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C

close¹ *n.* An FTP command that instructs the client to close the current connection with a server. *See also* FTP¹ (definition 1), Web site.

close² *vb.* **1.** To end an application's relationship with an open file so that the application will no longer be able to access the file without opening it again. **2.** To end a computer's connection with another computer on a network.

close box *n.* In the Macintosh graphical user interface, a small box in the left corner of a window's title bar. Clicking on the box closes the window. *Compare* close button.

close button *n.* In the graphical user interface for Windows 9x, Windows NT, and the X Window System, a square button in the right corner (left corner in X Windows) of a window's title bar with an × mark on it. Clicking on the button closes the window. *Also called* X button. *Compare* close box.

closed architecture *n.* **1.** Any computer design whose specifications are not freely available. Such proprietary specifications make it difficult or impossible for third-party vendors to create ancillary devices that work correctly with a closed-architecture machine; usually only its original maker can build peripherals and add-ons for such a machine. *Compare* open architecture (definition 1). **2.** A computer system that provides no expansion slots for adding new types of circuit boards within the system unit. The original Apple Macintosh was an example of a closed architecture. *Compare* open architecture (definition 2).

closed file *n.* A file not being used by an application. An application must open such a file before reading or writing to it and must close it afterward. *Compare* open file.

closed shop *n.* A computer environment in which access to the computer is restricted to programmers and other specialists. *Compare* open shop.

closed system *n.* *See* closed architecture (definition 2).

cloth ribbon *n.* An inked ribbon generally used with impact printers and typewriters. The print element strikes the ribbon and drives it against the paper so as to transfer ink; then the ribbon advances slightly to make fresh ink available. A cloth ribbon is wrapped onto a spool or loaded into a cartridge that is made to fit the printer used. Cloth ribbon, although adequate for most tasks, is sometimes replaced by film ribbon when the crispest possible output is called for. How-

ever, a cloth ribbon, which re-inks itself by capillary action, is usable for multiple impressions, unlike a film ribbon. *Compare* carbon ribbon.

cluster *n.* **1.** An aggregation, such as a group of data points on a graph. **2.** A communications computer and its associated terminals. **3.** In data storage, a disk-storage unit consisting of a fixed number of sectors (storage segments on the disk) that the operating system uses to read or write information; typically, a cluster consists of two to eight sectors, each of which holds a certain number of bytes (characters). **4.** A group of independent network servers that operate—and appear to clients—as if they were a single unit. A cluster network is designed to improve network capacity by, among other things, enabling the servers within a cluster to shift work in order to balance the load. By enabling one server to take over for another, a cluster network also enhances stability and minimizes or eliminates downtime caused by application or system failure. *See also* client/server architecture.

cluster controller *n.* An intermediary device that is situated between a computer and a group (cluster) of subsidiary devices, such as terminals on a network, and is used to control the cluster.

clustering *n.* The grouping of multiple servers in a way that allows them to appear to be a single unit to client computers on a network. Clustering is a means of increasing network capacity, providing live backup in case one of the server fails, and improving data security. *See also* cluster (definition 4), server.

cluster network *n.* *See* cluster.

CMI *n.* Acronym for computer-managed instruction. Any type of teaching that uses computers as educational tools. *See also* CAI, CBT.

CMOS \C`mos\ *n.* **1.** Acronym for complementary metal-oxide semiconductor. A semiconductor technology in which pairs of metal-oxide semiconductor field-effect transistors (MOSFETs), one N-type and the other P-type, are integrated on a single silicon chip. Generally used for RAM and switching applications, these devices have very high speed and extremely low power consumption. They are, however, easily damaged by static electricity. *See also* MOSFET, N-type semiconductor, P-type semiconductor. **2.** The battery-backed memory used to store parameter values needed to boot PCs, such as the type of disks and the amount of memory, as well as the clock/calendar time.

liveware *n.* A slang term for people, to distinguish them from hardware, software, and firmware. *Also called* wetware.

LLC *n.* Acronym for **Logical Link Control**. In the IEEE 802.x specifications, the higher of two sublayers that make up the ISO/OSI data-link layer. The LLC is responsible for managing communications links and handling frame traffic. *See also* IEEE 802.x, MAC.

load¹ *n.* **1.** The total computing burden a system carries at one time. **2.** In electronics, the amount of current drawn by a device. **3.** In communications, the amount of traffic on a line.

load² *vb.* To place information from storage into memory for processing, if it is data, or for execution, if it is program code.

load-and-go *adj.* In reference to a routine, able to begin execution immediately, once loaded. The term is commonly used in reference to compilers and the machine code they generate.

