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Microsoft

Computer Dictionary

Fifth Edition

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- *Easy to read, expertly illustrated*
- *Definitive coverage of hardware, software, the Internet, and more!*



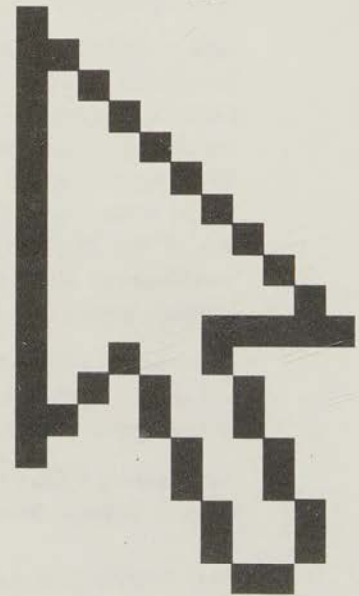
PO Exhibit 2015
Deponent: Mr. David Crane
Date: 07.01.2024

Microsoft®

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PUBLISHED BY
Microsoft Press
A Division of Microsoft Corporation
One Microsoft Way
Redmond, Washington 98052-6399

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Library of Congress Cataloging-in-Publication Data
Microsoft Computer Dictionary.--5th ed.

p. ; cm.

ISBN 0-7356-1495-4

1. Computers--Dictionaries. 2. Microcomputers--Dictionaries.

AQ76.5. M52267 2002

004'.03--dc21

200219714

Printed and bound in the United States of America.

1 2 3 4 5 6 7 8 9 QWT 7 6 5 4 3 2

Distributed in Canada by Penguin Books Canada Limited.

A CIP catalogue record for this book is available from the British Library.

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Body Part No. X08-41929

Introduction

The *Microsoft Computer Dictionary, Fifth Edition* is designed to be a comprehensive and authoritative source of definitions for computer-related terms and abbreviations. The dictionary includes terms drawn from a wide variety of topics relevant to computer users, including software, hardware, networking, data storage, graphics, games, information processing, the Internet and the World Wide Web, gaming, history, jargon and slang, organizations, programming, and standards.

Although this book covers nearly every aspect of computing, it does not include entries on most companies or on most makes and models of computers, nor does it contain entries on most application software products. The few exceptions to this rule of thumb are key companies and products that have a historical or universal importance within the computing industry.

This dictionary emphasizes terminology that the average computer user will encounter in documentation, online help, computer manuals, marketing and sales materials, the popular media, and the computer trade press. Because most computer users operate personal computers and desktop systems at home, work, or both, the majority of the entries in this dictionary cover the terminology used in describing and working with these systems. However, some specialized or highly technical language is included that pertains to areas of industry, academia, software and hardware development, and research. These terms have been included because they have a bearing on more common computer terminology or because they are of historical significance.

Changes in the Fifth Edition

The fifth edition of the *Microsoft Computer Dictionary* has been revised and expanded to include over 10,000 entries, reflecting the many advances in the computer field and

including several areas that have come into prominence in the public eye, such as networking, Web authoring, and new technologies, such as .NET. The content from the Year 2000 appendix has been integrated into the body of the dictionary and a new appendix on emoticons and instant messaging symbols has been added.

Order of Presentation

Entries are alphabetized by letter. Spaces are ignored, as are characters such as hyphens and slashes; for example, *Baudot code* falls between *baud* and *baud rate*, and *machine-independent* falls between *machine identification* and *machine instruction*. Numbers and symbols are located at the beginning of the book and are listed in ascending ASCII order. If an entry begins with a letter or letters but contains a number, it is listed alphabetically, according to the initial letter(s), and then according to ASCII order. Thus, V20 precedes V.2x, and both precede VAB.

Entries

Entries are of two types: main entries, which contain full definitions, and synonymous cross-references, which contain *See* references to the appropriate main entries. Synonymous cross-references are generally secondary or less common ways of referring to a main entry. The definition at the main entry can be substituted as a definition for the synonymous cross-reference.

Format

Information in each main entry is presented in a consistent format: entry name in boldface, spelling variants (if any), part of speech, definition, illustration or table reference (if any), acronym (if any), alternative names (if any), and cross-references (if any).

Main Entries

Entries that are acronyms or abbreviations for one or more words or concatenations of two or more words have those words spelled out at the beginning of the definition. The letters in these words or phrases that make up the acronym, abbreviation, or concatenation are in boldface.

When a main entry is spelled exactly the same as another main entry, the two entries are differentiated by the use of a superscript numeral after each term. These entries are called homographs, and they are generally different parts of speech. For example,

e-mail¹ (*noun*)

e-mail² (*verb*)

Spelling Variants

When a main entry has one or more variations in the way it is spelled, each spelling variant follows the main entry, after the word *or*.

Parts of Speech

Entries are broken down into four parts of speech, in addition to prefixes, abbreviated as follows:

n. noun

vb. verb

adj. adjective

adv. adverb

Definitions

Each of the more than 10,000 entries is written in clear, standard English. Many go beyond a simple definition to provide additional detail and to put the term in context for a typical computer user. When an entry has more than one sense or definition, the definitions are presented in a numbered list, to make it easier to distinguish the particular, sometimes subtle, variations in meaning.

