Glossary

Numerals

10Base-T See *Ethernet*.

100Base-T See *Fast Ethernet*.

3-D modeling software Graphics software used to create electronic models of three-dimensional objects.

3GL See *third-generation language*.

4GL See *fourth-generation language*.

5GL See *fifth-generation language*.

802.11b A wireless networking standard that describes specifications for data transmission speeds up to 11 Mbps.

802.11g A wireless networking standard that describes specifications for data transmission speeds of 20 Mbps and higher.

A

Accelerated Graphics Port (AGP) bus A bus standard that incorporates a special architecture that allows the video card to access the system's RAM directly, greatly speeding up graphics performance. Most new computers feature AGP graphics capabilities in addition to a PCI system bus and an expansion bus.

acceptance testing Testing performed during the development phase of the systems development life cycle. In acceptance testing, end users work with the installed system to ensure that it meets their criteria.

Access A database management program.

activate (1) To initiate a command or load a program into memory and begin using it. (2) To *choose*; for example, you can activate a resource by choosing its icon, toolbar button, or filename.

active matrix LCD A liquid crystal display (LCD) technology that assigns a transistor to each pixel in a flat-panel monitor, improving display quality and eliminating the "submarining" effect produced by some types of flat-panel monitors. Also called a *thin-film transistor (TFT)* display.

Active Server Pages (ASP) A specialized Web-scripting language that enables a Web page to access and draw data from databases.

active window On the computer screen, the window in which the user's next action will occur. The active window's title bar is highlighted, while the title bars of inactive windows appear dimmed.

adapter See *expansion board*.

address book A database that stores information about people, such as their names, addresses, phone numbers, e-mail addresses, and other details. Commonly part of a personal information management or e-mail program.

address bus A set of wires connecting the computer's CPU and RAM, across which memory addresses are transmitted.

Address Resolution Protocol (ARP) A specialized protocol that resolves logical IP addresses into physical addresses.

ADSL See *Asynchronous DSL*.

Advanced Micro Devices (AMD) A chip manufacturer that makes processors for PC-compatible computers.

adware See *spyware*.

AGP See *Accelerated Graphics Port*.

algorithm A set of ordered steps or procedures necessary to solve a problem.

all-in-one peripheral A device that combines the functions of printing, scanning, copying, and faxing. All-in-one peripherals can be based on either laser or ink jet printing technology and may operate in black and white, color, or both.

alphanumeric field See *text field*.

alphanumeric keys On a computer keyboard, the keys that include the letters of the alphabet, numerals, and commonly used symbols.

ALU See *arithmetic logic unit*.

always-on connection An Internet connection that is always active, as long as the computer is running. Cable modem and DSL connections are examples of always-on connections.

AMD See *Advanced Micro Devices*.

American Standard Code for Information Interchange An eight-bit binary code developed by the American National Standards Institute (ANSI) to represent symbolic, numeric, and alphanumeric characters. The ASCII character set is the most commonly used character set in PCs.

anonymous FTP archive An FTP site with files available to the general public. The user types the word "anonymous" as the account name in order to access the files.

anti-adware utility See *anti-spyware utility*.

antiglare screen A device that fits over a computer monitor and reduces glare from light reflecting off the screen.

anti-spyware utility A program that can locate and remove spyware programs from a user's computer. Some anti-spyware utilities can "immunize" a computer against known types of spyware, to prevent them from infecting the system.

antivirus utility A program that scans a computer's disks and memory for viruses; when it detects viruses, it removes them. Some antivirus programs can help the user recover data and program files that have been damaged by a virus and can actively scan files as they are being copied from a disk or downloaded from the Internet.

Apache HTTP Server A Web server product developed by the Apache Group. A robust and commercial-grade Web server that is maintained and improved upon as free, open-source software, Apache is the most popular Web server and runs on UNIX, Linux, and Windows servers.

APIPA See *automatic private IP address*.

applet A small program that can be run from within a Web page. Many Web-based applets are written in the Java programming language.

application server A network server that hosts shared application files, enabling multiple users to use a network version of a software program. Generally, an application server performs some or all of the processing tasks required by users of the application.

application software Any computer program used to create or process data, such as text documents, spreadsheets, graphics, and so on. Examples include database management software, desktop publishing programs, presentation programs, spreadsheet programs, and word processing programs.

architecture The design of any part of a computer system, or of an entire system, including software and hardware. The design of a microprocessor's circuits, for example, is called its architecture.

archive file A file that stores one or more compressed files, which have been shrunk by a data-compression program.

arithmetic logic unit (ALU) The component of the CPU that handles arithmetic and logical functions.

arithmetic operation One of two types of operations a computer can perform, which are handled by the arithmetic logic unit (ALU). Arithmetic operations include addition, subtraction, multiplication, and division. See also *logical operation*.

ARP See *Address Resolution Protocol*.

ARPANET Acronym for *Advanced Research Projects Agency Network*. An early network developed by the Department of Defense to connect computers at universities and defense contractors. This network eventually became part of the Internet.

article A message posted to an Internet newsgroup. A series of related articles and responses is called a *thread*.

ASCII See *American Standard Code for Information Interchange*.

assembler A computer program that converts assembly language instructions into machine language.

assembly language A second-generation programming language that uses simple phrasing in place of the complex series of binary numbers used in machine language.

Asynchronous DSL (ADSL) A variation on Digital Subscriber Line (DSL) service that provides different data transmission speeds for uploading and downloading data.

Asynchronous Transfer Mode (ATM) A network protocol designed to send voice, video, and data transmissions over a single network. ATM provides different kinds of connections and bandwidth on demand, depending on the type of data being transmitted.

ATM See *Asynchronous Transfer Mode*.

attenuation The loss of signal strength as analog or digital data travels through a network medium.

attribute (1) An enhancement or stylistic characteristic applied to text characters in a font, such as bold or italic. (2) In object-oriented programming, a component of the overall description of an object.

auto loader In a large tape backup system, a robotic device that can automatically load and eject tapes in tape drives.

automatic private IP address (APIPA) A special group of private IP addresses. If a computer is configured to obtain an address automatically (as a DHCP client) on a TCP/IP network but does not receive an address from a DHCP server, it will automatically give itself an address within the APIPA range, first making sure that no other host on the network has that address.

autonumber field See *counter field*.

average access time The average amount of time a storage or memory device requires to locate a piece of data. For storage devices, average access time is usually measured in milliseconds (ms). Average time is measured in nanoseconds (ns) in memory devices. Also called *seek time*.

B

B2B transaction See *business-to-business transaction*.

B2C transaction See *business-to-consumer transaction*.

back up To create a duplicate set of program or data files in case the originals become damaged. (A duplicate file made for this purpose is called a *backup* file.) Files can be backed up individually, by entire folders, and by entire drives. Backups can be made to many types of storage media, such as diskettes, optical discs, or tape. Verb—two words ("I am going to back up the files on the server."); noun or adjective—one word ("He used a backup utility to make a backup of that file.")

backbone The central structure of a network that connects other elements of the network and handles the major traffic.

backup utility A program that enables the user to copy one or more files from a hard disk to another storage medium (such as a floppy disk, tape, or compact disc) for safekeeping or use in case the original files become damaged or lost.

band printer A type of impact printer that uses a rapidly moving, circular band embossed with characters. A hammer strikes the band to press a character against an inked ribbon.

bandwidth The amount of data that can be transmitted over a network at any given time. Bandwidth may be measured in bits per second (bps) or in hertz (Hz).

bar code A pattern of bars printed on a product or its packaging. A device called a *bar code reader* can scan a bar code and convert its pattern into numeric digits. After the bar code reader has converted a bar code image into a number, it transfers that number to a computer, just as though the number had been typed on a keyboard.

bar code reader An input device that converts a pattern of printed bars (called a *bar code*) into a number that a computer can read. A beam of light reflected off the bar code into a light-sensitive detector identifies the bar code and converts the bar patterns into numeric digits that can be transferred to a computer. Bar code readers are commonly used in retail stores.

basic input output system (BIOS) A set of instructions, stored in ROM, that help a computer start running when it is turned on.

basic rate integrated services digital network (basic rate ISDN or BRI) The simplest and slowest type of ISDN connection. A basic rate ISDN connection combines two 64 Kbps data channels and one 19 Kbps error-checking channel.

basic rate ISDN See *basic rate integrated services digital network*.

batch (.bat) file An executable file that can be used to automate common or repetitive tasks. A batch file is a simple program that consists of an unformatted text file containing one or more commands. If you type a batch file's name in at a command prompt, your operating system will execute the commands in the file. A batch file can have a .com extensions instead of a .bat extension.

billions of instructions per second (BIPS) A common unit of measure when gauging the performance of a computer's processor.

binary field A database field that stores binary objects (such as clip art, photographs, screen images, formatted text, sound objects, and video clips) or OLE objects (such as charts or worksheets created with a spreadsheet or word processor).

binary large object (BLOB) (1) A graphic image file such as clip art, a photograph, a screen image, formatted text, a sound object, or a video clip. (2) An OLE object such as a chart or worksheet created with a spreadsheet or word processor; frequently used with object-oriented databases.

binary number system A system for representing the two possible states of electrical switches, which are on and off. (The binary number system is also known as *base 2*.) The binary number system gets its name from the fact that it includes only two numbers: 0 and 1. In computer storage and memory systems, the numeral 0 represents off and a 1 represents on.

BIOS See *basic input output system*.

BIPS See *billions of instructions per second*.

bit The smallest unit of data that can be used by a computer, represented by a 1 or a 0.

bitmap A binary representation of an image in which each part of the image, such as a pixel, is represented by one or more bits in a coordinate system. Also called a *raster*.

bits per second (bps) A measure of data transmission speed. This unit may be used to measure the data transmission rate of a specific device—such as a modem or disk drive—or for the components of a network. May be modified as kilobits per second (Kbps), megabits per second (Mbps), or gigabits per second (Gbps).

BLOB See *binary large object*.

block A contiguous series of characters, words, sentences, or paragraphs in a word processing document. This term is also sometimes used to describe a range of cells in a spreadsheet. Once a block of text or cells has been selected, the user can perform many different actions on it, such as moving, formatting, or deleting.

BMP Abbreviation for *bitmap*. BMP is a graphic-file format native to Windows and OS/2. BMP is widely used on PCs for icons and wallpaper.

board See *expansion board*.

Boolean field See *logical field*.

Boolean operator Special words—such as AND, OR, and NOT—that can be used to modify a keyword search in a Web-based search engine. These operators are commonly used in standard database queries.

boot To start a computer. The term comes from the expression "pulling oneself up by one's own bootstraps."

boot sector The portion of a disk that contains the master boot record—a program that runs when the computer is first started and determines whether the disk has the basic operating system components required to run successfully.

bottom-up design A design method in which system details are developed first, followed by major functions or processes.

bps See *bits per second*.

branch One of several directions that flows from a condition statement or function call within a sequence structure.

BRI See *basic rate integrated services digital network*.

brick-and-mortar store A business, such as a retail store, that has a physical location but does not have an online presence such as a Web site.

bridge A device that connects two LANs and controls data flow between them.

broadband Describes a high-speed network connection or data connection to the Internet. To qualify as broadband, a connection must transmit data faster than is possible with a dial-up connection through a standard modem and telephone line. Cable modems and DSL are common examples of broadband Internet connections.

browser See *Web browser*.

buddy list A list of people who can participate in chats, using instant messaging software.

buffer A dedicated space in memory or on a disk that temporarily stores data until it is needed by a program. Once the data has been used, it is deleted from the buffer.

bug An error in a computer program.

bus The path between components of a computer. The bus's width determines the speed at which data is transmitted. When used alone, the term commonly refers to a computer's data bus.

bus topology A network topology in which all network nodes and peripheral devices are attached to a single conduit.

business logic The process executed by one computer in a three-tier distributed application. This process can include determining what data is needed from a database, the best way to connect to the database, and other tasks.

business-to-business (B2B) transaction A transaction (such as the placing of an order or the paying of an invoice) conducted by two businesses. A B2B transaction can be conducted in many ways, with or without the use of computers, but the term *B2B* is commonly used to describe transactions that occur online or through a private corporate network such as an extranet.

business-to-consumer (B2C) transaction A transaction (such as the ordering of a product or the paying of a bill) conducted between an individual consumer and a business. A B2C transaction can be conducted in many ways, with or without the use of computers, but the term *B2C* is commonly used to describe transactions that occur via the Internet.

byte The amount of memory required to store a single character. A byte is comprised of eight bits.

C

cable modem service A technology that provides an Internet connection using cable television wiring. To connect to the Internet, a special device called a *cable modem* is required. The modem connects the user's PC or network to the cable television system.

cache memory High-speed memory that resides between the CPU and RAM in a computer. Cache memory stores data and instructions that the CPU is likely to need next. The CPU can retrieve data or instructions more quickly from cache than it can from RAM or a disk.

CAD See *computer-aided design*.

campus area network (CAN) A larger version of a *local area network (LAN)*, usually used to connect adjacent buildings such as those found on college campuses.

CAN See *campus area network*.

card See *expansion board*.

carpal tunnel syndrome A form of repetitive stress injury. Specifically, an injury of the wrist or hand commonly caused by repetitive motion, such as extended periods of keyboarding.

CASE See *computer-aided software engineering*.

cathode ray tube (CRT) A type of monitor that uses a vacuum tube as a display screen. CRTs are most commonly used with desktop computers.

CD See *compact disc*.

CD-R See *CD-Recordable drive*.

CD-Recordable (CD-R) drive An optical disc drive that enables the user to create customized CD-ROM discs. Data that has been written to a CD-R disc cannot be changed (overwritten). CD-R discs can be read by any CD-ROM drive. CD-R drives are commonly used to create backup copies of program or data files, or to create duplicates of existing compact discs.

CD-ReWritable (CD-RW) drive An optical disc drive that enables the user to create customized CD-ROM discs. Unlike a CD-R disc, a CD-RW disc's data can be overwritten, meaning the data can be updated after it has been placed on the disc.

CD-ROM See *compact disc read-only memory*.

CD-ROM drive An optical disc drive that enables a computer to read data from a compact disc. Using a standard CD-ROM drive and compact disc, the computer can only read data from the disc and cannot write data to the disc.

CD-RW See *CD-ReWritable drive*.

cell In a spreadsheet or database table, the intersection of a row and a column, forming a box into which the user enters numbers, formulas, or text. The term also is used to refer to the individual blocks in a table created in a word processing program.

cell address In a spreadsheet, an identifier that indicates the location of a cell in a worksheet. The address is composed of the cell's row and column locations. For example, if the cell is located at the intersection of column B and row 3, then its cell address is B3.

cell pointer A square enclosing one cell of a worksheet, identifying that cell as the active cell. The user positions the cell pointer in a worksheet by clicking the cell or by using the cursor movement keys on the keyboard.

central processing unit (CPU) The computer's primary processing device, which interprets and executes program instructions and manages the functions of input, output, and storage devices. In personal computers, the CPU is composed of a control unit, an arithmetic logic unit, built-in memory, and supporting circuitry such as a dedicated math processor. The CPU may reside on a single chip on the computer's motherboard or on a larger card inserted into a special slot on the motherboard. In larger computers, the CPU may reside on several circuit boards.

