



A Cambridge-MIT Institute funded project

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# MDP

Multidisciplinary Design Project

# Multidisciplinary Design Project Engineering Dictionary

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This Dictionary/Glossary of Engineering terms has been compiled to compliment the work developed as part of the Multi-disciplinary Design Project (MDP), which is a programme to develop teaching material and kits to aid the running of mechnronics projects in Universities and Schools. The project is being carried out with support from the Cambridge-MIT Institute undergraduate teaching programe.

For more information about the project please visit the MDP website at <http://www-mdp.eng.cam.ac.uk> or contact

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# 1 Introduction

This dictionary/glossary has not been developed as a definitive work but as a useful reference book for engineering students to search when looking for the meaning of a word/phrase. It has been compiled from a number of existing glossaries together with a number of local additions.

Each reference has a standard layout

## Transistor

[*Elec*]

Where [*Elec*] indicates the engineering area where the definition is used and the original source, see section 1.1.

In a number of cases there are multiple definitions, these have been kept to indicate the variation in use even within the same industry.

The MDP project is very grateful to the compilers of the other collections for their kind permission to reuse their data, but accepts responsibility for any errors or mistranscription. Links to some of the original data sources are given in section 1.1 and the users is urged to consult these if additional information is required.

## 1.1 Engineering Disciplines

**Aerospace & thermodynamic** engineering involves developing, designing, testing items related to aircraft power generating systems.

- [*aeroth*] - general

**Agricultural & Food** engineering involves every aspect of food production, processing, marketing, and distribution.

**Biomedical** engineering applies engineering principles and design to the biology and medical arena to improve health care and the lives of those with medical impairments. Bringing together knowledge from many engineering disciplines and technical fields, biomedical engineers design medical instruments, devices, and software; develop new procedures; conduct research; and solve clinical problems.

**Chemical** engineering applies principles of chemistry and physics to the design and production of materials that undergo chemical changes during their manufacture.

**Civil & Structural** engineering involves planning, designing, and building a wide variety of structures and facilities, including bridges, roads and highways, dams, high-rise buildings, airports, water treatment centers, industrial manufacturing and processing facilities, and sanitation plants.

- [*civilst*] - general
- [*civil-1*] - see <http://urban.arch.virginia.edu/km6e/reference/glossary/struc-glossary.html>

**Computer & Software** engineering involves the design, construction, and operation of computer systems.

- [*soft*] - general
- [*soft1*] - see <http://www.apl.jwww.apl.jhu.edu>

**Control Systems** engineering involves the design and manufacture of instrumentation and ways to control dynamic processes automatically.

**Electrical & Electronic** engineering is the practical application of electricity. Covering the area from very low power/voltage to high power and transmission systems.

- [*elec*] - general

**Environmental** engineering is the development of processes and infrastructure for the supply of water, the disposal of waste, and the control of all kinds of pollution.

- [*enviro*] - general

**Geotechnical** engineering uses the principles of mechanics to analyze and predict the behavior of earth materials in engineering situations.

- 
- [*geotech*] - general

**Instrumental** engineering

- [*instrum*] - general
- [*instrum-1*] - see <http://www.omega.com>

**Manufacturing** engineering includes all aspects of manufacturing operations, including the behavior and properties of materials and materials processes; the design of products, equipment, and tooling necessary for their manufacture; management of manufacturing enterprises; and, the design and operation of manufacturing systems

**Materials** engineering focusses on materials design, testing and processing techniques (e.g. casting, rolling, welding)

- [*mat*] - general
- [*mat-1*] - see <http://www.justinline.com/glossary>

**Mechanical** engineering applies the principles of mechanics and energy to the design of machines and devices. Perhaps the broadest of all engineering disciplines, mechanical engineering is generally combined into three broad areas: energy, structures and motion in mechanical systems, and manufacturing.

- [*mech*] - general
- [*mech-1*] - materials related see <http://www.tulane.edu/~bmitche/book/glossary.html>
- [*mech-2*] - Welding <http://www.meg.co.uk>
- [*mech-3*] - Fasteners see <http://www.boltscience.com>

**Mining** engineering comprises all aspects of discovering, removing, and processing minerals from the earth.

**Nuclear** engineering involves the design, construction, and operation of nuclear power plants for power generation, propulsion of nuclear submarines, the handling of nuclear fuels and the safe disposal of radioactive wastes.

- [*nuclear*] - general
- [*nuclear-1*] - see <http://www.usanuclear>

**Petroleum** engineering involves sustaining the flow of oil and gas, including discovery, recovery, storage, and transportation of petroleum.

- [*petro*] - general
- [*petro-1*] - see <http://www.statoil.com>

**Sanitary** engineering is a branch of civil and environmental engineering that deals with sanitary issues affecting public health, such as safe drinking water and sewage disposal. Among other things, sanitary engineers deal with preventing toxins and dangerous microorganisms from endangering the public in such systems.

**4GL** Fourth generation language . [*soft*]

**88open** A consortium with the aim of creating a multivendor open computing environment based on the Motorola 88000 RISC processor family [*soft*]

## AB

**AAP DTD** A DTD document type for scientific documents, defined by the AAP [*soft*]

**AAP** The Association of American Publishers: engaged in standardisation efforts in document preparation. [*soft*]

**ABI** Application Binary Interface: the interface by which an application program gains access to operating system and other services, designed to permit porting of compiled binary applications between systems with the same ABI. [*soft*]

**abrasion** a process where hard particles are forced against and moved along a solid surface. [*mat-1*]

**abrasive** a hard and wear-resistant material (commonly a ceramic) that is used to wear, grind, or cut away other material. [*mat-1*]

**Abrasive** A hard and wear-resistant material that is used to wear, grind or cut away other material.[*mech-1*]

**abrasive wheel** a grinding wheel composed of an abrasive grit and bonding agent. [*mat-1*]

**Abstract Class** In object-oriented programming, a class designed only as a parent from which sub-classes may be derived, but which is not itself suitable for instantiation . Often used to "abstract out" incomplete sets of features which may then be shared by a group of sibling sub-classes which add different variations of the missing pieces. [*soft*]

**Abutment** - In coal mining, (1) the weight of the rocks above a narrow roadway is transferred to the solid coal along the sides, which act as abutments of the arch of strata spanning the roadway; and (2) the weight of the rocks over a long-wall face is transferred to the front abutment, that is, the solid coal ahead of the face and the back abutment, that is, the settled packs behind the face.[*mining-1*]

**ACA** Application Control Architecture: DEC's implementation of ORB [*soft*]

**Acceleration** A vector quantity equal to the rate that velocity changes with time. [*struc-1*]

**Access hatch** An airtight door system that preserves the pressure integrity of a reactor containment structure while allowing access to personnel and equipment. [*nuclear-1*]

**ACE** Adaptive Communication Environment, a C++ Wrapper Library for communications from the University of California at Irvine [*soft*]

**ACE** Advanced Computing Environment: a consortium to agree on an open architecture based on the MIPS R4000 chip. A computer architecture ARCS will be defined, on which either OS/2 or Open Desktop can be run [*soft*]

**acid** a chemical substance that yields hydrogen ions when dissolved in water. [*mat-1*]

**Acid deposition or acid rain** Refers loosely to a mixture of wet and dry "deposition" (deposited material) from the atmosphere containing higher than "normal" amount of nitric and sulfuric acids. The precursors or chemical forerunners of acid rain formation result from both natural sources, such as volcanoes and decaying vegetation, and man-made sources, primarily emissions of sulfur and nitrogen oxides resulting from fossil fuel combustion.[*mining-1*]

**Acid mine water** - Mine water that contains free sulfuric acid, mainly due to the weathering of iron pyrites.[*mining-1*]

**ACM** Association for Computing Machinery [*soft*]

**Acorn Nut** A nut (so-called because of its shape) that has a domed top so that [*mech-3*]

**acoustic emission** a measure of integrity of a material determined by sound emission when a material is stressed. [*mat-1*]

**Acrobat** A platform-independent text and image formatter/viewer from Adobe Systems [*soft*]

**acrylic** synthetic resin made from acrylic acid or a derivative thereof; acrylics possess the property of transparency and offer flame resistance. [*mat-1*]

**Actis** An approach to integrated CASE by Apollo . [*soft*]

**activated rosin flux** mixture of rosin and small amounts of organic-halide activators or organic-acid activators. [*mat-1*]

**activation energy** the energy required to initiate a reaction, such as diffusion. [*mat-1*]

**Activation** The process of making a radioisotope by bombarding a stable element with neutrons or protons. [*nuclear-1*]

- activator** substance that enhances the ability of a flux to remove oxides and other contaminants from surfaces being joined. [*mat-1*]
- Active DBMS** A conventional or passive DBMS combined with a means of event detection and condition monitoring. Event handling is often rule-based, as with an expert system. [*soft*]
- Active fuel length** The end-to-end dimension of fuel material within a fuel element. [*nuclear-1*]
- Active object** An object that encompasses its own thread of control. [*soft*]
- Active workings** - Any place in a mine where miners are normally required to work or travel and which are ventilated and inspected regularly. [*mining-1*]
- ActiveX** A software development kit from Microsoft for development of Internet applications and content [*soft*]
- Actor** A term in Chorus denoting the unit of resource allocation. [*soft*]
- Actor** In object-oriented programming, an object which exists as a concurrent process. [*soft*]
- Actra** A multiprocessor Smalltalk project. [*soft*]
- Ada** A high-level computer language sponsored by the US Department of Defense. It has a multitasking mechanism, and a number of features useful for software engineering [*soft*]
- AdaIC** Ada Information Clearinghouse - More information. [*soft*]
- Adaline** Name given by Widrow to ADaptive LInear NEurons, that is neurons (see McCulloch-Pitts) which learn using the Widrow-Huff Delta Rule (see also Madaline). [*soft*]
- ADAMO** A data management system written at CERN based on the Entity-Relationship model [*soft*]
- Adaptable User Interface** A toolkit from Oracle allowing applications to be written portably for different windowing systems. It provides one call level interface along with a resource manager and editor across a range of "standard" GUIs, including Macintosh, Windows and the X Window System. [*soft*]
- Adaptive learning** Learning in which a system programs itself by adjusting weights or strengths until it produces the desired output. Same as Hebbian. [*soft*]
- AD/Cycle** (AD = Application Development): a set of SAA-compatible IBM-sponsored products for program development, running on workstations accessing a central repository on a mainframe. The stages cover requirements, analysis and design, production of the application, building and testing, and maintenance. Technologies used include code generators and knowledge based systems, as well as languages and debuggers. [*soft*]
- ADDD** A Depository of Development Documents. A public domain Software Engineering Environment from GMD developed as part of the STONE project [*soft*]
- adhesion** (1) the attractive force between adjacent surfaces in a frictional contact; (2) the state in which two surfaces are held together by interfacial forces. [*mat-1*]
- Adhesive** a substance that bonds together the surfaces of two other materials. [*mech-1*]
- Adit** - A nearly horizontal passage from the surface by which a mine is entered and dewatered. A blind horizontal opening into a mountain, with only one entrance. [*mining-1*]
- ADL** Assertion (or API) Definition Language. A project for Automatic Interface Test Generation [*soft*]
- ADT** Abstract Data Type: a class of data structures described by means of a set of operations rather than by physical representation, such as a class in object-oriented programming.. [*soft*]
- Advanced Ceramic** a value-added technical ceramic. [*mech-1*]
- Advance** - Mining in the same direction, or order of sequence; first mining as distinguished from retreat. [*mining-1*]
- Aegis** A CASE tool for project change management, part of the GNU software. [*soft*]
- AENOR** Asociacion Espanola de Normalizacion y Certificacion. The Spanish standards organisation. [*soft*]
- AEP** Application environment profile. [*soft*]
- Aerotight Nut** it prevents contact with the external thread. [*mech-3*]
- AES** Application environment specification: a set of specifications from OSF for programming and user interfaces, aimed at providing a consistent application environment on different hardware platforms. It includes O/S for the operating system (user commands and program interfaces), U/E for the User Environment (Motif), and N/S for Network services. [*soft*]



- AFIPS** American Federation of Information Processing Societies. [*soft*]
- AFNOR** Association Francaise pour la Normalisation: the French national standards institute, a member of ISO . [*soft*]
- AFS** Andrew File System . [*soft*]
- aging** a change in the properties of certain metals and alloys that occurs at ambient or moderately elevated temperatures after hot working, heat treatment, or a cold working operation. [*mat-1*]
- AGL** Atelier de Genie Logiciel: French for IPSE . [*soft*]
- AGOCG** Advisory Group on Computer Graphics. Advising UK Higher Education on Computer Graphics, Visualization and Multimedia [*soft*]
- Agreement State** A state that has signed an agreement with the Nuclear Regulatory Commission under which the state regulates the use of byproduct, source, and small quantities of special nuclear material in that state. [*nuclear-1*]
- AIA** Application Integration Architecture: DEC's "open standards" specifications. [*soft*]
- AI** Artificial Intelligence . [*soft*]
- AICA** Associazione Italiana di Calcolo Automatico. [*soft*]
- AIFF** Audio IFF. A format developed by Apple for storing high-quality sampled sound and musical instrument info; also used by SGI and several professional audio packages. [*soft*]
- Airborne radioactivity area** A room, enclosure, or area in which airborne radioactive materials, composed wholly or partly of licensed material, exist in concentrations that (1) exceed the derived air concentration limits or (2) would result in an individual present in the area without respiratory protection exceeding, during those hours, 0.6 percent of the annual limit on intake or 12 derived air concentration-hours [*nuclear-1*]
- air-lock** an intermediate enclosed chamber of a vacuum or pressure system through which an object may be passed without materially changing the vacuum or pressure of the system. [*mat-1*]
- Air sampling** The collection of samples of air to measure the radioactivity or to detect the presence of radioactive material, particulate matter, or chemical pollutants in the air. [*nuclear-1*]
- Air Set Cement** a cement that sets through loss of water.[*mech-1*]
- Air split** - The division of a current of air into two or more parts.[*mining-1*]
- Airway** - Any passage through which air is carried. Also known as an air course.[*mining-1*]
- AIS** Advanced Informatics Support project for administrative work at CERN [*soft*]
- AIX** Advanced Interactive eXecutive: IBM's version of UNIX , taken as the basis for the OSF [*soft*]
- ALARA** Acronym for "as low as (is) reasonably achievable." Means making every reasonable effort to maintain exposures to ionizing radiation as far below the dose limits as practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest [*nuclear-1*]
- alclad** composite wrought product comprised of an aluminum alloy core having one or both surfaces as metallurgically bonded aluminum or aluminum alloy coating that is anodic to the core, and thus electrochemically protects the core against corrosion. [*mat-1*]
- Algol** A high-level programming language developed in the 1950s . [*soft*]
- Algorithm** A systematic procedure guaranteed to produce a result after a finite number of steps. [*soft*]
- alkali metal** a metal in group IA of the periodic table that form strongly alkaline hydroxides (lithium, sodium, potassium, rubidium, cesium, francium). [*mat-1*]
- alkaline earth metal** a metal in group IIA of the periodic table (beryllium, magnesium, calcium, strontium, barium, radium). [*mat-1*]
- allotriomorphic crystal** a crystal having a normal lattice structure, but with an imperfect outward shape due to the influence of its surroundings. [*mat-1*]
- allotropy** the possibility of existence of two or more different crystal structures for a substance (generally an elemental solid). [*mat-1*]
- Allowance** An intentional clearance between internal or external thread and the design form of

