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long cited as a shortcoming of the Macintosh compared with IBM PCs and compatibles. This feature, along with other layout changes and the addition of new keys and lights, makes the Apple Extended Keyboard quite similar in form to the IBM enhanced keyboard. See the illustration. See also enhanced keyboard.

**Apple II** \ap'1 tōō\ *n.* The second computer introduced by the Apple Computer Corporation, in April 1977. The Apple II featured 4K dynamic RAM, expandable to 48K (with 16K chips), and used the 6502 microprocessor. The Apple II was the first computer to offer a TV video adapter as an optional alternative to a color computer monitor. It also featured sound and eight expansion slots. See also 6502.

**Apple key** \ap'1 kē\ *n.* A key on Apple keyboards labeled with an outline of the Apple logo . On the Apple Extended Keyboard, this key is the same as the Command key, which functions similarly to the Control key on IBM and compatible keyboards. It is generally used in conjunction with a character key as a shortcut to making menu selections or starting a macro.

**Apple Macintosh** \ap'1 mak'ən-tosh\ *n.* See Macintosh.

**Apple Newton** \ap'1 nōō'tən\ *n.* See Newton.

**AppleScript** \ap'1-skript\ *n.* A script language used with Macintosh computers running under the System 7 operating system to execute commands and automate functions. See also script.

**AppleShare** \ap'1-shâr\ *n.* File server software that works with the Mac OS and allows one Mac-

intosh computer to share files with another on the same network. See also file server, Mac OS.

**applet** \a'plət\ *n.* A small piece of code that can be transported over the Internet and executed on the recipient's machine. The term is especially used to refer to such programs as they are embedded in line as objects in HTML documents on the World Wide Web.

**AppleTalk** \ap'1 tāk\ *n.* An inexpensive local area network developed by Apple that can be used by Apple and non-Apple computers to communicate and share resources such as printers and file servers. Non-Apple computers must be equipped with AppleTalk hardware and suitable software. The network uses a layered set of protocols similar to the ISO/OSI model and transfers information in the form of packets called frames. AppleTalk supports connections to other AppleTalk networks through devices known as bridges, and it supports connections to dissimilar networks through devices called gateways. See also bridge, frame (definition 2), gateway.

**application** \a'plə-kā'shən\ *n.* A program designed to assist in the performance of a specific task, such as word processing, accounting, or inventory management. Compare utility.

**application binary interface** \a-plə-kā'shən bī-nār-ē in'tər-fās, bī'nār-ē\ *n.* A set of instructions that specifies how an executable file interacts with the hardware and how information is stored. Acronym: ABI (A'B-I'). Compare application programming interface.



Apple Extended Keyboard.

**arithmetic expression** \âr-ith-met`ik eks-presh`-ən\ *n.* A series of elements, including data labels and constants as well as numbers, that are joined by arithmetic operators, such as + and −, and can be calculated to produce a value.

**arithmetic logic unit** \âr-ith-met`ik loj`ik yō`nit\ *n.* A component of a microprocessor chip used for arithmetic, comparative, and logical functions. *Acronym:* ALU (A`L-U`). *See also* gate (definition 1).

**arithmetic operation** \ə-rith`mə-tik op-ər-ā`shən, âr-ith-met`ik\ *n.* Any of the standard calculations performed in arithmetic—addition, subtraction, multiplication, or division. The term is also used in reference to negative numbers and absolute values.

**arithmetic operator** \âr-ith-met`ik op`ər-ā-tər\ *n.* An operator that performs an arithmetic operation: +, −, ×, or /. An arithmetic operator usually takes one or two arguments. *See also* argument, binary, logical operator, operator (definition 1), unary.

**.arj** \dot`A-R-J`\ *n.* The DOS file extension used with archive files created with the ARJ compression program.

**.army.mil** \dot-âr`mē-dot-mil`, dot-âr`mē-dot-M-I-L\ *n.* On the Internet, the major geographic domain specifying that an address belongs to the United States Army.

**ARP** \A`R-P`, arp\ *n.* Acronym for **Address Resolution Protocol**. A TCP/IP protocol for determining the hardware address (or physical address) of a node on a local area network connected to the Internet, when only the IP address (or logical address) is known. An ARP request is sent to the network, and the node that has the IP address responds with its hardware address. Although ARP technically refers only to finding the hardware address, and RARP (for Reversed ARP) refers to the reverse procedure, ARP is commonly used for both senses. *See also* IP address, TCP/IP.

**ARPANET** \âr`pə-net`, A`R-P`A-N`E-T\ *n.* A large wide area network created in the 1960s by the U.S. Department of Defense Advanced Research Projects Agency (ARPA, renamed DARPA in the 1970s) for the free exchange of information between universities and research organizations, although the military also used this network for communications. In the 1980s MILNET, a separate network, was spun off from ARPANET for use by

the military. ARPANET was the network from which the Internet evolved. *See also* Internet, MILNET.