CGI See *computer-generated imaging*.

channel Discussion group where chat users convene to discuss a topic.

character field See *text field*.

character formatting In a word processor, settings that control the attributes of individual text characters, such as font, type size, type style, and color.

characters per second (cps) A measure of the speed of impact printers such as dot matrix printers.

chat One of the services available to users of the Internet and some online services. Using special chat software or Web-based chatting tools, users can exchange messages with one another in real time.

choose See *activate*.

circuit board A rigid rectangular card—consisting of chips and electronic circuitry—that ties the processor to other hardware. In a personal computer, the primary circuit board (to which all components are attached) is called the *motherboard*.

CISC See *Complex Instruction Set Computing*.

click To select an object or command on the computer screen (for example, from a menu, toolbar, or dialog box) by pointing to the object and then pressing and releasing the primary mouse button once.

click-and-mortar store A business such as a retail store that has one or more physical locations as well as an online presence such as a Web site. Customers can conduct transactions with such a business by visiting a physical location or using its Web site.

client An application program on a user's computer that requests information from another computer, such as a network server or Web host, over a network or the Internet. The term also may be used to refer to the computer itself, as it requests services via a network.

client/server network A hierarchical network strategy in which the processing is shared by a server and numerous clients. In this type of network, clients provide the user interface, run applications, and request services from the server. The server contributes storage, printing, and some or all processing services.

clip art Predrawn or photographed graphic images that are available for use by anyone. Some clip art is available through licensing, some through purchase, and some for free.

Clipboard A holding area maintained by the operating system in memory. The Clipboard is used for storing text, graphics, sound, video, or other data that has been copied or cut from a document. After data has been placed in the Clipboard, it can be inserted from the Clipboard into other documents, in the same application, or in a different application.

clock cycle In a processor, the amount of time required to turn a transistor off and back on again. Also called a *tick*. A processor can execute an instruction in a given number of clock cycles, so as a computer's clock speed (the number of clock cycles it generates per second) increases, so does the number of instructions it can carry out each second.

clock speed A measure of a processor's operating speed, currently measured in megahertz (MHz, or millions of cycles per second) or gigahertz (GHz, or billions of cycles per second). A computer's operating speed is based on the number of clock cycles, or ticks, it generates per second. For example, if a computer's clock speed is 800 MHz, it "ticks" 800 million times per second.

cluster On a magnetic disk (such as a hard disk), a group of sectors that are treated as a single data-storage unit. The number of sectors per disk can vary, depending on the type of disk and the manner in which it is formatted.

coaxial cable (coax) A cable composed of a single conductive wire wrapped in a conductive wire mesh shield with an insulator in between.

code The instructions or statements that are the basis of a computer program.

color monitor A computer monitor whose screen can display data in color. A color monitor's capabilities are based on a variety of factors. Current high-resolution color monitors can display more than 16 million colors, but they also can be set to display as few as 16 colors or varying shades of gray.

command An instruction issued to the computer. The user can issue commands, usually by choosing from a menu, clicking an on-screen tool or icon, or pressing a combination of keys. Application programs and the operating system also issue commands to the computer.

command-line interface A user interface that enables the user to interact with the software by typing strings of characters at a prompt.

command prompt See *prompt*.

commercial software Software that a manufacturer makes available for purchase. The consumer usually pays for a license to use the software, instead of purchasing the software itself.

communications device An input/output device used to connect one computer to another to share hardware and information. This family of devices includes modems and network interface cards.

compact disc (CD) A type of optical storage medium, identical to audio CDs. The type of CD used in computers is called *compact disc read-only memory (CD-ROM)*. As the device's name implies, you cannot change the information on the disc, just as you cannot record over an audio CD. Standard compact discs can store either 650 MB or 700 MB of computer data, or 70 minutes or 80 minutes of audio data.

compact disc read-only memory (CD-ROM) The most common type of optical storage medium. In CD-ROM, data is written in a series of lands and pits on the surface of a compact disc (CD), which can be read by a laser in a CD-ROM drive.

compatible Describes the capability of one type of hardware, software, or data file to work with another. See also *incompatible*.

compiler A program that translates a file of program source code into machine language.

Complex Instruction Set Computing (CISC) Describes a type of processor designed to handle large and comprehensive instruction sets. CISC processors are commonly used in IBM-compatible PCs.

computer An electronic device used to process data, converting the data into information that is useful to people.

computer-aided design (CAD) Software used to create complex two- or three-dimensional models of buildings and products, including architectural, engineering, and mechanical designs.

computer-aided software engineering (CASE) Software used to develop information systems. CASE automates the analysis, design, programming, and documentation tasks.

computer-generated imaging (CGI) The process of using powerful computers and special graphics, animation, and compositing software to create digital special effects or unique images. CGI is frequently used in filmmaking, game design, animation, and multimedia design.

computer system A four-part system that consists of hardware, software, data, and a user.

conditional statement A feature of selection structure programming that directs program flow by branching to one part of the program or another depending on the results of a comparison.

configure To adapt a computer to a specific need by selecting from a range of hardware or software options. Configuration may include installing new or replacement hardware or software or changing settings in existing hardware or software.

contact information Data that can help communicate with individuals or businesses, such as names, mailing addresses, phone numbers, e-mail addresses, and other details. This kind of information is often stored and managed in special software, such as contact-management software, personal information managers, or e-mail programs.

contact-management software See *personal information manager*.

contact manager See *personal information manager*.

context menu In Windows 95 and later operating systems, a brief menu that appears when the user right-clicks certain items.

The menu contains commands that apply specifically to the item that was right-clicked. Also called a *shortcut menu*.

control unit The component of the CPU that contains the instruction set. The control unit directs the flow of data throughout the computer system. See also *instruction set*.

conversion The process of replacing an existing system with an updated or improved version. Information systems (IS) professionals may use one or more different conversion methods when changing an organization's system.

cookie A special text file that a Web server places on a visitor's computer. A cookie may store information about your visit at a Web site, or it may store personal information such as credit card data. Web sites create cookies and store them on the user's computer.

cookie-management utility A program that allows the user to control the handling of cookies on the PC. Using a cookie-management program, you can determine what types of cookies to allow on your system and can selectively remove cookies at any time.

Copy command An application command that makes a duplicate of data selected from a document and stores it in the Clipboard without removing the data from the original document. The data then can be used in other documents and other applications.

counter field A database field that stores a unique incrementing numeric value (such as an invoice number) that the DBMS automatically assigns to each new record. Also called *autonumber field*.

countermeasure Any step that is taken to avoid or protect against a threat.

cps See *characters per second*.

CPU See *central processing unit*.

crawler A special software program, commonly used by search engines, that travels the Internet looking for new Web pages and recording their addresses. Also called *spiders*.

credit report A document that lists all your financial accounts that can be a source of credit or that you can use for making purchases or for other transactions. These include bank accounts, mortgages, credit cards, and others.

CRT See *cathode ray tube*.

cursor A graphic symbol on the screen that indicates where the next keystroke or command will appear when entered. Also called the *insertion point*.

cursor-movement keys On a computer keyboard, the keys that direct the movement of the on-screen cursor or insertion point, including the up, down, left, and right arrows and the HOME, END, PAGE UP, and PAGE DOWN keys.

Cut command An application command that removes data selected from a document and stores it in the Clipboard. The data is no longer a part of the original document. While in the Clipboard, the data can be used in other documents or applications.

cybercrime The use of a computer to carry out any conventional criminal act, such as fraud.

cyberterrorism A form of warfare in which terrorists attack a nation's critical information infrastructure. The conventional goal is to harm or control key computer systems or digital controls in order to disrupt utilities or telecommunications. Typical targets are power plants, nuclear facilities, water treatment plants, and government agencies.

cylinder A vertical stack of tracks, one track on each side of each platter of a hard disk.

D

daisy wheel printer A now-obsolete type of impact printer that uses a spinning wheel embossed with alphanumeric characters, which are pressed against an inked ribbon to create an image.

DAS See *direct attached storage*.

data Raw facts, numbers, letters, or symbols that the computer processes into meaningful information.

data area The part of the disk that remains free to store information after the logical formatting process has created the boot sector, file allocation table (FAT), and root folder.

data bus An electrical path composed of parallel wires that connect the CPU, memory, and other hardware on the motherboard. The number of wires determines the amount of data that can be transferred across the bus at one time.

data compression The process of reducing data volume and increasing data-transfer rates by using mathematical algorithms to analyze groups of bits and encode repeating sequences of data.

data compression utility A program that reduces the volume of data by manipulating the way the data is stored.

data diddling The copying or altering of data on an infiltrated system by a hacker.

Data Exchange Format (DXF) An open file format for vector graphics files.

data flow diagram A method of documenting how data moves through a system, including input, processing, and output.

data mining A method of searching large databases for specific types of information, used by large organizations. For example, companies with large databases of customer information may use data mining technologies to search for purchasing trends or very specific kinds of demographic data.

data projector An output device that can project a computer's display onto a screen or wall.

data scrubbing The process of ensuring the integrity and usefulness of data in a database. Data scrubbing can ensure, for example, that all telephone numbers are formatted a specific way, duplicate entries are identified, and inappropriate data is not allowed in the database. Also called *data validation*.

data transfer rate The rate at which a data storage device can transfer data to another device; expressed as either bits per second (bps) or bytes per second (Bps). Also called *throughput*.

data validation See *data scrubbing*.

data warehouse Refers to a huge collection of data in one or more databases, of the kind often used by large businesses.

database A collection of related data organized with a specific structure.

database management system (DBMS) A computer program used to manage the storage, organization, processing, and retrieval of data in a database.

datagram The term for data packets when traversing the Internet. A datagram (or packet) is a piece of a larger message that has been broken up for transmission over the Internet.

date field A database field that stores a date.

DB2 An enterprise-level database management system, developed and sold by IBM Corp.

DBMS See *database management system*.

DDOS attack See *distributed denial of service attack*.

debugging The process of tracking down and correcting errors (called *bugs*) in a software program.

decimal number system The system that uses 10 digits to represent numbers; also called *base 10*.

decision support system (DSS) A specialized application used to collect and report certain types of business data, which can be used to aid managers in the decision-making process.

decision tree A graphical representation of the events and actions that can occur in a program or information system under different conditions.

decoding (1) In a machine cycle, the step in which the control unit breaks down a command into instructions that correspond to the CPU's instruction set. (2) During file compression, the process of reinserting bits stripped away during encoding.

dedicated media Media (such as cables or wireless links) that are specifically set up for use in a network.

defragmentation The process of locating file fragments (parts of a file that are stored in noncontiguous sectors) on the surface of a magnetic disk, then storing them in contiguous sectors. This process can help optimize a disk's performance by allowing it to locate and load files in less time.

degaussing The process of disrupting a magnetic field. If a floppy disk become degaussed, for example, the data stored on it can be corrupted or destroyed.

density A measure of the quality of a magnetic disk's surface. The higher a disk's density, the more data the disk can store.

description field See *memo field*.

deselect The opposite of *select*. In many applications, the user can select, or highlight, blocks of text or objects for editing. By clicking the mouse in a different location or pressing a cursor-movement key, the user removes the highlighting and the text or objects are no longer selected.

desktop In a computer operating system, a graphical workspace in which all of the computer's available resources (such as files, programs, printers, Internet tools, and utilities) can be easily accessed by the user. In such systems, the desktop is a colored background on which the user sees small pictures, called *icons*. The user accesses various resources by choosing icons on the desktop.

desktop computer A full-size personal computer whose system unit is designed to sit on top of a desk or table; such computers are not considered to be portable. One variation of the desktop model is the *tower model*, whose system unit can stand upright on the floor.

development phase Phase 3 of the systems development life cycle, in which programmers create or customize software to fit the needs of an organization, technical documentation is prepared, and software testing is begun.

device Any electronic component attached to or part of a computer; hardware.

DHCP See *Dynamic Host Control Protocol*.

dial-up connection An Internet connection between a client computer and an Internet service provider's (ISP's) server computer, which takes place over a standard telephone line, using a standard modem. Such connections are called "dial-up" because the client computer's modem must dial a telephone number in order to connect to the ISP's server computer.

dialog box A special-purpose window that appears when the user issues certain commands in a program or graphical operating system. A dialog box gets its name from the "dialog" it conducts with the user as the program seeks the information it needs to perform a task.

digital The use of the numerals 1 and 0 (digits) to express data in a computer. The computer recognizes the numeral 1 as an "on" state of a transistor, whereas a 0 represents an "off" state.

digital camera A camera that converts light intensities into digital data. Digital cameras are used to record images that can be viewed and edited on a computer.

digital light processing (DLP) A technology used in some types of digital projectors to project bright, crisp images. DLP devices use a special microchip, called a *digital micromirror device*, that uses mirrors to control the image display. DLP projectors can display clear images in normal lighting conditions.

digital pen See *pen*.

Digital Subscriber Line (DSL) A form of digital telephone service used to transmit voice and data signals. There are several varieties of DSL technology, which include Asymmetrical DSL, High bit-rate DSL, and others.

Digital Video Disc (DVD) A high-density optical medium capable of storing a full-length movie on a single disc the size of a standard compact disc (CD). Unlike a standard CD, which stores data on only one side, a DVD-format disc stores data on both sides. Using compression technologies and very fine data areas on the disc's surface, newer-generation DVDs can store several gigabytes of data.

Digital Video Disc-RAM (DVD-RAM) A type of optical device that allows users to record, erase, and re-record data on a special disc. Using video editing software, you can record your own digitized videos onto a DVD-RAM disc, then play them back in any DVD player. (However, special encoding makes it impossible to copy movies from commercial DVD onto a DVD-RAM disc.) DVD-RAM drives can read DVDs, DVD-R discs, CD-R discs, CD-RW discs, and standard CDs.

digitize To convert an image or a sound into a series of binary numbers (1s and 0s) that can be stored in a computer.

DIMM See *Dual In-Line Memory Module*.

direct attached storage (DAS) A storage device that is attached directly to a computer and that depends on the computer's processor.

Director A multimedia authoring program, developed by Macromedia, Inc.

directory See *folder*.

disconnected datasets Information that is temporarily copied from a central database to a user's computer and resides on the user's system only for as long as the user needs it. During that time, the connection with the database is broken.

disk A storage medium commonly used in computers. Two types of disks are used: magnetic disks, which store data as charged particles on the disk's surface; and optical discs, which use lasers to read data embossed on the disc in a series of lands and pits.

disk controller A device that connects a disk drive to the computer's bus, enabling the drive to exchange data with other devices.

disk defragmenter A utility program that locates the pieces of fragmented files saved in noncontiguous sectors on a magnetic disk and rearranges them so they are stored in contiguous sectors. Defragmenting a disk can improve its performance because the operating system can locate data more efficiently.

disk drive A storage device that holds, spins, reads data from, and writes data to a disk.

disk optimization One or more disk-management procedures that can improve a disk's performance. Disk optimization procedures include defragmentation, deletion of unneeded files, compression, and others.

diskette A removable magnetic disk encased in a plastic sleeve. Also called *floppy disk* or *floppy*.

diskette drive A device that holds a removable floppy disk when in use; read/write heads read and write data to the diskette.

display adapter See *video card*.

distributed application A program that is divided into parts, each of which executes on a different computer. In essence, the program's execution is distributed across multiple systems.

distributed computing A system configuration in which two or more computers in a network share applications, storage, and processing power. Also called *distributed processing*.

distributed denial of service (DDOS) attack A type of hacking attack in which a hacker hides malicious code on the PCs of many victims. This code may enable the hacker to take over the infected PCs, or simply use them to send requests to a Web server. If the hacker controls enough PCs, and can get them to send enough requests to the targeted Web server, the server essentially becomes jammed with requests and stops working.

distributed processing See *distributed computing*.