- the thread when the thread form is on its maximum metal condition. Not all classes of fit have an allowance. For metric threads the allowance is called the fundamental deviation. [*mech-3*]
- Alloy** a metallic solid or liquid formed from an intimate combination of two or more elements. [*mech-1*]
- alloy** a metallic substance that is composed of two or more elements. [*mat-1*]
- alpha iron** the body-centered cubic (BCC) form of pure iron, stable below 910 C (1670 F). [*mat-1*]
- Alpha particle** A positively charged particle ejected spontaneously from the nuclei of some radioactive elements. It is identical to a helium nucleus that has a mass number of 4 and an electrostatic charge of +2. It has low penetrating power and a short range (a few centimeters in air). The most energetic alpha particle will generally fail to penetrate the dead layers of cells covering the skin and can be easily stopped by a sheet of paper. Alpha particles are hazardous when an alpha-emitting isotope is inside the body. [*nuclear-1*]
- Alternating Copolymer** a polymer, in which the different mer units systematically alternate positions along the molecular chain. [*mech-1*]
- Alvey** A funding programme for collaborative research in the UK. [*soft*]
- AMADEUS** A PC client for Hyper-G. [*soft*]
- ami** Applications of Metrics in Industry (Assess, Analyze, Metricate, Improve). A method for software project management and process improvement [*soft*]
- Amoeba** A distributed operating system developed by A. Tanenbaum and others at Amsterdam [*soft*]
- Amorphography** the branch of science concerned with the determination of amorphous solid structures and their systematic classification (see also crystallography). [*mech-1*]
- Amorphous** having no long-range order. [*mech-1*]
- amorphous** non-crystalline, without long-range order. [*mat-1*]
- AMS** Andrew Message System. [*soft*]
- Anaerobic Adhesive** An adhesive which hardens in the absence of air, such adhesives are often used as a thread locking medium. [*mech-3*]
- analog circuit** electrical circuit that provides a continuous relationship between its input and output. [*mat-1*]
- Analysis** The part of the software development process concerned with defining the requirements for the product. [*soft*]
- ANDF** Architecture-Neutral Distribution Format: an emerging OSF standard for software distribution. Programs are compiled into ANDF before distribution, and executables are produced from it for the local target system. [*soft*]
- Andrew File System** The distributed file system of the Andrew project, adopted by the OSF. [*soft*]
- Andrew Message System** A multimedia interface to electronic mail and bulletin boards, developed as part of the Andrew project [*soft*]
- Andrew Project** A distributed system project for support of educational and research computing at Carnegie Mellon University [*soft*]
- Andrew Toolkit** A portable user interface toolkit developed as part of the Andrew project, running on the X Window System and distributed with X11R5. [*soft*]
- Anemometer** - Instrument for measuring air velocity. [*mining-1*]
- Angle Controlled Tightening** A tightening procedure in which a fastener is first tightened by a pre-selected torque (called the snug torque) so that the clamped surfaces are pulled together, and then is further tightened by giving the nut an additional measured rotation. Frequently bolts are tightened beyond their yield point by this method in order to ensure that a precise preload is achieved. Bolts of short length can be elongated too much by this method and the bolt material must be sufficiently ductile to cater for the plastic deformation involved. Because of the bolt being tightened beyond yield, its re-use is limited. [*mech-3*]
- Angle of dip** - The angle at which strata or mineral deposits are inclined to the horizontal plane. [*mining-1*]
- Angle of draw** - In coal mine subsidence, this angle is assumed to bisect the angle between the vertical and the angle of repose of the material and is 20° for flat seams. For dipping seams, the angle of break increases, being 35.8° from the vertical for a 40° dip. The main break occurs over the seam at an angle from the vertical equal to half the dip. [*mining-1*]
- Angle of repose** - The maximum angle from horizontal at which a given material will rest on a given surface without sliding or rolling. [*mining-1*]



- Anion** A negatively charged ion. [*nuclear-1*]
- anion** a negatively charged non-metallic ion. [*mat-1*]
- Anisotropic** exhibiting different values of a property in different crystallographic directions. [*mech-1*]
- anisotropy** material characteristic of exhibiting different values of a property in different crystallographic directions. [*mat-1*]
- ANL** Argonne National Laboratory, USA [*soft*]
- Anna** A specification language from Stanford University for formally specifying Ada programs. It has a Specification Analyzer and a Consistency Checking System. [*soft*]
- Annealing** a generic term used to denote a heat treatment wherein the microstructure and, consequently, the properties of a material are altered. Frequently, refers to heat treatment whereby a cold-worked metal is softened by allowing it to recrystallize. [*mech-1*]
- annealing** a generic term used to denote a heat treatment where the microstructure and properties of a material are altered; it frequently refers to a heat treatment where a previously cold-worked metal is softened by allowing it to recrystallize. [*mat-1*]
- Annealing** A technique which can be applied to any minimization or learning process based on successive update steps (either random or deterministic) where the update step length is proportional to an arbitrarily set parameter which can play the role of a temperature. Then, in analogy with the annealing of metals, the temperature is made high in the early stages of the process for faster minimization or learning, then is reduced for greater stability. [*soft*]
- annealing twin** a twin formed in a crystal during recrystallization. [*mat-1*]
- Annual limit on intake (ALI)** The derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the reference man that would result in a committed effective dose equivalent of 5 rems (0.05 sievert) or a committed dose equivalent of 50 rems (0.5 sievert) to any individual organ or tissue. [*nuclear-1*]
- anode** the electrode of an electrolyte cell at which oxidation occurs; electrons flow away from the anode in the external circuit; it is usually at the electrode that corrosion occurs and metal ions enter solution. [*mat-1*]
- anodic protection** a technique to reduce the corrosion rate of a metal by polarizing it into its passive region, where dissolution rates are low. [*mat-1*]
- anodic reaction** electrode reaction equivalent to a transfer of positive charge from the electronic to the ionic conductor; an anodic reaction is an oxidation process. [*mat-1*]
- anodizing** forming a conversion coating on a metal surface by anodic oxidation; most often applied to aluminum. [*mat-1*]
- ANSA** Advanced Network Systems Architecture: an architecture for distributed computer systems based on a model developed as an Esprit project [*soft*]
- ANSI** American National Standards Institute, responsible for approving U.S. standards in many areas, including computers and communications. ANSI is a member of ISO - More information. [*soft*]
- ANSI/SPARC Architecture** A layered model of database architecture comprising a physical schema, a conceptual schema, and user views. [*soft*]
- ANSI Z39.50** See Z39.50 . [*soft*]
- AnswerGarden** A help desk software package from MIT. [*soft*]
- Anticipated transient without scram (ATWS)** ATWS is one of the "worst case" accidents, consideration of which frequently motivates the NRC to take regulatory action. The accident could happen if the system that provides a highly reliable means of shutting down the reactor (scram system) fails to work during a reactor event (anticipated transient). The types of events considered are those used for designing the plant. [*nuclear-1*]
- Anticline** - An upward fold or arch of rock strata. [*mining-1*]
- Antiferromagnetism** a phenomenon observed in some materials in which complete magnetic moment cancellation occurs as a result of antiparallel coupling of adjacent atoms or ions. The macroscopic solid possesses no net magnetic moment. [*mech-1*]
- antiferromagnetism** a phenomenon where complete magnetic moment cancellation occurs as a result of antiparallel coupling of adjacent atoms

or ions; the macroscopic solid possesses no net magnetic moment. [*mat-1*]

**Anti-Friction Coating** AF coatings are dry lubricants consisting of suspensions of solid lubricants, such as graphite, PTFE or molybdenum disulphide of small particle size in a binder. Such coatings can be applied to fastener threads to replace metallic coatings such as zinc and cadmium and offer maintenance free permanent lubrication. By careful selection of the lubricants, AF coatings can be designed to meet specific applications. The coatings are permanently bonded to the metal surface and provide a lubricating film preventing direct metal to metal contact. [*mech-3*]

**Anti-Seize Compound** An anti-seize compound is used on the threads of fasteners in some applications. The purpose of the compound depends upon the application. It can prevent galling of mating surfaces - such compounds are frequently used with stainless steel fasteners to prevent this effect from occurring. In some applications it is used to improve corrosion resistance to allow the parts to be subsequently dis-assembled. Thirdly, it can provide a barrier to water penetration since the threads are sealed by use of the compound. [*mech-3*]

**AOCE** Apple Open Collaboration Environment. A set of software for e-mail, directory services etc. [*soft*]

**APA** Application Portability Architecture: DEC's plan for portable applications software. [*soft*]

**apE** A graphics package from the Ohio Supercomputer Centre. [*soft*]

**Apertos** An object-oriented operating system from Sony Computer Science Laboratory [*soft*]

**API** Application Program Interface: a term for the interface by which an application program gains access to operating system and other services, defined at source-code level. [*soft*]

**APL** A Programming Language developed by Iverson for mathematical applications. [*soft*]

**Apollo** Apollo Computer, now a division of Hewlett-Packard, also the name of a range of workstations manufactured by this company. [*soft*]

**AppKit** A set of objects used by the application builder for the NeXTstep environment. [*soft*]

**Apple** Apple Computer Inc, manufacturers of the Macintosh range of Personal Computers. [*soft*]

**Appletalk** The proprietary local area network protocol developed by Apple for their Macintosh range of processors. Current implementations exist on Localtalk and Ethertalk. [*soft*]

**Applet** A small application, often downloaded from a remote server and run in a controlled environment. Typically written in a language such as Java browser. [*soft*]

**Applied force** see external force. [*struc-1*]

**APSE** Ada Programming Support Environment. [*soft*]

**Aquifer** - A water-bearing bed of porous rock, often sandstone. [*mining-1*]

**Arcadia** A software engineering research project by a consortium of US universities [*soft*]

**Archie** An archive server database and query system operated by the McGill University School of Computer Science. Services remote requests for information on software kept on archives worldwide and available via ftp [*soft*]

**Arching** - Fracture processes around a mine opening, leading to stabilization by an arching effect. [*mining-1*]

**ARC** (Previously ARCS) Advanced RISC Computing Specification: the standard hardware architecture of ACE., specifying the baseline hardware requirements to create ACE-compatible systems. [*soft*]

**ARCS** see ARC. [*soft*]

**Area (of an airway)** - Average width multiplied by average height of airway, expressed in square feet. [*mining-1*]

**Arjuna** A system for reliable distributed computing from the Computing Laboratory, University of Newcastle upon Tyne. It supports atomic transactions on persistent objects. [*soft*]

**ARL** ASSET Reuse Library. [*soft*]

**ARL** Association of Research Libraries (North America) - More information. [*soft*]

**ARPANET** U.S. Department of Defense (DARPA) wide area network. It became operational in 1968 and was the forerunner of the Internet. [*soft*]

**Artifex** A CASE environment from ARTIS of Turin for the development of large event-driven distributed systems. It has code-generation and rapid prototyping features [*soft*]

- Artificial Intelligence** The subfield of computer science concerned with the concepts and methods of symbolic inference by computer, and the symbolic representation of the knowledge to be used in making inferences - More information. [*soft*]
- ASCII** American Standard Code for Information Interchange. [*soft*]
- ASDL** Abstract-Type and Scheme-Definition Language: developed as part of Esprit project GRASPIN , as a basis for generating language-based editors and environments. It combines an object-oriented type system, syntax-directed translation schemes and a target-language interface. [*soft*]
- ASE** Advanced Software Environment: an object-oriented application support system from Nixdorf. [*soft*]
- ASIC** Application-Specific Integrated Circuit: an integrated circuit designed to perform a particular function by defining the interconnection of a set of basic circuit building blocks drawn from a library provided by the circuit manufacturer. [*soft*]
- ASIS** Ada Semantic Interface Specification. An interface between an Ada library and any tool requiring information in it [*soft*]
- ASIS** Application Software Installation Server at CERN [*soft*]
- ASME** American Society of Mechanical Engineers: involved in CAD standardisation. [*soft*]
- ASN.1** Abstract Syntax Notation 1: an ISO /CCITT standard for the description of data. It is intended to facilitate the exchange of data between application programs. [*soft*]
- ASPECT** An IPSE developed by an Alvey to specify the object-management system and tool interface. [*soft*]
- ASQ** Automated Software Quality. The use of software tools, such as automated testing tools, to improve software quality. [*soft*]
- ASQC** American Society for Quality Control. [*soft*]
- ASSET** Asset Source for Software Engineering Technology. A programme to promote software reuse by the DoD - More information. [*soft*]
- Assumptions (for IPEs, IPEEs, and PRAs)**  
In the context of PRAs, assumptions are those parts of the mathematical models that the analyst expects will hold true for the range of solutions used for making decisions. Without assumptions, even the most powerful computers may not be able to provide useful solutions for the models. [*nuclear-1*]
- Atactic** a type of polymer chain configuration wherein side groups are randomly poitioned on one side of the polymer backbone or the other.[*mech-1*]
- atactic** a type of polymer chain configuration where side groups are randomly positioned on one side of the chain or the other. [*mat-1*]
- AtFS** Attributed File System: the basis of the Shape\_VC toolkit. Cooperative work within projects is supported by a status model controlling visibility of version objects, locking, and "long transactions" for synchronizing concurrent updates. The concept of object attributes provides a basis for storing management information with versions and passing this information between individual tools. This mechanism is useful for building integrated environments from a set of unrelated tools. [*soft*]
- Athena** Project Athena: a distributed system project for support of educational and research computing at MIT . Much of the software developed is now in wider use, especially the X Window System [*soft*]
- Atherton** Atherton Technology developed the Software BackPlane framework. Their Atherton Tool Integration Services were the basis for the ATIS standard. [*soft*]
- ATIS** A Tools Integration Standard: an object-oriented interface to a set of services that allows the saving, accessing, and managing of information in a common repository . Developed by Atherton Technology and DEC, based on an extended version of the Software BackPlane , now proposed as an industry standard. [*soft*]
- ATK** The Andrew Toolkit [*soft*]
- ATM** Adobe Type Manager. [*soft*]
- ATM** Asynchronous Transfer Mode. A transmission system for telecommunications [*soft*]
- Atomic Energy Commission** Federal agency created in 1946 to manage the development, use, and control of nuclear energy for military and civilian applications. Abolished by the Energy Reorganization Act of 1974 and succeeded by the Energy Research and Development Administration (now part of the U.S. Department of Energy) and the U.S. Nuclear Regulatory Commission. [*nuclear-1*]