Illustration and Table References

Some entries have affiliated illustrations or tables that aid in defining the entry. In most cases, illustrations and tables appear on the same page as the entries to which they apply.

In some instances, however, page layout requirements have forced them to a subsequent page. Entries with illustrations or tables usually have references at the end of the definition for an entry, in the following formats:

See the illustration.

See the table.

Acronyms

Some terminology in the computer field, particularly computer standards and Internet slang, can be shortened to form acronyms. Sometimes the acronym is the more common way to refer to the concept or object; in these cases, the acronym is the main entry. In other cases, the acronym is not as commonly used as the words or phrase for which it stands. In these cases, the words or phrase constitute the main entry. The acronym is given after the definition for these entries in the following format:

Acronym:

Alternative Names

Some items or concepts in the computer field can be referred to by more than one name. Generally, though, one way is preferred. The preferred terminology is the main entry. Alternative names are listed after any acronyms; otherwise they are listed after the definition in the following format:

Also called:

Cross-References

Cross-references are of three types: *See*, *See also*, and *Compare*. A *See* reference is used in an entry that is a synonymous cross-reference and simply points to another entry that contains the information sought. A *See also* reference points to one or more entries that contain additional or supplemental information about a topic and follows any acronyms or alternative names after the definition. A *Compare* reference points to an entry or entries that offer contrast and follows any *See also* references; otherwise it follows any acronyms or alternative names after the definition.

Future Printings and Editions

Every effort has been made to ensure the accuracy and completeness of this book. If you find an error, think that an entry does not contain enough information, or seek an entry that does not appear in this edition, please let us know. Address your letter to: Dictionary Editor, Microsoft Press, One Microsoft Way, Redmond, WA 98052-6399. Or send e-mail to mcped@microsoft.com.

adaptive answering *n.* The ability of a modem to detect whether an incoming call is a fax or a data transmission and respond accordingly. *See also* modem.

adaptive delta pulse code modulation *n.* A class of compression encoding and decoding algorithms used in audio compression and other data compression applications. These algorithms store digitally sampled signals as a series of changes in value, adapting the range of the change with each sample as needed, thus increasing the effective bit resolution of the data. *Acronym:* ADPCM. *See also* pulse code modulation. *Compare* adaptive differential pulse code modulation.

adaptive differential pulse code modulation *n.* A digital audio compression algorithm that stores a sample as the difference between a linear combination of previous samples and the actual sample, rather than the measurement itself. The linear combination formula is modified every few samples to minimize the dynamic range of the output signal, resulting in efficient storage. *See also* pulse code modulation. *Compare* adaptive delta pulse code modulation.

adaptive load balancing *n.* *See* load balancing.

adaptive routing *n.* *See* dynamic routing.

adaptive system *n.* An artificial intelligence system that is capable of altering its behavior based on certain features of its experience or environment. *See also* expert system.

ADB *n.* *See* Apple Desktop Bus.

ADC *n.* *See* analog-to-digital converter.

A-D converter *n.* *See* analog-to-digital converter.

adder *n.* **1.** A component of the CPU (central processing unit) that adds two numbers sent to it by processing instructions. *See also* central processing unit. **2.** A circuit that sums the amplitudes, or strength, of two input signals. *See also* full adder, half adder.

add-in *n.* *See* add-on.

addition record *n.* **1.** A file that describes new record entries (such as a new customer, employee, or product) in a database so that they can later be scrutinized and posted. **2.** A record in a change file specifying a new entry. *See also* change file.

add-on *n.* **1.** A hardware device, such as an expansion board or chip, that can be added to a computer to expand its capabilities. *Also called:* add-in. *See also* open archi-

ture (definition 2). **2.** A supplemental program that can extend the capabilities of an application program. *See also* utility program.

address¹ *n.* **1.** A number specifying a location in memory where data is stored. *See also* absolute address, address space, physical address, virtual address. **2.** A name or token specifying a particular computer or site on the Internet or other network. **3.** A code used to specify an e-mail destination.

address² *vb.* To reference a particular storage location.

addressable cursor *n.* A cursor programmed so that it can be moved to any location on the screen, by means of the keyboard or a mouse.

address book *n.* **1.** In an e-mail program, a reference section listing e-mail addresses and individuals' names. **2.** As a Web page, an informal e-mail or URL phone book.

address bus *n.* A bus consisting of 20 to 64 separate hardware lines that is used to carry the signals specifying memory locations for data. *See also* bus.

address classes *n.* Predefined groupings of Internet addresses with each class defining networks of a certain size. The range of numbers that can be assigned for the first octet in the IP address is based on the address class. Class A networks (values 1 to 126) are the largest, with more than 16 million hosts per network. Class B networks (128 to 191) have up to 65,534 hosts per network, and Class C networks (192 to 223) can have up to 254 hosts per network.

address decoder *n.* An electronic device that converts a numeric address to the electrical signals needed to select a specific memory location on one or more RAM chips.

addressing *n.* The process of assigning or referring to an address. In programming, the address is typically a value specifying a memory location. *See also* address¹.

address mapping table *n.* A table used by routers or DNS (Domain Name System) servers to obtain the corresponding IP (Internet Protocol) address of a text name of a computer resource, such as the name of a host computer on the Internet. *Acronym:* AMT. *See also* DNS server, IP address, router.

address mark *n.* *See* index mark.