DLL See *dynamic link library file*.

DLP See *digital light processing*.

DNS See *domain name system*.

docking station A base into which a portable computer can be inserted, essentially converting the portable computer into a desktop system. A docking station may provide connections to a full-size monitor, keyboard, and mouse, as well as additional devices such as speakers or a digital video camera.

document A computer file consisting of a compilation of one or more kinds of data. There are many types, including text documents, spreadsheets, graphics files, and so on. A document, which a user can open and use, is different from a program file, which is required by a software program to operate.

document area In many software applications, the portion of the program's interface in which the active document appears. In this part of the interface, the user can work directly with the document and its contents. Also called *document window*.

document format In productivity applications, a setting that affects the appearance of the entire document, such as page size, page orientation, and the presence of headers or footers.

document window See *document area*.

domain name A name given to a computer and its peripherals connected to the Internet that identifies the type of organization using the computer. Examples of domain names are .com for commercial enterprises and .edu for schools. Also called *top-level domain*.

domain name system (DNS) A naming system used for computers on the Internet. This system provides an individual name (representing the organization using the computer) and a domain name, which classifies the type of organization.

dot matrix printer A type of impact printer that creates characters on a page by using small pins to strike an inked ribbon, pressing ink onto the paper. The arrangement of pins in the print head creates a matrix of dots—hence the device's name.

dot pitch The distance between phosphor dots on a monitor. The highest-resolution monitors have the smallest dot pitch.

dots per inch (dpi) A measure of resolution commonly applied to printers, scanners, and other devices that input or output text or images. The more dots per inch, the higher the resolution. For example, if a printer has a resolution of 600 dpi, it can print 600 dots across and 600 down in a one-inch square, for a total of 360,000 dots in one square inch.

double-click To select an object or activate a command on the screen by pointing to an object (such as an icon) and pressing and releasing the mouse button twice in quick succession.

download To retrieve a file from a remote computer. The opposite of *upload*.

dpi See *dots per inch*.

drag To move an object on the screen by pointing to the object, pressing the primary mouse button, and holding down the button while dragging the object to a new location.

drag and drop To move text or graphics from one part of the document to another by selecting the desired information,

pressing and holding down the primary mouse button, dragging the selection to a new location, and releasing the mouse button. Also called *drag-and-drop editing*.

draw program A graphics program that uses vectors to create an image. Mathematical equations describe each line, shape, and pattern, allowing the user to manipulate all elements of the graphic separately.

Dreamweaver A Web-authoring environment, developed by Macromedia, Inc.

driver A small program that accepts requests for action from the operating system and causes a device, such as a printer, to execute the requests.

DSL See *Digital Subscriber Line*.

DSS See *decision support system*.

Dual In-Line Memory Module (DIMM) One type of circuit board containing RAM chips.

dual-scan LCD An improved passive-matrix technology for flat-panel monitors in which pixels are scanned twice as often, reducing the effects of blurry graphics and submarining (an effect that occurs when the mouse pointer blurs or disappears when it is moved).

dumpster diving The act of searching through trash in hopes of finding valuable personal information such as account numbers, passwords, or Social Security numbers; commonly practiced by identity thieves.

DVD See *digital video disc*.

DVD-R See *DVD-Recordable*.

DVD-RAM See *Digital Video Disc-RAM*.

DVD-Recordable (DVD-R) An optical disc drive that can record data onto the surface of a special, recordable DVD disc. Once data has been written to the disc, it cannot be overwritten.

DXF See *Data Exchange Format*.

dye-sublimation (dye-sub) printer A printer that produces photographic-quality images by using a heat source to evaporate colored inks from a ribbon, transferring the color to specially coated paper.

dynamic Describes anything that can be changed. For example, a computer's IP address may be dynamic, meaning that it changes each time the user connects to the Internet. Similarly, a Web page's content can be dynamic, changing in response to user inputs.

dynamic addressing Another name for *Dynamic Host Control Protocol (DHCP)*.

Dynamic Host Control Protocol (DHCP) An Internet protocol that automatically assigns all necessary Internet configurations to a computer that connects to the Internet.

dynamic IP address The address given to a computer by a DHCP server.

dynamic link library (.dll) file A partial executable file. A .dll file will not run all on its own; rather, its commands are accessed by another running program.

E

EBCDIC See *Extended Binary Coded Decimal Interchange Code*.

e-commerce See *electronic commerce*.

EDI See *Electronic Data Interchange*.

edit To make modifications to an existing document file.

EDM See *electronic document management*.

EIDE See *Enhanced Integrated Drive Electronics*.

ELD See *electroluminescent display*.

electroluminescent display (ELD) A monitor that is similar to an LCD monitor but uses a phosphorescent film held between two sheets of glass. A grid of wires sends current through the film to create an image.

electromagnetic field (EMF) A field of magnetic and electrical forces created during the generation, transmission, and use of low-frequency electrical power. EMFs are produced by computers.

electronic commerce The practice of conducting business transactions online, such as selling products from a World Wide Web site. The process often involves the customer's providing personal or credit card information online, presenting special security concerns. Also called *e-commerce*.

Electronic Communications Privacy Act A federal law (enacted in 1986) that prevents unlawful access to voice communications by wire. It originally regulated electronic wiretaps and provided the basis for laws defining illegal access to electronic communications, including computer information. It is the basis for protection against unreasonable governmental intrusion into Internet usage, stored electronic communications, and e-mail.

Electronic Data Interchange (EDI) The transfer of information electronically between companies over networks.

electronic document management A popular type of enterprise software that tracks documents, keeps related ideas together, and aids in facilities management.

electronic mail A system for exchanging written, voice, and video messages through a computer network. Also called *e-mail*.

e-mail See *electronic mail*.

e-mail address An address that identifies an individual user of an electronic mail system, enabling the person to send and receive e-mail messages. The e-mail address consists of a user name, the "at" symbol (@) and the DNS address.

e-mail client See *e-mail program*.

e-mail program Software that lets you create, send, and receive e-mail messages. Also called an *e-mail client*.

embedded operating system A computer operating system that is built into the circuitry of an electronic device—unlike a PC's operating system, which resides on a magnetic disk. Embedded operating systems are typically found in devices such as PDAs.

EMF See *electromagnetic field*.

encapsulate To include characteristics or other objects within an object in an object-oriented program.

encryption The process of encoding and decoding data, making it useless to any system that cannot decode (decrypt) it.

Enhanced Integrated Drive Electronics (EIDE) An enhanced version of the IDE interface.

enterprise directory A collection of data about the users of a network and the computer resources of the network. This database typically is managed by the network operating system, which resides on a network server.

enterprise software Software that is used by hundreds or thousands of people at the same time, or that handles millions of records, or both.

enterprise storage A large-scale system of data storage, connected to the computer system of a large organization.

enterprise system A very large-scale computer system, such as one used by a large organization.

ergonomics The study of the physical relationship between people and their tools. In the world of computing, ergonomics seeks to help people use computers correctly to avoid physical problems such as fatigue, eyestrain, and repetitive stress injuries.

error-correction protocol A standard for correcting errors that occur when static interferes with data transmitted via modems over telephone lines.

Ethernet The most common network protocol. Also called *10Base-T*.

Event Viewer In later versions of Windows, a program that records certain conditions, such as errors, and creates a log that is usable by the system's user or administrator.

executable (.exe, .com) file The core program file responsible for launching software.

execute To load and carry out a program or a specific set of instructions. Executing is also called *running*.

execution cycle The second portion of the machine cycle, which is the series of steps a CPU takes when executing an instruction. During the execution cycle, the CPU actually carries out the instruction by converting it into microcode. In some cases, the CPU may be required to store the results of an instruction in memory; if so, this occurs during the execution cycle.

exit condition In programming, a condition that must be met in order for a loop to stop repeating.

expansion board A device that enables the user to configure or customize a computer to perform specific tasks or to enhance performance. An expansion board—also called a *card*, *adapter*, or *board*—contains a special set of chips and circuitry that add functionality to the computer. An expansion board may be installed to add fax/modem capabilities to the computer, for example, or to provide sound or video-editing capabilities.

expansion slot The area of the motherboard into which expansion boards are inserted, connecting them to the PC's bus.

expert system An information system in which decision-making processes are automated. A highly detailed database is accessed by an inference engine, which is capable of forming an intelligent response to a query.

Extended ASCII An extension of the ASCII character set, which specifies the characters for values from 128 to 255. These characters include punctuation marks, pronunciation symbols, and graphical symbols.

Extended Binary Coded Decimal Interchange Code (EBCDIC) An eight-bit code that defines 256 symbols. It is still used in IBM mainframe and midrange systems, but it is rarely encountered in personal computers.

Extensible Hypertext Markup Language (XHTML) An outgrowth of HTML, XHTML is a superset of the HTML commands, including the capabilities of HTML and adding to them. XHTML allows for the execution of programs written in Extensible Markup Language (XML) and it is itself extensible, meaning that it allows for new commands and features to be added.

Extensible Markup Language (XML) An outgrowth of HTML, it is a markup language that allows data to be stored in a human-readable format. The language also allows users to create unique tags or other elements.

Extensible Markup Language Mobile Profile (XHTML MP) A new development environment formerly known as Wireless Markup Language (WML) used to create documents that can be viewed by handheld devices such as Web-enabled cell phones, PDAs, and even digital pagers.

Extensible Stylesheet Language (XSL) An XML technology that allows XML documents to be formatted for display in HTML-based browsers.

extension point A device that allows a greater number of users to access a wireless network.

external cache See *Level-2 cache*.

external modem A communications device used to modulate data signals. This type of device is described as "external" because it is housed outside the computer and connected to the computer through a serial port and to the telephone system with a standard telephone jack.

extract To uncompress one or more compressed files that have been stored together in an archive file.

extranet A network connection that enables external users to access a portion of an organization's internal network, usually via an Internet connection. External users have access to specific parts of the internal network but are forbidden to access other areas, which are protected by firewalls.

eyestrain Fatigue of the eyes, caused by staring at a fixed object for too long. Extended computer use can lead to eyestrain.

F

Fair Credit Reporting Act A federal law (enacted in 1970) that mandates that personal information assembled by credit reporting agencies must be accurate, fair, and private. It allows individuals to review and update their credit record as well as dispute the entries.

FAQ See *frequently asked questions*.

Fast Ethernet A networking technology, also called *100Base-T*, that uses the same network cabling scheme as Ethernet but uses

different network interface cards to achieve data transfer speeds of up to 100 Mbps.

FAT See *file allocation table*.

fault tolerance The ability of a computer system to continue functioning, even after a major component has failed.

fax modem A modem that can emulate a fax machine.

fetching The first step of the CPU's instruction cycle, during which the control unit retrieves (or fetches) a command or data from the computer's memory.

fiber-optic cable A thin strand of glass wrapped in a protective coating. Fiber-optic cable transfers data by means of pulsating beams of light.

field The smallest unit of data in a database; used to group each piece or item of data into a specific category. Fields are arranged in a column and titled by the user.

fifth-generation language (5GL) A high-level programming language that theoretically would use artificial intelligence techniques to create software, based on the programmer's description of the program.

file A set of related computer data (used by a person) or program instructions (used by an application or operating system) that has been given a name.

file allocation table (FAT) In a diskette or hard disk, a log created during the logical formatting process that records the location of each file and the status of each sector on the disk.

file compression See *data compression*.

file compression utility See *data compression utility*.

file format A standardized method of encoding data for storage.

file server The central computer of a network; used for shared storage. A server may store software applications, databases, and data files for the network's users. Depending on the way a server is used, it also may be called a *network server*, *application server*, or *server*.

file server network A hierarchical network strategy in which the server is used to store and forward files to the nodes. Each node runs its own applications.

file system In an operating system, a logical method for managing the storage of data on a disk's surface.

file transfer The process of sending a file from one computer to another by modem or across a network. See also *download* and *upload*.

file transfer protocol (FTP) A set of rules that dictate the format in which data is sent from one computer to another.

filter (1) A DBMS tool that enables the user to establish conditions for selecting and displaying a subset of records that meet those criteria. (2) In an e-mail program, a tool that allows the user to decide how messages are handled. For example, you can create a filter that automatically deletes messages from a certain sender or that stores certain messages in a specific folder. In e-mail programs, a filter also may be called a *rule*.

Financial Modernization Act of 1999 A federal law that requires companies to give consumers notice of their privacy and information-sharing practices.

firewall An antipiracy method for protecting networks. A firewall permits access to public sections of the network while protecting proprietary areas.

FireWire See *IEEE 1394*.

first-generation language A term applied to machine languages, which were the earliest and crudest programming languages used with personal computers.

first-party cookie A cookie placed on a user's computer by the Web site he or she is currently viewing. First-party cookies are persistent and usually store preferences the user has set for viewing the site. Some first-party cookies store information that can personally identify the user.

Flash A development tool for creating very sophisticated Web pages; it can include moving graphics, animation, sound, and interactivity.

flash memory A special type of memory chip that combines the best features of RAM and ROM. Like RAM, flash memory lets a user or program access data randomly. Also like RAM, flash memory lets the user overwrite any or all of its contents at any time. Like ROM, flash memory is nonvolatile, so it retains data even when power is off.

flash memory drive A small-format storage device that uses flash memory to hold data. This highly portable storage device is small enough to be carried on a keychain.

flat-file database A database file consisting of a single data table that is not linked to any other tables.

flat-panel display A thin, lightweight monitor used in laptop and notebook computers. Most flat-panel displays use LCD technology.

floppy See *diskette*.

floppy disk See *diskette*.

flowchart A diagram of the program control flow.

folder A tool for organizing data stored on a disk. A folder contains a list of files and other folders stored on the disk. A disk can hold many folders, which can in turn store many files and other folders. Also called a *directory*.

font A family of alphanumeric characters, symbols, and punctuation marks that share the same design. Modern applications provide many different fonts and enable users to use different fonts in the same document. Also called a *typeface*.

form A custom screen created in a database management system (DBMS) for displaying and entering data related to a single database record.

format (1) As relating to magnetic storage devices, the layout of tracks and sectors in which data is stored. (2) In productivity applications, a setting that affects the appearance of a document or part of a document.

formatting (1) The process of magnetically mapping a disk with a series of tracks and sectors where data will be stored. Also

called *initializing*. (2) The process of applying formatting options (such as character or paragraph formats) to a document.

formula A mathematical equation within a cell of a spreadsheet. To identify it and distinguish it from other spreadsheet entries, a formula begins with a special symbol, such as a plus sign or an equal sign.

formula bar In spreadsheet programs, a special text box that displays the active cell's address and the data or formula entered in that cell. The user may be able to enter or edit data or formulas in this box.

fourth-generation language (4GL) An advanced programming language used to create an application.

fragmentation Describes the state of a file that has been broken into sections that are stored on noncontiguous sectors of a disk.

frame (1) In networking, a small block of data to be transmitted over a network. A frame includes an identifying header and the actual data to be sent. Also called a *packet*. (2) In animation, a single still image that, when viewed with many other images in rapid succession, creates the illusion of motion. (3) In many software applications, a special tool that enables the user to place an object—such as a text box or an image from a separate file—in a document. The frame surrounds the object in the document, enabling the user to position and resize the object as needed.