- Atomic energy** Energy released in nuclear reactions. Of particular interest is the energy released when a neutron initiates the breaking up or fissioning of an atom's nucleus into smaller pieces (fission) or when two nuclei are joined together under millions of degrees of heat (fusion). It is more correctly called nuclear energy. [*nuclear-1*]
- Atomic number** The number of positively charged protons in the nucleus of an atom. [*nuclear-1*]
- atomic packing factor (APF)** the fraction of the volume of a unit cell that is occupied by "hard sphere" atoms or ions. [*mat-1*]
- atom percent (at%)** concentration specification on the basis of the number of moles (or atoms) of a particular element relative to the total number of moles (or atoms) of all elements within an alloy. [*mat-1*]
- Atom** The smallest particle of an element that cannot be divided or broken up by chemical means. It consists of a central core of protons and neutrons, called the nucleus. Electrons revolve in orbits in the region surrounding the nucleus. [*nuclear-1*]
- Attenuation** The process by which the number of particles or photons entering a body of matter is reduced by absorption and scattered radiation. [*nuclear-1*]
- AUE** Andrew User Environment. Part of the Andrew project [*soft*]
- Auger** - A rotary drill that uses a screw device to penetrate, break, and then transport the drilled material (coal). [*mining-1*]
- AUI** Adaptable User Interface from Oracle . [*soft*]
- AUIS** Andrew user Interface System [*soft*]
- austenite** face-centered cubic iron; also iron and steel alloys that have the FCC crystal structure. [*mat-1*]
- Austenite** face-centered cubic iron; also iron and steel alloys that have the FCC structure. [*mech-1*]
- austenitizing** forming austenite by heating a ferrous alloy above its upper critical temperature - to within the austenite phase region from the phase diagram. [*mat-1*]
- AutoCAD** A CAD software package for mechanical engineering marketed by Autodesk Inc. [*soft*]
- Autolok Nut** A torque prevailing nut of an all metal construction. Covered by UK patent 1180842 the nut is marketed by GKN Screws and Fasteners Limited. [*mech-3*]
- Auxiliary feedwater** Backup water supply used during nuclear plant startup and shutdown to supply water to the steam generators during accident conditions for removing decay heat from the reactor. [*nuclear-1*]
- Auxiliary operations** - All activities supportive of but not contributing directly to mining. [*mining-1*]
- Auxiliary ventilation** - Portion of main ventilating current directed to face of dead end entry by means of an auxiliary fan and tubing. [*mining-1*]
- Average planar linear heat generation rate (APLGHR)** The average value of the linear heat generation rate of all the control rods at any given horizontal plane along a fuel bundle. [*nuclear-1*]
- AVL** Abstract Visualization Language in the Tecate project. [*soft*]
- AVS** Application Visualisation System: a portable modular UNIX -based graphics package supported by a consortium of vendors including Convex, DEC, IBM, HP, SET Technologies, Stardent and WaveTracer [*soft*]
- AWK** A pattern scanning and processing language named after its authors: Aho, Weinberger and Kernighan. [*soft*]
- aXe** A text editor for the X-Window-System . [*soft*]
- Axial force** A system of internal forces whose resultant is a force acting along the longitudinal axis of a structural member or assembly. [*struc-1*]
- Azimuth** - A surveying term that references the angle measured clockwise from any meridian (the established line of reference). The bearing is used to designate direction. The bearing of a line is the acute horizontal angle between the meridian and the line. [*mining-1*]
- Bachman** Proposed a style of Entity-Relationship modeling which differs from the original Chen proposals. [*soft*]
- Backfill** Mine waste or rock used to support the roof after coal removal. [*mining-1*]
- Background radiation** Radiation from cosmic sources; naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material) and global



fallout as it exists in the environment from the testing of nuclear explosive devices. It does not include radiation from source, byproduct, or special nuclear materials regulated by the Nuclear Regulatory Commission. The typically quoted average individual exposure from background radiation is 360 millirems per year. [*nuclear-1*]

**Back-propagation** An important algorithm for learning in feed-forward networks which makes use of a mathematical trick when the network is simulated on a digital computer, yielding in just two traversals of the network (once forward, and once back) both the difference between the desired and actual output, and the derivatives of this difference with respect to the connection weights. [*soft*]

**Back** - The roof or upper part in any underground mining cavity. [*mining-1*]

**Backus Naur** A formal language for syntax specification. [*soft*]

**B** A Formal method of program design - More information. [*soft*]

**Bainite** a Fe-C composition consisting of a fine dispersion of cementite . It is an austenitic transformation product that forms at temperatures between those at which pearlite and martensite transformations occur. [*mech-1*]

**bainite** an austenitic transformation product found in some steels and cast irons; it forms at temperatures between those at which pearlite and martensite transformations occur; the microstructure consists of alpha-ferrite and a fine dispersion of cementite. [*mat-1*]

**Bamboo** A trusted third-party authentication system from the University of Iowa, similar to Kerberos - More information. [*soft*]

**Band Gap Energy** for semiconductors and insulators, the energies that lie between the valence and conduction bands. [*mech-1*]

**band gap energy** for semiconductors and insulators, the energies that lie between the valence and conduction bands; for intrinsic materials electrons are forbidden to have energies within this range. [*mat-1*]

**Barren** - Said of rock or vein material containing nonminerals of value, and of strata without coal, or containing coal seams too thin to be workable. [*mining-1*]

**Barricading** - Enclosing part of a mine to prevent inflow of noxious gases from a mine fire or an explosion. [*mining-1*]

**Barrier** - Something that bars or keeps out. Barrier pillars are solid blocks of coal left between two mines or sections of a mine to prevent accidents due to rushes of water, gas, or from explosion - or a mine fire. [*mining-1*]

**Baseline** See Released version . [*soft*]

**BASIC** Beginners All-purpose Symbolic Instruction Code: a programming language, usually interpreted, suitable for simple applications. [*soft*]

**Basic Thread Profile** This is the theoretical profile of external and internal threads with no manufacturing tolerance applied. [*mech-3*]

**bauxite** an ore of aluminum consisting of moderately pure hydrated alumina -  $Al_2O_3 \cdot 2H_2O$ . [*mat-1*]

**Bayesian estimation** A mathematical formulation, using Bayes' theorem, by which the likelihood of an event can be estimated taking explicit consideration of certain contextual features (such as amount of data, nature of decision, etc.). [*nuclear-1*]

**Bayesian prior** A way to express the context of a Bayesian estimation in which initial data are updated as new data become available. [*nuclear-1*]

**BBN** Bolt Beranek and Newman Inc., of Cambridge, Massachusetts, was awarded the original contract to build the ARPANET and has been extensively involved in Internet development. It is responsible for managing NNSC, CSNET, and NEARnet. [*soft*]

**BCS** Binary Compatibility Standard: the ABI of 88open . [*soft*]

**BCS** British Computer Society. [*soft*]

**BEA** Basic programming Environment for interactive-graphical Applications, from Siemens-Nixdorf. [*soft*]

**Beam** - A bar or straight girder used to support a span of roof between two support props or walls. [*mining-1*]

**Beam building** - The creation of a strong, inflexible beam by bolting or otherwise fastening together several weaker layers. In coal mining this is the intended basis for roof bolting. [*mining-1*]

**Bearing** A surveying term used to designate direction. The bearing of a line is the acute horizontal angle between the meridian and the line. The meridian is an established line of reference. Azimuths are angles measured clockwise from any meridian. [*mining-1*]



- Bearing plate** - A plate used to distribute a given load. In roof bolting, the plate used between the bolt head and the roof. [*mining-1*]
- Bearing Stress** The surface pressure acting on a joint face directly as a result of the force applied by a fastener. [*mech-3*]
- Becquerel (Bq)** The unit of radioactive decay equal to 1 disintegration per second. 37 billion ( $3.7 \times 10^{10}$ ) becquerels = 1 curie (Ci). [*nuclear-1*]
- Bed** - A stratum of coal or other sedimentary deposit. [*mining-1*]
- Bedrock** A C++ class library for Macintosh user interface portability. [*soft*]
- Belt conveyor** - A looped belt on which coal or other materials can be carried and which is generally constructed of flame-resistant material or of reinforced rubber or rubber-like substance. [*mining-1*]
- Belt idler** - A roller, usually of cylindrical shape, which is supported on a frame and which, in turn, supports or guides a conveyor belt. Idlers are not powered but turn by contact with the moving belt. [*mining-1*]
- Belt take-up** - A belt pulley, generally under a conveyor belt and in by the drive pulley, kept under strong tension parallel to the belt line. Its purpose is to automatically compensate for any slack in the belting created by start-up, etc. [*mining-1*]
- Benchmark** A standard set of programs which can be run on different platforms to compare performance. [*soft*]
- Bench** - One of two or more divisions of a coal seam separated by slate or formed by the process of cutting the coal. [*mining-1*]
- Bending moment** A system of internal forces whose resultant is a moment. This term is most commonly used to refer to internal forces in beams. [*struc-1*]
- Beneficiation** - The treatment of mined material, making it more concentrated or richer. [*mining-1*]
- Bento** A multi-vendor initiative allowing files to contain typed parts, to allow standard access between parts of a compound document independent of the file system. [*soft*]
- Berkeley UNIX** see BSD. [*soft*]
- Berm** - A pile or mound of material capable of restraining a vehicle. [*mining-1*]
- BETA** An object-oriented language and associated programming environment from Mjolner Informatics, Aarhus [*soft*]
- Beta particle** A charged particle emitted from a nucleus during radioactive decay, with a mass equal to 1/1837 that of a proton. A negatively charged beta particle is identical to an electron. A positively charged beta particle is called a positron. Large amounts of beta radiation may cause skin burns, and beta emitters are harmful if they enter the body. Beta particles may be stopped by thin sheets of metal or plastic. [*nuclear-1*]
- Beyond design-basis accidents** This term is used as a technical way to discuss accident sequences that are possible but were not fully considered in the design process because they were judged to be too unlikely. As the regulatory process strives to be as thorough as possible, "beyond design-basis" accident sequences are analyzed to fully understand the capability of a design. [*nuclear-1*]
- BHT** Budget Holder's Toolkit (at CERN) - More information. [*soft*]
- Bifunctional Monomer** a monomer unit that has two active bonding positions. [*mech-1*]
- Bihexagon Head** A bolt or screw whose cross section of its head is in the shape of a 12 pointed star. [*mech-3*]
- Binder** - A streak of impurity in a coal seam. [*mining-1*]
- Binding energy** The minimum energy required to separate a nucleus into its component neutrons and protons. [*nuclear-1*]
- Bioassay** The determination of kinds, quantities, or concentrations and, in some cases, locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed (in vitro) from the human body. [*nuclear-1*]
- Biological half-life** The time required for a biological system, such as that of a human, to eliminate, by natural processes, half of the amount of a substance (such as a radioactive material) that has entered it. [*nuclear-1*]
- Biological shield** A mass of absorbing material placed around a reactor or radioactive source to reduce the radiation to a level safe for humans. [*nuclear-1*]