address mask *n.* A number that, when compared by the computer with a network address number, will block out

provide users with the graphics-based interface characteristic of that computer. *See also* System V.

auxiliary device *n.* *See* peripheral.

auxiliary equipment *n.* *See* peripheral.

auxiliary storage *n.* Any storage medium, such as disk or tape, not directly accessed by a computer's microprocessor, as is random access memory (RAM). In current usage, such media are typically referred to as *storage* or *permanent storage*, and the RAM chips that the microprocessor uses directly for temporary storage are referred to as *memory*.

availability *n.* **1.** In processing, the accessibility of a computer system or resource, such as a printer, in terms of usage or of the percentage of the total amount of time the device is needed. **2.** A measure of the fault tolerance of a computer and its programs. A highly available computer runs 24 hours a day, 7 days a week. *See also* fault tolerance.

available time *n.* *See* uptime.

avalanche ad *n.* One of several larger formats for online ads developed to replace traditional banner ads on the Internet. Avalanche ads are generally 120 x 800 pixels in size. *See also* skyscraper ad.

avatar *n.* In virtual-reality environments such as certain types of Internet chat rooms, a graphical representation of a user. An avatar typically is a generic picture or animation of a human of either gender, a photograph or caricature of the user, a picture or animation of an animal, or an object chosen by the user to depict his or her virtual-reality "identity." *See* superuser.

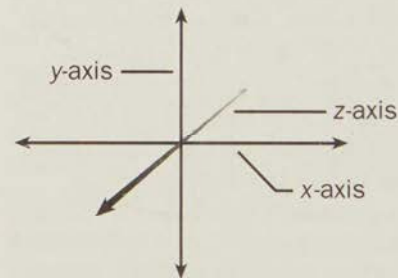
.avi *n.* The file extension that identifies an audiovisual interleaved data file in the Microsoft RIFF format.

AVI *n.* Acronym for Audio Video Interleaved. A Windows multimedia file format for sound and moving pictures that uses the Microsoft RIFF (Resource Interchange File Format) specification.

awk *n.* A UNIX-based language designed for file processing applications, awk is a part of the POSIX Command Language and Utilities standard. It is considered a subset of PERL.

AWT *n.* *See* Abstract Window Toolkit.

axis *n.* In a chart or other two-dimensional system using coordinates, the horizontal line (*x*-axis) or vertical line (*y*-axis) that serves as a reference for plotting points. In a three-dimensional coordinate system, a third line (*z*-axis) is used to represent depth. *See the illustration. See also* Cartesian coordinates.



Axis.

D

delimit *vb.* To set the limits of some entity, generally by using a special symbol called a delimiter. Programming languages typically delimit such variable-length elements as comments, strings, and program blocks. *See also* delimiter.

delimiter *n.* A special character that sets off, or separates, individual items in a program or set of data. Special characters often used include commas, semi-colons, tabs, and paragraph marks. *See also* delimit, field (definition 1), record¹.

Del key *n.* *See* Delete key.

delta channel *n.* *See* ISDN.

demand-driven processing *n.* The processing of data immediately as it becomes available or ready. Such real-time processing avoids the need to store data that has not been processed. *Compare* data-driven processing.

demand paging *n.* The most common implementation of virtual memory, in which pages of data are read into main memory from an auxiliary storage device only in response to interrupts that result when software requests a memory location that the system has saved to auxiliary storage and reused for other purposes. *See also* paging, swap (definition 2), virtual memory.

demand priority *n.* A network access method in which hubs control network access; a feature of 100Base-VG Ethernet networks. With demand priority, nodes send requests to hubs and the hubs give permission to transmit based on priority levels assigned to the requests by the nodes. *See also* 100Base-VG.

demand publishing *n.* Producing print copies of publications on an as-needed basis rather than in a single long press run. Demand publishing is a by-product of desktop publishing and advancements in printer capabilities.

demo *n.* **1.** Short for **demonstration**. A partial or limited version of a software package distributed free of charge for advertising purposes. Demos often consist of animated presentations that describe or demonstrate the program's features. *See also* crippled version. **2.** A computer in a store that is available for customers to test, to see if they wish to buy it.

demodulation *n.* In communications, the means by which a modem converts data from modulated carrier frequencies (waves that have been modified in such a way that variations in amplitude and frequency represent meaningful information) over a telephone line. Data is converted to the digital form needed by a computer to

which the modem is attached, with as little distortion as possible. *Compare* modulation (definition 1).

demon dialer *n.* *See* war dialer.

demonstration program or **demo program** *n.* **1.** A prototype that shows the on-screen look and sometimes the proposed capabilities of a program under development. *See also* prototyping. **2.** A scaled-down version of a proprietary program offered as a marketing tool.

denial of service attack *n.* *See* DoS.

denizen *n.* A participant in a Usenet newsgroup.

dense wavelength division multiplexing *n.* A data transmission technique in which multiple optical signals, each assigned to a separate color (wavelength frequency), are multiplexed onto a single strand of optical fiber. Because each signal travels separately in its own color band on the fiber, dense wavelength division multiplexing allows for the simultaneous transmission of different types of signals, such as SONET and ATM, each traveling at its own rate of speed. Dense wavelength division multiplexing can greatly increase the carrying capacity of a single optical fiber. Depending on the number, type, and rate of the signals involved, bandwidth can range from more than 40 Gbps to projected highs of 200 Gbps or more. *Acronym:* DWDM. *Also called:* wave division multiplexing, WDM. *Compare* time division multiple access.

