

WEBSTER'S NEW WORLDTM

COMPUTER DICTIONARY

10TH EDITION

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Webster's New World™ Computer Dictionary, 10th Edition

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appropriate software from their computer manufacturer. Great care must be taken when updating BIOS; the manufacturer's directions must be followed precisely. Flash BIOS is made possible by flash erasable programmable read-only memory (flash EPROM).

flash EPROM A type of read-only memory (ROM) that can be erased by an electrical current and then reprogrammed with new instructions at very high speeds. After the reprogramming occurs, the circuits retain these instructions even if the power is switched off. Flash EPROM is used in flash BIOS as well as modems that are set up so that one can download and install support for new communications protocols as they become available.

flash erasable programmable read-only memory See *flash EPROM*.

flash memory A special type of read-only memory (ROM) that enables users to upgrade the information contained in the memory chips. Also called flash BIOS or flash EPROM.

flash memory card In digital devices such as cameras and PDAs, a unit of flash memory that holds data, such as captured images, music, or text files. Flash memory cards are removable; when one is full, the user can insert an additional card. Subsequently, the data can be downloaded from the card to a desktop computer. The card can then be erased and used again. The two most popular flash memory card technologies are called CompactFlash and SmartMedia. See *CompactFlash (CF)*, *digital camera*, *SmartMedia*.

flat Lacking elaborate structure. A file system without subdirectories in which one can group files is said to be flat. Such systems have not been used since the earliest days of personal computing.

flat address space A method of organizing a computer's memory so that the operating system can allocate portions of the memory without restriction. The opposite of a flat address space is the segmented

memory architecture of MS-DOS and Microsoft Windows 3.1, which divides memory into 64K sections (called segments). A flat memory space design is more efficient because the processor does not have to map each memory address to a specific 64K segment, but such a design requires the use of 32-bit memory addresses. Microsoft Windows 95/98, which employs 32-bit memory addresses, creates a flat address space for one's applications.

flatbed scanner A scanner with a flat scanning area large enough to accommodate a letter-sized page (8½ × 11 inches) or more of material. A sheet feeder to automate scanning multiple-page documents is an available option. See *digitize*.

flat file database A database application that stores, organizes, and retrieves all its data in a single table. This approach is well-suited for small, simple databases; more complex databases can be built with relational database applications. See *data integrity*, *relational database management system (RDBMS)*.

flat file system A file system in which each file must have a unique name. Most modern operating systems use a hierarchical file system, in which two or more files can have the same name as long as they are located in different directories. See *hierarchical file system*.

flat-panel display A thin display screen that uses one of several display technologies, such as active matrix (also known as thin film transistor), field emission display, gas plasma display, LCD (liquid crystal display), or passive matrix. A backlit display makes the display easier to read. Traditionally used in portable computers, flat-panel displays are becoming common for desktop computers and digital televisions.

flat-square monitor A monitor that is more gently curved than most but really neither flat nor square. Although such monitors have less distortion than most displays, they are not free of spherical distortion, as flat tension-mask monitors are.

fast bus and, in the end, achieves better throughput. Like DDR-SDRAM, Rambus DRAM can send and receive data within one clock cycle. Directly competing with DDR-SDRAM, Rambus DRAM is Intel's choice for high-performance PCs; however, DDR-SDRAM has been more widely adopted. See *DDR-SDRAM*, *PC-600*, *PC-700*, *PC-800*, *PC-1600*, *PC-2100*, *PC-2600*, *RIMM*.

read To retrieve data or program instructions from a device such as a hard or floppy disk, and place the data into the computer's random access memory (RAM).

read buffering A method of increasing the apparent speed of disk access by storing frequently accessed program instructions or data in memory chips, which operate more quickly than disks. See *buffer*.

README file A text file, often included on the installation disk of application programs, that contains last-minute information not contained in the program's documentation. Typical README file names are README.1ST, README.TXT, and README.

read-only Capable of being displayed or used, but not deleted. If a display of read-only data can be edited, formatted, or otherwise modified, it cannot be saved under the same file name. See *file attribute*, *locked file*, *read/write*.

read-only attribute In operating systems such as MS-DOS and Microsoft Windows, a file attribute stored with a file's directory entry that indicates whether the file can be changed or deleted. When the read-only attribute is on, the user can display the file, but cannot modify or erase it. When the read-only attribute is off, the user can modify or delete the file.

read-only memory (ROM) The portion of a computer's primary storage that does not lose its contents when one switches off the power. ROM contains essential system programs that neither the user nor the computer can erase. Because the computer's internal memory is blank at

powerup, the computer can perform no functions unless given startup instructions. These instructions are stored in ROM. A growing trend is toward including substantial portions of the operating system on ROM chips instead of on disk. See *EPROM*, *PROM*.

read/write The capability of a primary or secondary storage device to record data (write) and to play back data previously recorded or saved (read).

read/write file A file whose read-only file attribute is set so that the file can be deleted and modified. See *locked file*.

read/write head In a hard disk or floppy disk, the magnetic recording and playback device that travels back and forth across the surface of the disk, storing and retrieving data.

read/write memory See *random access memory (RAM)*.