- BITNET** An academic and research network connecting approximately 2500 computers, often IBM mainframes. It provides interactive electronic mail, and file transfer services via a store-and-forward technique based on IBM NJE protocols. BITNET and Internet traffic are exchanged via several gateway hosts. It is now operated by CREN. [*soft*]
- Bit** - The hardened and strengthened device at the end of a drill rod that transmits the energy of breakage to the rock. The size of the bit determines the size of the hole. A bit may be either detachable from or integral with its supporting drill rod. [*mining-1*]
- Bituminous coal** A middle rank coal (between subbituminous and anthracite) formed by additional pressure and heat on lignite. Usually has a high Btu value and may be referred to as "soft coal." [*mining-1*]
- Black Bolts And Nuts** The word black refers to the comparatively wider tolerances employed and not necessarily to the colour of the surface finish of the fastener. [*mech-3*]
- Black damp** - A term generally applied to carbon dioxide. Strictly speaking, it is a mixture of carbon dioxide and nitrogen. It is also applied to an atmosphere depleted of oxygen, rather than having an excess of carbon dioxide. [*mining-1*]
- Blasting agent** - Any material consisting of a mixture of a fuel and an oxidizer. [*mining-1*]
- Blasting cap** - A detonator containing a charge of detonating compound, which is ignited by electric current or the spark of a fuse. Used for detonating explosives. [*mining-1*]
- Blasting circuit** - Electric circuits used to fire electric detonators or to ignite an igniter cord by means of an electric starter. [*mining-1*]
- Bleeder or bleeder entries** - Special air courses developed and maintained as part of the mine ventilation system and designed to continuously move air-methane mixtures emitted by the gob or at the active face away from the active workings and into mine-return air courses. Alt: Exhaust ventilation lateral. [*mining-1*]
- block copolymer** a linear copolymer in which identical mer units are clustered in blocks along the molecular chain. [*mat-1*]
- Block Copolymer** a linear copolymer units are clustered in blocks along the molecular chain. [*mech-1*]
- BMP** Bitmap format (for Windows) - More information. [*soft*]
- BNF** Backus-Naur Form. [*soft*]
- BOCS** Berard Object and Class Specifier, an Object-oriented form of Berard Software Engineering. [*soft*]
- Body-centered Cubic (BCC)** a common crystal structure that contains atoms located at the corners of a cubic cell and one atom at the cell center position. [*mech-1*]
- body-centered cubic (BCC)** within the cubic unit cell atoms are located at corner and center cell positions [*mat-1*]
- Body force** An external force acting throughout the mass of a body. Gravity is a body force. An inertial force is a body force. [*struc-1*]
- Boehm B.** Proposed the COCOMO technique for evaluating the cost of a software project. [*soft*]
- Bohr Magneton** [*mech-1*]
- Boiling water reactor (BWR)** A reactor in which water, used as both coolant and moderator, is allowed to boil in the core. The resulting steam can be used directly to drive a turbine and electrical generator, thereby producing electricity. [*nuclear-1*]
- Bolt** A bolt is the term used for a threaded fastener, with a head, designed to be used in conjunction with a nut. [*mech-3*]
- Bolt torque** - The turning force in foot-pounds applied to a roof bolt to achieve an installed tension. [*mining-1*]
- Boltzmann's Constant** The gas constant per molecule:  $1.381 \times 10^{-23}$  J/atom K;  $1.381 \times 10^{-16}$  erg/atom K; or  $8.63 \times 10^{-5}$  eV/atom K. [*mech-1*]
- BoM** Bill of Materials. [*soft*]
- BON** Better Object Notation. Used in the Esprit Business Classes project [*soft*]
- bonding energy** the energy required to separate two atoms that are chemically bonded to each other. [*mat-1*]
- Bonding Energy** the energy required to separate two atoms that are chemically bonded to each other. [*mech-1*]
- Bone seeker** A radioisotope that tends to accumulate in the bones when it is introduced into the body. An example is strontium-90, which behaves chemically like calcium. [*nuclear-1*]

- Bookreader** DEC's CD-ROM-based online documentation browser. [soft]
- Bookviewer** A hypertext documentation system from Oracle based on Oracle Toolkit . It allows the user to create private links and bookmarks, and to make multimedia annotations. [soft]
- BOOM** Berard Object-Oriented Methodology [soft]
- Borehole** - Any deep or long drill-hole, usually associated with a diamond drill.[mining-1]
- BOS** A data management system written at DESY and used in some HEP programs. [soft]
- Boss** - Any member of the managerial ranks who is directly in charge of miners (e.g., "shift-boss," "face-boss," "fire-boss," etc.).[mining-1]
- Bottom** - Floor or underlying surface of an underground excavation.[mining-1]
- Bourne shell** A common UNIX - More information. [soft]
- Box-type magazine** - A small, portable magazine used to store limited quantities of explosives or detonators for short periods of time at locations in the mine which are convenient to the blastingsites at which they will be used.[mining-1]
- BPM** Business Process Modelling. [soft]
- BPR** Business Process Reengineering. [soft]
- Bragg's Law** a relationship that stipulates the condition for diffraction by a set of crystallographic planes.[mech-1]
- Branched Polymer** a polymer having a molecular structure of secondary chains that extend from the primary chains.[mech-1]
- branched polymer** a polymer having a molecular structure of secondary chains that extend from the primary main chains. [mat-1]
- Brass** a copper-rich copper-zinc alloy.[mech-1]
- brass** copper (Cu) based alloy with zinc (Zn) as the main alloying element. [mat-1]
- Brattice or brattice cloth** - Fire-resistant fabric or plastic partition used in a mine passage to confine the air and force it into the working place. Also termed "line brattice," "line canvas," or "line curtain." [mining-1]
- Bravais Lattice**[mech-1]
- Brazing** a metal joining technique that uses a molten filler metal alloy having a melting temperature greater than about 425 C.[mech-1]
- brazing** a metal joining technique that uses a molten filler metal alloy having a melting temperature greater than about 425 degrees C (800 F). [mat-1]
- Breakaway Torque** The torque necessary to put into reverse rotation a bolt that has not been tightened. [mech-3]
- Break line** - The line that roughly follows the rear edges of coal pillars that are being mined. The line along which the roof of a coal mine is expected to break.[mining-1]
- Breakloose Torque** The torque required to effect reverse rotation when a pre-stressed threaded assembly is loosened. [mech-3]
- Breakthrough** - A passage for ventilation that is cut through the pillars between rooms.[mining-1]
- Breeder** A reactor that produces more nuclear fuel than it consumes. A fertile material, such as uranium-238, when bombarded by neutrons, is transformed into a fissile material, such as plutonium-239, which can be used as fuel. [nuclear-1]
- Bridge carrier** - A rubber-tire-mounted mobile conveyor, about 10 meters long, used as an intermediate unit to create a system of articulated conveyors between a mining machine and a room or entry conveyor.[mining-1]
- Bridge conveyor** - A short conveyor hung from the boom of mining or lading machine or haulage system with the other end attached to a receiving bin that dollies along a frame supported by the room or entry conveyor, tailpiece. Thus, as the machine boom moves, the bridge conveyor keeps it in constant connection with the tailpiece.[mining-1]
- Brinell hardness test** a test for determining the hardness of a material by forcing a hard steel or carbide ball of specified diameter into it under a specified load; the result is expressed as the Brinell hardness number. [mat-1]
- British Standard Brass** A specialist thread form based upon the Whitworth thread and consisting of 26 threads per inch whatever the thread diameter. [mech-3]
- British thermal unit (Btu)** The amount of heat required to change the temperature of one pound of water one degree Fahrenheit at sea level. [nuclear-1]
- Brittle** A brittle structure or material exhibits low ductility, meaning that it exhibits very little inelastic deformation before complete failure. [struc-1]

**brittle crack propagation** a very sudden propagation of a crack with the absorption of no energy except that stored elastically in the body. [*mat-1*]

**Brittle Fracture** fracture that occur by rapid crack propagation and without appreciable macroscopic deformation. [*mech-1*]

**brittle fracture** separation of a solid with little or no macroscopic plastic deformation; fracture occurs by rapid crack propagation with less expenditure of energy than for ductile fracture; brittle tensile fractures have a bright, granular appearance and exhibit little or no necking; typical fracture mode of a glass or ceramic. [*mat-1*]

**brittleness** the tendency of a material to fracture without first undergoing significant plastic deformation. [*mat-1*]

**Bronze** a copper-rich copper-tin alloy. [*mech-1*]

**bronze** copper (Cu) based alloy with tin (Sn) as the main alloying element. [*mat-1*]

**Brow** - A low place in the roof of a mine, giving insufficient headroom. [*mining-1*]

**Browser** A tool for navigating around hypertext documents. [*soft*]

**Brushing** - Digging up the bottom or taking down the top to give more headroom in roadways. [*mining-1*]

**BSD** Berkeley Source Distribution: the versions of UNIX developed and distributed by the University of California at Berkeley. Many commercial UNIX implementations such as SunOS and Dynix are derived from it. [*soft*]

**Bsf** British Standard Fine. A thread form based upon the British Standard Whitworth form but with a finer thread (more threads per inch for a given diameter). This thread form was first introduced in 1908, the thread form is specified in BS 84: 1956. [*mech-3*]

**BSI** British Standards Institution: a member of ISO. [*soft*]

**BSP method** A CASE method from IBM. [*soft*]

**Bsw** British Standard Whitworth. A thread form developed by Sir Joseph Whitworth in 1841. The thread form has rounded roots and crests, the thread form is specified in BS 84: 1956. This thread form was superceded by the Unified thread in 1948 and then the metric thread form. [*mech-3*]

**Btu** British thermal unit. A measure of the energy required to raise the temperature of one pound of water one degree Fahrenheit. [*mining-1*]

**Bug dust** - The fine particles of coal or other material resulting from the boring or cutting of the coal face by drill or machine. [*mining-1*]

**Bump (or burst)** - A violent dislocation of the mine workings which is attributed to severe stresses in the rock surrounding the workings. [*mining-1*]

**Bump Thread** A modified thread profile patented and trade mark of the Bosco Tool Inc. The thread form has a small projection at the pitch diameter that eliminates the clearance from the thread assembly on both flanks. By doing this it is claimed that resistance to vibration loosening is significantly improved. [*mech-3*]

**Burgers Vector** a vector that denotes the magnitude and direction of lattice distortion associated with a dislocation. [*mech-1*]

**Burgers vector** (*b*) a vector that denotes the magnitude and direction of lattice distortion associated with a dislocation. [*mat-1*]

**Butt cleat** - A short, poorly defined vertical cleavage plane in a coal seam, usually at right angles to the long face cleat. [*mining-1*]

**Butt entry** - A coal mining term that has different meanings in different locations. It can be synonymous with panel entry, submain entry, or in its older sense it refers to an entry that is "butt" onto the coal cleavage (that is, at right angles to the face). [*mining-1*]

**Byproduct** Byproduct is (1) any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident to the process of producing or using special nuclear material (as in a reactor); and (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from ore [*nuclear-1*]

**Byte** A data unit of several bits smaller than a computer word: usually 8 bits. [*soft*]

## CD

**Cache** A small fast memory holding recently-accessed data, designed to speed up further access. [*soft*]



- CACI** A company marketing SIMSCRIPT , MOD-SIM , and other simulation software products. [*soft*]
- CACM** Communications of the ACM . [*soft*]
- CAD/CAM** Computer Aided Design/Computer Aided Manufacturing (see CAD ) [*soft*]
- CAD** Computer Aided Design: usually applied to that part of CAE which has to do with the drawing or physical layout steps of engineering design. [*soft*]
- CADD** Computer Aided Detector Design: a project to develop standards and methods to allow cooperation between HEP detector designers working in different institutes [*soft*]
- Cadmium Electroplating** Coating of threaded fasteners with cadmium can provide the parts with excellent corrosion resistance. The appearance of the coating is bright silver or yellow if subsequently passivated. The friction values associated with this coating are also comparatively low. A chromate conversion coating is frequently applied to the surface to improve corrosion resistance. Cadmium is not now frequently used because of the environmental and worker health problems associated with the coating process and should not be used in applications above 250C or when contact with food is possible. [*mech-3*]
- CADRE** A software engineering vendor in the US. [*soft*]
- CAE** Common Applications Environment of X/Open , based on POSIX . [*soft*]
- CAE** Computer Aided Engineering: a technique for using computers to help with all phases of engineering design work. As CAD , but also involving the conceptual and analytical design steps. [*soft*]
- Cage** - In a mine shaft, the device, similar to an elevatorcar, that is used for hoisting personnel and materials.[*mining-1*]
- CAI** Computer Aided Instruction. [*soft*]
- CAIS-A** Common APSE Interface Set: DoD-STD-1838A. [*soft*]
- CAIS** Common APSE Interface Specification. [*soft*]
- CAiSE** Conference on Advanced Information Systems Engineering. [*soft*]
- CAJUN** CD-ROM Acrobat Journals Using Networks. A project at Nottigham University More information. [*soft*]
- C** A language developed in conjunction with the UNIX operating system at AT&T Bell Laboratories by D.Ritchie and now an ANSI standard. It has grown popular due to its simplicity, efficiency, and flexibility. C programs are often easily adapted to new environments - More information. [*soft*]
- Calcination** a high-temperature reaction whereby one solid material dissociates to form a gas and another solid.[*mech-1*]
- Calibration** The adjustment, as necessary, of a measuring device such that it responds within the required range and accuracy to known values of input. [*nuclear-1*]
- Calorific value** - The quantity of heat that can be liberated from one pound of coal or oil measured in BTU's.[*mining-1*]
- CALS** Computer-Aided Acquisition and Logistics Support: a DoD standard for electronic exchange of data with commercial suppliers [*soft*]
- Caml** A functional programming language in the style of ML [*soft*]
- C++** An extension to the C language developed primarily by B.Stroustrup at AT&T Bell Laboratories: it supports object-oriented programming among other enhancements [*soft*]
- Cannel coal** - A massive, non-caking block coal with a fine,even grain and a conchoidal fracture which has a high percentage ofhydrogen, burns with a long, yellow flame, and is extremely easy toignite.[*mining-1*]
- Canopy** - A protective covering of a cab on a miningmachine.[*mining-1*]
- Capability** The maximum load that a generating station can carry under specified conditions for a given period of time without exceeding approved limits of temperature and stress. [*nuclear-1*]
- Capacitance** the charge-storage ability of a capacitor, defined as the magnitude of charge stored on either plate divided by the applied voltage.[*mech-1*]
- capacitance** the charge-storing ability of a capacitor, defined as the magnitude of charge stored on either plate divided by the applied voltage. [*mat-1*]
- Capacity factor (gross)** The ratio of the gross electricity generated, for the time considered, to the energy that could have been generated at continuous full-power operation during the same period. [*nuclear-1*]