dependence *n.* The state in which one entity relies upon specific hardware, software, or specific events for its own definition or functionality. *See also* context-dependent, dependent variable, device dependence, hardware-dependent, software-dependent.

dependent variable *n.* A variable in a program whose value relies on the outcome of another operation.

deployment descriptor *n.* In the Java J2EE network platform, a deployment descriptor is an XML file provided for each module or application describing how it should be deployed. The deployment descriptor directs a deployment tool to deploy a module or application with specific container options. It also describes the specific configuration requirements that an administrator must resolve when installing modules and J2EE applications into an operational environment. *See also* container, J2EE, module, XML.

depth queuing *vb.* **1.** In computer graphics and modeling, giving a two-dimensional object a three-dimensional appearance through such techniques as shading and hidden-

IntelliSense *n.* A Microsoft technology used in various Microsoft products, including Internet Explorer, Visual Basic, Visual Basic C++, and Office that is designed to help users perform routine tasks. In Visual Basic, for example, information such as the properties and methods of an object is displayed as the developer types the name of the object in the Visual Basic code window.

Intensity Red Green Blue *n.* *See* IRGB.

interactive *adj.* Characterized by conversational exchange of input and output, as when a user enters a question or command and the system immediately responds. The interactivity of microcomputers is one of the features that makes them approachable and easy to use.

interactive fiction *n.* A type of computer game in which the user participates in a story by giving commands to the system. The commands given by the user determine, to some extent, the events that occur during the story. Typically the story involves a goal that must be achieved, and the puzzle is to determine the correct sequence of actions that will lead to the accomplishment of that goal. *See also* adventure game.

interactive graphics *n.* A form of user interface in which the user can change and control graphic displays, often with the help of a pointing device such as a mouse or a joystick. Interactive graphics interfaces occur in a range of computer products, from games to computer-aided design (CAD) systems.

interactive processing *n.* Processing that involves the more or less continuous participation of the user. Such a command/response mode is characteristic of microcomputers. *Compare* batch processing (definition 2).

interactive program *n.* A program that exchanges output and input with the user, who typically views a display of some sort and uses an input device, such as a keyboard, mouse, or joystick, to provide responses to the program. A computer game is an interactive program. *Compare* batch program.

interactive services *n.* *See* BISDN.

interactive session *n.* A processing session in which the user can more or less continuously intervene and control the activities of the computer. *Compare* batch processing (definition 2).

interactive television *n.* A video technology in which a viewer interacts with the television programming. Typical uses of interactive television include Internet access, video

on demand, and video conferencing. *See also* video conferencing.

interactive TV *n.* *See* iTV.

interactive video *n.* The use of computer-controlled video, in the form of a CD-ROM or videodisc, for interactive education or entertainment. *See also* CD-ROM, interactive, interactive television, videodisc.

interactive voice response *n.* A computer that operates through the telephone system, in which input commands and data are transmitted to the computer as spoken words and numbers or tones and dial pulses generated by a telephone instrument; and output instructions and data are received from the computer as prerecorded or synthesized speech. For example, a dial-in service that provides airline flight schedules when you press certain key codes on your telephone is an interactive voice response system. *Also called:* IVR.

Interactive voice system *n.* *See* interactive voice response.

interapplication communication *n.* The process of one program sending messages to another program. For example, some e-mail programs allow users to click on a URL within the message. After the user clicks on the URL, browser software will automatically launch and access the URL.

interblock gap *n.* *See* inter-record gap.

Interchange File Format *n.* *See* .iff.

Interchange Format *n.* *See* Rich Text Format.

interconnect *n.* **1.** *See* System Area Network. **2.** An electrical or mechanical connection. Interconnect is the physical connection and communication between two components in a computer system.

interface *n.* **1.** The point at which a connection is made between two elements so that they can work with each other or exchange information. **2.** Software that enables a program to work with the user (the user interface, which can be a command-line interface, menu-driven interface, or a graphical user interface), with another program such as the operating system, or with the computer's hardware. *See also* application programming interface, graphical user interface. **3.** A card, plug, or other device that connects pieces of hardware with the computer so that information can be moved from place to place. For example, standardized interfaces such as RS-232-C standard and

SCSI enable communications between computers and printers or disks. *See also* RS-232-C standard, SCSI.

interface adapter *n.* *See* network adapter.

interface card *n.* *See* adapter.

Interface Definition Language *n.* *See* IDL.

interference *n.* **1.** Noise or other external signals that affect the performance of a communications channel. **2.** Electromagnetic signals that can disturb radio or television reception. The signals can be generated naturally, as in lightning, or by electronic devices, such as computers.

Interior Gateway Protocol *n.* A protocol used for distributing routing information among routers (gateways) in an autonomous network—that is, a network under the control of one administrative body. The two most often used interior gateway protocols are RIP (Routing Information Protocol) and OSPF (Open Shortest Path First). *Acronym:* IGP. *See also* autonomous system, OSPF, RIP. *Compare* exterior gateway protocol.

Interior Gateway Routing Protocol *n.* *See* IGRP.

