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bits per pixel The number of bits used to define a pixel in an image. Its abbreviation is **bpp**.

bits per second A measure of the transmission speed over a communications channel, such as that in a network. It represents the average number of bits transmitted per second. Higher multiples of bits are more frequently used for these measurements, and examples are kilobits per second, or gigabits per second. Its abbreviation is **bps**.

bitstream The transmission of a continuous series of bits over a communications channel. Also spelled **bit stream**.

BJT Abbreviation of **bipolar junction transistor**.

Bk Chemical symbol for **berkelium**.

BL Abbreviation of **baseline**.

black-and-white Image reproduction in black, white, and multiple shades of gray in between. For example, that of a black-and-white TV. Also called **monochrome (1)**, or **grayscale**.

black-and-white television Same as **black-and-white TV**.

black-and-white TV Abbreviation of **black-and-white television**. Television image reproduction which occurs in black, white, and multiple shades of gray in between. Also called **monochrome TV**.

black body Same as **blackbody**.

black body radiation Same as **blackbody radiation**.

black box **1.** A component, device, or unit with an input and an output, which can be inserted into a system without the need to know its internal structure. It is simply used based on its input and output characteristics. Also called **closed box (1)**. **2.** In computers, a hardware or software unit whose internal structure is unknown, but whose function is known. Also called **closed box (2)**. **3.** A sturdy self-contained electronic device which records key information concerning an aircraft, such as flight data.

black-box testing Also called **functional testing**, or **closed-box testing**. **1.** Any tests utilizing the assistance of a **black box (1)**. This contrasts with **white-box testing (1)**, which requires detailed knowledge of the inner workings. **2.** Tests of software or hardware utilizing the assistance of a **black box (2)**. This contrasts with **white-box testing (2)**, which requires detailed knowledge of the inner workings.

black compression In a TV signal, an attenuation in the gain at the levels which correspond to the dark areas of the picture, so as to reduce the contrast in these areas. Also called **black saturation**.

black hat hacker A hacker which upon discovering a security vulnerability uses it to steal, damage, or otherwise harm. This contrasts with a **white hat hacker**, who alerts the owner, administrator, or the like, of the breach. A **gray hat hacker** lies somewhere in between, and may, for instance, post security flaws on the Internet.

black hole **1.** Within a communications network, a location where data enters, but never leaves. May be created, for instance, by noncompatible equipment. **2.** An object in space whose gravitation is so great that neither matter nor light can escape from it.

black iron oxide A reddish or bluish-black powder whose chemical formula is Fe_3O_4. It is used in magnetic-tape coatings, magnetic inks, and in ferrites. Also called **iron oxide, iron oxide black, ferrosoferric oxide**, or **magnetic iron oxide**.

black level In a video signal, the amplitude level that corresponds to the maximum permitted black peaks, that is, to the screen being black. Also called **reference black level**.

black-level control A control for adjusting the **black level**. When referring to a monitor, such as that of a TV or computer, it is more commonly known by the less accurate term **brightness control**.

black light **1.** Invisible light radiation, especially ultraviolet light. **2.** A lamp which produces ultraviolet light.

black saturation Same as **black compression**.

black signal In fax communications, the amplitude of the signal produced when scanning the maximum darkness of the transmitted material. Also called **picture black (2)**.

black transmission A mode of facsimile transmission in which the maximum amplitude corresponds to the maximum darkness of the received material.

black & white Same as **black-and-white**.

black & white television Same as **black-and-white TV**.

black & white TV Same as **black-and-white TV**.

BlackBerry A popular wireless Internet appliance.

blackboard In expert systems, a hierarchically organized database which allows information to be exchanged between knowledge sources.

blackbody An ideal body which would absorb all the radiant energy incident upon it. It would also be a perfect emitter of radiant energy, whose distribution of energy depended solely on its absolute temperature. Also spelled **black body**. Also called **ideal radiator, perfect radiator**, or **full radiator**.

blackbody radiation Radiation from a **blackbody**. Also spelled **black body radiation**.

blacker-than-black Same as **blacker-than-black level**.

blacker-than-black level In a video signal, an amplitude level greater than that which corresponds to black. Used, for instance, for sync pulses. Its abbreviation **blacker-than-black**.

blackout **1.** A complete loss of AC power arriving from a power line. Also called **power blackout**. **2.** A complete loss of a radio signal, or of radio-wave propagation. Also called **radio blackout**. **3.** Same as **blackout effect**.

