check our your local bookstore or library for these books:

Microsoft Office Macintosh Survival Guide,
Charles Seiter, Tonya Joy Engst and Barrie Sosinsky, published by Hayden Books, 1995 (1-56830-173-1).

MACWORLD ClarisWorks Companion,
Steven Schwartz, published by IDG Books, 1993
(1-56884-481-6).

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If you want to do this…	Go to this entry…
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Business Letters and Forms

The popularity of computers and laser printers for home and office use has made it virtually impossible to tell a small business from a large corporation

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by looking at the mail they send out. The only real difference between a letter from Amalgamated Soft Drink International MultiCorp and one from Aunt Betsy's Lemonade Stand is the size of the mailing list. It's not the quality of the printed matter, as long as Betsy has access to a Mac, a laser printer, and some business letter and form templates.

There are a great many sources for premade templates, and several programs that will help you make up your own. Desktop publishing programs such as PageMaker generally come with a set of business form templates, covering everything from basic invoice and business card layouts to annual reports. Word processors and works programs also include some sample letters and form templates. There are apt to be templates for fax covers in your fax software and templates for accounting and record keeping in your spreadsheet and financial management programs.

A desktop publishing program is your best choice if you must make complex forms. If a simple one is all you need, ClarisWorks can do the job quite nicely. So can any draw program. The purchase order shown here was created in ClarisWorks and saved as stationery. Every time the restaurant needs to place an order, the manager opens the purchase order form, enters the vendor's name and address from a database, lists his/her order, and enters the total in his/her inventory spreadsheet. When the goods arrive, the spreadsheet entry is moved from "on order" to "on hand."

Specific forms, such as the Federal Express form and United Parcel Service shipping forms can be generated from within the computer. These

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companies are quite happy to provide the software to anyone who ships packages frequently. The main advantage to this is not the form's generation capability but the ability to schedule a package pick-up via modem, and to log into a central computer to see whether your package has been delivered. You can track a missing package or find out what time one was delivered and who signed for it without ever having to listen to "music on hold." Federal Tax forms can be downloaded, too. Let your Web browser take you to www.irs.ustreas.gov/prod/forms_pubs/index.html for all the federal forms you need. At the same site you can get information on electronic filing and helpful tips on filling out your returns correctly.

Business letters, personal letters, and documents of all kinds are at your fingertips in the **LetterWorks** series. There are professionally written and designed letters, forms, and legal documents for all occasions. All of these are indexed in the accompanying handbooks, by topic, and come with suggestions for their use. There are even programs to help you generate a more effective résumé. SoftKey's Résumé Kit has several formats and a guide to help you determine what to put in, and more important, what to leave out.

Button

Many **dialog boxes** have features that are accessed by clicking a button. Generally a button is a rectangular, rounded-corner box with a **command** . Clicking a button opens a dialog box, window, or completes a command (as in the case of: "Do you want to **save changes** ? Click the OK button.")

Many buttons have a **keyboard shortcut** . Anytime you see a button with a

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thick dark line around it, with another thin line just inside of that, it is the default button. The default button is the button you're most likely to choose, and the keyboard shortcut to choosing the default button is pressing the **Enter** or **Return** key. Either of these two keys will activate the default button in a dialog box. In many applications the **Escape key** will act as a keyboard shortcut for the **Cancel** button.

See Also
Cancel; Command; Dialog Boxes; Enter; Escape Key; Keyboard Return; Save Changes; Shortcut

Button Disabler

This control panel was designed for use by educators and home Macintosh users who have children using their Mac. The idea behind this is ingenious; it enables you to disable the external **brightness** and volume knobs on certain **Performa** models of Macintosh aimed at the home and education markets. This way, children, or students, aren't be able to adjust the knobs themselves.

See Also
Brightness; Performa

Bypass Internal Drive Keyboard

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Shortcut

If you want to **startup** your Mac from disk other than your internal **startup disk**, you hold down the ⌘-Option-Shift-Delete keys while you startup the machine. The Mac bypasses the internal disk and begins to search through the **SCSI chain** looking for a disk to startup from. When it finds a disk with the necessary startup files, it starts up. Because you've bypassed your internal drive, the new disk will not mount on the **desktop.**

To bypass the internal drive, follow these steps:

1. When you first turn on your computer, hold the ⌘-Option-Shift-Delete keys and the Mac will search the SCSI chain until it finds a startup disk to boot from.

2. Once it begins startup and you see the Happy Mac, you may release the keys.

See Also
Boot Startup; Desktop; Keyboard Shortcuts; SCSI Chain; Startup Disk

Bypass Virtual Memory at Startup

If you have **Virtual Memory** turned on but want to startup or restart the computer with Virtual Memory temporarily turned off, hold the Command key during startup, and Virtual Memory is temporarily bypassed. The

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Memory Control Panel remains unchanged as this is just a temporary bypass, so if you look at the Memory Control Panel, you see that Virtual Memory is toggled to the "On" position. You can confirm it is off by looking at the "About This Macintosh" dialog box at the top of the Apple menu in the Finder. The dialog box displays only the amount of physical **RAM** you have installed and won't reflect any Virtual Memory RAM.

Virtual memory will not be turned on again until you restart your computer.

See Also
Memory Control Panel; RAM; Virtual Memory

Byte-Code
See
Compiled Language

Byte Shop, The

The Byte Shop was a Silicon Valley computer shop owned and run by Paul Terrell. In May 1976, The Byte Shop became Apple's first customer with an order for 50 Apple I computers at $500 each.

Terrell had seen the Apple I demonstrated by **Steve Wozniak** at a meeting of the **Homebrew Computer Club** . Although Wozniak and **Steve Jobs** had

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planned to sell just the bare circuit boards, Terrell expected complete computers, so they quickly managed to assemble 50 complete computers (complete circuit boards, actually) to fill the order.

See Also
Apple Computer, History; Homebrew Computer Club; Jobs, Steve; Wozniak, Steve