Interix *n.* A software application from Microsoft that allows businesses to run existing UNIX-based legacy applications while adding applications based on the Microsoft Windows operating system. Interix serves as a single enterprise platform from which to run UNIX-based, Internet-based, and Windows-based applications.

interlaced *adj.* Pertaining to a display method on raster-scan monitors in which the electron beam refreshes or updates all odd-numbered scan lines in one vertical sweep of the screen and all even-numbered scan lines in the next sweep. *Compare* noninterlaced.

interlaced GIF *n.* A picture in GIF format that is gradually displayed in a Web browser, showing increasingly detailed versions of the picture until the entire file has finished downloading. Users of slower modems have a perceived shorter wait time for the image to appear, and they can sometimes get enough information about the image to decide whether to proceed with the download or move on. Users with faster connections will notice little difference in effect between an interlaced GIF and a noninterlaced GIF.

interlace scanning *n.* A display technique designed to reduce flicker and distortions in television transmissions; also used with some raster-scan monitors. In interlace scanning the electron beam in the television or monitor refreshes alternate sets of scan lines in successive top-to-bottom sweeps, refreshing all even lines on one pass, and

all odd lines on the other. Because of the screen phosphor's ability to maintain an image for a short time before fading and the tendency of the human eye to average or blend subtle differences in light intensity, the human viewer sees a complete display, but the amount of information carried by the display signal and the number of lines that must be displayed per sweep are halved. Interlaced images are not as clear as those produced by the progressive scanning typical of newer computer monitors. Interlace scanning is, however, the standard method of displaying analog broadcast television images. *Also called:* interlacing. *Compare* progressive scanning.

interlacing *n.* *See* interlace scanning.

interleave *vb.* To arrange the sectors on a hard disk in such a way that after one sector is read, the next sector in numeric sequence will arrive at the head when the computer is ready to accept it rather than before, which would make the computer wait a whole revolution of the platter for the sector to come back. Interleaving is set by the format utility that initializes a disk for use with a given computer.

interleaved memory *n.* A method of organizing the addresses in RAM memory in order to reduce wait states. In interleaved memory, adjacent locations are stored in different rows of chips so that after accessing a byte, the processor does not have to wait an entire memory cycle before accessing the next byte. *See also* access time (definition 1), wait state.

interlock *vb.* To prevent a device from acting while the current operation is in progress.

intermediate language *n.* **1.** A computer language used as an intermediate step between the original source language, usually a high-level language, and the target language, usually machine code. Some high-level compilers use assembly language as an intermediate language. *See also* compiler (definition 2), object code. **2.** *See* Microsoft intermediate language.

intermittent *adj.* Pertaining to something, such as a signal or connection, that is not unbroken but occurs at periodic or occasional intervals.

intermittent error *n.* An error that recurs at unpredictable times.

internal clock *n.* *See* clock/calendar.

internal command *n.* A routine that is loaded into memory along with the operating system and resides there for as long as the computer is on. *Compare* external command.

who downloads the PDF file and then opens the file in Adobe Acrobat.

peek *vb.* **1.** To read a byte from an absolute memory location. Peek commands are often found in programming languages such as Basic that do not normally allow access to specific memory locations. **2.** To look at the next character in a buffer associated with an input device without actually removing the character from the buffer.

peer *n.* Any of the devices on a layered communications network that operate on the same protocol level. *See also* network architecture.

peer-to-peer architecture *n.* A network of two or more computers that use the same program or type of program to communicate and share data. Each computer, or *peer*, is considered equal in terms of responsibilities and each acts as a server to the others in the network. Unlike a client/server architecture, a dedicated file server is not required. However, network performance is generally not as good as under client/server, especially under heavy loads. *Also called:* peer-to-peer network. *See also* peer, peer-to-peer communications, server. *Compare* client/server architecture.

peer-to-peer communications *n.* Interaction between devices that operate on the same communications level on a network based on a layered architecture. *See also* network architecture.

peer-to-peer network *n.* *See* peer-to-peer architecture.

PE file *n.* *See* portable executable file.

pel *n.* Short for picture element. *See* pixel.

PEM *n.* *See* Privacy Enhanced Mail.

pen *n.* *See* light pen, stylus.

pen-based computing *n.* The process of entering handwritten symbols into a computer via a stylus and pressure-sensitive pad. *See also* pen computer.

pen computer *n.* Any of a class of computers whose primary input device is a pen (stylus) instead of a keyboard. A pen computer is usually a smaller, handheld device and

has a flat semiconductor-based display such as an LCD display. It requires either a special operating system designed to work with the pen input device or a proprietary operating system designed to work with a specific-purpose device. The pen computer is the primary model for an emerging class of computers known as personal digital assistants (PDAs). *See also* clipboard computer, PC Card, PDA.

Penguin *n.* Slang for the Linux operating system or a Linux user. The name comes from the penguin character used as the Linux mascot. *See also* Tux.

pen plotter *n.* A traditional graphics plotter that uses pens to draw on paper. Pen plotters use one or more colored pens, either fiber-tipped pens or, for highest-quality output, drafting pens. *See also* plotter. *Compare* electrostatic plotter.