- Capacity factor (net)** The ratio of the net electricity generated, for the time considered, to the energy that could have been generated at continuous full-power operation during the same period. [*nuclear-1*]
- Cap** - A miner's safety helmet. Also, a highly sensitive, encapsulated explosive that is used to detonate larger but less sensitive explosives. [*mining-1*]
- Cap block** - A flat piece of wood inserted between the top of the prop and the roof to provide bearing support. [*mining-1*]
- CApH** Conventions for the Application of HyTime . An activity of the GCA [*soft*]
- CAQ** Computer Aided Quality. [*soft*]
- Car** - A railway wagon, especially any of the wagons adapted to carrying coal, ore, and waste underground. [*mining-1*]
- Carbide bit** - More correctly, cemented tungsten carbide. A cutting or drilling bit for rock or coal, made by fusing an insert of molded tungsten carbide to the cutting edge of a steel bit shank. [*mining-1*]
- carbon steel** steel which owes its properties chiefly to various percentages of carbon without substantial amounts of other alloying elements; also known as ordinary, straight carbon, or plain carbon steel. [*mat-1*]
- Carburizing** the process by which the surface carbon concentration of a ferrous alloy is increased by diffusion from the surrounding environment. [*mech-1*]
- CARDS** Central Archive for Reusable Defense Software of the DoD . [*soft*]
- Car-dump** - The mechanism for unloading a loaded car. [*mining-1*]
- CASE** Computer Aided Software Engineering: a technique for using computers to help with the systematic analysis, design, implementation and maintenance of software. Adopting the CASE approach to building and maintaining systems involves software tools and training for the developers who will use them. [*soft*]
- CASE** [*soft*]
- CASE framework** A set of products and conventions that allow CASE tools to be integrated into a coherent environment. [*soft*]
- CASE tools** Software tools to help in the application of CASE methods to a software project. [*soft*]
- Cask** A heavily shielded container used to store and/or ship radioactive materials. Lead and steel are common materials used in the manufacture of casks. [*nuclear-1*]
- Cast** - A directed throw; in strip-mining, the overburden is cast from the coal to the previously mined area. [*mining-1*]
- CAST** Computer Aided Software Testing. [*soft*]
- casting** generic term referring to a process where a fluid material (usually a molten alloy) is made to flow into a shaped mold cavity where it solidifies; this method is used to produce complex component shapes and properties difficult to achieve otherwise. [*mat-1*]
- cast iron** a ferrous alloy; the carbon content is greater than the maximum solubility in austenite at the eutectic temperature. [*mat-1*]
- Cast Iron** a ferrous alloy with carbon content between 2 and 4.5 wt%. [*mech-1*]
- CATE** Computer Aided Test Engineering: CASE methods applied to electronics testing and linked to CAE [*soft*]
- Cathodic Protection** a means of corrosion prevention whereby electrons are supplied to the structure to be protected from an external source such as another more reactive metal or a dc power supply. [*mech-1*]
- Cation** A positively charged ion. [*nuclear-1*]
- cation** a positively charged metallic ion. [*mat-1*]
- CAUSE** An international (mainly North American) nonprofit association for managing and using information technology in higher education - More information. [*soft*]
- cb** C Beautifier . [*soft*]
- C Beautifier** A tool for tidying the syntax of C source code. [*soft*]
- CBT** Computer-Based Training. [*soft*]
- CCI** Common Client Interface for Mosaic [*soft*]
- CCITT** A committee of the ITU responsible for making technical recommendations about telephone and data communication systems for PTTs and suppliers. Plenary sessions are held every four years to adopt new standards. [*soft*]
- CCL** Common Command Language. A standard for bibliographic information retrieval systems. [*soft*]

- CCS** Common Communication Services: the standard program interface to networks in SAA . [soft]
- CDA** Compound Document Architecture: DEC's set of standards for compound document creation, storage, retrieval, interchange and manipulation. [soft]
- CDC** Control Data Corporation [soft]
- CDD/Plus** DEC's CASE . [soft]
- CDE** C Development environment from IDE [soft]
- CDE** Common Desktop Environment. A Desktop manager - More information. [soft]
- CDF** Common Data Format. A library and toolkit for multi-dimensional data sets [soft]
- CDIF** CASE Data Interchange Format: an emerging standard for interchange of data between CASE tools [soft]
- CDM** Content Data Model. An SGML -based DoD specification for interactive manuals. [soft]
- CEBAF** Continuous Electron Beam Facility in Newport News, VA USA - More information. [soft]
- Cecil** An object-oriented language from Washington University intended to support rapid construction of high-quality, extensible software [soft]
- CE** Concurrent Engineering . [soft]
- Cement** a substance that can be used to build together aggregates of sand or stone into a cohesive structure. May be a single compound or a mixture. May be hydraulic set .[mech-1]
- cementite** iron carbide. [mat-1]
- Cementite** iron carbide (Fe<sub>3</sub>C).[mech-1]
- CEN** Conseil European pour la Normalisation: a body coordinating standardisation activities in the EEC and EFTA. countries. [soft]
- CENELEC** CEN -electricite. [soft]
- Center of Gravity** The location of the resultant of gravity forces on an object or objects [struc-1]
- Centroid** Similar to the concept of center of gravity, except that it applies to a two dimensional shape rather than an object. For a given shape, the centroid location corresponds to the center of gravity for a thin flat plate of that shape, made from a homogeneous material. [struc-1]
- CERA** Concurrent Engineering : Research and Applications. An international journal - More information. [soft]
- ceramic** a compound of metallic and nonmetallic elements, for which the interatomic bonding is predominantly ionic. [mat-1]
- Ceramic** inorganic, nonmetallic products for which the interatomic bonding is predominantly ionic.[mech-1]
- CERC** Concurrent Engineering Research Center, West Virginia University [soft]
- Cermet** a composite materials.[mech-1]
- CERNLIB** The CERN Program Library [soft]
- CERN** The European Laboratory for Particle Physics. [soft]
- CERT** Computer Emergency Response Team. Now CERT Coordination Center, works with the Internet community on security problems [soft]
- Certified** - Describes a person who has passed an examination to do a required job.[mining-1]
- CFI** CAD Framework Initiative. A consortium working on interface standards for integrating CAD tools and data. [soft]
- CFOOT** Corporate Facilitators of Object-Oriented Technology. [soft]
- CGI** A (French) software engineering vendor in the US. [soft]
- CGI** Common Gateway Interface. A standard for running external programs under a WWW or similar information server - More information. [soft]
- CGM** Computer Graphics Metafile: a standard file format for storage and communication of graphical information, widely used on personal computers and accepted by desktop publishing systems. (ANSI/ISO [soft]
- Chain conveyor** - A conveyor on which the material is moved along solid pans (troughs) by the action of scraper crossbars attached to powered chains.[mining-1]
- Chain pillar** - The pillar of coal left to protect the gangway or entry and the parallel airways.[mining-1]
- Chain reaction** A reaction that initiates its own repetition. In a fission chain reaction, a fissionable nucleus absorbs a neutron and fissions spontaneously, releasing additional neutrons. These,

- in turn, can be absorbed by other fissionable nuclei, releasing still more neutrons. A fission chain reaction is self-sustaining when the number of neutrons released in a given time equals or exceeds the number of neutrons lost by absorption in nonfissionable material or by escape from the system. [*nuclear-1*]
- Change Management** A consistent set of techniques that aid in evolution, composition and policy management of the design and implementation of an object or system. [*soft*]
- Charged particle** An ion. An elementary particle carrying a positive or negative electric charge. [*nuclear-1*]
- Charm** A portable object-oriented parallel programming system from University of Illinois [*soft*]
- Charpy test** an impact test in which a V-notched, keyhole-notched, or U-notched specimen, supported at both ends horizontally, is struck behind the notch by a striker mounted at the lower end of a pendulum; the energy that is absorbed in fracture is calculated from the height to which the striker would have risen had there been no specimen and the height to which it actually rises after fracture of the specimen. [*mat-1*]
- Check curtain** - Sheet of brattice cloth hung across an airway to control the passage of the air current. [*mining-1*]
- Chemical recombination** Following an ionization event, the positively and negatively charged ion pairs may or may not realign themselves to form the same chemical substance they formed before ionization. Thus, chemical recombination could change the chemical composition of the material bombarded by ionizing radiation. [*nuclear-1*]
- Chemical Set Cement** a cement that sets through reaction or precipitation. Often subjected to a high temperature during manufacture or use. [*mech-1*]
- Chen** Peter Chen developed the Entity-Relationship model. [*soft*]
- CHEOPS** A satellite-based batch data dissemination project between CERN and member state institutes. [*soft*]
- Child version** A version of a version. See change management . [*soft*]
- CHILL** CCITT High-Level Language. A real-time language used in telecommunications. [*soft*]
- Chock** - Large hydraulic jacks used to support roof inlongwall and shortwall mining systems. [*mining-1*]
- Choices** An object-oriented operating system from University of Illinois [*soft*]
- Chorus** A distributed operating system developed at INRIA . [*soft*]
- CIAC** Computer Incident Advisory Capability of the US DoE [*soft*]
- CIC** Committee on Institutional Cooperation. An academic consortium of American Universities [*soft*]
- CICERO** Control Information system Concepts based on Encapsulated Real-time Objects. A CERN DRDC proposal . [*soft*]
- CIDR** Classless Inter-Domain Routing (on the Internet ) [*soft*]
- CIL** Component Integration Laboratories. An effort to create a common framework for interoperability between applications on desktop platforms, formed by Apple, IBM, Novell, Oracle, Taligent, WordPerfect, and Xerox [*soft*]
- CIM** Computer Integrated Manufacturing. [*soft*]
- circuit** interconnections of electrical elements and devices that perform a desired electrical function. [*mat-1*]
- CIS** Case Integration Services: a committee formed to discuss CASE tool integration standards related to ATIS . [*soft*]
- CISC** Complex Instruction Set Computer. [*soft*]
- CISI** A French software house. [*soft*]
- CIX** Commercial Internet eXchange. A non-profit trade association of Public Data Internetwork service providers - More information. [*soft*]
- Cladding** The thin-walled metal tube that forms the outer jacket of a nuclear fuel rod. It prevents corrosion of the fuel by the coolant and the release of fission products into the coolant. Aluminum, stainless steel, and zirconium alloys are common cladding materials. [*nuclear-1*]
- Clamping Force** The compressive force which a fastener exerts on the joint. [*mech-3*]
- Class** A language developed by the Andrew Project : one of the first attempts to add object-oriented features to C . [*soft*]
- Class library** A library of reusable classes for use with an object-oriented programming system - More information. [*soft*]

- Class Of Fit** The Class of Fit is a measure of the degree of fit between mating internal and external threads. Three main Classes of Fit are defined for metric screw threads : FINE: This has a tolerance class of 5H for internal threads and 4h for external threads. MEDIUM: This has a tolerance class of 6H for internal threads and 6g for external threads. COARSE: This has a tolerance class of 7H for internal threads and 8g for external threads. For Unified threads, a similar designation as for metric threads is used. The thread classes used are 1A, 2A and 3A for external threads and 1B, 2B and 3B for internal threads. Cleveloc Nut [*mech-3*]
- Class-Relation Method** A design technique based on the concepts of object-oriented programming and the Entity-Relationship model from the French company Softeam. [*soft*]
- Class** The prototype for an object in an object-oriented language; analogous to a derived type in a procedural language. [*soft*]
- Clay vein** - A body of clay-like material that fills a void in a coal bed. [*mining-1*]
- Clean Air Act Amendments of 1990** A comprehensive set of amendments to the federal law governing the nation's air quality. The Clean Air Act was originally passed in 1970 to address significant air pollution problems in our cities. The 1990 amendments broadened and strengthened the original law to address specific problems such as acid deposition, urban smog, hazardous air pollutants and stratospheric ozone depletion. [*mining-1*]
- Clean Coal Technologies** A number of innovative, new technologies designed to use coal in a more efficient and cost-effective manner while enhancing environmental protection. Several promising technologies include: fluidized-bed combustion, integrated gasification combined cycle, limestone injection multi-stage burner, enhanced flue gas desulfurization (or "scrubbing"), coal liquefaction and coal gasification. [*mining-1*]
- Cleanroom** A software development approach aimed at producing software with the minimum number of errors [*soft*]
- Cleanup system** A system used for continuously filtering and demineralizing a reactor coolant system to reduce contamination levels and to minimize corrosion. [*nuclear-1*]
- Cleat** - The vertical cleavage of coal seams. The main set of joints along which coal breaks when mined. [*mining-1*]
- cleavage** transcrystalline fracture along specific crystallographic planes; usually associated with low-energy fracture; may exhibit river patterns and/or tongues. [*mat-1*]
- Cleveloc Nut** A torque prevailing nut of all metal construction. The collar of the nut is elliptical in cross section and it is this that provides the flexible locking element. The nut is pre-lubricated to reduce the tightening torque. Cleveloc is a registered trade name of Forest Fasteners. [*mech-3*]
- CLHEP** A C++ class library for high energy physics applications - More information. [*soft*]
- Client** A system or process that requests a service from another system or process. [*soft*]
- CLOS** Common Lisp Object System: an object-oriented language derived from Common Lisp [*soft*]
- CLP** Constraint Logic Programming. [*soft*]
- CL** See Common Lisp . [*soft*]
- CLU** An object-oriented programming language developed at MIT by Liskov et al. [*soft*]
- CLX** The Common Lisp interface to the X Window System , equivalent to Xlib . [*soft*]
- CMA** Concert Multithread Architecture from DEC . [*soft*]
- CM** Configuration Management. [*soft*]
- CML** Chemical Markup Language. A means for interchanging chemical information, based on SGML [*soft*]
- CMM** Capability Maturity Model for software development organisations, from SEI [*soft*]
- CMS** A code management system from DEC. [*soft*]
- CMVC** Configuration Management Version Control from IBM. [*soft*]
- CMZ** A portable interactive code management system from CodeME S.A.R.L in use in the high-energy physics community. [*soft*]
- CNET** Centre national d'Etudes des Telecommunications: the French national telecommunications research centre at Lannion. [*soft*]
- CNI** Coalition for Networked Information. Promotes the creation of and access to information resources in networked environments in order to enrich scholarship and enhance intellectual productivity - More information. [*soft*]