load balancing *n.* **1.** In distributed processing, the distribution of activity across two or more servers in order to avoid overloading any one with too many requests from users. Load balancing can be either static or dynamic. In the former, the load is balanced ahead of time by assigning different groups of users to different servers. In the latter, software refers incoming requests at runtime to whichever server is most capable of handling them. **2.** In client/server network administration, the process of reducing heavy traffic flows either by dividing a busy network segment into multiple smaller segments or by using software to distribute traffic among multiple network interface cards working simultaneously to transfer information to a server. **3.** In communications, the process of routing traffic over two or more routes rather than one. Such load balancing results in faster, more reliable transmissions.

loaded line *n.* A transmission cable fitted with loading coils, usually spaced about a mile apart, that reduce amplitude distortion in a signal by adding inductance (resistance to changes in current flow) to the line. Loaded lines minimize distortion within the range of frequencies affected by the loading coils, but the coils also reduce the bandwidth available for transmission.

loader *n.* A utility that loads the executable code of a program into memory for execution. On most microcomputers, the loader is an invisible part of the oper-

ating system and is automatically invoked when a program is run. *See also* loader routine, load module.

loader routine *n.* A routine that loads executable code into memory and executes it. A loader routine can be part of an operating system or it can be part of the program itself. *See also* loader, overlay¹ (definition 1).

load module *n.* An executable unit of code loaded into memory by the loader. A program consists of one or more load modules, each of which can be loaded and executed independently. *See also* loader.

load point *n.* The beginning of the valid data area on a magnetic tape.

load sharing *n.* A method of managing one or more tasks, jobs, or processes by scheduling and simultaneously executing portions of them on two or more microprocessors.

load shedding *n.* In electrical systems, the process of turning off power to some electronic equipment in order to maintain the integrity of the power supply to other connected devices. *See also* UPS.

local *adj.* **1.** In general, close at hand or restricted to a particular area. **2.** In communications, a device that can be accessed directly rather than by means of a communications line. **3.** In information processing, an operation performed by the computer at hand rather than by a remote computer. **4.** In programming, a variable that is restricted in scope, that is, used in only one part (subprogram, procedure, or function) of a program. *Compare* remote.

local area network *n.* *See* LAN.

local bus *n.* A PC architecture designed to speed up system performance by allowing some expansion boards to communicate directly with the microprocessor, bypassing the normal system bus entirely. *See also* PCI local bus, VL bus.

local bypass *n.* A telephone connection used by some businesses that links separate buildings but bypasses the telephone company.

localhost *n.* The name that is used to represent the same computer on which a TCP/IP message originates. An IP packet sent to localhost has the IP address 127.0.0.1 and does not actually go out to the Internet. *See also* IP address, packet (definition 1), TCP/IP.

localization *n.* The process of altering a program so that it is appropriate for the area in which it is used. For example, the developers of a word processing program must localize the sorting tables in the pro-

L

Q

QAM \kwäm\ *n.* See quadrature amplitude modulation, queued access method.

QBE *n.* See query by example.

QIC *n.* 1. Acronym for quarter-inch cartridge. A storage technology used with tape backup drives and cartridges. A means of backing up data on computer systems, QIC represents a set of standards devised to enable tapes to be used with drives from different manufacturers. The QIC standards specify the length of tape, the number of recording tracks, and the magnetic strength of the tape coating, all of which determine the amount of information that can be written to the tape. Older QIC-80 drives can hold up to 340 MB of compressed data. Newer versions can hold more than 1 GB of information. 2. A consortium of quarter-inch tape manufacturers. Quarter-Inch Cartridge Drive Standards Inc. (QIC) establishes standards for the production of quarter-inch tapes. For example, QIC-40 and QIC-80, designed to use a PC's floppy disk drive controller, are called the "floppy tape standards."

QOS or QoS *n.* See quality of service.

quadbit *n.* A set of 4 bits representing one of 16 possible combinations. In communications, quadbits are a means of increasing transmission rates by encoding 4 bits at a time, instead of 1 or 2. The 16 quadbits are 0000, 0001, 0010, 0011, 0100, 0101, 0110, 0111, 1000, 1001, 1010, 1011, 1100, 1101, 1110, and 1111. Compare nibble.

quadrature amplitude modulation *n.* In communications, an encoding method that combines amplitude modulation and phase modulation to create a constellation of signal points, each representing one unique combination of bits that can be identified with one possible state that the carrier wave can be in. Acronym: QAM. See also amplitude modulation, constellation, phase-shift keying, trellis-coded modulation.

quadrature encoding *n.* The most common method used to determine in which direction a mouse is moving. In mechanical mice, movement of the mouse ball is translated into horizontal or vertical movement by a pair of turning disks, one disk for horizontal movement and one disk for vertical movement, each of which makes and breaks contact with two sensors located on it. The two sensors are placed out of phase with each other, and the mouse notes which sensor receives contact first. The phrase *quadrature encoding* comes from the fact that each sensor sends a square-wave signal 90 degrees out of phase with the other. If the first signal occurs before the second, the mouse is assumed to have been moved in one direction; if the second signal occurs before the first, the mouse is assumed to have been moved in the opposite direction. See also mechanical mouse, mouse, optomechanical mouse.