blackout effect A temporary loss of sensitivity in an electronic device or instrument, following a strong transient signal. Also called **blackout (3)**.

blade A flat moving conductor used in a switch.

blade antenna An antenna, such as that mounted on an aircraft to reduce wind drag, which is comparatively thin.

blank **1.** A recordable medium, such as a magnetic tape or diskette, which has no information recorded yet. **2.** A piece of material, especially a crystal, which is cut in preparation for further processing. **3.** To cut-off a signal or beam. **4.** To cut-off the electron beam in a CRT. **5.** Same as **blank character**.

blank character A character which occupies one byte, the same as if it were a letter or digit. Although a blank character is not necessarily the same as a space character, it is often visualized and treated as such. Such characters are utilized to represent and occupy empty positions. Also called **blank (5)**.

blank disk A disk which has no information recorded yet. It may refer to a magnetic disk, such as a diskette or hard disk, or an optical disk, such as a DVD.

blank tape Magnetic tape which has no information recorded yet.

blanker A circuit or device which serves to cut-off a signal or beam.

blanket area An area where **blanketing** occurs.

blanketing Interference of radio reception due to a strong nearby transmitter. This usually affects a wide range of frequencies.

blanking **1.** The disabling or blocking of a circuit, device, signal, beam, or channel for a given time interval. **2.** Same as **beam blanking**.

blanking circuit A circuit which provides **blanking**.

synchroscope A device or instrument which indicates whether two values, magnitudes, voltages, frequencies, phases, or the like, are synchronized. An oscilloscope, for instance, may indicate the synchronization, or any difference in phases, frequencies, or the like which are being monitored. Used, for instance, to verify that two or more generators are in phase.

synchrotron A particle accelerator similar to a cyclotron, and in which the frequency of the field is adjusted so as to compensate for the increased mass of the particles as their speed approaches that of light. A proton synchrotron accelerates protons, an electron synchrotron accelerates electrons, and there are specialized variations, such as tevatrons, which can generate energies in excess of 1 TeV.

synchrotron radiation The electromagnetic radiation emitted by charged particles which are moving within a magnetic field at speeds approaching that of light. This is observed, for instance, in a synchrotron.

syntax **1.** In a natural language, the rules which describe how words and phrases are combined to form expressions and sentences. Such rules are taken into account, for instance, in voice-recognition programs. **2.** The rules which determine how statements are formed, so as to be understood by a given computer program.

syntax error An error in a computer program arising from the improper use **syntax (2)**.

synthesis The proper combination of elements, components, substances, and so on, to form a given whole. Examples include the synthesis of digital speech, musical sounds, circuits with a given response, or chemical compounds.

synthesis telescope A computer-controlled telescope which utilizes two or more pairs of antennas which sequentially cover sections of the total aperture, in order to gather the information equivalent to that obtained by a much larger single telescope. Also called **aperture synthesis telescope**.

synthesize To unite the proper combination of elements, components, substances, and so on, to form a given whole.

synthesizer **1.** That which serves to **synthesize**. **2.** A circuit or device which generates precise frequency signals. Such a device usually utilizes one or more crystal oscillators, and can generate equally-spaced frequencies within a given band through the use of frequency multipliers, dividers, mixers, and so on. Also called **frequency synthesizer**. **3.** A device which electronically generates or reproduces sounds that emulate musical instruments and voices, and which can be utilized to compose, play, and record music. A keyboard, real or virtual, is usually used, and two common techniques for generating sounds are FM synthesis and wavetable synthesis. Also called **music synthesizer**.

synthetic **1.** Pertaining to, characteristic of, involving, or arising from **synthesis**. **2.** Produced by synthesis, especially that which is artificial. Examples include synthetic radioactive chemical elements, resins, plastics, crystals, fibers, rubbers, polymers, and so on.

synthetic aperture radar An airborne radar that emits microwave energy along a given path, and which utilizes the Doppler effect to process the phase of the returned radar signals. Such a radar effectively synthesizes the equivalent of a very long aperture, and is used, for instance, for ground mapping. Its abbreviation is **SAR**.

synthetic voice Simulation of a human voice through the use of a device which incorporates a loudspeaker and a computer. Used, for example, in robotics, or to assist those with reduced speech abilities.

syntonic Pertaining to two oscillating circuits which have the same resonant frequency.

syntony The circumstance of two oscillating circuits having the same resonant frequency.

sysadmin Acronym for **system administrator**.

sysop Acronym for **system operator**.