Freedom of Information Act A federal law (enacted in 1966) that allows individuals to view and amend personal information kept about them by any governmental entity.

Freescale A subsidiary of Motorola, Inc., that produces microprocessors used in many Apple computers, as well as in large-scale UNIX-based systems.

freeware Software that is made freely available to the public by the publisher. Freeware publishers usually allow users to distribute their software to others, as long as the software's source files are not modified and as long as the distributor charges no fees or does not profit from the distribution.

frequently asked questions (FAQs) A document routinely developed by a newsgroup; it lists questions most commonly asked in the newsgroup, along with their answers. FAQs help a newsgroup's members avoid the repeated posting of the same information to the group.

FrontSide Bus Found in many newer model computers, a 64-bit data bus that transfers eight bytes at a time.

FTP See *file transfer protocol*.

FTP client software Programs that enable users to download files from an FTP site.

FTP server A computer used to store FTP sites, many containing thousands of individual programs and files.

FTP site A collection of files stored on an FTP server; users can copy files from and to their own computer.

function (1) In a spreadsheet, a formula used to perform complex operations, such as adding the contents of a range or finding the absolute value of a cell's contents. (2) In programming, a block of statements designed to perform a specific routine or task.

function key The part of the keyboard that can be used to quickly activate commands; designated F1, F2, and so on.

G

game controller A specialized type of input device that enables the user to interact with computer games. Two popular types of game controllers are game pads and joysticks.

game pad A type of game controller that usually provides two sets of controls—one for each hand. These devices are extremely flexible and are used to control a wide variety of game systems.

gateway A computer system that can translate one network protocol into another so that data can be transmitted between two dissimilar networks.

GB See *gigabyte*.

GHz See *gigahertz*.

GIF Acronym for *graphics interchange format*. A graphics file format supported by many graphics programs. GIF files are commonly used in Web pages.

Gigabit Ethernet The newest addition to Ethernet technology; capable of transferring 10 Gb of data per second.

gigabyte (GB) Equivalent to approximately one billion bytes; a typical measurement of data storage.

gigahertz (GHz) Equivalent to one billion cycles per second; a common measure of processor clock speed.

graphical user interface (GUI) A user interface in which actions are initiated when the user selects an icon, a toolbar button, or an option from a pull-down menu with the mouse or other pointing device. GUIs also represent documents, programs, and devices on screen as graphical elements that the user can use by clicking or dragging.

grayscale monitor A monitor that displays up to 256 shades of gray, ranging from white to black.

GUI See *graphical user interface*.

H

hacker An expert in computer technology who uses skill and innovative techniques to solve complex computing problems. Hackers are more notorious, however, for creating problems such as invading private or governmental computer networks, accessing data from corporate databases, online extortion, and other activities.

hacking Describes an activity performed by a *hacker*, such as invading a computer system through a network or Internet connection.

HAN See *home area network*.

handheld personal computer A personal computer that is small enough to be held in one hand. Also called *palmtop computer*.

hard disk A nonremovable magnetic storage device included in most PCs that stores data on a stack of aluminum platters, each coated with iron oxide, enclosed in a case. The device includes the hard disk platters, a spindle on which the platters spin, a

read/write head for each side of each platter, and a sealed chamber that encloses the disks and spindle. Many hard disks also include the drive controller, although the controller is a separate unit on some hard disks. Also called a *hard drive*.

hard drive See *hard disk*.

hardware The physical components of a computer, including processor and memory chips, input/output devices, tapes, disks, modems, and cables.

header (1)The initial part of a data packet being transmitted across a network. The header contains information about the type of data in the payload, the source and destination of the data, and a sequence number so that data from multiple packets can be reassembled at the receiving computer in the proper order. See *frame*. (2) A recurring line or paragraph of text appearing at the top of each page in a document. Headers often include page numbers, the document's title, the name of the current chapter, or other information.

headphones A small pair of speakers attached to a headband for wearing on the head. A type of output device that allows the user to listen to audio output without disturbing others.

headset An input/output device that features a microphone and one or two speakers mounted on a headband for wearing on the head.

help (.hlp, .chm) file A file included with most software programs; it provides information for the user, such as instructions for using the program's features.

helper application A program that must be added to your browser in order to play special content files—especially those with multimedia content—in real time. Also called *plug-in application*.

hertz (Hz) The frequency of electrical vibrations, or cycles, per second.

heuristics A programming technique for solving a problem or performing a task; it does not always find the best possible solution.

high-capacity floppy disk A small, removable disk that resembles a standard diskette, but provides much higher data storage capacity. Typically, high-capacity floppy disks have data densities of 100 MB or greater.

higher-level language A language designed to make programming easier through the use of familiar English words and symbols.

holographic memory A futuristic type of storage device that stores enormous amounts of data within the structure of a crystal; it uses special lasers to read and write data.

home area network (HAN) A local area network that exists within a home, used to connect the computers and peripheral devices in the home. A HAN is commonly used to allow multiple users to share a single Internet connection.

home page An organization's principal Web page, which may provide links to other Web pages having additional information.

host A computer that provides services to other computers that connect to it. Host computers provide file transfer, communications services, and access to the Internet's high-speed data lines.

hot-swappable hard disk A magnetic storage device similar to a removable hard disk. A removable box encloses the disk, drive, and read/write heads in a sealed container. This type of hard disk can be added to or removed from a server without shutting down the server.

hot swapping The process of removing a device (such as a storage device) from a computer and replacing it without shutting down the system first and without disrupting the system's operations. Devices that can be changed in this manner are called *hot-swappable*.

HTML See *Hypertext Markup Language*.

HTML tag A code used to format documents in Hypertext Markup Language (HTML) format.

HTTP See *Hypertext Transfer Protocol*.

HTTPS See *Secure Hypertext Transfer Protocol*.

hub In a network, a device that connects nodes and servers together at a central point.

hyperlink See *hypertext link*.

hypertext A software technology that provides fast and flexible access to information. The user can jump to a topic by selecting it on screen; used to create Web pages and help screens.

hypertext link A word, icon, or other object that when clicked jumps to another location on the document or another Web page. Also called *hyperlink* or *link*.

Hypertext Markup Language (HTML) A page-description language used on the World Wide Web that defines the hypertext links between documents.

Hypertext Preprocessor (PHP) A scripting language commonly used in Web development. Applications developed in PHP are useful for obtaining data from online databases.

Hypertext Transfer Protocol (HTTP) A set of file transfer rules used on the World Wide Web; it controls the way information is shared.

hyperthreading A technology supported by some newer processors that allows multiple threads to be executed at the same time.

Hz See *hertz*.

I

I/O See *input/output*.

IANA See *Internet Assigned Numbers Authority*.

IBM Refers to the IBM Corporation, a leading maker of computer hardware, software, and technologies.

ICANN See *Internet Corporation for Assigned Names and Numbers*.

ICMP See *Internet Control Message Protocol*.

icon A graphical screen element that executes one or more commands when clicked with a mouse or other pointing device.

IDE See *integrated development environment*.

identity (ID) theft A type of crime in which a thief uses someone else's identity to obtain money or conduct business transactions. This crime usually involves the theft of the victim's personal information, such as a Social Security number, credit card number, or bank account information.

IEEE 1394 An expansion bus technology that supports data-transfer rates of up to 400 Mbps. Also called *FireWire*.

IETF See *Internet Engineering Task Force*.

IGES See *Initial Graphics Exchange Specifications*.

IIS See *Internet Information Server*.

IM See *instant messaging*.

image scanner An input device that digitizes printed images. Sensors determine the intensity of light reflected from the page, and the light intensities are converted to digital data that can be viewed and manipulated by the computer. Sometimes called simply a *scanner*.

IMAP4 See *Internet Mail Access Protocol Version 4*.

impact printer A type of printer that creates images by striking an inked ribbon, pressing ink from the ribbon onto a piece of paper. Examples of impact printers are dot-matrix printers and line printers.

implementation phase Phase 4 of the systems development life cycle. In this phase, new software and hardware are installed in the user environment, training is offered, and system testing is completed.

incompatible The opposite of *compatible*. Describes the inability of one type of hardware, software, or data file to work with another.

Industry Standard Architecture (ISA) bus A PC bus standard developed by IBM, extending the bus to 16 bits. An ISA bus can access 8-bit and 16-bit devices.

inference engine Software used with an expert system to examine data with respect to the knowledge base and to select an appropriate response.

information processing cycle The set of steps a computer follows to receive data, process the data according to instructions from a program, display the resulting information to the user, and store the results.

information system A mechanism that helps people collect, store, organize, and use information. An information system does not necessarily include computers; however, a computer is an important part of an information system.

Information Systems department The people in an organization responsible for designing, developing, implementing, and maintaining the systems necessary to manage information for all levels of the organization.

INI file See *initialization file*.

Initial Graphics Exchange Specifications (IGES) One of a few universal file formats for vector graphics.

initialization (.ini) file A file containing configuration information, such as the size and starting point of a window, the color of the background, the user's name, and so on. Initialization files help programs start running or they contain information that programs can use as they run.

initializing See *formatting*.

ink jet printer A type of nonimpact printer that produces images by spraying ink onto the page.

input device Computer hardware that accepts data and instructions from the user. Examples of input devices include the keyboard, mouse, joystick, pen, trackball, scanner, bar code reader, microphone, and touch screen.

input/output (I/O) Communications between the user and the computer or between hardware components that result in the transfer of data.

input/output (I/O) device A device that performs both input and output functions. Modems and network interface cards are examples of input/output devices.

input–processing–output (IPO) chart A programming tool used in the planning of a software development project, an IPO chart contains three columns that list the program's required inputs, processes, and outputs.

insertion point See *cursor*.

installation testing During the development phase of the systems development life cycle (SDLC), the installation of a new system in a test environment where it is tested by the business.

instant messaging (IM) Chat software that enables users to set up buddy lists and open a window to "chat" when anyone on the list is online.

instruction A command that the computer must execute so that a specific action can be carried out.

instruction cycle The first portion of the machine cycle, which is the series of steps a CPU takes when executing an instruction. During the instruction cycle, the CPU's control unit fetches a command or data from the computer's memory, enabling the CPU to execute an instruction. The control unit then decodes the command so it can be executed.

instruction set Machine language instructions that define all the operations a CPU can perform.

integrated development environment (IDE) A programming tool that provides the programmer with all of the tools needed to develop applications in one program; most commonly used with 3GLs and 4GLs.

integrated pointing device A pointing device built into the computer's keyboard; consists of a small joystick positioned near the middle of the keyboard, typically between the *g* and *h* keys. The joystick is controlled with either forefinger. Two buttons that perform the same function as mouse buttons are just beneath the spacebar and are pressed with the thumb. One type of integrated pointing device, developed by IBM, is called *TrackPoint*.

integrated services digital network (ISDN) A digital telecommunications standard that replaces analog transmissions and transmits voice, video, and data.

Intel A leading manufacturer of microprocessors. Intel invented the first microprocessor, which was used in electronic calculators.

Intel's product line includes the *x*86 processors and the Pentium processor family.

intelligent smart card A type of smart card that contains its own processor and memory.

interactive Refers to software products that can react and respond to commands issued by the user or choices made by the user.

interactivity In multimedia, a system in which the user and program respond to one another. The program gives the user choices, which the user selects to direct the program.

interface See *user interface*.

internal modem A communications device used to modulate data signals. This type of modem is described as "internal" because it is a circuit board that is plugged into one of the computer's expansion slots.

Internet Originally, a link between ARPANET, NSFnet, and other networks. Today, a worldwide network of networks.

Internet Assigned Numbers Authority (IANA) An organization responsible for distributing IP addresses to regional Internet registries, coordinating with the IETF and others to assign protocol parameters, and other tasks.

Internet Control Message Protocol (ICMP) A special protocol used by Internet hosts (computers and routers) to report errors in transmission. A companion protocol to IP, ICMP also is used for managing, testing, and monitoring the network.

Internet Corporation for Assigned Names and Numbers (ICANN) A nonprofit corporation that oversees the domain name system.

Internet Engineering Task Force (IETF) An international technical body concerned with developing protocol standards, mostly involving TCP/IP.

Internet Information Server (IIS) A popular Web server product, developed by Microsoft Corporation.

Internet Mail Access Protocol Version 4 (IMAP4) An advanced e-mail protocol used on the Internet.

Internet Protocol (IP) Part of the TCP/IP protocol suite, a protocol that maintains the network addresses for the logical internetwork overlaying the physical network. Just as there is a physical address for every computer connected to a network, in a TCP/IP network there is also a specific logical address assigned to each computer or device that functions at the network layer. These addresses are called *IP addresses*, and each computer, router, and network printer, and all other devices that function at the network layer, must have an IP address.

Internet Protocol (IP) address A unique four-part numeric address assigned to each computer on the Internet, containing routing information to identify its location. Each of the four parts is a number between 0 and 255.

Internet relay chat (IRC) A multiuser system made up of channels that people join for exchanging messages either publicly or privately. Messages are exchanged in real time, meaning the messages are transmitted to other users on the channel as they are typed in.

Internet service provider (ISP) An intermediary service between the Internet backbone and the user, providing easy and relatively inexpensive access to shell accounts, direct TCP/IP connections, and high-speed access through dedicated data circuits.

internetworking The process of connecting separate networks together.

interpreter In programming, a software tool that converts source code to machine code. Instead of creating an executable file (as a compiler does), however, an interpreter executes each bit of machine code as it is converted. Interpreters, therefore, are said to translate code on the fly.

interrupt A preprogrammed set of steps that a CPU follows.

intranet An internal network whose interface and accessibility are modeled after an Internet-based Web site. Only internal users are allowed to access information or resources on the intranet; if connected to an external network or the Internet, the intranet's resources are protected from outside access by firewalls.

intrusion detection software Software that works with (or is built into) a firewall, which reveals the types of attacks a firewall is thwarting. The program creates logs of the attacks and may notify the user or administrator of certain types of intrusion attempts.

IP *See Internet Protocol.*

IP address See *Internet Protocol address*.

IP spoofing A method used by hackers and spammers to send messages to a victim from what appears to be a trusted computer.

IPO chart See *input–processing–output chart*.

IRC See *Internet relay chat*.

IS department See *Information Systems department*.

ISA bus See *Industry Standard Architecture bus*.

ISDN See *integrated services digital network*.

ISP See *Internet service provider*.

J

JAD See *joint applications design*.

Java A programming language used for creating cross-platform programs. Java enables Web page designers to include small applications (called *applets*) in Web pages.

Java applet A Java-based program included in a Web page.

JavaScript A Java-based scripting language, commonly used to create applets.

joint applications design (JAD) A process—sometimes used during the user design phase of the rapid application development (RAD) systems development cycle—in which users and developers work together to create applications. The JAD process focuses on structured workshops, in which developers and business users can collaborate.

Joint Photographic Experts Group (JPEG) format A bitmap file format commonly used to display photographic images.

joint requirements planning (JRP) A process—often used during the requirements planning phase of the rapid application development (RAD) systems development cycle—to identify high-level, strategic management requirements. At the heart of JRP are highly structured workshops in which senior managers participate in defining the goals and strategy of the organization and defining the goals and priorities of the new system.

joystick An input device used to control the movement of on-screen components; typically used in video games.