RealAudio A proprietary streaming audio technology developed by RealNetworks, which enables Internet users to begin hearing an audio file moments after they start downloading the file. Quality varies according to the speed of the user's Internet connection, and ranges from the quality of an AM radio broadcast to the quality of an FM radio broadcast under ideal conditions. See *streaming audio*.

real mode In Intel microprocessors, an operating mode in which memory locations are directly mapped by a limited set of registers, producing a total maximum memory size of 1MB (and, in practice, 640K, due to the allocation of some of the memory for the use of peripheral devices). Processors prior to the 80286 could work only in real mode; the 80286 and higher processors can be switched into protected mode, which enables them to address much larger amounts of memory and to support the reliable execution of two or more programs simultaneously. See *multitasking*.

real time A timing constraint imposed on a computer system that originates from

EOF Abbreviation for "end of file." This abbreviation is used in scripts and programming languages to denote the physical end of a file.

EOL Abbreviation for "end of line." A control character that demarcates the end of a line of text in a text file.

EPIC Acronym for Explicitly Parallel Instruction Computing. A design philosophy that underlies Intel Corporation's 64-bit microprocessors, including the Itanium. In this design philosophy, the compiler is given the task of deciding which instructions should be executed first rather than leaving this task to superscalar processes implemented in processor hardware, such as branch prediction. See *branch prediction*, *Itanium*, *RISC*, *superscalar architecture*.

EPP Acronym for enhanced parallel port. An improvement on the parallel port, which enables two-way communication. Using an EPP, for example, a printer can tell a microprocessor how much paper or toner remains in its bins. The Extended Capabilities Port (ECP) might eventually replace the EPP, but for now, many motherboards support both standards.

EPP/ECP port An improved version of the parallel port that supports both the enhanced parallel port (EPP) and Extended Capabilities Port (ECP) standards. EPP/ECP ports can transmit data very fast, as fast as an Ethernet network interface card.

EPROM Acronym for erasable programmable read-only memory. A read-only memory (ROM) chip that can be programmed and reprogrammed with a special electronic device. EPROM chips are packaged in a clear plastic case so that the contents can be erased using ultraviolet light. The erasability of EPROM chips matters to computer manufacturers, who often find that they need to reprogram ROM chips containing bugs. Programmable read-only memory (PROM) chips, which cannot be reprogrammed, must be discarded when a programming error is discovered.

EPS See *Encapsulated PostScript (EPS) file*.

equation typesetting Codes in a word processing document that cause the program to print multiline equations, including mathematical symbols such as integrals and summation signs. The best word processing programs, such as WordPerfect and Microsoft Word, offer what-you-see-is-what-you-get (WYSIWYG) onscreen equation editors, which allow a person see the equation as he or she builds it.

erasable optical disc drive Also called a floptical. A read/write data storage medium that uses a laser and reflected light to store and retrieve data on an optical disc. Unlike CD-ROM drives and write-once, read-many (WORM) drives, erasable optical disc drives can be used like hard disks: One can write and erase data repeatedly. Storage capacities can exceed 9 GB per disc. They are expensive and much slower than hard drives, however. See *secondary storage*.

erasable programmable read-only memory See *EPROM*.

e rate See *vertical refresh rate*.

ERD Acronym for entity relationship diagram. In the design of information systems, a diagram that shows all the entities (organizations, departments, users, programs, and data) that play roles in the system, as well as the relationships between those entities.

ergonomic keyboard A keyboard designed to reduce strain on the wrists, which can result in repetitive stress injury (RSI). Some ergonomic keyboards, such as the Microsoft Natural Keyboard, angle keys away from the center, while others put keys in pits into which a naturally curved hand can fit. See *carpal tunnel syndrome*, *repetitive stress injury (RSI)*.

ergonomics The science of designing machines, tools, computers, and physical work areas so that people find them easy and healthful to use.

programmer/analyst A person who performs system analysis and design functions as well as programming activities. See *programmer*.

programmer's switch A plastic accessory included with pre-1991 Macintosh computers that, when installed on the side of the computer, enables one to perform a hardware reset and access the computer's built-in debugger.

programming The process of providing instructions to the computer that tells the microprocessor what to do. Stages in programming include design, or making decisions about what the program should accomplish; coding, or using a programming language to express the program's logic in computer-readable form and entering internal documentation for the commands; testing and debugging, in which the program's flaws are discovered and corrected; and documentation, in which an instructional manual for the program is created, either in print or onscreen.