Pentium *n.* A family of 32-bit microprocessors introduced by Intel in March 1993 as the successor to the i486. The Pentium family is composed of superscalar, CISC-based microprocessors containing between 3 million (earlier models) and 28 million transistors. They have a 32-bit address bus, a 64-bit data bus, a built-in floating-point unit and memory management unit, built-in caches, and a System Management Mode (SMM), which provides the microprocessor with the ability to slow or halt some system components when the system is idle or performing non-CPU-intensive tasks, thereby lessening power consumption. The Pentium also employs *branch prediction*, resulting in faster system performance. In addition, the Pentium has built-in features to ensure data integrity, and it supports functional redundancy checking (FRC). The Pentium II introduced MMX media enhancement support. *See also* branch prediction, CISC, functional redundancy checking, i486DX, L1 cache, L2 cache, microprocessor, MMX, P5, SIMD, superscalar.

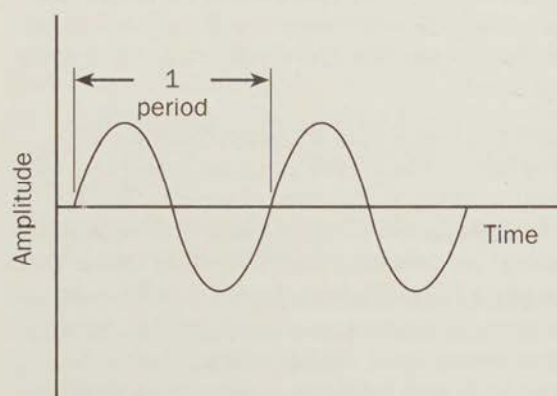
Pentium upgradable *n.* **1.** An i486 motherboard capable of being adapted to run a Pentium-class processor. *See also* i486DX, microprocessor, motherboard, Pentium.

2. A 486 PC that can be upgraded to Pentium class by adding a Pentium processor. *See also* i486DX.

perfbboard *n.* Short for **perforated fiber board**. *See* breadboard.

performance monitor *n.* A process or program that appraises and records status information about various system devices and other processes.

period *n.* The length of time required for an oscillation to complete one full cycle. For an oscillating electrical signal, the period is the time between waveform repetitions. If f is the frequency of oscillation in hertz, and t is the period in seconds, then $t = 1/f$. *See* the illustration.



Period. *The period of an oscillating signal.*

peripheral *n.* In computing, a device, such as a disk drive, printer, modem, or joystick, that is connected to a computer and is controlled by the computer's microprocessor. *Also called:* peripheral device. *See also* console.

Peripheral Component Interconnect *n.* *See* PCI local bus.

peripheral device *n.* *See* peripheral.

peripheral power supply *n.* An auxiliary source of electricity used by a computer or a device as a backup in case of a power failure. *Acronym:* PPS.

Perl *n.* Acronym for **Practical Extraction and Report Language**. An interpreted language, based on C and several UNIX utilities. Perl has powerful string-handling features for extracting information from text files. Perl can assemble a string and send it to the shell as a command; hence, it

is often used for system administration tasks. A program in Perl is known as a script. Perl was devised by Larry Wall at NASA's Jet Propulsion Laboratory.

permanent storage *n.* A recording medium that retains the data recorded on it for long periods of time without power. Ink on paper is by far the most widely used permanent storage, but data can be transferred from paper to a computer only with difficulty. Typically, some form of magnetic medium, such as floppy disk or tape, is preferable. Magnetic media are generally accepted as permanent, even though the magnetic fields that encode data in the media tend to fade eventually (in five years or more). *See also* nonvolatile memory.

permanent swap file *n.* In Windows, a file composed of contiguous disk sectors used for virtual memory operations. *See also* swap file, virtual memory.

permanent virtual circuit *n.* *See* PVC.

permission *n.* In a networked or multiuser computer environment, the ability of a particular user to access a particular resource by means of his or her user account. Permissions are granted by the system administrator or other authorized person. Several levels of access can be given: read only, read and write (view and change), or read, write, and delete. *Also called:* Access permission.

permission class *n.* A class that defines access to a resource or defines an identity by supporting authorization checks.

permission object *n.* An instance of a permission class that represents access rights to resources or identity. A permission object can be used to specify a request, a demand, or a grant of permission.

permissions log *n.* A file on a network or multiuser computer environment where permissions for users are stored. When a user attempts to access a resource on the system, the permissions log is checked to see whether the user has permission to use it.

perpendicular recording *n.* A method of increasing storage capacity on magnetic media by aligning the magnetic dipoles, whose orientation determines bit values, in a direction that is perpendicular to the recording surface. *Also called:* vertical recording.

nications. The addition of SBC's Internet customer base made Prodigy the third largest ISP in the United States.

Prodigy Information Service *n.* An online information service founded by IBM and Sears. Like its competitors America Online and CompuServe, Prodigy offers access to databases and file libraries, online chat, special interest groups, e-mail, and Internet connectivity. *Also called:* Prodigy.

product *n.* **1.** An operator in the relational algebra used in database management that, when applied to two existing relations (tables), results in the creation of a new table containing all possible ordered concatenations (combinations) of tuples (rows) from the first relation with tuples from the second. The number of rows in the resulting relation is the product of the number of rows in the two source relations. *Also called:* Cartesian product. *Compare* inner join. **2.** In mathematics, the result of multiplying two or more numbers. **3.** In the most general sense, an entity conceived and developed for the purpose of competing in a commercial market. Although computers are products, the term is more commonly applied to software, peripherals, and accessories in the computing arena.

production system *n.* In expert systems, an approach to problem solving based on an "IF this, THEN that" approach that uses a set of rules, a database of information, and a "rule interpreter" to match premises with facts and form a conclusion. Production systems are also known as rule-based systems or inference systems. *See also* expert system.