quality assurance *n.* A system of procedures carried out to ensure that a product or a system adheres or conforms to established standards. Also called quality control.

quality of service *n.* 1. Generally, the handling capacity of a system or service; the time interval between request and delivery of a product or service to the client or customer. 2. In computer technology, the guaranteed throughput (data transfer rate) level.

quantity *n.* A number—positive or negative, whole or fractional—that is used to indicate a value.

quantize *vb.* To divide an element into separate, distinct units (quanta) and to assign a value to each resulting unit, especially in the domain of time. Compare digitize.

quantum *n.* 1. In communications, the unit resulting from division of a signal by quantization. 2. A portion of time allotted on a time-sharing system. Compare time slice. 3. An amount of something; as, in physics, a unit of radiant energy.

quarter-inch cartridge *n.* See QIC (definition 1).

window definition function *n.* A resource associated with a window in a Macintosh application. The Macintosh Window Manager calls this function to perform such actions as drawing and resizing the window. *Also called* WDEF.

windowing environment *n.* An operating system or shell that presents the user with specially delineated areas of the screen called *windows*. Windowing environments typically allow windows to be resized and moved around on the display. The Macintosh Finder, Windows, and the OS/2 Presentation Manager are all examples of windowing environments. *See also* graphical user interface, window.

window random access memory *n.* *See* WRAM.

Windows *n.* An operating system introduced by Microsoft Corporation in 1983. Windows is a multitasking graphical user interface environment that runs on MS-DOS-based computers (Windows 3x and Windows for Workgroups), and as a self-contained operating system for desktop computers (Windows 9x), workstations (Windows NT Workstation, Windows 2000 Professional), and network servers (Windows NT Server, Windows NT Enterprise Edition, Windows 2000 Server, and Windows 2000 Advanced Server). Windows provides a standard graphical interface based on drop-down menus, windowed regions on the screen, and a pointing device such as a mouse.

Windows 2000 *n.* A line of desktop operating systems and network servers announced by Microsoft in 1998. Designed to replace the NT line of products, Windows 2000 is built upon the NT kernel and features an interface that closely resembles Windows NT and Windows 9x. Included in the Windows 2000 line are Windows 2000 Professional, Windows 2000 Server, Windows 2000 Advanced Server, and Windows 2000 Datacenter Server. Windows 2000 was originally announced as Windows NT 5.0. *See also* Windows.

Windows 2000 Advanced Server *n.* Microsoft's network server for larger organizations. Designed to replace Windows NT 4.0 Enterprise Edition, it supports up to four-way SMP, large physical memories, and database-intensive work. It integrates clustering and load balancing support. *See also* SMP, Windows.

Windows 2000 Datacenter Server *n.* Microsoft's network server for larger organizations. Considered as the most powerful and functional server operating system ever offered by Microsoft, it supports up to

16-way SMP and up to 64GB of physical memory (depending on system architecture). Like Windows 2000 Advanced Server, it provides both clustering and load balancing services as standard features. It is optimized for large data warehouses, econometric analysis, large-scale simulations in science and engineering, OLTP, and server consolidation projects. *See also* OLTP, SMP, Windows.

Windows 2000 Professional *n.* Microsoft's mainstream desktop operating system for businesses of all sizes. Designed to replace Windows NT Workstation 4.0, which many people are using today as the standard business desktop, Windows 2000 Professional builds upon the interface and kernel in NT 4.0. It also includes improved security, state-of-the-art features for mobile users, industrial-strength reliability, and better performance.

Windows 2000 Server *n.* Microsoft's network server for small to medium businesses. Designed to replace Windows NT 4.0 Server, Windows 2000 Server offers improved functionality and supports new systems with up to two-way symmetric multiprocessing (SMP).

Windows 95 *n.* An operating system with a graphical user interface for 80386 and higher processors, released by Microsoft Corporation in 1995. Intended to replace Windows 3.11, Windows for Workgroups 3.11, and MS-DOS, Windows 95 is a complete operating system, rather than a shell that requires MS-DOS, as does Windows 3.x. For backward compatibility, Windows 95 can run MS-DOS software. Under Windows 95, filenames can be up to 255 characters long and may include dots and spaces. Windows 95 supports the Plug and Play method for installing and configuring hardware and can access Windows, NetWare, and UNIX networks. The minimum configuration for Windows 95 is an 80386 processor with 4 MB of RAM, but an i486 or higher processor with at least 8 MB of RAM is recommended. *See also* MS-DOS, NetWare, Plug and Play, Windows, Windows for Workgroups.

Windows 98 *n.* An operating system with a graphical user interface for i486 and higher processors, released by Microsoft Corporation in 1998. Building upon Windows 95, Windows 98 features an improved interface and has been designed to be more robust. With the Active Desktop, Windows 98 integrates

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