SysReq Same as **SysRq**.

SysReq key Same as **SysRq**. Abbreviation of **System Request key**. Also spelled **SysRq key**.

SysRq Abbreviation of **System Request**. On many computer keyboards, a key intended to access specific operating system functions. Such a key is sometimes programmed to perform special functions within a given operating system environment or application. Also spelled **SysReq**. Also called **SysRq key**.

SysRq key Same as **SysRq**. Abbreviation of **System Request key**. Also spelled **SysReq key**.

system **1.** A set of interrelated and/or interdependent components which form a complex whole serving for one or more purposes or functions. There are countless examples, including control, sound, expert, radar, alarm, computer, carrier, biometric, and satellite systems. **2.** A **system (1)** incorporating components which are mechanical, electrical, electronic, magnetic, optical, and so on, or any combination of these. For instance, electromechanical, optoelectronic, or magnetohydrodynamic systems. **3.** A set of objects, entities, characteristics, phenomena, or rules, utilized to describe, classify, organize, compare, or analyze. For example, a system which enables the precise specification and comparison of colors, a scale which allows the classification of materials according to their resistance to scratching or denting, a coordinate system, or a quantum system. **4.** A set of related objects, entities, characteristics, or phenomena, which occur naturally, such as a solar system. **5.** A set of components, including equipment, media, and channels, which incorporate all that is necessary for any form of communication from one or more points to others. For example, telephone, TV, or radio systems, computer networks, and so on. **6.** The complete complement of components required for a computer to function. These include the CPU, keyboard, mouse, monitor, memory, storage mediums, cables, and so on, which comprise the hardware of the computer itself, plus any necessary peripheral devices. In addition, a computer system incorporates the operating system. Also called **computer system**.

system administration The functions performed by a **system administrator**. These include the allocation of resources, security, maintenance, improvements, and the like.

system administrator A person who is responsible for, supervises, and/or manages a computer or communications network. Its acronym is **sysadmin**.

system analysis Same as **systems analysis**.

system analysis and design Same as **systems analysis**.

system-area network A high-speed network which serves to link processors, I/O systems, or servers. Its acronym is **SAN**.

system basic input/output system Same as **system BIOS**.

system BIOS Acronym for **system basic input/output system**. **1.** A set of indispensable software routines that enable a computer to boot itself. It has the code necessary to control all peripherals and perform other functions, such as testing, and is generally stored on a ROM chip so that disk failures do not disable it. Currently, it is usually contained in a flash-memory chip, and is typically copied to the RAM at startup, as RAM is faster. Also called **BIOS**. **2.** The **system BIOS (1)** of a computer which is contained in the motherboard, as opposed to that contained in a peripheral.

system board The main circuit board of a computer, containing the connectors necessary to attach additional boards. It contains most of the key components of the system, and incorporates the CPU, bus, memory, controllers, expansion slots, and so on. Memory chips may be added to it, and some motherboards allow for the CPU to be replaced. Also called **motherboard, mainboard**, or **backplane (2)**.

electrostatic system of units A system of electrostatic units within the cgs system of units. Units in this system have a **stat-** prefix, for instance, statcoulomb or statvolt. The cgs measuring system is obsolescent. Its abbreviation is **esu**. Also called **electrostatic units**, or **cgs electrostatic system**.

electrostatic transducer A transducer consisting of two capacitor plates, one fixed and the other flexible or movable, which converts changes in applied voltage into movement. Also called **capacitive transducer**.

electrostatic tweeter A tweeter consisting of a small electrostatic speaker. Such tweeters feature a mostly linear response which can extend well beyond the range of human hearing.

electrostatic units Same as **electrostatic system of units**.

electrostatic voltmeter A voltmeter in which the voltage to be measured is applied between two plates, one fixed, the other movable and attached to a spring. The resulting electrostatic force displaces the moving plate to an extent which is proportional to the applied voltage, and an attached pointer serves to indicate the voltage on a calibrated scale.

electrostatic wave In a plasma, wave motion whose restoring forces are principally electrostatic.

electrostatics The study of all that pertains to electric charges at rest, including their associated forces, fields, and applications.

electrostimulation The use of electricity to stimulate tissue, such as nerve, muscle, or bone.

electrostriction The mechanical strain that occurs in some materials, such as dielectrics, when placed in an electric field. If a material, such as certain ceramics, also produces an electric charge when under mechanical strain, then it possesses the property of **piezoelectricity**, not electrostriction. Also called **electrostrictive effect**, or **electrostrictive strain (1)**.