- CNRI Corporation** for National Research Initiatives, Reston, VA. A US research and development organisation in information processing technology [*soft*]
- Coal** - A solid, brittle, more or less distinctly stratified combustible carbonaceous rock, formed by partial to complete decomposition of vegetation; varies in color from dark brown to black; not fusible without decomposition and very insoluble. [*mining-1*]
- Coal dust** - Particles of coal that can pass a No. 20 sieve. [*mining-1*]
- Coal Gasification** The conversion of coal into a gaseous fuel. [*mining-1*]
- Coal mine** - An area of land and all structures, facilities, machinery, tools, equipment, shafts, slopes, tunnels, excavations, and other property, real or personal, placed upon, under, or above the surface of such land by any person, used in extracting coal from its natural deposits in the earth by any means or method, and the work of preparing the coal so extracted, including coal preparation facilities. British term is "colliery". [*mining-1*]
- Coal reserves** - Measured tonnages of coal that have been calculated to occur in a coal seam within a particular property. [*mining-1*]
- Coal washing** The process of separating undesirable materials from coal based on differences in densities. Pyritic sulfur, or sulfur combined with iron, is heavier and sinks in water; coal is lighter and floats. [*mining-1*]
- Coastdown** An action that permits the reactor power level to decrease gradually as the fuel in the core is depleted. [*nuclear-1*]
- COBOL** COmmon Business Oriented Language: an early and widely-used programming language for business applications. [*soft*]
- COCOMO** Constructive Cost Model: a method for evaluating the cost of a software package proposed by B. Boehm, "Software Engineering Economics" Prentice-Hall 1987 [*soft*]
- CODA** An object-oriented data-acquisition system at CEBAF [*soft*]
- Codd's First Normal Form** see Normal Form . [*soft*]
- CodeCenter** A proprietary software development environment for C programs, offering an integrated toolkit for developing, testing, debugging and maintenance (formerly Saber-C) [*soft*]
- Code Management** A source code management system helps program developers keep track of version history, releases, parallel versions etc. There are several in popular use [*soft*]
- Coefficient Of Friction** A dimensionless number representing the ratio of the friction force to normal force. Typically for threaded connections it is between 0.10 to 0.18 but can vary significantly depending upon the materials used and whether a lubricant has been used. [*mech-3*]
- Cognitech** A French software house specialising in Artificial Intelligence. [*soft*]
- COHESION** DEC's CASE environment. [*soft*]
- Coke** A hard, dry carbon substance produced by heating coal to a very high temperature in the absence of air. [*mining-1*]
- Cold shutdown** The term used to define a reactor coolant system at atmospheric pressure and at a temperature below 200 degrees Fahrenheit following a reactor cooldown. [*nuclear-1*]
- cold working** plastic deformation of a metal at a temperature below that at which it recrystallizes; increasing the amount of cold work causes the dislocation density to rise in the material, making it more difficult to plastically deform the material and eventually cause brittle fracture. [*mat-1*]
- Cold Working** the plastic deformation at a temperature below that at which it recrystallizes. [*mech-1*]
- Collage** A synchronous collaborative data analysis tool for use over the Internet - More information. [*soft*]
- Collar** - The term applied to the timbering or concrete around the mouth or top of a shaft. The beginning point of a shaft or drill hole at the surface. [*mining-1*]
- Collective dose** The sum of the individual doses received in a given period by a specified population from exposure to a specified source of radiation. [*nuclear-1*]
- Colliery** - British name for coal mine. [*mining-1*]
- columnar structure** coarse structure of parallel columns of grains caused by highly directional solidification of molten metal resulting from sharp thermal gradients. [*mat-1*]
- Column flotation** A precombustion coal cleaning technology in which coal particles attach to air bubbles rising in a vertical column. The coal is then removed at the top of the column. [*mining-1*]



- COM** Common Object Model. An open architecture from DEC and Microsoft, allowing interoperation between ObjectBroker - More information. [*soft*]
- COMIS** a COMpilation and Interpretation System. A FORTRAN interpreter use by the PAW system [*soft*]
- COMMA** Common Object-oriented Methodology Metamodel Architecture from OPEN [*soft*]
- Commingleing** A term used to describe the undesirable practice of mixing fasteners from different batches that are the same size and grade in the same container. [*mech-3*]
- Comminution** - The breaking, crushing, or grinding of coal,ore, or rock.[*mining-1*]
- Committed dose equivalent** This is the dose to some specific organ or tissue that is received from an intake of radioactive material by an individual during the 50-year period following the intake [*nuclear-1*]
- Committed effective dose equivalent** The committed dose equivalent for a given organ multiplied by a weighting factor [*nuclear-1*]
- Common Lisp** An ANSI standard version of Lisp . [*soft*]
- COMNET** A simulation tool from CACI for analysing wide-area voice or data networks, based on SIMSCRIPT .. [*soft*]
- Compact** A group of two or more states formed to dispose of low-level radioactive waste on a regional basis. Forty-two states have formed nine compacts. [*nuclear-1*]
- Compaq** A US manufacturer of IBM PC-compatibles. [*soft*]
- Competent rock** - Rock which, because of its physical andgeological characteristics, is capable of sustaining openings withoutany structural support(except pillars and walls left during mining(stalls, light props, and roof bolts are not considered structuralsupport).[*mining-1*]
- component** an element or chemical compound that helps make up a material system; the composition of a phase or system can be described by giving the relative amounts of each component. [*mat-1*]
- Component (of a vector)** Any vector can be expressed as a collection of vectors whose sum is equal to the original vector. Each vector in this collection is a component of the original vector. It is common to express a vector in terms of components which are parallel to the x and y axes. [*struc-1*]
- Composite** a material brought about by combining materials differing in composition or form on a macroscale for the purpose of obtaining specific characteristics and properties. The constituents retain their identity such that they can be physically identified and they exhibit an interface between one another.[*mech-1*]
- Compound** A chemical combination of two or more elements combined in a fixed and definite proportion by weight. [*nuclear-1*]
- Compression** Data files are often compressed to take up less network bandwidth, memory etc. Common examples are program executables and visual images. Many algorithms and utilities exist for this - More information. [*soft*]
- COMSOFT** Consortium for the Management of Emerging Software Technologies - More information. [*soft*]
- Concentrated force** A force considered to act along a single line in space. Concentrated forces are useful mathematical idealizations, but cannot be found in the real world, where all forces are either body forces acting over a volume or surface forces acting over an area. [*struc-1*]
- Concentrated load** An external force which a concentrated force. [*struc-1*]
- Concrete** a composite material consisting of aggregate particles bound together in a solid body by a cement.[*mech-1*]
- Concrete Class** In object-oriented programming, a class suitable to be instantiated.(as opposed to an abstract class ). [*soft*]
- Concurrent Clean** A functional language for the Macintosh from the University of Nijmegen. [*soft*]
- Concurrent Engineering** An approach where all aspects of a product's life-cycle are considered as early as possible in the design, manufacturing and maintenance process [*soft*]
- Condensate** Water that has been produced by the cooling of steam in a condenser. [*nuclear-1*]
- condensation polymerization** the formation of polymer macromolecules by an intermolecular reaction involving at least two monomer species, usually with the production of a by-product of low molecular weight, such as water. [*mat-1*]

**Condensation Polymerization** the formation of polymers species, usually with the production of a low molecular weight by-product such as water. [*mech-1*]

**Condenser** A large heat exchanger designed to cool exhaust steam from a turbine below the boiling point so that it can be returned to the heat source as water. In a pressurized water reactor, the water is returned to the steam generator. In a boiling water reactor, it returns to the reactor core. The heat removed from the steam by the condenser is transferred to a circulating water system and is exhausted to the environment, either through a cooling tower or directly into a body of water. [*nuclear-1*]

**Conduction Band** the lowest-lying electron energy band that is not completely filled with electrons. [*mech-1*]

**conductivity, electrical** the proportionality constant between current density and applied electric field; a measure of the ease with which a material is capable of conducting an electric current. [*mat-1*]

**Cone Proof Load** This is an axial applied force applied to a nut when it is seated on a cone shaped washer which has an included angle of 120 degrees. Failure in this test is usually due to the nut splitting. The intention of the test is to introduce a nut dilation operation which will assess the potential detrimental effects of surface discontinuities. This type of test is sometimes applied to nuts which are intended for high temperature service. [*mech-3*]

**Configuration** [*mech-1*]

**Configuration management** The process of identifying, defining, recording and reporting the configuration items in a system and the change requests. Controlling the releases and change of the items throughout the life-cycle See also code management [*soft*]

**conformal coating** a thin nonconducting coating that is either plastic or inorganic; it is applied to a circuit for environmental and mechanical protection. [*mat-1*]

**Conformation** [*mech-1*]

**Congruent Transformation** a transformation of one phase to another that does not involve any change in composition. [*mech-1*]

**Connection** Connection is similar to the concept of support, except that connection refers to a relationship between members in a structural model. A connection restrains degrees of freedom of one

member with respect to another. For each restrained degree of freedom, there is a corresponding force transferred from one member to the other; forces associated with unrestrained degrees of freedom are zero. See fixed connection and pin connection. [*struc-1*]

**Construction recapture** The maximum number of years that could be added to the license expiration date to recover the period from the construction permit to the date when the operating license was granted. A licensee is required to submit an application for such a change. [*nuclear-1*]

**Constructor** A function provided by a class in C++ to instantiate an object. [*soft*]

**Contact** - The place or surface where two different kinds of rocks meet. Applies to sedimentary rocks, as the contact between limestone and a sandstone, for example, and to metamorphic rocks; and it is especially applicable between igneous intrusions and their walls. [*mining-1*]

**Container class** A class whose instances are collections of other objects. Examples include stacks, queues, lists and arrays. [*soft*]

**Containment structure** A gaslight shell or other enclosure around a nuclear reactor to confine fission products that otherwise might be released to the atmosphere in the event of an accident. [*nuclear-1*]

**Contamination** Undesired radioactive material that is deposited on the surface of or inside structures, areas, objects, or people. [*nuclear-1*]

**Continuous miner** - A machine that constantly extracts coal while it loads it. This is to be distinguished from a conventional, or cyclic, unit which must stop the extraction process in order for loading to commence. [*mining-1*]

**Contour** - An imaginary line that connects all points on a surface having the same elevation. [*mining-1*]

**Controlled area** At a nuclear facility, an area outside a restricted area but within the site boundary, access to which the licensee can limit for any reason. [*nuclear-1*]

**Control rod** A rod, plate, or tube containing a material such as hafnium, boron, etc., used to control the power of a nuclear reactor. By absorbing neutrons, a control rod prevents the neutrons from causing further fissions. [*nuclear-1*]

**Control room** The area in a nuclear power plant from which most of the plant power production and emergency safety equipment can be operated by remote control. [*nuclear-1*]

- Conventional mining** The first fully-mechanized underground mining method involving the insertion of explosives in a coal seam, the blasting of the seam, and the removal of the coal onto a conveyor or shuttle car by a loading machine. [*mining-1*]
- Conveyor** - An apparatus for moving material from one point to another in a continuous fashion. This is accomplished with an endless (that is, looped) procession of hooks, buckets, wide rubber belt, etc. [*mining-1*]
- COOL** A class library for C++ from Texas Instruments [*soft*]
- Coolant** A substance circulated through a nuclear reactor to remove or transfer heat. The most commonly used coolant in the United States is water. Other coolants include heavy water, air, carbon dioxide, helium, liquid sodium, and a sodium-potassium alloy. [*nuclear-1*]
- Cool** Combined object-oriented Language from the ITHACA project, which combines C -based languages with database technology. [*soft*]
- Cooldown** The gradual decrease in reactor fuel rod temperature caused by the removal of heat from the reactor coolant system after the reactor has been shutdown. [*nuclear-1*]
- Cooling tower** A heat exchanger designed to aid in the cooling of water that was used to cool exhaust steam exiting the turbines of a power plant. Cooling towers transfer exhaust heat into the air instead of into a body of water. [*nuclear-1*]
- coordination number** the number of atomic or ionic nearest neighbors. [*mat-1*]
- Coordination Number** the number of atomic or ionic nearest neighbors. [*mech-1*]
- COOTS** Conference on Object-Oriented Technologies and Systems. [*soft*]
- cope** the top half of a horizontally parted mold. [*mat-1*]
- copolymer** a polymer that consists of two or more dissimilar mer units in combination along its molecular chains. [*mat-1*]
- Copolymer** a polymer that consists of two or more dissimilar mer units in combination along its molecular chains. [*mech-1*]
- CORBA** Common Object Request Broker Architecture: an OMG [*soft*]
- CORDIS** The European Community R&D information service [*soft*]
- CORE** Chemistry Online Retrieval Experiment. A project to publish American Chemical Society journals electronically. [*soft*]
- Core damage frequency** An expression of the likelihood that, given the way a reactor is designed and operated, an accident could cause the fuel in the reactor to be damaged. [*nuclear-1*]
- Core melt accident** An event or sequence of events that result in the melting of part of the fuel in the reactor core. [*nuclear-1*]
- Core sample** A cylinder sample generally 1-5 in diameter drilled out of an area to determine the geologic and chemical analysis of the overburden and coal. [*mining-1*]
- Core** The central portion of a nuclear reactor containing the fuel elements, moderator, neutron poisons, and support structures. [*nuclear-1*]
- Corrosion** Deteriorative loss of a metal as a result of dissolution environmental reactions. [*mech-1*]
- Cortex** An experimental slow controls project at CERN [*soft*]
- COS** Corporation for Open Systems: an international consortium of computer users and vendors, set up to provide ways of testing OSI implementations. [*soft*]
- COSE** Common Open Software Environment. An initiative by Hewlett-Packard, Sun, IBM, Novell, Univel and SCO to move towards consistency and interoperability between Unix suppliers. [*soft*]
- COSINE** Cooperation for Open Systems Interconnection Networking in Europe. A EUREKA project. [*soft*]
- Cosmic radiation** Penetrating ionizing radiation, both particulate and electromagnetic, originating in outer space. Secondary cosmic rays, formed by interactions in the Earth's atmosphere, account for about 45 to 50 millirem of the 360 millirem background radiation that an average individual receives in a year. [*nuclear-1*]
- COSS** Common Object Services Specification in CORBA . [*soft*]
- CoST** A set of software tools for SGML documents. [*soft*]
- COTS** Commercial Off The Shelf solution [*soft*]
- coulombic force** a force between charged particles, such as ions. [*mat-1*]