JPEG See *Joint Photographic Experts Group format*.

JRP See *joint requirements planning*.

K

KB See *kilobyte*.

keyboard The most common input device, used to enter letters, numbers, symbols, punctuation, and commands into the computer. Computer keyboards typically include numeric, alphanumeric, cursor-movement, modifier, and function keys, as well as other special keys.

keyboard buffer A part of memory that receives and stores the scan codes from the keyboard controller until the program can accept them.

keyboard controller A chip within the keyboard or the computer that receives the keystroke and generates the scan code.

keyboarding Touch typing using a computer keyboard.

keyword A term or phrase used as the basis for a search when looking for information on the World Wide Web.

kilobyte (KB) Equivalent to 1,024 bytes; a common measure of data storage.

knowledge base A highly specialized database used with an expert system to intelligently produce solutions.

knowledge discovery Describes a type of database utility designed to analyze data and report useful information.

L

L1 cache See *Level-1 cache*.

L2 cache See *Level-2 cache*.

L3 cache See *Level-3 cache*.

label Descriptive text used in a spreadsheet cell to describe the data in a column or row.

LAN See *local area network*.

land A flat area on the metal surface of a optical disc that reflects the laser light into the sensor of an optical disc drive. See also *pit*.

laptop computer See *notebook computer*.

laser printer A quiet, fast printer that produces high-quality output. A laser beam focused on an electrostatic drum creates an image to which powdered toner adheres, and that image is transferred to paper.

LCD monitor See *liquid crystal display monitor*.

LDAP See *Lightweight Directory Access Protocol*.

Level-1 (L1) cache A type of cache memory built directly into the microprocessor. Also called *on-board cache*.

Level-2 (L2) cache A type of cache memory that is external to the microprocessor but is positioned between the CPU and RAM. Also called *external cache*.

Level-3 (L3) cache A type of cache memory that is built into the computer's motherboard.

Lightweight Directory Access Protocol (LDAP) A set of protocols used for accessing information directories such as e-mail names and addresses stored on a mail server. The advantages of LDAP are that it is very fast, it is simpler, and it is constructed to work with TCP/IP. LDAP eventually should make it possible for almost any application running on virtually any computer platform to obtain directory information such as e-mail addresses.

line conditioner A device that protects hardware from electrical surges and line noise.

line noise Power disturbances that can be caused by high-demand electrical equipment such as air conditioners.

line printer A type of impact printer that uses a special, wide print head to print an entire line of characters at one time.

link See *hypertext link*.

Linux A freely available version of the UNIX operating system. Developed by a worldwide cooperative of programmers in the 1990s, Linux is a feature-rich, 32-bit, multiuser, multiprocessor operating system that runs on virtually any hardware platform.

liquid crystal display (LCD) monitor A flat-panel monitor on which an image is created when the liquid crystal becomes charged; used primarily in notebook computers.

listserv An e-mail server that contains a list of names and enables users to communicate with others on the list in an ongoing discussion.

local area network (LAN) A system of PCs located relatively near to one another and connected by wire or a wireless link. A LAN permits simultaneous access to data and resources, enhances personal communication, and simplifies backup procedures.

local bus An internal system bus that runs between components on the motherboard.

logic error A bug in which the code directs the computer to perform a task incorrectly.

logical field A database field that stores only one of two values: yes or no, true or false, on or off, and so on. Also called a *Boolean field*.

logical formatting An operating system function in which tracks and sectors are mapped on the surface of a disk. This mapping creates the master boot record, FAT, root folder (also called the *root directory*), and the data area. Also called *soft formatting* and *low-level formatting*.

logical operation One of the two types of operations a computer can perform. Logical operations usually involve making a comparison, such as determining whether two values are equal. See also *arithmetic operation*.

loop A program or routine that executes a set of instructions repeatedly while a specific condition is true, or until a new event (called an *exit condition*) occurs.

looping structure See *repetition structure*.

low-level formatting See *logical formatting*.

M

machine code See *machine language*.

machine cycle The complete series of steps a CPU takes in executing an instruction. A machine cycle itself can be broken down into two smaller cycles: the instruction cycle and the execution cycle.

machine language The lowest level of computer language. Machine language includes the strings of 1s and 0s that the computer can understand. Although programs can be written in many different higher-level languages, they all must be converted to machine language before the computer can understand and use them. Also called *machine code*.

Mac OS See *Macintosh operating system*.

Macintosh operating system (Mac OS) The operating system that runs on machines built by Apple Computer.

macro A series of commands and other actions, recorded and saved with a name for later use. Many programs support macros, which enable users to automate repetitive or common tasks.

magnetic disk A round, flat disk covered with a magnetic material (such as iron oxide), the most commonly used storage medium. Data is written magnetically on the disk and can be recorded over and over. The magnetic disk is the basic component of the diskette and hard disk.

magnetic storage A storage technology in which data is recorded when iron particles are polarized on a magnetic storage medium.

mail merge The process of combining a text document, such as a letter, with the contents of a database, such as an address list; commonly used to produce form letters.

mail server In an e-mail system, the server on which messages received from the post office server are stored until the recipients access their mailboxes and retrieve the messages.

mainframe A large, multiuser computer system designed to handle massive amounts of input, output, and storage. A mainframe is usually composed of one or more powerful CPUs connected to many input/output devices, called *terminals*, or to personal computers. Mainframe systems are typically used in businesses requiring the maintenance of huge databases or simultaneous processing of multiple complex tasks.

maintenance phase Phase 5 of the systems development life cycle. In this phase, the new system is monitored, errors are corrected, and minor adjustments are made to improve system performance.

malware Describes a variety of malicious software programs such as viruses, spyware, and Web bugs.

MAN See *metropolitan area network*.

management information system (MIS) A set of software tools that enables managers to gather, organize, and evaluate information about a workgroup, department, or an entire organization. These systems meet the needs of three different categories of managers—executives, middle managers, and front-line managers—by producing a range of standardized reports drawn from the organization's database. A good management information system summarizes vast amounts of business data into information that is useful to each type of manager.

massively parallel processing (MPP) A processing architecture that uses hundreds or thousands of microprocessors in one computer to perform complex processes quickly.

mb See *megabit*.

MB See *megabyte*.

mbps See *megabits per second*.

MBps See *megabytes per second*.

mechanical mouse A mouse that tracks motion mechanically, using a ball, a set of rollers, and built-in sensors. As the mouse is moved across a flat surface, the ball's rolling motion is detected by the rollers and sensors, which send data about the mouse's direction and speed to the computer.

media The plural form of the word *medium*. See *medium*.

medium (1) In storage technology, a medium is material used to store data, such as the magnetic coating on a disk or tape, or the metallic platter in a compact disc. (2) In networking, a medium is a means of conveying a signal across the network, such as a cable. (3) In multimedia, a medium is a single means of conveying a message, such as text or video.

megabit (mb) Equivalent to approximately one million bits. A common measure of data transfer speeds.

megabits per second (mbps) Equivalent to one million bits of data per second.

megabyte (MB) Equivalent to approximately one million bytes. A common measure of data storage capacity.

megabytes per second (MBps) Equivalent to one million bytes of data per second.

megahertz (MHz) Equivalent to millions of cycles per second. A common measure of clock speed.

memo field A database field that stores text information of variable length. Also called *description field*.

memory A collection of chips on the motherboard, or on a circuit board attached to the motherboard, where all computer processing and program instructions are stored while in use. The computer's memory enables the CPU to retrieve data quickly for processing.

memory address A number used by the CPU to locate each piece of data in memory.

menu A list of commands or functions displayed on screen for selection by the user.

menu bar A graphical screen element—located above the document area of an application window—that displays a list of the types of commands available to the user. When the user selects

an option from the menu bar, a list appears displaying the commands related to that menu option.

mesh topology An expensive, redundant cabling scheme for local area networks, in which each node is connected to every other node by a unique cable.

message header Information that appears at the beginning of an e-mail message, providing details about the sender and the message.

metasearch engine A Web-based search engine that compiles the search results from several other engines, allowing for a wider range of results.

metropolitan area network (MAN) A larger version of a local area network (LAN); it can be used to connect computer systems in buildings in the same town or city.

MHz See *megahertz*.

microcode Code that details the individual tasks the computer must perform to complete each instruction in the instruction set.

microcomputer See *personal computer (PC)*.

micron A unit of measure equivalent to one-millionth of a meter.

microphone An input device used to digitally record audio data, such as the human voice. Many productivity applications can accept input via a microphone, enabling the user to dictate text or issue commands orally.

microprocessor Integrated circuits on one or more chips that make up the computer's CPU. Microprocessors are composed of silicon or other material etched with many tiny electronic circuits.

MIDI See *Musical Instrument Digital Interface*.

midrange computer See *minicomputer*.

millions of instructions per second (MIPS) A common unit of measure when gauging the performance of a computer's processor.

millisecond (ms) Equivalent to one-thousandth of a second; used to measure access time of storage devices such as hard disks. See also *nanosecond*.

minicomputer A midsize, multiuser computer capable of handling more input and output than a PC but with less processing power and storage than a mainframe. Also called a *midrange computer*.

MIPS See *millions of instructions per second*.

mirrored See *RAID 1*.

MIS See *management information system*.

mobile computer Any type of computer system that can the user can carry. Examples include notebook computers and PDAs.

modem Abbreviation for *modulator/demodulator*. An input/output device that allows computers to communicate through telephone lines. A modem converts outgoing digital data into analog signals that can be transmitted over phone lines and converts incoming analog signals into digital data that can be processed by the computer.

modifier keys Keyboard keys that are used in conjunction with other keys to execute a command. The IBM-PC keyboard includes SHIFT, CTRL, and ALT modifier keys.

monitor A display screen used to provide computer output to the user. Examples include the cathode ray tube (CRT) monitor, flat-panel monitor, and liquid crystal display (LCD).

monochrome monitor A monitor that displays only one color (such as green or amber) against a contrasting background.

motherboard The main circuit board of the computer; it contains the CPU, memory, expansion slots, bus, and video controller. Also called the *system board*.

Motorola A maker of computer chips.

mouse An input device operated by rolling across a flat surface. The mouse is used to control the on-screen pointer by pointing and clicking, double-clicking, or dragging objects on the screen.

MP See *multiprocessing*.

MPP See *massively parallel processing*.

ms See *millisecond*.

MS-DOS Acronym for *Microsoft–Disk Operating System*. The command-line interface operating system developed by Microsoft for PCs. IBM selected DOS as the standard for early IBM and IBM-compatible machines.

multimedia Elements of text, graphics, animation, video, and sound combined for presentation to the consumer.

multiprocessing (MP) See *parallel processing*.

multitasking The capability of an operating system to load multiple programs into memory at one time and to perform two or more processes concurrently, such as printing a document while editing another.

multi-user/multitasking operating system A powerful operating system that supports more than one user at a time, performing more than one task at a time. UNIX is an example of a multi-user/multitasking operating system.

Musical Instrument Digital Interface (MIDI) A specialized category of input/output devices used in the creation, recording, editing, and performance of music.

MySQL A popular, open-source database management program.

N

name server A special server that functions as part of the domain name system (DNS). DNS name servers store domain names that are mapped to IP addresses. The main Internet DNS name servers are located on one of the Internet backbones, while others are located at ISP facilities and within many large organizations.

nanosecond (ns) One-billionth of a second. A common unit of measure for the average access time of memory devices.

NAS See *network attached storage*.

needs analysis phase Phase 1 of the systems development life cycle. In this phase, needs are defined, the current system is analyzed, alternative solutions are developed, and the best solution and its functions are selected.

.NET A development environment that combines several programming languages, including Visual Basic, C++, C#, and J#. Using .NET, developers can write programs for Windows, the World Wide Web, and PocketPC.

.NET Framework A set of technologies that support Web-based applications, large databases, e-commerce servers, and distributed applications.

Netscape Fast Track A popular Web server program, developed by Netscape Communications.

network (1) A system of interconnected computers that communicate with one another and share applications, data, and hardware components. (2) The act of connecting computers together in order to permit the transfer of data and programs between users.

network attached storage (NAS) A large, dedicated storage device that is attached directly to a network rather than being part of a server.

network interface card (NIC) A circuit board that controls the exchange of data over a network.

network news transfer protocol (NNTP) A set of rules that enable news servers to exchange articles with other news servers.

network operating system (NOS) A group of programs that manage the resources on a network.

network operations center (NOC) A professionally managed facility that houses high-volume Web servers.

network protocol A set of standards used for network communications.

network server See *file server*.

network storage Refers to one or more shared storage devices attached to a network.

network version An application program especially designed to work within a network environment. Users access the software from a shared storage device.

news A public bulletin board service on the Internet; organized into discussion groups representing specific topics of interest.

news server A host computer that exchanges articles with other Internet servers.

newsgroup An electronic storage space where users can post messages to other users, carry on extended conversations, and trade information.

newsreader A software program that enables the user to post and read articles in an Internet newsgroup.

NIC See *network interface card*.

NNTP See *network news transfer protocol*.

NNTP server Another name for news servers using the network news transfer protocol.

NOC See *network operations center.*

node An individual computer that is connected to a network.

nonimpact printer A type of printer that creates images on paper without striking the page in any way. Two common examples are ink jet printers, which spray tiny droplets of ink onto the page, and laser printers, which use heat to adhere particles of toner to specific points on the page.

nonvolatile The tendency for memory to retain data even when the computer is turned off (as is the case with ROM).

NOS See *network operating system*.

notebook computer A small, portable computer with an attached flat screen; typically powered by battery or AC and weighing less than 10 pounds. Notebook computers commonly provide most of the same features found in full-size desktop computers, including a color monitor, a fast processor, a modem, and adequate RAM and storage for business-class software applications. Also called *laptop computer*.

ns See *nanosecond*.

NSFnet Acronym for *National Science Foundation Network*. A network developed by the National Science Foundation (NSF) to accommodate the many users attempting to access the five academic research centers created by the NSF.

***n*-tier application** A distributed database application that is divided among more than three computers.

numeric field A database field that stores numeric characters.

numeric keypad The part of a keyboard that looks and works like a calculator keypad; it has 10 digits and mathematical operators.

O

object In object-oriented programming, a data item and its associated characteristics, attributes, and procedures. An object's characteristics define the type of object—for example, whether it is text, a sound, a graphic, or video. Attributes might be color, size, style, and so on. A procedure refers to the processing or handling associated with the object.

object code The executable file in machine language that is the output of a compiler.

object embedding The process of integrating a copy of data from one application into another, as from a spreadsheet to a word processor. The data retains the formatting applied to it in the original application, but its relationship with the original file is destroyed.

object linking The process of integrating a copy of data from one application into another so that the data retains a link to the original document. Thereafter, a change in the original document also appears in the linked data in the second application.

Object Linking and Embedding (OLE) A Windows feature that combines object embedding and linking functions. OLE allows the user to construct a document containing data from a single point in time or one in which the data is constantly updated.

object-oriented programming (OOP) A programming technology that makes use of reusable, modular components, called *objects*.

object-oriented systems analysis (OOSA) A systems development methodology.

OCR See *optical character recognition*.

octet Refers to a common format for IP addresses, in which addresses are 32 bits long, in four eight-bit fields.

off-the-shelf application A software product that is packaged and available for sale; installed as-is in some system designs.

office automation system A system designed to manage information efficiently in areas such as word processing, accounting, document management, or communications.