electrostrictive Possessing, or pertaining to, the property of **electrostriction**.

electrostrictive ceramic A ceramic, such as lead magnesium niobate, which has the property of **electrostriction**.

electrostrictive effect Same as **electrostriction**.

electrostrictive strain **1.** Same as **electrostriction**. **2.** The extent of the mechanical strain occurring in **electrostriction**.

electrosurgery The use of electricity for surgical procedures. For instance, the application of an electric current to cut tissue, or to stop bleeding.

electrosynthesis A synthesis reaction which is produced by electricity. A **synthesis** occurs when a complex chemical compound is obtained from simpler constituents.

electrotechnology Technology pertaining to electrical and/or electronic products and applications. It is an abbreviation of **electronic technology**, or **electrical technology**.

electrotherapy The use of electricity for medical therapy. Used, for instance, for treatment of certain muscular or skeletal disorders.

electrothermal Also called **electrothermic**. **1.** Pertaining to electricity and heat. **2.** The conversion of electricity into heat, as occurs, for instance, as a result of a resistance.

electrothermal process Any process, such as the production of an arc, in which an electric current produces heat.

electrothermal propulsion A form of propulsion in which the propellant is heated electrically, as accomplished, for instance, by an electric arc. Usually used in spacecraft.

electrothermic Same as **electrothermal**.

electrotonic Pertaining to **electrotonus**.

electrotonus For nerve or muscle, a change in a characteristic such as conductivity or excitability, when an electric current is passed through it. A steady current is usually used.

electrovalence Also spelled **electrovalency**. **1.** The valence an atom acquires when exchanging electrons with another, in the formation of an **electrovalent bond**. **2.** The number of electrons gained or lost in attaining **electrovalence (1)**.

electrovalency Same as **electrovalence**.

electrovalent Pertaining to **electrovalence**.

electrovalent bond A chemical bond formed by the electrostatic attraction of the oppositely-charged ions which form the resulting compound. In such a bond, each constituent either gains or loses one or more electrons. For instance, in **NaCl** (table salt), the sodium transfers one electron to the chlorine. In the process, the sodium becomes a positively-charged ion, and the chlorine a negatively-charged one. Also called **ionic bond**.

electroweak force A force which unifies the electromagnetic and the weak forces, two of the **four fundamental forces of nature**.

electrowinning The use of an electrochemical process, such as electrolysis, to separate metals from a solution. Used, for instance, to extract metals from their molten ores.

elegant Characterized by simplicity, precision, effectiveness, and the ingenious utilization of available resources. May refer, for instance, to a computer program that is easy to use and performs its designated tasks accurately and efficiently, while occupying the least possible memory and processing resources of the computer it is running on.

element **1.** A fundamental, distinct, and usually irreducible constituent of a given entity, process, or concept. For example, any of the various functional parts of an electron tube. **2.** Any of the electrical components that are a part of a circuit. These may include resistors, capacitors, transistors, generators, electron tubes, and so on. Each element has terminals which allow it to be connected to the conducting path. Also called **electrical element**, **circuit element**, **circuit component**, or **component (2)**. **3.** A substance which can not be subdivided into smaller units by chemical means. There are over 110 known chemical elements, each with unique properties, and they comprise all matter above the atomic level. The smallest particle that retains all the properties of an element is an atom. All neutral atoms of a given chemical element have the same number of protons and electrons, and if an element has isotopes, the difference between each is the number of neutrons in its nucleus. Also called **chemical element**. **4.** Within an antenna array, one of multiple radiators which contribute to its overall transmission and/or reception characteristics. Such an element may be driven, or parasitic. Also called **antenna element**. **5.** In computers, the smallest subunit within a larger set. For instance, picture elements or data elements.

element 110 A synthetic radioactive chemical element whose atomic number is 110, and which currently does not have a single internationally recognized name.

element 111 A synthetic radioactive chemical element whose atomic number is 111, and which currently does not have a single internationally recognized name.

element 112 A synthetic radioactive chemical element whose atomic number is 112, and which currently does not have a single internationally recognized name.

element 113 A synthetic radioactive chemical element whose atomic number is 113, and which currently does not have a single internationally recognized name.

element 114 A synthetic radioactive chemical element whose atomic number is 114, and which currently does not have a single internationally recognized name.

element 115 A synthetic radioactive chemical element whose atomic number is 115, and which currently does not have a single internationally recognized name.