**ARP request** \ärp` rə-kwest`, A-R-P\ *n.* Short for **Address Resolution Protocol request**. An ARP packet containing the Internet address of a host computer. The receiving computer responds with or passes along the corresponding Ethernet address. *See also* ARP, Ethernet, IP address, packet.

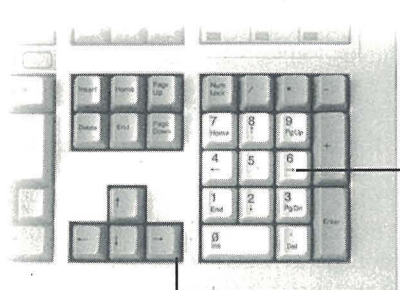
**array** \ər-ā`\ *n.* In programming, a list of data values, all of the same type, any element of which can be referenced by an expression consisting of the array name followed by an indexing expression. Arrays are part of the fundamentals of data structures, which, in turn, are a major fundamental of computer programming. *See also* array element, index, record<sup>1</sup>, vector.

**array element** \ər-ā` el`ə-mənt\ *n.* A data value in an array.

**array processor** \ər-ā` pros`e-sər\ *n.* A group of interconnected, identical processors operating synchronously, often under the control of a central processor.

**arrow key** \âr`ō kē`\ *n.* Any of four keys labeled with arrows pointing up, down, left, and right, used to move the cursor vertically or horizontally on the display screen or, in some programs, to extend the highlight. *See* the illustration.

Arrow keys  
(when Num Lock is off)



Arrow keys

**Arrow key.** *When Num Lock is off, the arrow keys on the number keypad can be used.*

**article** \är`tə-kəl\ *n.* A message that appears in an Internet newsgroup. *Also called* post. *See also* newsgroup.



**.fidonet.org** \dot-fī dō-net-dot-ōrg\ *n.* On the Internet, the major domain specifying that an address is located on Fidonet.

**field** \fēld\ *n.* **1.** A location in a record in which a particular type of data is stored. For example, EMPLOYEE-RECORD might contain fields to store Last-Name, First-Name, Address, City, State, Zip-Code, Hire-Date, Current-Salary, Title, Department, and so on. Individual fields are characterized by their maximum length and the type of data (for example, alphabetic, numeric, or financial) that can be placed in them. The facility for creating these specifications usually is contained in the data definition language (DDL). In relational database management systems, fields are called *columns*. **2.** A space in an on-screen form where the user can enter a specific item of information.

**field-effect transistor** \fēld-ə-fekt tranz-i'stər\ *n.* See FET.

**field-programmable logic array** \fēld-prō-gram-ə-bl loj'ik ə-r-ā-\ *n.* An integrated circuit containing an array of logic circuits in which the connections between the individual circuits, and thus the logic functions of the array, can be programmed after manufacture, typically at the time of installation in the field. Programming can be performed only once, typically by passing high current through fusible links on the chip. *Acronym:* FPLA (F'P-L-A'). Also called PLA, programmable logic array.

**field separator** \fēld'sep-ər-ā-tər\ *n.* Any character that separates one field of data from another. See also delimiter, field (definition 1).

**FIFO** \fī'fō, F'I-F-O\ *n.* See first in, first out.

**fifth-generation computer** \fifth-jen-ər-ā-shən kəm-pyōō'tər\ *n.* See computer.

**fifth normal form** \fifth-nōr-məl fōrm\ *n.* Abbreviated 5NF. See normal form (definition 1).

**file** \fīl\ *n.* A complete, named collection of information, such as a program, a set of data used by a program, or a user-created document. A file is the basic unit of storage that enables a computer to distinguish one set of information from another. A file is the "glue" that binds a conglomeration of instructions, numbers, words, or images into a coherent unit that a user can retrieve, change, delete, save, or send to an output device.

**file allocation table** \fīl'al-ə-kā-shən tā-bl\ *n.* A table or list maintained by some operating systems

to manage disk space used for file storage. Files on a disk are stored, as space allows, in fixed-size groups of bytes (characters) rather than from beginning to end as contiguous strings of text or numbers. A single file can thus be scattered in pieces over many separate storage areas. A file allocation table maps available disk storage space so that it can mark flawed segments that should not be used and can find and link the pieces of a file. In MS-DOS, the file allocation table is commonly known as the FAT. See also FAT file system.

**file attribute** \fīl' a-trə-byōōt\ *n.* A restrictive label attached to a file that describes and regulates its use—for example, hidden, system, read-only, archive, and so forth. In MS-DOS, this information is stored as part of the file's directory entry.

**file backup** \fīl' bak'up\ *n.* See backup.

**file compression** \fīl' kəm-presh'ən\ *n.* The process of reducing the size of a file for transmission or storage. See also data compression.

**file control block** \fīl' kən-trōl' blok\ *n.* A small block of memory temporarily assigned by a computer's operating system to hold information about an opened file. A file control block typically contains such information as the file's identification, its location on disk, and a pointer that marks the user's current (or last) position in the file. *Acronym:* FCB (F'C-B').