OLE See *Object Linking and Embedding*.

on-board cache See *Level-1 cache*.

online (1) The state of being connected to, served by, or available through a networked computer system or the Internet. For example, when a user is browsing the World Wide Web, that person's computer is said to be online. (2) Describes any computer-related device that is turned on and connected, such as a printer or modem that is in use or ready for use.

online banking The use of Web-based services to conduct transactions with a bank, such as managing accounts or paying bills.

online finance The use of Web-based services to conduct financial transactions such as investing or buying insurance.

online service A telecommunications service that supplies e-mail and information search tools.

online shopping The use of Web-based services to make purchases from online retailers, such as Web-based bookstores or clothing stores.

online store A business that operates only online, such as through a Web site, and has no physical location.

OOP See *object-oriented programming*.

OOSA See *object-oriented systems analysis*.

open-source software Software that is available for free and whose source code can be modified by users.

Open System Interconnection Reference Model (OSI Model) A theoretical networking model that describes how the various parts of a network system should work together to format and transmit data. The Internet, as well as many private networks, is based on this model.

operating environment An intuitive graphical user interface that overlays the operating system but does not replace it. Microsoft Windows 3.*x* is an example.

operating system (OS) The master control program that provides an interface for a user to communicate with the computer; it manages hardware devices, manages and maintains disk file systems, and supports application programs.

opt-out option An option available on many Web sites and registration forms. By selecting this option, the user affirms that he or she does not want to be contacted by the company or its partners, and that he or she does not want the company to sell or share information about him or her.

optical character recognition (OCR) software Technology that enables a computer to translate optically scanned data into character codes, which then can be edited.

optical drive A storage device that writes data to and reads data from an optical storage medium such as a compact disc.

optical mouse A pointing device that tracks its location (and the pointer's location on the screen) by using a beam of light, such as a laser, bounced off a reflective surface.

optical storage Refers to storage systems that use light beams to read data from the surface of an optical disc. Data is stored as a series of lands and pits on the disc's reflective surface. Generally speaking, optical storage systems provide higher storage capacities than typical magnetic storage systems, but they operate at slower speeds.

Oracle A popular database management system, developed by Oracle Corp.

OS See *operating system*.

OSI Model See *Open System Interconnection Reference Model*.

output device A hardware component, such as a monitor or printer, that returns processed data to the user.

P

P2P See *peer-to-peer network*.

packet A small block of data transmitted over a network that includes an identifying header and the actual data to be sent. Also called a *frame*.

page-white display The LCD version of the paper-white display, which produces a very high contrast between the monitor's white background and displayed text or graphics, which usually appear in black. This high-contrast, black-and-white monitor is sometimes used by graphic designers and page-layout technicians.

pages per minute (ppm) A common measure for printer output speed. Consumer-grade laser printers, for example, typically can print from 6 to 10 pages per minute depending on whether text or graphics are being printed. See also *characters per second*.

paint program A graphics program that creates images as bitmaps, or a mosaic of pixels.

Palm OS The operating system used by Palm handheld devices.

palmtop computer See *handheld personal computer*.

paper-white display A specialized CRT monitor that produces a very high contrast between the monitor's white background and displayed text or graphics, which usually appear in black. This high-contrast, black-and-white monitor is sometimes used by graphic designers and page-layout technicians.

paragraph In a word processing program, any series of letters, words, or sentences followed by a hard return. (A hard return is created by pressing the ENTER key.)

paragraph format A setting that affects the appearance of one or more entire paragraphs, such as line spacing, paragraph spacing, indents, alignment, tab stops, borders, and shading.

parallel interface A channel through which eight or more data bits can flow simultaneously, such as a computer bus. A parallel interface is commonly used to connect printers to the computer; also called a *parallel port*.

parallel port See *parallel interface*.

parallel processing The use of multiple processors to run a program. By harnessing multiple processors, which share the processing workload, the system can handle a much greater flow of data, complete more tasks in a shorter period of time, and deal with the demands of many input and output devices. Also called *multiprocessing (MP)* or *symmetric multiprocessing (SMP)*.

passive matrix LCD Liquid crystal display technology used for flat-panel monitors; it relies on a grid of transistors arranged by rows and columns. In a passive matrix LCD, the color displayed by each pixel is determined by the electricity coming from the transistors at the end of the row and the top of the column.

password A word or code used as a security checkpoint by an individual computer system or a network to verify the user's identity.

password capture A technique used by hackers and identity thieves to learn passwords or other personal information from a victim. In password capture, the thief listens to or records telephone conversations or intercepts network transmissions in hopes of gathering the right information.

password guessing A technique used by hackers and identity thieves to learn passwords or other personal information from a victim. In password guessing, the thief attempts to log into a network or Web site by guessing the victim's password.

password sharing A technique used by hackers and identity thieves to learn passwords or other personal information from a victim. In password sharing, the victim unwittingly gives his or her password to the thief by writing it down in a conspicuous place or telling it to someone else.

Paste command An application command that copies data from the Clipboard and places it in the document at the position of the insertion point. Data in the Clipboard can be pasted into multiple places in one document, multiple documents, and documents in different applications.

payload In a packet, the actual data being transmitted across a network or over telephone lines. Also refers to the executable portion of a computer virus or the output produced by a virus.

PC See *personal computer*.

PC Card A specialized expansion card the size of a credit card; it fits into a computer and is used to connect new components.

PC DOS A version of the disk operating system marketed by IBM Corp.

PC-to-TV converter A hardware device that converts a computer's digital video signals into analog signals for display on a standard television screen.

PC video camera A small video camera that connects to a special video card on a PC. When used with videoconferencing software, a PC video camera enables users to capture full-motion video images, save them to disk, edit them, and transmit them to other users across a network or the Internet.

PCI See *Peripheral Component Interconnect bus*.

PDA See *personal digital assistant*.

peer-to-peer (P2P) network A network environment in which all nodes on the network have equal access to at least some of the resources on all other nodes.

peer-to-peer (P2P) service A special type of connection provided via the Internet, which allows connected client computers to communicate and exchange data directly instead of using server computers.

pen An input device that allows the user to write directly on or point at a special pad or the screen of a pen-based computer, such as a PDA. Also called a *stylus*.

Peripheral Component Interconnect (PCI) bus A PC bus standard developed by Intel; it supplies a high-speed data path between the CPU and peripheral devices.

Perl A scripting language commonly used in the development of Web-based applications.

persistent cookie A cookie that remains on the user's hard disk after the current browsing session is ended. Persistent cookies are usually set to "expire" on a certain date; until then, they remain active.

personal computer (PC) The most common type of computer found in an office, classroom, or home. The PC is designed to fit on a desk and be used by one person at a time; also called a *microcomputer*.

personal digital assistant (PDA) A very small portable computer designed to be held in one hand; used to perform specific tasks, such as creating limited spreadsheets or storing phone numbers.

personal information manager (PIM) A software program used for collecting and refining information about people, schedules, and tasks. PIMs are also called *contact-management software* or *contact managers*, because these programs are used primarily for managing information about people the user commonly contacts.

phishing A technique used by hackers and identity thieves to learn passwords and other important information from victims. In phishing, the thief contacts victims via phone or e-mail, pretending to be a legitimate business such as a bank, then asks the victim for private information.

photo-editing program A multimedia software tool used to make modifications, including adjusting contrast and sharpness, to digital photographic images.

photo printer A special color printer used for outputting photo-quality images. These printers are typically used to print images captured with a digital camera or an image scanner.

PhotoCD A special optical disc technology, developed by Kodak, for digitizing and storing standard film-based photographs.

photorealistic Describes computer-generated images that are lifelike in appearance and not obviously models.

PICT Abbreviation for *picture*. A graphics file format developed for and commonly used on the Macintosh platform, but seldom used on the PC platform.

PIM See *personal information manager*.

pipelining A technique that enables a processor to execute more instructions in a given time. In pipelining, the control unit begins executing a new instruction before the current instruction is completed.

pit A depressed area on the metal surface of an optical disc that scatters laser light. Also see *land*.

pixel Contraction of *picture element*. One or more dots that express a portion of an image on a computer screen.

plain old telephone system (POTS) Refers to the standard, existing system of telephone lines that has been in use for decades in the United States. The system includes millions of miles of copper wiring and thousands of switching stations, which ensure that analog telephone signals are routed to their intended destination. This system is now also commonly used to transmit digital data between computers; however, the data must be converted from digital form to analog form before entering the telephone line, then reconverted back to digital form when it reaches the destination computer. This conversion is handled at the computer by a device called a *modem*.

plasma display A type of flat-panel monitor in which a special gas (such as neon or xenon) is contained between two sheets of glass. When the gas is electrified via a grid of small electrodes, it glows. By controlling the amount of voltage applied at various points on the grid, each point acts as a pixel to display an image.

platform independence The capability of a program to run under different operating systems and/or hardware platforms.

plotter An output device used to create large-format hard copy; generally used with CAD and design systems.

Plug and Play An operating system feature that enables the user to add hardware devices to the computer without performing technically difficult configuration procedures.

plug-in application See *helper application*.

Pocket PC OS An operating system designed to run on some types of handheld computers and other small computing devices.

point (1) A standard unit used in measuring fonts. One point equals 1/72 inch in height. (2) To move the mouse pointer around the screen by manipulating the mouse or another type of pointing device.

point-of-presence (PoP) Describes a connection point to the Internet, such as the connection points used by Internet service providers.

pointer An on-screen object used to select text; access menus; move files; and interact with programs, files, or data represented graphically on the screen.

pointing To move the mouse pointer around the screen by mainipulating the mouse or another type of pointing device.

pointing device A device that enables the user to freely move an on-screen pointer and to select text, menu options, icons, and other onscreen objects. Two popular types of pointing devices are mice and trackballs.

polarized The condition of a magnetic bar with ends having opposite magnetic polarity.

PoP See *point-of-presence*.

POP See *post office protocol*.

POP server A server computer on an e-mail system that manages the flow of e-mail messages and attachments, using the post office protocol.

pop-up See *pop-up window*.

pop-up blocker A software program that prevents unwanted pop-up windows from appearing on the user's screen when browsing the Web.

pop-up window A secondary browser window that unexpectedly appears when browsing the Web. Pop-up windows commonly contain advertisements and often host spyware.

port (1) A socket on the back of the computer used to connect external devices to the computer. (2) To transfer a software application from one platform to another.

portable Describes software applications that are easily transferred from one platform to another, or hardware that can be easily moved.

post To publish a document on the Internet by using one of its services, such as news, FTP, or the World Wide Web.

POST See *power on self test*.

post office protocol (POP) A networking protocol used by e-mail servers to manage the sending and receiving of e-mail messages and attachments.

Post Office Protocol Version 3 (POP3) A commonly used protocol that controls the handling of e-mail messages over the Internet.

POTS See *plain old telephone system*.

power failure The loss of electrical power.

power fluctuation A sudden, unexpected increase or decrease in electrical power. Power fluctuations have various causes; extreme fluctuations can be harmful to computer hardware and data.

power on self test (POST) A routine stored in a computer's BIOS that runs whenever the computer is started. This routine conducts checks to determine whether various parts of the system are functioning properly.

ppm See *pages per minute*.

presentation A collection of slides that can be shown to an audience. Presentations are created using special software, called a *presentation program*.

presentation program Software that enables the user to create professional-quality images, called *slides*, that can be shown as part of a presentation. Slides can be presented in any number of ways, but they are typically displayed on a large screen or video monitor while the presenter speaks to the audience.

primary e-mail account An individual's main e-mail account, which is usually established as part of an account with an Internet service provider.

print head In impact printers, a device that strikes an inked ribbon, pressing ink onto the paper to create characters or graphics.

print server A special network server that is devoted to managing printing tasks for multiple users. A print server makes it easy for many users to share a single printer.

printer An output device that produces a hard copy on paper. Two types are impact and nonimpact.

Privacy Act of 1974 A federal law that restricts federal agencies from sharing information about individuals without their written consent.

private IP address An IP address that is reserved for use by a specific organization's computer.

processing A complex procedure by which a computer transforms raw data into useful information.

processor See *central processing unit (CPU)*.

program (1) A set of instructions or code to be executed by the CPU; designed to help users solve problems or perform tasks. Also called *software*. (2) To create a computer program. The process of computer programming is also called *software development*.

program control flow The order in which a program's statements are executed when the program is run.

programmable read-only memory (PROM) A type of computer chip whose contents cannot be changed. PROM chips are often found on hard drives and printers. They contain the instructions that power the devices. These instructions, once set, never need to be changed.

programmer The person responsible for creating a computer program, including writing new code and analyzing and modifying existing code.

programming language A higher-level language than machine code for writing programs. Programming languages use variations of basic English.

PROM See *programmable read-only memory*.

prompt In a command-line interface, the on-screen location where the user types commands. A prompt usually provides a blinking cursor to indicate where commands can be typed. Also called a *command prompt*.

protocol A set of rules and procedures that determine how a computer system receives and transmits data.

prototype A working system model used to clarify and refine system requirements.

pseudocode "Fake" code; a text version of the program control flow; similar to the program code but lacking the exact syntax and details.

public domain software Software that is freely available to anyone, free of charge. Generally, users can modify the source code of public domain software.

public IP address An IP address that is available for use by any computer on the Internet.

public record A legal document, such as driving records or marriage licenses, that is available for viewing by anyone.

publish See *post*.

Q

QBE See *query by example*.

query In a database management system (DBMS), a search question that instructs the program to locate records that meet specific criteria.

query by example (QBE) In a database management system (DBMS), a tool that accepts a query from a user and then creates the SQL code to locate data requested by the query. QBE enables the user to query a database without understanding SQL.

Quick Launch bar A customizable area of the Windows taskbar that lets you launch programs with a single click.

R

RAD See *rapid application development*.

RAID 0 A data storage technology (also called *striping*) that provides the user with rapid access by spreading data across several disks in a disk array. Striping alone, however, does not provide redundancy. If one of the disks in a striped array fails, the data is lost.

RAID 1 A data storage technology (also called *mirroring*) in which data is written to two or more disks simultaneously, providing a complete copy of all the information on multiple drives in the event one drive should fail. This improves reliability and availability, and if one disk fails, the mirrored disk continues to function, thus maintaining reliability and availability.

RAID 4 A data storage technology (also called *striping-with-parity*) in which data from each file is spread over multiple disks. It provides the speed of striping with the safety of redundancy because the system stores parity information that can be used to reconstruct data if a disk drive fails. Such arrays also provide error-checking.

RAM See *random access memory*.

random access memory (RAM) A computer's volatile or temporary memory, which exists as chips on the motherboard near the CPU. RAM stores data and programs while they are being used and requires a power source to maintain its integrity.

random access storage device A storage device that can locate data at any point on the storage medium without going through all the data up to that point. Floppy disks, hard disks, and optical discs are examples of random access storage devices.

rapid application development (RAD) A method used in systems development that allows for fast creation of computer systems and applications in an organization.

raster See *bitmap*.

read/write head The magnetic device within the disk drive that reads, records, and erases data on the disk's surface. A read/write head contains an electromagnet that alters the polarity of magnetic particles on the storage medium. Most disk drives have one read/write head for each side of each disk in the drive.

read-only memory (ROM) A permanent, or nonvolatile, memory chip used to store instructions and data, including the computer's startup instructions.

real-time application An application that responds to certain inputs extremely quickly—thousandths or millionths of a second (milliseconds or microseconds, respectively). Real-time applications are needed to run medical diagnostics equipment, life-support systems, machinery, scientific instruments, and industrial systems.

real-time operating system An operating system designed to support real-time applications.

record A database row composed of related fields; a collection of records makes up the database.