- Counter** A general designation applied to radiation detection instruments or survey meters that detect and measure radiation. The signal that announces an ionization event is called a count. [*nuclear-1*]
- Couple** A system of forces composed of two equal forces of opposite direction, offset by a distance. A couple is statically equivalent to a moment whose magnitude equals the magnitude of the force times the offset distance. [*struc-1*]
- Covalent Bond** a primary interatomic bond that is formed by the sharing electrons between neighboring atoms. [*mech-1*]
- covalent bond** a primary interatomic bond that is formed by the sharing of electrons between neighboring atoms. [*mat-1*]
- Cover** - The overburden of any deposit. [*mining-1*]
- CPAN** Comprehensive Perl Archive Network - More information. [*soft*]
- CPI** Common Program Interface: the API of SAA . [*soft*]
- CPSR** Computer Professionals for Social Responsibility. A US non-profit organisation concerned with the effects of computers on society - More information. [*soft*]
- CPU** Central Processing Unit, usually applied to that part of a computer which carries out the arithmetic and controls the instruction flow. [*soft*]
- CRAY** Cray Research Inc.: manufacturers of a range of large powerful mainframes. [*soft*]
- CRC** Class-Responsibility-Collaboration. A technique described in Object-Oriented Software by Wirfs-Brock. [*soft*]
- CREASE** Catalog of Resources for Education in Ada and Software Engineering. A database maintained by AdaIC . [*soft*]
- Creep** - The forcing of pillars into soft bottom by the weight of a strong roof. In surface mining, a very slow movement of slopes downhill. [*mining-1*]
- creep** the time-dependent permanent deformation that occurs under stress; for most materials it is important only at elevated temperatures. [*mat-1*]
- Creep** the time-dependent permanent deformation that occurs under stress; for most materials it is important only at elevated temperatures. [*mech-1*]
- CREN** Corporation for Research and Educational Networking: responsible for providing networking service to BITNET and CSNET users [*soft*]
- Crib** - A roof support of prop timbers or ties, laid in alternate cross-layers, log-cabin style. It may or may not be filled with debris. Also may be called a chock or cog. [*mining-1*]
- Cribbing** - The construction of cribs or timbers laid at right angles to each other, sometimes filled with earth, as a roof support or as a support for machinery. [*mining-1*]
- Criticality** A term used in reactor physics to describe the state when the number of neutrons released by fission is exactly balanced by the neutrons being absorbed (by the fuel and poisons) and escaping the reactor core. A reactor is said to be "critical" when it achieves a self-sustaining nuclear chain reaction, as when the reactor is operating. [*nuclear-1*]
- Critical mass** The smallest mass of fissionable material that will support a self-sustaining chain reaction. [*nuclear-1*]
- Critical organ** That part of the body that is most susceptible to radiation damage under the specific conditions under consideration. [*nuclear-1*]
- Critical Point** [*mech-1*]
- critical resolved shear stress** the shear stress, resolved within a slip plane and direction, which is required to initiate slip. [*mat-1*]
- cron** The clock daemon in UNIX that executes commands at specified dates and times according to instructions in a file - More information. [*soft*]
- Crop coal** - Coal at the outcrop of the seam. It is usually considered of inferior quality due to partial oxidation, although this is not always the case. [*mining-1*]
- Crossbar** - The horizontal member of a roof timber set supported by props located either on roadways or at the face. [*mining-1*]
- Crosscut** - A passageway driven between the entry and its parallel air course or air courses for ventilation purposes. Also, a tunnel driven from one seam to another through or across intervening measures; sometimes called "crosscut tunnel", or "breakthrough". In vein mining, an entry perpendicular to the vein. [*mining-1*]
- Cross entry** - An entry running at an angle with the main entry. [*mining-1*]



- crosslinked polymer** a polymer in which adjacent linear molecular chains are joined at various positions by covalent bonds. [*mat-1*]
- Crosslinked Polymer** A polymer in which adjacent linear molecular chains are joined at various positions by covalent bonds. [*mech-1*]
- Cross software** Software developed on one kind of computer for use on another (usually because the other computer does not have itself adequate facilities for software development). [*soft*]
- CRS4** Centro di Ricerca, Sviluppo e Studi Superiori in Sardegna. ( Center for Advanced Studies, Research and Development in Sardinia). A high performance computing centre with an interesting information server . [*soft*]
- Crud** A colloquial term for corrosion and wear products (rust particles, etc.) that become radioactive (i.e., activated) when exposed to radiation. Because the activated deposits were first discovered at Chalk River, a Canadian nuclear plant, "crud" has been used as shorthand for Chalk River Unidentified Deposits. [*nuclear-1*]
- Crusher** - A machine for crushing rock or other materials. Among the various types of crushers are the ball mill, gyratory crusher, Handseil mill, hammer mill, jaw crusher, rod mill, rolls, stamp mill, and tube mill. [*mining-1*]
- crystalline** the state of a solid material characterized by a periodic and repeating three-dimensional array of atoms, ions, or molecules. [*mat-1*]
- Crystalline** the state of a solid material characterized by a periodic and repeating three-dimensional arrays of atoms, ions, or molecules. [*mech-1*]
- Crystallinity** for polymers, the state wherein a periodic and repeating atomic arrangement is achieved by molecular chain alignment. [*mech-1*]
- Crystallite** a region within a crystalline polymer in which all the molecular chains are ordered and aligned. [*mech-1*]
- crystallization** act or process of forming crystals or bodies by elements or compounds solidifying so they are bounded by plane surfaces, symmetrically arranged, and are external expressions of definite internal structure. [*mat-1*]
- Crystallography** [*mech-1*]
- Crystal Structure** for crystalline materials, the manner in which atoms or ions are arrayed in space. It is defined in terms of the unit cell geometry and the atom positions within the cell. [*mech-1*]
- crystal structure** for crystalline materials, the manner in which atoms or ions are arrayed in space; it is defined in terms of the unit cell geometry and the atom positions within the unit cell. [*mat-1*]
- Crystal System** a scheme by which crystal structures are classified according to unit cell geometry. [*mech-1*]
- CSCW** Computer Supported Cooperative Work (also known as Groupware): software tools and technology to support groups of people working together on a project, often at different sites [*soft*]
- c shell** A common UNIX originating on Berkeley UNIX [*soft*]
- cshell** See c shell [*soft*]
- csh** See c shell [*soft*]
- CSL** Caml Special Light. An implementation of Caml - More information. [*soft*]
- CSMA/CD** Carrier Sense Multiple Access with Collision Detection: a network arbitration scheme used on Ethernet . A station with a message to send starts sending if there is no carrier detected on the transmission medium. If a collision occurs, transmission is abandoned and retried after a delay. [*soft*]
- CSNET** Computers and Science Network, operated by CREN for US computer science institutes. It provides electronic mail service via dial-up lines, plus X.25 and Internet services. [*soft*]
- CSP** Communicating Sequential Processes. A programming model developed by T. Hoare at Oxford University [*soft*]
- CSS** Cascading Style Sheets. A simple mechanism for adding style to WWW documents [*soft*]
- CSTC** Computer Security Technology Center of the US DoE [*soft*]
- CTAN** Comprehensive TeX Archive Network [*soft*]
- CTI** Computer Telephony Integration. [*soft*]
- CUA** Common User Access: the User Interface standard of SAA . [*soft*]
- Cumulative dose** The total dose resulting from repeated exposures of ionizing radiation to an occupationally exposed worker to the same portion of the body, or to the whole body, over time. [*nuclear-1*]

- cure** to irreversibly polymerize a thermosetting plastic by subjecting it to a time-temperature profile. [*mat-1*]
- Curie (Ci)** The basic unit used to describe the intensity of radioactivity in a sample of material. The curie is equal to 37 billion ( $3.7 \times 10^{10}$ ) disintegrations per second, which is approximately the activity of 1 gram of radium. A curie is also a quantity of any radionuclide that decays at a rate of 37 billion disintegrations per second. It is named for Marie and Pierre Curie, who discovered radium in 1898. [*nuclear-1*]
- Curie Temperature** that temperature above which a ferromagnetic or ferrimagnetic material becomes paramagnetic. [*mech-1*]
- Curie temperature** the temperature above which a ferromagnetic or ferrimagnetic material becomes paramagnetic. [*mat-1*]
- curses** A set of subroutines in UNIX for handling navigation on a terminal screen using the cursor [*soft*]
- Cutter; Cutting machine** - A machine, usually used in coal, that will cut a 10- to 15-cm slot. The slot allows room for expansion of the broken coal. Also applies to the man who operates the machine and to workers engaged in the cutting of coal by pick or drill. [*mining-1*]
- CVS** A code management system based on RCS [*soft*]
- CWI** Dutch Centre for Mathematics and Computer Science, Amsterdam - More information. [*soft*]
- CWIS** Campus-Wide Information System. Many universities and other institutes have computerised information systems, often based on WWW [*soft*]
- Cycle mining** - A system of mining in more than one workplace at a time, that is, a miner takes a lift from the face and moves to another face while permanent roof support is established in the previous working face. [*mining-1*]
- DAA** Distributed Application Architecture: under design by Hewlett-Packard and Sun. A distributed object management environment that will allow applications to be developed independent of operating system, network or windowing system. [*soft*]
- DACNOS** A prototype network operating system for multivendor environments, from IBM European Networking Centre Heidelberg and University of Karlsruhe. [*soft*]
- Dacromet** A high performance surface coating that can be applied to fasteners. The coating consists of passivated zinc flakes that are stoved onto the metal surface. The coating can be coloured and eliminates the risk of hydrogen embrittlement associated with electroplated metal. DACROMET is a registered trademark of Metal Coatings International, Inc. of Chardon Ohio [*mech-3*]
- DAD** Distributed Adamo Database. An extension to ADAMO [*soft*]
- daemon** A process running in the background performing some service (such as handling print queues) in UNIX or other operating systems. [*soft*]
- DANTE** A company established by the national research networks in Europe to provide international network services [*soft*]
- DARPA** Defense Advanced Research Project Agency of the US Department of Defense, responsible for the development of new technology, including ARPANET. [*soft*]
- DASE** Distributed Application Support Environment. [*soft*]
- Data base** See DBMS [*soft*]
- Database** See DBMS. [*soft*]
- Datacom** A DBMS from Computer Associates International. [*soft*]
- Data Definition Language** A language enabling the structure and instances of a database to be defined in a human- and machine-readable form. [*soft*]
- Data dictionary** A set of data descriptions that can be shared by several applications. [*soft*]
- Data Flow Diagram** A graphical notation used to describe how data flows between processes in a system. An important tool of most structured analysis techniques. [*soft*]
- Data Model** A set of data structures with manipulation and validation operators for general purpose usage. Examples are the Entity-Relationship [*soft*]
- DATATRIEVE** A query and report system for use with DEC's VMS system (RMS, VAX Rdb/VMS or VAX DBMS). [*soft*]
- DataViews** Graphical user interface development software from V.I. Corporation, aimed at constructing platform-independent interactive views of dynamic data. [*soft*]

- Data Warehouse** A database of information intended for use as part of a decision support system. The data is typically extracted from an organisation's operational databases. [*soft*]
- Daughter products** Isotopes that are formed by the radioactive decay of some other isotope. In the case of radium-226, for example, there are 10 successive daughter products, ending in the stable isotope lead-206. [*nuclear-1*]
- DAZIX** Daisy/Cadnetix Corporation: a supplier of digital electronic CAE systems. [*soft*]
- DB2** A DBMS from IBM. [*soft*]
- DBA** DataBase Administrator. [*soft*]
- dBASE III** A DBMS from Ashton-Tate Corporation. [*soft*]
- DB** Database. [*soft*]
- DBMS** Database management system: such systems typically manage large structured sets of persistent data, offering ad hoc query facilities to many users. They are widely used in business applications: commercial examples include Ingres, Oracle etc. [*soft*]
- DCA** Document Content Architecture from IBM [*soft*]
- DCE** Distributed Computing Environment from OSF - More information. [*soft*]
- DCF** Document Composition Facility. [*soft*]
- DCOM** Distributed Component Object Model Protocol [*soft*]
- DCSA** Distributed Component Software Architecture [*soft*]
- DD** Data Dictionary . [*soft*]
- DDE Manager** An Oracle product that lets Windows applications that support the DDE protocol act as front end tools for Oracle. It allows applications like Excel, Word, Ami Professional, WingZ, and ToolBook to query, update, graph, and report information stored in Oracle. [*soft*]
- DDE protocol** Dynamic Data Exchange: a Microsoft protocol that allows Windows applications to communicate using a client/server model. [*soft*]
- DDIF** Digital Document Interchange Format. A CDA specification for representing compound documents in revisable format; a DEC standard for document encoding. [*soft*]
- DDL** Data definition language . [*soft*]
- DDL** Document Description Language . [*soft*]
- DDTS** Distributed Defect Tracking System. [*soft*]
- Decay heat** The heat produced by the decay of radioactive fission products after a reactor has been shut down. [*nuclear-1*]
- Decay, radioactive** The decrease in the amount of any radioactive material with the passage of time due to the spontaneous emission from the atomic nuclei of either alpha or beta particles, often accompanied by gamma radiation. [*nuclear-1*]
- DECdesign** A software analysis and design tool from DEC supporting several methodologies. [*soft*]
- DEC** Digital Equipment Corporation: a computer manufacturer and software vendor. [*soft*]
- DECdns** Distributed Naming Service: adopted by OSF as the naming service for DCE . [*soft*]
- Declared pregnant woman** A woman who is an occupational radiation worker and has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception. [*nuclear-1*]
- DECnet** The network marketed by DEC to connect its computers together. [*soft*]
- Decommissioning** The process of closing down a facility followed by reducing residual radioactivity to a level that permits the release of the property for unrestricted use. [*nuclear-1*]
- Decompression Point** The point at which there is zero pressure at the joint interface as a result of forces applied to the joint. If the applied force is increased beyond the decompression point, a gap will form at the interface. Analytically, a criteria of joint failure is often taken as when the applied force on the joint reaches the decompression point. This is because forces acting on the bolt(s) can dramatically increase at this point. Loading beyond this point can also result in fretting at the interface that will lead to bolt tension loss that will subsequently lower the decompression point. This process can continue until bolt failure does occur. The failure can be by fatigue or other mechanism but the underlying cause was loading of the joint beyond the decompression point. It is for this reason that it is frequently taken as a failure criteria in analysis work. [*mech-3*]
- DECON** A method of decommissioning in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed and safety buried in a low-

level radioactive waste landfill or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations. [*nuclear-1*]