programming environment A set of tools for programming that is commonly provided with a computer's operating system. Minimally, the tools include a line editor, a debugger, and an assembler to compile assembly language programs. These tools usually are not sufficient for professional program development, however, and often are replaced by an application development system.

programming language An artificial language consisting of a fixed vocabulary and a set of rules (called syntax) that programmers use to write computer programs, which tell the computer what to do. Programming languages are differentiated according to their level of abstraction from machine code (low-level and high-level languages), their focus (procedural steps, object manipulation, or data relationships), the method used to transform the programmer's notations into executable code (interpreted or compiled), and the prominence of data typing (strongly typed, weakly typed, typeless). See *declarative*

programming language, high-level programming language, low-level programming language, object-oriented programming, procedural programming language.

program overlay A portion of a program kept on disk and called into memory only as required.

progressive JPEG A type of JPEG graphic in which a low-resolution version of the entire image appears onscreen almost immediately and becomes sharper as additional information is downloaded.

project management program Software that tracks individual tasks that make up an entire job and enables project managers to discern the critical path, the sequence of activities that must be completed in a timely fashion if the entire project is to be completed on time.

PROLOG A high-level, fourth generation programming language used in artificial intelligence research and applications, particularly expert systems. PROLOG, short for PROgramming in LOGic, is a declarative language; rather than tell the computer what procedure to follow to solve a problem, the programmer describes the problem to be solved. The language resembles the query language of a database management system such as Standard Query Language (SQL) in that one can use PROLOG to ask a question such as, "Is Foster City in California?" But an important difference exists between PROLOG and a database management system (DBMS). A database contains retrievable information; in contrast, a PROLOG program contains knowledge, from which the program can draw inferences about what is true or false.

PROM Acronym for programmable read-only memory. A read-only memory (ROM) chip programmed at the factory for use with a given computer. Unlike standard ROM chips, which have their programming included in the internal design of the chip circuits, programmable ROM chips are easy to modify. Although programmable

ROM chips can be programmed (burned) just once, after which the programming becomes permanent, it is easier to change the way the chips are programmed than to change their internal design. See *EPROM*.

prompt A symbol or phrase that appears onscreen to inform the user that the computer is ready to accept input.

property 1. A characteristic or attribute of an object or resource made available by a computer program. In Microsoft Word, for example, a document's properties include its title and author. An object's properties are contained in its property sheet. 2. In object-oriented programming, a variable that is declared in a class so that it is available to all the objects created with the class. See *method*, *object*, *object-oriented programming*.

property sheet In application software, a dialog box, often displayed with index tabs, that stores all the properties associated with an object that the program makes available. In many applications, a given object's property sheet can be viewed by right-clicking the object and choosing Properties from the pop-up menu.

proportional pie graph In presentation graphics, a paired pie graph in which the size of each pie is in proportion to the amount of data the pie represents. Proportional pie graphs are useful for comparing two pies when one is significantly larger than the other.

proportional spacing In typefaces, setting the width of a character in proportion to the character shape so that a narrow character such as *i* receives less space than a wide character such as *m*. The text used in this dictionary entry uses proportional spacing. See *Kerning*, *monospace*.

proprietary Privately owned; based on trade secrets, privately developed technology, or specifications that the owner refuses to divulge, thus preventing others from duplicating a product or program unless an explicit license is purchased. Although there

are now a few carefully selected makers of Macintosh clones, the Macintosh system architecture is proprietary. The opposite of proprietary is open (privately developed but publicly published and available for emulation by others). With the exception of the basic input-output system (BIOS), the IBM PC system is open. From the user's perspective, proprietary designs or formats entail risk. If the company prospers and the design or format is widely emulated or accepted, the user benefits. But if the company does not prosper or fails, the user could be stuck with a computer system or with data that cannot be upgraded or exchanged with others. See *proprietary file format*.

proprietary file format A file format developed by a firm for storing data created by its products. In word processing, proprietary file formats are needed to handle formatting choices, which are not represented using the standard ASCII characters. A proprietary file format usually is unreadable by other companies' application programs without the assistance of a file conversion utility. The popular programs typically include the utilities to convert the files of several other file formats.

proprietary local bus A local bus standard developed by one company for use on only its machines. A proprietary bus requires adapter cards specifically designed for use on this bus, and there may be fewer of these than cards developed for open architectures. See *Micro Channel Architecture (MCA)*.

proprietary protocol An unpublished and nonpublic communications protocol developed by a company to enable its products to communicate with each other. The use of a proprietary communications protocol veils a not-so-subtle strategy to force users of one product to adopt other products made by the same company. The use of an open protocol, on the other hand, encourages the connection of the device with products made by other companies. See *connector conspiracy*.