**file conversion** \fīl' kən-vər'zhən\ *n.* The process of transforming the data in a file from one format to another without altering its contents—for example, converting a file from a word processor's format to its ASCII equivalent.

**file extension** \fīl' eks-ten'shən\ *n.* See extension (definition 1).

**file extent** \fīl' eks-tent\ *n.* See extent.

**file format** \fīl' fōr'mat\ *n.* The structure of a file that defines the way it is stored and laid out on the screen or in print. The format can be fairly simple and common, as are files stored as "plain" ASCII text, or it can be quite complex and include various types of control instructions and codes used by programs, printers, and other devices. Examples include RTF (Rich Text Format), DCA (Document Content Architecture), PICT, DIF (Data Interchange Format), DXF, TIFF (Tagged Image File Format), and EPSF (Encapsulated PostScript Format).

**local loop** \lō`kəl lōōp` \ *n.* A telephone connection that runs from the subscriber to the local telephone exchange.

**local memory** \lō`kəl mem`ər-ē\ *n.* In multiprocessor systems, the memory on the same card or high-speed bus as a particular processor. Typically, memory that is local to one processor cannot be accessed by another without some form of permission.

**local newsgroups** \lō`kəl nōōz`grōōps\ *n.* Newsgroups that are targeted toward a geographically limited area such as a city or educational institution. Posts to these newsgroups contain information that is specific to the area, concerning such topics as events, meetings, and sales. *See also* newsgroup.

**local reboot** \lō`kəl rē`bōōt\ *n.* A reboot of the machine that one is directly working on, rather than a remote host. *See also* reboot.

**LocalTalk** \lō`kəl-tāk`\ *n.* An inexpensive cabling scheme used by AppleTalk networks to connect Apple Macintosh computers, printers, and other peripheral devices. *See also* AppleTalk.

**local variable** \lō`kəl vār`ē-ə-bl\ *n.* A program variable whose scope is limited to a given block of code, usually a subroutine. *See also* scope (definition 1). *Compare* global variable.

**location** \lō-kā`shən\ *n.* *See* address<sup>1</sup> (definition 1).

**lock** \lok\ *n.* **1.** A software security feature that requires a key or dongle in order for the application to run correctly. *See also* dongle. **2.** A mechanical device on some removable storage medium (for example, the write-protect notch on a floppy disk) that prevents the contents from being overwritten. *See also* write-protect notch.

**locked file** \lokd fil\ *n.* **1.** A file on which one or more of the usual types of manipulative operation cannot be performed—typically, one that cannot be altered by additions or deletions. **2.** A file that cannot be deleted or moved or whose name cannot be changed.

**locked volume** \lokd` vol`yōōm\ *n.* On the Apple Macintosh, a volume (storage device, such as a disk) that cannot be written to. The volume can be locked either physically or through software.

**lockout** \lok`out\ *n.* The act of denying access to a given resource (file, memory location, I/O port),

usually to ensure that only one program at a time uses that resource.

**lock up** \lok` up\ *n.* A condition in which processing appears to be completely suspended and in which the program in control of the system will accept no input. *See also* crash<sup>1</sup>.

**log** \log\ *n.* **1.** A record of transactions or activities that take place on a computer system. **2.** *See* logarithm.

**logarithm** \log`ər-idh`əm\ *n.* Abbreviated log. In mathematics, the power to which a base must be raised to equal a given number. For example, for the base 10, the logarithm of 16 is (approximately) 1.2041 because  $10^{1.2041}$  equals (approximately) 16. Both natural logarithms (to the base *e*, which is approximately 2.71828) and common logarithms (to the base 10) are used in programming. Languages such as C and Basic include functions for calculating natural logarithms.

**logic** \loj`ik\ *n.* In programming, the assertions, assumptions, and operations that define what a given program does. Defining the logic of a program is often the first step in developing the program's source code. *See also* formal logic.

**logical** \loj`ə-kəl\ *adj.* **1.** Based on true and false alternatives as opposed to arithmetic calculation of numeric values. For example, a logical expression is one that, when evaluated, has a single outcome, either true or false. *See also* Boolean algebra. *Compare* fuzzy logic. **2.** Of or pertaining to a conceptual piece of equipment or frame of reference, regardless of how it may be realized physically. *Compare* physical.

**logical decision** \loj`ə-kəl də-sizh`ən\ *n.* Any decision that can have one of two outcomes (true/false, yes/no, and so on). *Compare* fuzzy logic.

**logical device** \loj`ə-kəl də-vīs`\ *n.* A device named by the logic of a software system, regardless of its physical relationship to the system. For example, a single floppy disk drive can simultaneously be, to the MS-DOS operating system, both logical drive A and drive B.

**logical drive** \loj`ə-kəl drīv\ *n.* *See* logical device.

**logical error** \loj`ə-kəl ār`ər\ *n.* *See* logic error.

**logical expression** \loj`ə-kəl eks-presh`ən\ *n.* *See* Boolean expression.

**logical file** \loj`ə-kəl fil\ *n.* A file as seen from a conceptual standpoint, without reference to and as