Reduced Instruction Set Computing (RISC) Refers to a type of microprocessor design that uses a simplified instruction set; it uses fewer instructions of constant size, each of which can be executed quickly.

redundant array of independent disks (RAID) a storage system that links any number of disk drives (a disk array) so that they act as a single disk. This is done for better performance and/or redundancy.

refresh rate The number of times per second that each pixel on the computer screen is scanned; measured in hertz (Hz).

register High-speed memory locations built directly into the ALU and used to hold instructions and data currently being processed.

relational database A database structure capable of linking tables; a collection of tables that share at least one common field.

Remote Access VPN Special networking software that allows a user to create a secure connection to a private network via the Internet.

repeat rate A keyboard setting that determines how rapidly the character is typed and how long an alphanumeric key must be held down before the character will be repeated.

repetition structure A control structure in which a condition is checked and a loop is executed based on the result of the condition. Also called *looping structure*.

repetitive stress injury (RSI) An injury to some part of the body caused by continuous movement. Computer-related injuries include strain to the wrist, neck, and back.

report A database product that displays data to satisfy a specific set of search criteria presented in a predefined layout, which is designed by the user.

resolution The degree of sharpness of an image, determined by the number of pixels on a screen; expressed as a matrix.

resolver A network device that converts logical IP addresses into physical addresses.

restore To replace a damaged or missing file on a hard disk with a copy from a backup.

right-click To use the right mouse button of a two-button mouse to select an object or command on the screen.

Right to Financial Privacy Act of 1978 A federal law that requires companies to give consumers notice of their privacy and information-sharing practices.

ring topology A network topology in which network nodes are connected in a circular configuration. Each node examines the data sent through the ring and passes on data not addressed to it.

RISC See *Reduced Instruction Set Computing*.

ROM See *read-only memory*.

root folder The top-level folder on a disk. This primary folder contains all other folders and subfolders stored on the disk. Also called the *root directory*, or sometimes just the *root*.

router A computer device that stores the addressing information of each computer on each LAN or WAN; it uses this information to transfer data along the most efficient path between nodes of a LAN or WAN.

RSI See *repetitive stress injury*.

rule See *filter*.

ruler An on-screen tool in a word processor's document window. The ruler shows the position of lines, tab stops, margins, and other parts of the document.

run See *execute*.

S

SAN See *storage area network*.

scalability A program's capability to adjust to changes in scale—the number of users it must support or the numbers of tasks it must perform.

scanner See *image scanner*.

screen saver A utility program that displays moving images on the screen if no input is received for several minutes; originally developed to prevent an image from being burned into the screen.

scroll To move through an entire document in relation to the document window in order to see parts of the document not currently visible on screen.

scroll bar A vertical or horizontal bar displayed along the side or bottom of a document window that enables the user to scroll horizontally or vertically through a document by clicking an arrow or dragging a box within the scroll bar.

SCSI See *Small Computer System Interface*.

SDLC See *systems development life cycle*.

SDSL See *Synchronous DSL*.

search engine A Web site that uses powerful data-searching techniques to help the user locate Web sites containing specific types of content or information.

second-generation language Refers to assembly language, which is slightly more advanced and English-like than machine languages (which are considered first-generation languages).

second-level domain (SLD) A domain name given to an organization. In the URL www.government.org, for example, *government* is the second-level domain.

secondary e-mail account A backup e-mail account that can be used as a collection place for spam and other unwanted e-mail messages.

sector A segment or division of a track on a disk.

Secure Hypertext Transfer Protocol (HTTPS) An Internet protocol used to encrypt individual pieces of data transmitted between a user's computer and a Web server, making the data unusable to anyone who does not have a key to the encryption method.

secure sockets layer (SSL) An Internet protocol that can be used to encrypt any amount of data sent over the Internet between a client computer and a host computer.

secure Web page A Web page that uses one or more encryption technologies to encode data received from and sent to the user.

seek time See *average access time*.

select (1) To highlight a block of text (in a word processor) or range (in a spreadsheet), so the user can perform one or more editing operations on it. (2) To click once on an icon.

selection structure A control structure built around a conditional statement.

sequence structure A type of control structure in which a computer executes lines of code in the order in which they are written.

sequential access device A storage device that must search a storage medium from beginning to end in order to find the data that is needed. Such devices cannot access data randomly. A tape drive is an example of a sequential access device.

serial interface A channel through which data bits flow one at a time. Serial interfaces are used primarily to connect a mouse or a communications device to the computer. Also called a *serial port*.

serial port See *serial interface*.

server See *file server*.

session cookie A cookie that remains on the user's hard disk only during a Web-browsing session. The cookie is deleted when the session ends. Also called a *transient cookie*.

shadow mask In a cathode ray tube (CRT) monitor, a fine mesh made of metal fitted to the shape and size of the screen. The holes in the shadow mask's mesh are used to align the electron beams to ensure that they strike the correct phosphor dot. In most shadow masks, these holes are arranged in triangles.

shareware Software that can be used without paying a fee or registering for a specified time period. After that time, the user is obligated to purchase and/or register the product.

shell Refers to a GUI environment that can run on top of a command-line operating system, such as Linux or UNIX.

shopping cart At many e-commerce Web sites, a feature that lets the shopper store, review, and edit items to be purchased before checking out.

shortcut Any means that enables the user to quickly execute an action or issue a command. On the Windows desktop, for example, icons serve as shortcuts by allowing you to quickly launch programs. Within programs, you may be able to click buttons or press specific keys to quickly perform tasks; these buttons and keystrokes are also shortcuts.

shortcut menu See *context menu*.

shoulder surfing A method used by hackers and identity thieves to learn passwords and other personal information from their victims. In shoulder surfing, the thief watches as the victim enters a password or other information at a computer, ATM, phone, or other device.

S-HTTP See *Secure Hypertext Transfer Protocol*.

SIMM See *Single In-Line Memory Module*.

Simple Mail Transfer Protocol (SMTP) A common protocol for sending e-mail between servers on the Internet. It also often is used for sending e-mail from an e-mail client to a server.

Single In-Line Memory Module (SIMM) One type of circuit board containing memory chips.

single-user/multitasking operating system An operating system that supports only one user at a time, but allows the user to perform multiple tasks simultaneously, such as running several programs at the same time. Examples include Windows and the Macintosh operating system.

single-user/single-tasking operating system An operating system that supports only one user at a time and allows the user to perform only one task at a time. Examples include MS-DOS and some operating systems designed for use on handheld computers.

site license An agreement in which an organization purchases the right to use a program on a limited number of machines. The total cost is less than would be required if individual copies of the software were purchased for all users.

site-to-site VPN A special type of networking software that can be used to connect two networks together in a secure manner. Both networks may be part of the same private intranet or they may be networks of partner companies participating in an extranet.

SLD See *second-level domain*.

slide An individual graphic that is part of a presentation. Slides are created and edited in presentation programs.

Small Computer System Interface (SCSI) A high-speed interface that extends the bus outside the computer, permitting the addition of more peripheral devices than normally could be connected using the available expansion slots.

small outline DIMM (SO-DIMM) A small-format memory chip found in portable computers.

smart card A plastic card—about the same size as a standard credit card—that contains a small chip that stores data. Using a special device, called a smart card reader, the user can read data from the card, add new data, or revise existing data.

smart card reader A device that can read data from or write data to a smart card.

smart phone A digital cellular phone that includes many of the features found in a personal digital assistant (PDA), such as schedule management, e-mail, Web access, and others.

SMP Acronynm for *symmetric multiprocessing*. See *parallel processing*.

SMTP See *Simple Mail Transfer Protocol*.

snagging A method used by identity thieves to gather passwords or other personal information from a victim. In snagging, the thief listens in on a telephone extension, through a wiretap, or over a cubicle wall while the victim gives credit card or other personal information to a legitimate agent.

snail mail A term used to describe the U.S. Postal Service.

sniffing Describes a variety of methods used by hackers and identity thieves to gather passwords or other personal information from victims.

social engineering Describes a variety of methods used by hackers and identity thieves to gather passwords or other personal information from victims. Social engineering usually involves tricking a victim into divulging personal information.

Sockets An application programming interface (API) for the UNIX operating system that assists in connecting a UNIX computer to the Internet.

SO-DIMM See *small outline DIMM*.

soft formatting See *logical formatting*.

software See *program*.

software license An agreement between a software program's developer and its user. Most licenses grant the user certain rights related to the program's use, but they do not give the user actual ownership of the program.

software piracy The illegal duplication and/or use of software.

software suite A set of software programs that are sold and installed together, and that have been developed so that their interfaces are common and they can easily exchange data with one another.

solid-state disk (SSD) A high-speed, high-capacity storage device based on random access memory (RAM) circuits rather than disks.

solid-state storage Describes any type of storage device that uses memory chips rather than disks to store data.

sort To arrange database records in a particular order—such as alphabetical, numerical, or chronological order—according to the contents of one or more fields.

sound card An expansion card that records and plays back sound by translating the analog signal from a microphone into a digitized form that the computer can store and process, and then translating the data back into analog signals or sound.

source code Program statements created with a programming language.

spam (1) Another term for junk e-mail. (2) To distribute unrequested messages across the Internet or an online service. Spammers often flood newsgroups with messages and send e-mail messages to thousands of individuals. Spam messages often attempt to sell a product or service (like regular junk mail) but frequently carry negative, indecent, or obscene material.

spam blocker A software program that is designed to prevent unwanted e-mail messages from reaching the user.

spammer A person who distributes junk e-mail messages.

spawn To launch a program from within another program. For example, to allow the user to view streaming multimedia content, a Web browser may spawn a second application, such as the QuickTime Player.

speech recognition An input technology that can translate human speech into text. Some speech-recognition systems enable the user to navigate application programs and issue commands by voice control, as well as to create documents by dictating text; also called *voice recognition*.

spider See *crawler*.

sponsored link In a page of results created by a search engine, a link that has been purchased by a merchant. Sponsored links usually appear before nonsponsored links in search results, or may appear separately from nonsponsored links.

spoof To distribute unrequested e-mail messages while concealing the sender's identity. In spoofing, the spoofer's message identifies the sender as someone else or shows no sender's identity at all. This method protects the spoofer from retaliation from those who receive unwanted messages. See also *spam*.

spreadsheet A grid of columns and rows used for recording and evaluating numbers. Spreadsheets are used primarily for financial analysis, record keeping, and management, as well as to create reports and presentations.

spyware Software that tracks a computer user's activities and reports the activities back to someone else. Spyware can be used to monitor Internet use, e-mail, and keyboard or mouse actions.

SQL See *Structured Query Language*.

SQL Server A database management system, developed by Microsoft Corp.

SSD See *solid-state disk*.

SSL See *secure sockets layer*.

stand-alone program A software application that is designed to perform one type of task, such as word processing or photo editing. Stand-alone programs typically are purchased and installed by themselves.

star topology A network topology in which network nodes connect to a central hub through which all data is routed.

START button A Windows 95/98/2000/NT/XP screen element—found on the taskbar—that displays the Start menu when selected.

Start menu A menu in the Windows 95/98/2000/NT/XP operating systems; the user can open the Start menu by clicking the START button; the Start menu provides tools to locate documents, find help, change system settings, and run programs.

start page The page that opens automatically when a Web browser launches.

static Describes anything that does not change. If a computer has a static IP address, for example, the address never changes.

static IP address An IP address that never changes. A computer with a static IP address always uses the same address.

status bar An on-screen element that appears at the bottom of an application window and displays the current status of various parts of the current document or application, such as the page number, text entry mode, and so on.

storage The portion of the computer that holds data or programs while they are not being used. Storage media include magnetic disks, optical discs, tape, and cartridges.

storage area network (SAN) A network that is devoted to a storage system. In a very large enterprise, for example, storage requirements may be so great, and storage devices so numerous, that a complete network is required for the storage system itself.

storage device The hardware components that write data to and read data from storage media. For example, a diskette is a type of storage medium, whereas a diskette drive is a storage device.

storage media The physical components or materials on which data is stored. Diskettes and compact discs are examples of storage media.

stored cookie See *persistent cookie*.

storing The second step of the CPU's execution cycle.

streaming audio/video Multimedia content that is sent to the user's desktop in a continuous "stream" from a Web server. Because audio and video files are large, streaming content is sent to the user's disk in pieces; the first piece is temporarily buffered (stored on disk), then played as the next piece is stored and buffered.

striping See *RAID 0*.

striping-with-parity See *RAID 4*.

structured English A programming design tool and a method of documenting a system using plain English terms and phrases to describe events, actions, and alternative actions that can occur.

structured programming A programming process that uses a set of well-defined structures, such as condition statements and loops.

Structured Query Language (SQL) The standard query language used for searching and selecting records and fields in a relational database.

stylus See *pen*.

submarining In older passive-matrix LCD displays, a problem caused by the monitor's inability to refresh itself fast enough. One characteristic of submarining is the disappearance of the mouse pointer when it moves across the screen.

subscribe To select a newsgroup so the user can regularly participate in its discussions. After subscribing to a newsgroup in a newsreader program, the program automatically downloads an updated list of articles when it is launched.

Super VGA (SVGA) An IBM video display standard capable of displaying resolutions up to 1024 × 768 pixels, with 16 million colors.

supercomputer The largest, fastest, and most powerful type of computer. Supercomputers are often used for scientific and engineering applications and for processing complex models that use very large data sets.

surge supressor A device that protects electrical equipment from sudden spikes (surges) in electrical service.

SVGA See *Super VGA*.

swap in To load essential parts of a program into memory as required for use.

swap out To unload, or remove, nonessential parts of a program from memory to make room for needed parts.

switch A networking device that learns which machine is connected to its port by using the device's IP address.

Symbian An operating system designed for use on handheld computers.

symmetric multiprocessing (SMP) See *parallel processing*.

Synchronous DSL (SDSL) A type of Digital Subscriber Line (DSL) technology that provides the same data transmission speeds for both uploading and downloading data.

syntax The precise sequence of characters required in a spreadsheet formula or in a programming language.

syntax error A bug in which the code is incorrectly entered so that the computer cannot understand its instructions.

sysop See *system operator.*

system board See *motherboard*.

system call A feature built into an application program that requests a service from the operating system, as when a word processing program requests the use of the printer to print a document.

system clock The computer's internal clock, which is used to time processing operations. The clock's time intervals are based on the constant, unchanging vibrations of molecules in a quartz crystal; currently measured in megahertz (MHz).

system operator (sysop) In an online discussion group, the person who monitors the discussion.

system software A computer program that controls the system hardware and interacts with application software. The designation includes the operating system and the network operating system.

system testing During the development phase of the systems development life cycle, the testing of an entire system that is conducted prior to installation.

system unit In a personal computer, the case that contains the system's essential hardware components, including the processor, disk drives, and motherboard.

systems design phase Phase 2 of the systems development life cycle. In this phase, the project team researches and develops alternative ways to meet an organization's computing needs.

systems development life cycle (SDLC) A formal methodology and process for the needs analysis, system design, development, implementation, and maintenance of an information system.