P

Professional Graphics Adapter *n.* A video adapter introduced by IBM, primarily for CAD applications. The Professional Graphics Adapter is capable of displaying 256 colors, with a horizontal resolution of 640 pixels and a vertical resolution of 480 pixels. *Acronym:* PGA.

Professional Graphics Display *n.* An analog display introduced by IBM, intended for use with their Professional Graphics Adapter. *See also* Professional Graphics Adapter.

profile¹ *n.* *See* user profile.

profile² *vb.* To analyze a program to determine how much time is spent in different parts of the program during execution.

profiler *n.* A diagnostic tool for analyzing the run-time behavior of programs.

Profiles for Open Systems Internetworking Technology

n. *See* POSIT.

program¹ *n.* A sequence of instructions that can be executed by a computer. The term can refer to the original source code or to the executable (machine language) version. *Also called:* software. *See also* program creation, routine, statement.

program² *vb.* To create a computer program, a set of instructions that a computer or other device executes to perform a series of actions or a particular type of work.

program button *n.* On a handheld device, a navigation control that is pressed to launch an application. *Also called:* application button.

program card *n.* *See* PC Card, ROM card.

program cartridge *n.* *See* ROM cartridge.

program comprehension tool *n.* A software engineering tool that facilitates the process of understanding the structure and/or functionality of computer applications. *Acronym:* PCT. *Also called:* software exploration tool.

program counter *n.* A register (small, high-speed memory circuit within a microprocessor) that contains the address (location) of the instruction to be executed next in the program sequence.

program creation *n.* The process of producing an executable file. Traditionally, program creation comprises three steps: (1) compiling the high-level source code into assembly language source code; (2) assembling the assembly language source code into machine-code object files; and (3) linking the machine-code object files with various data files, run-time files, and library files into an executable file. Some compilers go directly from high-level source to machine-code object, and some integrated development environments compress all three steps into a single command. *See also* assembler, compiler (definition 2), linker, program.

program encapsulation *n.* A method of dealing with programs with Year 2000 problems that entailed modifying the data with which a program worked. The input data is modified to reflect a parallel date in the past that the program can handle. When output is generated, that data is changed again, to reflect the correct date. The program itself remains unchanged.

program file *n.* A disk file that contains the executable portions of a computer program. Depending on its size and

dedicated to that data, and it cannot be reprogrammed. *See also* EEPROM, EPROM, ROM (definition 2).

PROM blaster *n.* *See* PROM programmer.

PROM blower *n.* *See* PROM programmer.

promiscuous-mode transfer *n.* In network communications, a transfer of data in which a node accepts all packets regardless of their destination address.

PROM programmer *n.* A hardware device that records instructions or data on a PROM (programmable read-only memory) chip or an EPROM (erasable programmable read-only memory) chip. *Also called:* PROM blaster, PROM blower. *See also* EPROM, PROM.

prompt *n.* **1.** In command-driven systems, one or more symbols that indicate where users are to enter commands. For instance, in MS-DOS, the prompt is generally a drive letter followed by a greater than symbol (C>). In UNIX, it is usually %. *See also* command-driven system, DOS prompt. **2.** Displayed text indicating that a computer program is waiting for input from the user.

propagated error *n.* An error used as input to another operation, thus producing another error.

propagation *n.* Travel of a signal, such as an Internet packet, from its source to one or more destinations. Propagation of messages over different paths with different lengths can cause messages to appear at a user's computer with varying delivery times. *See also* propagation delay.

propagation delay *n.* The time needed by a communications signal to travel between two points; in satellite links, a noticeable delay of between one-quarter second and one-half second, caused by the signal traveling through space.

propeller head *n.* Slang for a person who is obsessed with computers or other technology; a geek. The name refers to a child's beanie cap topped by a spinning propeller.

property *n.* In Windows 9x, a characteristic or parameter of an object or device. Properties of a file, for example, include type, size, and creation date and can be identified by accessing the file's property sheet. *See also* property sheet.

property sheet *n.* A type of dialog box in Windows 9x, accessed by choosing Properties in the File menu or by right-clicking on an object and selecting Properties, that lists the attributes or settings of an object such as a file, application, or hardware device. A property sheet presents the user with a tabbed, index-card-like selection of prop-

erty pages, each of which features standard dialog-style controls for customizing parameters.

proportional font *n.* A set of characters in a particular style and size in which a variable amount of horizontal space is allotted to each letter or number. In a proportional font, the letter *i*, for example, is allowed less space than the letter *m*. *Compare* monospace font.

proportional spacing *n.* A form of character spacing in which the horizontal space each character occupies is proportional to the width of the character. The letter *w*, for example, takes up more space than the letter *i*. *Compare* monospacing.

proprietary *adj.* Of, pertaining to, or characteristic of something that is privately owned. Generally, the term refers to technology that has been developed by a particular corporation or entity, with specifications that are considered by the owner to be trade secrets. Proprietary technology may be legally used only by a person or entity purchasing an explicit license. Also, other companies are unable to duplicate the technology, both legally and because its specifications have not been divulged by the owner. *Compare* public domain.