T

T1 A communications line that represents a higher level of the ISDN standard service and supplies a bandwidth of 1.544 Mbps.

T3 A communications line capable of transmitting a total of 44.736 Mbps.

table A grid of data, set up in rows and columns.

tablet PC A newer type of portable PC, similar in size to a notebook PC; it allows the user to input data and commands with a pen rather than a standard keyboard or pointing device.

tag In a markup language such as HTML, a marker that indicates where formatting or some other attribute begins or ends.

tag pair The tags of the same purpose that appear at the beginning and the end of a formatted element in a markup language.

tape drive A magnetic storage device that reads and writes data to the surface of a magnetic tape. Tape drives are generally used for backing up data or restoring the data of a hard disk.

task switching The process of moving from one open window to another.

taskbar A Windows 95/98/2000/NT/XP screen element—displayed on the desktop—that includes the START button and lists the programs currently running on the computer.

TB See *terabyte*.

TCP See *Transmission Control Protocol*.

TCP/IP See *Transmission Control Protocol/Internet Protocol*.

telecommute To work at home or on the road and have access to a work computer via telecommunications equipment, such as modems and fax machines.

telecommuter A person who works at home or on the road and requires access to a work computer via telecommunications equipment, such as modems and fax machines.

teleconference A live, real-time communications session involving two or more people in different locations, using computers and telecommunications equipment.

temporary (.tmp) file A file created by an operating system or application that is needed only temporarily. Such files are usually deleted from the disk when they are no longer required.

terabyte (TB) Equivalent to one trillion bytes of data; a measure of storage capacity.

terminal An input/output device connected to a multiuser computer such as a mainframe.

terminal client Networking software that creates a user session when a user runs a program from a network server (the terminal server).

terminal server In multi-user/multitasking networked environments, a server that gives multiple users access to shared programs and other resources.

terminator In a bus topology network, a special device that is placed at the end of the network cable. The device prevents data signals from "bouncing back" after reaching the end of the cable, thus preventing data collisions.

text box In word processing and presentation software, a special frame that enables the user to contain text in a rectangular area. The user can size and position the text box like a frame by dragging the box or one of its handles. Also see *frame*.

text code A standard system in which numbers represent the letters of the alphabet, punctuation marks, and other symbols. A text code enables programmers to use combinations of numbers to represent individual pieces of data. EBCDIC, ASCII, and Unicode are examples of text code systems.

text field A database field that stores a string of alphanumeric characters; also called *alphanumeric field* or *character field*.

TFT Acronym for *thin-film transistor*. See *active matrix LCD*.

thermal-wax printer A printer that produces high-quality images by using a heat source to evaporate colored wax from a ribbon, which adheres to the paper.

thin-film transistor (TFT) See *active matrix LCD*.

third-generation language (3GL) A category of programming languages that supports structured programming and enables programmers to use true English-like phrasing when writing program code.

third-party cookie A cookie that is placed on the user's computer by a Web server other than the one hosting the page being viewed.

thread A series of related articles and responses about a specific subject, posted in a newsgroup.

threat Anything that can cause harm to a computer system, its data, or its user.

throughput See *data-transfer rate*.

tier One of the application servers in a distributed application.

TIFF Acronym for *tagged image file format*. A graphics file format widely used on both PCs and Macintosh computers. Commonly used when exchanging bitmap files that will be printed or edited, the TIFF format can faithfully store images that contain up to 16.7 million colors without any loss of image quality.

time field A database field that stores a time.

title bar An on-screen element displayed at the top of every window that identifies the window contents. Dragging the title bar changes the position of the window on the screen.

TLD See *top-level domain*.

token In a network using ring topology, any piece of data that is being transferred across the network. Each node examines the data and passes it along until it reaches its destination.

Token Ring IBM's network protocol, based on a ring topology in which linked computers pass an electronic token containing addressing information to facilitate data transfer.

toner A substance composed of tiny particles of charged ink that is used in laser printers. The ink particles stick to charged areas of a drum and are transferred to paper with pressure and heat.

toolbar In application software, an on-screen element appearing just below the menu bar. The toolbar contains multiple tools, which are graphic icons (called *buttons*) representing specific

actions the user can perform. To initiate an action, the user clicks the appropriate button.

top-down design A systems design method in which the major functions or processes are developed first, followed by the details.

top-level domain (TLD) See *domain name*.

topology The physical layout of wires that connect the computers in a network; includes bus, star, ring, and mesh.

touch screen An input/output device that accepts input directly from the monitor. To activate commands, the user touches words, graphical icons, or symbols displayed on screen.

touchpad See *trackpad*.

track An area used for storing data on a formatted disk. During the disk-formatting process, the operating system creates a set of magnetic concentric circles on the disk; these are the tracks. These tracks are then divided into sectors, with each sector able to hold a given amount of data. By using this system to store data, the operating system can quickly determine where data is located on the disk. Different types of disks can hold different numbers of tracks.

trackball An input device that functions like an upside-down mouse, consisting of a stationary casing containing a movable ball that is operated by hand. Trackballs are used frequently with laptop computers.

trackpad A stationary pointing device that the user operates by moving a finger across a small, touch-sensitive surface. Trackpads are often built into portable computers. Also called a *touchpad*.

TrackPoint See *integrated pointing device*.

transaction A series of steps required to complete an event, such as taking an order or preparing a time sheet.

transaction processing system (TPS) A type of information system that handles the processing and tracking of transactions.

transient cookie See *session cookie*.

transistor An electronic switch within the CPU that exists in two states: conductive (on) or nonconductive (off). The resulting combinations are used to create the binary code that is the basis for machine language.

Transmission Control Protocol (TCP) One of the key protocols of the Internet and many private networks, TCP manages the delivery of data through a network.

Transmission Control Protocol/Internet Protocol (TCP/IP) The set of commands and timing specifications used by the Internet to connect dissimilar systems and to control the flow of information.

tunneling The process of creating a secure, private connection over the public Internet. The connection may exist between individual computers, a single computer and a private network, or two private networks.

twisted-pair cable Cable used in network connections. Twisted-pair cable consists of copper strands, individually shrouded in plastic, twisted around each other in pairs and bound together in a layer of plastic insulation; also called *unshielded twisted-pair (UTP) wire*. Twisted-pair wire encased in a metal sheath is called *shielded twisted-pair (STP) wire*.

two-tier application A distributed database application, portions of which are executed on two separate computers.

type style An attribute applied to a text character, such as underlining, italic, and bold, among others. Most application programs provide a wide variety of type styles that the user can freely apply to text anywhere in a document.

typeface See *font*.

U

UART See *Universal Asynchronous Receiver Transmitter*.

UCE See *unsolicited commercial e-mail*.

UDP See *User Datagram Protocol*.

Unicode Worldwide Character Standard A character set that provides 16 bits to represent each symbol, resulting in 65,536 different characters or symbols, enough for all the languages of the world. The Unicode character set includes all the characters from the ASCII character set.

uniform resource locator (URL) An Internet address used with HTTP in the format *type://address/path*.

uninstall To remove an installed program from a computer's disk.

uninterruptible power supply (UPS) A device that supplies electrical power even after electrical service has failed. A UPS can allow a computer system to keep running, at least temporarily, after power to the building fails. At the very least, a UPS will allow the system to keep running long enough to save data and shut down safely.

unit testing During the development phase of the systems development life cycle, the testing of components of a new system, which takes place prior to system testing.

Universal Asynchronous Receiver-Transmitter (UART) A chip that converts parallel data from the bus into serial data that can flow through a serial cable, and vice versa.

Universal Serial Bus (USB) A new expansion bus technology that currently enables the user to connect 127 different devices into a single port.

UNIX A 32-bit, fully multitasking, multithreading operating system developed by Bell Labs in the 1970s. A powerful, highly scalable operating system, UNIX (and variants of it) is used to operate supercomputers, mainframes, minicomputers, and powerful PCs and workstations. UNIX generally features a command-line interface, although some variants of UNIX feature a graphical operating environment as well.

unsolicited commercial e-mail (UCE) The official term for *spam*. UCE is any e-mail message that is sent to multiple recipients, which contains commercial content.

upload To send a file to a remote computer. The opposite of *download*.

UPS See *uninterruptible power supply*.

URL See *uniform resource locator*.

USA Patriot Act A federal law (enacted in 2001) that extends the authority of law enforcement and intelligence agencies in monitoring private communications and access to your personal information.

USB See *Universal Serial Bus*.

user The person who inputs and analyzes data using a computer; the computer's operator.

User Datagram Protocol (UDP) A transport protocol that is sometimes used instead of the more common TCP (Transport Control Protocol) for sending messages across a network.

user ID See *user name*.

user interface The on-screen elements that enable the user to interact with the software.

user name A code that identifies the user to the system; often the user's full name, a shortened version of the user's name, or the user's e-mail name. Also called a *user ID*.

user session The period during which a user interacts with a terminal server, using a shared program on a network.

utility A software program that may be used to enhance the functionality of an operating system. Examples of utility software are disk defragmenters and screen savers.

V

value A numerical entry in a spreadsheet—representing currency, a percentage, a date, a time, a fraction, and so on—that can be used in calculations.

vector A mathematical equation that describes the position of a line.

very small aperture terminal (VSAT) An earth-based communications station that allows an individual or organization to connect to the Internet via satellite.

VGA See *Video Graphics Array*.

video capture card A specialized expansion board that enables the user to connect video devices—such as VCRs and camcorders—to the PC. This enables the user to transfer images from the video equipment to the PC, and vice versa. Many video cards enable the user to edit digitized video and to record the edited images on videotape.

video card A circuit board attached to the motherboard that contains the memory and other circuitry necessary to send information to the monitor for display on screen. This controller determines the refresh rate, resolution, and number of colors that can be displayed. Also called the *display adapter*.

Video Graphics Array (VGA) An IBM video display standard capable of displaying resolutions of 640 × 480, with 16 colors.

video RAM (VRAM) Memory on the video controller (sometimes called *dual-ported memory*) that can send a screen of data to the monitor while receiving the next data set.

videoconference A live, real-time video communications session involving two or more people using computers, video cameras, telecommunications and videoconferencing software.

viewing angle The widest angle from which a display monitor's image can be seen clearly. Generally speaking, cathode ray tube (CRT) monitors provide a wider viewing angle than liquid crystal display (LCD) monitors do.

viewing area The actual portion of a computer monitor that displays an image.

virtual memory Space on a computer's hard drive that acts as a backup to system RAM. Programs can store instructions or data in virtual memory that is not needed immediately; when an instruction or data is needed, it can quickly be moved into RAM, where the processor can access it.

virtual private network Technologies that allow data to be exchanged securely and privately over a public network, such as the Internet.

virus A parasitic program that infects another legitimate program, sometimes called the *host*. To infect the host program, the virus modifies the host so that it contains a copy of the virus.

virus definition A database of information about specific viruses that enables an antivirus program to detect and eradicate viruses. Also called a *virus pattern*.

virus pattern See *virus definition*.

Voice over Internet Protocol (VoIP) A protocol that allows voice data to travel over the Internet.

voice recognition See *speech recognition*.

VoIP See *Voice over Internet Protocol*.

volatile The tendency for memory to lose data when the computer is turned off, as is the case with RAM.

VPC Acronym for *virtual private connection*. See *virtual private network*.

VPN See *virtual private network*.

VRAM See *video RAM*.

VSAT See *very small aperture terminal*.

vulnerability Any aspect of a system that is open to harm. For example, if a computer does not have antivirus software, this is a vulnerability because the system can easily become infected by a virus.

W

WAN See *wide area network*.

WAP See *wireless access point*.

war driving The act of searching an area covered by a Wi-Fi network to locate spots where wireless Internet access is available.

Web browser A program that enables the user to view Web pages, navigate Web sites, and move from one Web site to another. Also called a *browser*.

Web bug A GIF-format graphic file, placed in a Web page or HTML-format e-mail message, that can be used to track a person's online activities. Web bugs are commonly considered to be a form of spyware.

Web page A document developed using HTML and found on the World Wide Web. Web pages contain information about a particular subject with links to related Web pages and other resources.

Web server An Internet host computer that may store thousands of Web sites.

Web site A collection of related Web pages.

Webcam An inexpensive video camera that connects directly to a PC and captures video images that can be broadcast over the Internet or through a network connection.

Webmaster A person or group responsible for designing and maintaining a Web site.

WEP See *Wire Equivalent Privacy*.

wheel mouse A pointing device that features a wheel, located between its two buttons. The user can spin the wheel to scroll through a document.

wide area network (WAN) A computer network that spans a wide geographical area.

Wi-Fi Stands for Wireless Fidelity. A networking standard that supports data communications without the use of wire-based media.

Wi-Fi Protected Access (WPA) An encryption method designed to protect data and private information as it is being transmitted over a wireless network.

window An area on the computer screen in which an application or document is viewed and accessed.

Windows A family of operating system products developed and produced by Microsoft Corp. The vast majority of personal computers run Windows, with versions including Windows 3.*x*, 95.*x*, NT, 2000, and XP. Windows versions 3.*x* and earlier were actually operating environments—graphical interfaces that ran on top of the DOS operating system. In versions 95 and later, Windows is a full-fledged operating system.

Winsock An application programming interface (API) for the Windows operating system that assists in connecting a Windows computer to the Internet.

Wire Equivalent Privacy (WEP) A networking standard that provides wireless networks a level of security similar to that found in secure wire-based networks.

wireless access point (WAP) See *access point*.

wireless local area network (WLAN) A local area network that uses wireless means rather than wires or cabling for data transmission.

Wireless Markup Language (WML) A development language used to create Web pages that can be displayed on small-format Web-enabled devices such as PDAs or cell phones.

wireless network A network that transmits data without the use of wires or cables. Such networks typically transmit data via radio waves or infrared signals.

wireless NIC A network interface card that connects a computer to a wireless network.

wireless wide area network (WWAN) A wide area network that uses wireless means rather than wires or cabling for data transmission.

WLAN See *wireless local area network*.

WML See *Wireless Markup Language*.

word processing program Software used to create and edit text documents such as letters, memos, reports, and publications. Also called a *word processor*.

word processor See *word processing program*.

word size The size of the registers in the CPU, which determines the amount of data the computer can work with at any given time. Larger word sizes lead to faster processing; common word sizes include 16 bits, 32 bits, and 64 bits.

workbook A data file created with spreadsheet software, containing multiple worksheets.

worksheet The data file created with spreadsheet software.

workstation A fast, powerful microcomputer used for scientific applications, graphics, CAD, CAE, and other complex applications. Workstations are usually based on RISC technology and operated by some version of UNIX, although an increasing number of Intel/Windows-based workstations are coming into popular use.

World Wide Web (the Web or WWW) An Internet service developed to incorporate footnotes, figures, and cross-references into online hypertext documents.

WPA See *Wi-Fi Protected Access*.

WWAN See *wireless wide area network*.

WWW See *World Wide Web*.

X-Z

Xbase A generic database language used to construct queries. Xbase is similar to SQL but more complex because its commands cover the full range of database activities beyond querying.

XHTML See *Extensible Hypertext Markup Language*.

XHTML MP See *Extensible Hypertext Markup Language Mobile Profile*.

XML See *Extensible Markup Language*.

XSL See *Extensible Stylesheet Language*.