proprietary software *n.* A program owned or copyrighted by an individual or a business and available for use only through purchase or by permission of the owner. *Compare* open source, public-domain software.

protected *n.* A keyword in a programming language (such as Java or C++) used in a method or variable declaration. It signifies that the method or variable can be accessed only by elements residing in its class, subclasses, or classes in the same package. *See also* class, declaration, method, package, variable.

protected mode *n.* An operating mode of the Intel 80286 and higher microprocessors that supports larger address spaces and more advanced features than real mode. When started in protected mode, these CPUs provide hardware support for multitasking, data security, and virtual memory. The Windows (version 3.0 and later) and OS/2 operating systems run in protected mode, as do most versions of UNIX for these microprocessors. *Compare* real mode.

protocol *n.* *See* communications protocol.

protocol analyzer *n.* A management tool designed to identify and diagnose computer network problems. A protocol analyzer looks at LAN (local area network) or WAN (wide area network) traffic and finds protocol errors, connection delays, and other network faults. The protocol

P

upload² *vb.* To transfer a copy of a file from a local computer to a remote computer. *Compare* download.

UPnP *n.* Acronym for **Universal Plug and Play**. A Microsoft initiative which prompted the creation of the UPnP Forum for interconnecting computers, appliances, networks, and services. UPnP extends conventional Plug and Play to include devices connected to networks. It allows peripheral devices to discover and connect to other devices and to enumerate the characteristics of those devices. UPnP is intended to be an element of home networking, in which PCs, appliances, and the services they provide are linked together.

UPnP Device Architecture *n.* A specification developed by the Universal Plug and Play (UPnP) Forum that defines the structure of UPnP networking. The UPnP Device Architecture, formerly known as the DCP Framework, provides information about discovery, description, control, eventing, and presentation in a UPnP network. *See also* UPnP networking.

UPnP Forum *n.* A consortium of companies and individuals that oversees Universal Plug and Play (UPnP) specifications, protocols, logos, sample implementations, test suites, white papers, and other UPnP-related efforts. *See also* UPnP, UPnP Device Architecture, UPnP networking.

UPnP networking *n.* The peer-to-peer networking of intelligent machines, appliances, wireless devices, computers, and other devices according to the Universal Plug and Play (UPnP) Device Architecture. UPnP networking uses control points, devices, services, and protocols including GENA, SOAP, SSDP, standard TCP/IP, and other Internet protocols. *See also* UPnP Device Architecture.

uppercase *adj.* Of, pertaining to, or characterized by capital letters. *Compare* lowercase.

upper memory area *n.* *See* UMA (definition 1).

upper memory block *n.* *See* UMB.

UPS *n.* Acronym for **uninterruptible power supply**. A device, connected between a computer (or other electronic equipment) and a power source (usually an outlet receptacle), that ensures that electrical flow to the computer is not interrupted because of a blackout and, in most cases, protects the computer against potentially damaging events, such as power surges and brownouts. All UPS units are equipped with a battery and a loss-of-power sensor; if the sensor detects a loss of power, it switches over to the battery so that the user has time to save his or her work and shut off the computer. *See also* blackout, brownout.

upstream¹ *n.* The direction in which information is delivered from a client to a (Web) server. *Compare* downstream¹.

upstream² *adj.* **1.** The location of a server in relation to another server. *Compare* downstream² (definition 1). **2.** The direction in which data moves *from* an individual computer *to* the remote network. With certain communications technologies, such as ADSL, cable modems, and high-speed 56-Kbps modems, data flows upstream more slowly than downstream. For example, a 56-Kbps modem can deliver data at a 56-Kbps maximum only downstream; upstream, it delivers data at either 28.8 or 33.6 Kbps. *Compare* downstream² (definition 2).

uptime *n.* The amount or percentage of time a computer system or associated hardware is functioning and available for use. *Compare* downtime.

upward-compatible *adj.* Of, pertaining to, or characteristic of a computer product, especially software, designed to perform adequately with other products that are expected to become widely used in the foreseeable future. The use of standards and conventions makes upward compatibility easier to achieve.

urban legend *n.* A widely distributed story that remains in circulation in spite of the fact that it is not true. Many urban legends have been floating around the Internet and other online services for years, including the request for cards for the sick boy in England (he's long since recovered and grown up), the cookie or cake recipe that cost \$250 (it's a myth), and the Good Times or Penpal Greetings virus, which will infect your computer when you read an e-mail message (it does not exist). *See also* Good Times virus.

URC *n.* *See* Uniform Resource Citation.

URI *n.* *See* Uniform Resource Identifier.

URL *n.* Acronym for **Uniform Resource Locator**. An address for a resource on the Internet. URLs are used by Web browsers to locate Internet resources. A URL specifies the protocol to be used in accessing the resource (such as http: for a World Wide Web page or ftp: for an FTP site), the name of the server on which the resource resides (such as //www.whitehouse.gov), and, optionally, the path to a resource (such as an HTML document or a file on that server). *See also* FTP¹ (definition 1), HTML, HTTP, path (definition 1), server (definition 2), virtual path (definition 1), Web browser.

URN *n.* *See* Uniform Resource Name.