**Decontamination** The reduction or removal of contaminating radioactive material from a structure, area, object, or person. Decontamination may be accomplished by (1) treating the surface to remove or decrease the contamination, (2) letting the material stand so that the radioactivity is decreased as a result of natural radioactive decay, or (3) covering the contamination to shield or attenuate the radiation emitted. [*nuclear-1*]

**DECstation** A range of RISC based workstations manufactured by DEC. [*soft*]

**DECwindows** DEC's windowing environment based on the X Window System. [*soft*]

**DECwrite** DEC's CDA document processing application. It can generate and import SGML marked-up documents. [*soft*]

**defect structure** relating to the kinds and concentrations of vacancies and interstitials in a ceramic compound. [*mat-1*]

**Defense-in-depth** A design and operational philosophy with regard to nuclear facilities that calls for multiple layers of protection to prevent and mitigate accidents. It includes the use of controls, multiple physical barriers to prevent release of radiation, redundant and diverse key safety functions, and emergency response measures. [*nuclear-1*]

**Deflection** This word usually carries the same meaning as displacement, although it is sometimes used in place of deformation. [*struc-1*]

**Deformation** A change in the shape of an object or material. [*struc-1*]

**Degree of Freedom** A displacement quantity which defines the shape and location of an object. In the two dimensional plane, a rigid object has three degrees of freedom [*struc-1*]

**degree of polymerization** the average number of mer units per polymer chain molecule. [*mat-1*]

**Delphi** An object-oriented development system from Borland [*soft*]

**Delta-4** Definition and Design of an open Dependable Distributed system architecture. An Esprit project investigating the achievement of dependability in open distributed systems, including real-time systems. [*soft*]

**delta iron** an allotropic (polymorphic) form of iron stable above 2550 F and crystallizing in the body centered cubic lattice. [*mat-1*]

**DELTA** A distributed processing environment concerned with fault-tolerant and process-control applications from the Esprit project. [*soft*]

**Delta** The information which differentiates a version from members of its immediate family. See change management [*soft*]

**DeMarco** Tom DeMarco proposed a form of Structured Analysis. [*soft*]

**DEM** Digital Elevation Model. A format for map files [*soft*]

**Demeter** A CASE tool developed mainly by Karl Lieberherr (see Aug/Sep 1988 issue of JOOP, OOPSLA '89 Proceedings "Contributions to Teaching Object-Oriented Design and Programming") [*soft*]

**Demonstrated reserves** A collective term for the sum of coalin both measured and indicated resources and reserves. [*mining-1*]

**Departure from nuclear boiling ratio (DNBR)** The ratio of the heat flux to cause departure from nucleate boiling to the actual local heat flux or a fuel rod. [*nuclear-1*]

**Departure from nucleate boiling (DNB)** The point at which the heat transfer from a fuel rod rapidly decreases due to the insulating effect of a steam blanket that forms on the rod surface when the temperature continues to increase. [*nuclear-1*]

**Depleted uranium** Uranium having a percentage of uranium-235 smaller than the 0.7 percent found in natural uranium. It is obtained from spent (used) fuel elements or as byproduct tails, or residues, from uranium isotope separation. [*nuclear-1*]

**Deposit** - Mineral deposit or ore deposit is used to designate a natural occurrence of a useful mineral, or an ore, insufficient extent and degree of concentration to invite exploitation. [*mining-1*]

**Depth** - The word alone generally denotes vertical depth below the surface. In the case of incline shafts and boreholes it may mean the distance reached from the beginning of the shaft or hole, the borehole depth, or the inclined depth. [*mining-1*]



- Derived air concentration (DAC)** The concentration of radioactive material in air and the time of exposure to that radionuclide in hours. An NRC licensee may take 2000 hours to represent one ALI, equivalent to a committed effective dose equivalent of 5 rems (0.05 sievert). [*nuclear-1*]
- DES** Data Encryption Standard. A NIST encryption standard. [*soft*]
- Design-basis accident** A postulated accident that a nuclear facility must be designed and built to withstand without loss to the systems, structures, and components necessary to assure public health and safety. [*nuclear-1*]
- Design-basis phenomena** Earthquakes, tornadoes, hurricanes, floods, etc., that a nuclear facility must be designed and built to withstand without loss of systems, structures, and components necessary to assure public health and safety. [*nuclear-1*]
- Design-basis threat** A profile of the type, composition, and capabilities of an adversary. The NRC and its licensees use the design-basis threat (DBT) as a basis for designing safeguards systems to protect against acts of radiological sabotage and to prevent the theft of special nuclear material. [*nuclear-1*]
- Design** Design is usually considered to be the phase of software development following analysis, and concerned with how the problem is to be solved. [*soft*]
- Design Form Of Thread** The design form of an internal or external thread is the thread form in its maximum metal condition. It is the same as the basic thread profile except that the thread roots are rounded. If either the internal or external thread form exceeds the design form of the thread profile then a potential interference exists. [*mech-3*]
- Design recovery** A subset of reverse engineering in which domain knowledge, external information, and deduction of fuzzy reasoning are added to the observations of the subject system to identify meaningful higher level abstraction beyond those obtained directly by examining the system itself. [*soft*]
- Desktop manager** A user interface to system services, usually icon and menu based like the Macintosh Finder, enabling the user to run applications and use a filing system without directly using the command language of the operating system. [*soft*]
- DESQview** A system from Quarterdeck Office Systems implementing multitasking under MS-DOS. [*soft*]
- Destructor** A function provided by a class in C++ to delete an object. [*soft*]
- DESY** Deutsches Elektronen Synchrotron Laboratory, Hamburg, Germany - More information. [*soft*]
- Detector** A material or device that is sensitive to radiation and can produce a response signal suitable for measurement or analysis. A radiation detection instrument. [*nuclear-1*]
- Detectors** - Specialized chemical or electronic instruments used to detect mine gases. [*mining-1*]
- Deterministic effect** The health effects of radiation, the severity of which varies with the dose and for which a threshold is believed to exist. Radiation-induced cataract formation is an example of a deterministic effect (also called a non-stochastic effect). [*nuclear-1*]
- Deterministic (probabilistic)** Consistent with the principles of "determinism," which hold that specific causes completely and certainly determine effects of all sorts. As applied in nuclear technology, it generally deals with evaluating the safety of a nuclear power plant in terms of the consequences of a predetermined bounding subset of accident sequences. The term "probabilistic" is associated with an evaluation that explicitly accounts for the likelihood and consequences of possible accident sequences in an integrated fashion. [*nuclear-1*]
- Detonator** - A device containing a small detonating charge that is used for detonating an explosive, including, but not limited to, blasting caps, exploders, electric detonators, and delay electric blasting caps. [*mining-1*]
- Deuterium** An isotope of hydrogen with one proton and one neutron in the nucleus. [*nuclear-1*]
- Deuteron** The nucleus of deuterium. It contains one proton and one neutron. See also heavy water. [*nuclear-1*]
- Development mining** - Work undertaken to open up coal reserves as distinguished from the work of actual coal extraction. [*mining-1*]
- Development** The process of analysis, design, coding and testing software. [*soft*]
- Devitrification** the process in which a glass (non-crystalline or vitreous solid) transforms to a crystalline solid [*mech-1*]

- DFD** Data Flow Diagram . [*soft*]
- DGL** Data Generation Language: a tool for generating test data for hardware or software systems. [*soft*]
- DGL** The distributed version of GL . [*soft*]
- Dhrystone** A benchmark program in C and Ada. [*soft*]
- DIALOG** A commercial bibliographic database and retrieval service from DIALOG Information Services. [*soft*]
- diamagnetism** a weak form of induced or nonpermanent magnetism for which the magnetic susceptibility is negative. [*mat-1*]
- Diamagnetism** a weak form of induced or nonpermanent magnetism for which the magnetic susceptibility is negative.[*mech-1*]
- DIB** Device Independent Bitmap, a format for portable images. [*soft*]
- die** (1) a metal form used as a permanent mold for die casting or for a wax pattern in investment casting; (2) an integrated circuit chip as diced or cut from the finished wafer. [*mat-1*]
- dielectric** any material that is electrically insulating. [*mat-1*]
- Dielectric** any material that is electrically insulating.[*mech-1*]
- dielectric constant** a relative measurement of the degree of polarization (shift of positive charge toward the negative electrode and negative charge toward the positive electrode) that occurs when a material is placed in an electric field. [*mat-1*]
- Dielectric Constant** the ratio of the permittivity of a medium to that of a vacuum.[*mech-1*]
- Dielectric Strength** the magnitude of an electric field necessary to cause significant current passage through a dielectric material.[*mech-1*]
- Dienst** A protocol for a distributed digital document library built on http [*soft*]
- Differential pressure (dp or dP)** The difference in pressure between two points of a system, such as between the inlet and outlet of a pump. [*nuclear-1*]
- diffraction (x-ray)** constructive interference of x-ray beams that are scattered by atoms of a crystal. [*mat-1*]
- Diffuser fan** - A fan mounted on a continuous miner to assist and direct air delivery from the machine to the face.[*mining-1*]
- Diffusion** - Blending of a gas and air, resulting in a homogeneous mixture. Blending of two or more gases.[*mining-1*]
- diffusion coefficient ( $D$ )** the constant of proportionality between the diffusion flux and the concentration gradient in Fick's first law; its magnitude is indicative of the rate of atomic diffusion. [*mat-1*]
- Diffusion Coefficient** the constant of proportionality between diffusion flux and the concentration gradient in Fick's first law.[*mech-1*]
- diffusion flux ( $J$ )** the quantity of mass diffusing through and perpendicular to a unit cross-sectional area of material per unit time. [*mat-1*]
- Diffusion** mass transport by atomic motion.[*mech-1*]
- diffusion** motion of atoms, ions, or vacancies through a material. [*mat-1*]
- DII** Dynamic Invocation Interface. An OMG specification. [*soft*]
- DIIG** Digital Information Infrastructure Guide. A resource to facilitate the development of the NII [*soft*]
- Dilute** - To lower the concentration of a mixture; in this case the concentration of any hazardous gas in mine air by addition of fresh intake air.[*mining-1*]
- Dilution** - The contamination of ore with barren wall rock in stopping.[*mining-1*]
- DIN** Deutsche Institut fuer Normung: the German standardisation body, a member of ISO . [*soft*]
- DIP** Document Image Processing: storage, management and retrieval of images. [*soft*]
- dipole** a system or object whose one end has a negative charge and the other a positive charge. [*mat-1*]
- Dipole (electric)** a pair of equal yet opposite electrical charges that are separated by a small distance[*mech-1*]
- Dip** - The inclination of a geologic structure (bed, vein, fault, etc.) from the horizontal; dip is always measured downwards at right angles to the strike. [*mining-1*]
- Direct Tension Indicators** Direct Tension Indicators (DTI's) is a term sometimes used to describe load indicating washers. Projections on the face of the washer (usually on the face abutting the bolt head or nut) that deform under loading as the bolt is tensioned. An indication of the

- tension in the bolt can be made by measuring the gap between the washer face and the nut or bolt head. The smaller the gap - the greater the tension in the bolt. Commonly used in civil rather than mechanical engineering applications. [*mech-3*]
- Dirt** Design In Real Time: a user interface builder for the X Window System by R.Hesketh [*soft*]
- DISA** Data Interchange Standards Association (USA) [*soft*]
- DISA** Defense Information Systems Agency (USA) [*soft*]
- Dislocation** a linear crystalline defect around which there is an atomic misalignment. [*mech-1*]
- dislocation** a linear crystalline defect around which there is atomic misalignment; plastic deformation corresponds to the motion of dislocations in response to an applied shear stress; edge, screw, and mixed dislocations are possible. [*mat-1*]
- dislocation line** the line that extends along the end of the extra half-plane of atoms for an edge dislocation, and along the center of the spiral of a screw dislocation. [*mat-1*]
- Displacement** A change in position. A displacement may be a translation a rotation or a combination of those. [*struc-1*]
- Display PostScript** An extended form of PostScript permitting its interactive use with bitmap displays. [*soft*]
- Distributed load** An external force which acts over a region of length, surface, or area [*struc-1*]
- DLG** Digital Line Graph. A format for map files [*soft*]
- DL/I** The data manipulation language of IMS . [*soft*]
- DLM** Distributed Lock Manager on distributed VMS systems. [*soft*]
- DME** Distributed Management Environment: an OSF standard presently at the RFT stage. [*soft*]
- DMS** Document Management System. [*soft*]
- DNS** Distributed Name Service: see DECdns . [*soft*]
- DOC** Distributed Object Computing. [*soft*]
- Document Examiner** A high-performance hypertext system by Symbolics that provides on-line access to their user documentation. [*soft*]
- Document Style Semantics and Specification Language** An ISO standard under preparation, addressing the semantics of high-quality composition in a manner independent of particular formatting systems or processes. DSSSL is intended as a complementary standard to SGML for the specification of semantics. [*soft*]
- DoD-STD-2167A** A DoD standard specifying the overall process of development and documentation for mission-critical software - More information. [*soft*]
- DoD-STD-2168** A DoD standard for software quality assurance procedures. [*soft*]
- DoD** The US Department of Defense, responsible for sponsoring many standards in the software engineering field [*soft*]
- DOE** Distributed Object Environment: a distributed object-oriented application framework from SunSoft. [*soft*]
- DoE** The US Department of Energy [*soft*]
- domain** a volume region of a ferromagnetic or ferromagnetic material in which all atomic or ionic magnetic moments are aligned in the same direction. [*mat-1*]
- Domain** Distributed Operating Multi Access Interactive Network:the proprietary network protocol used by Apollo workstations. [*soft*]
- DOMF** Distributed Object Management Facility: an OMG -compliant object management system; part of DOE . from SunSoft. [*soft*]
- DOORS** Dynamic Object Oriented Requirements System [*soft*]
- doping** the intentional alloying of semiconducting materials with controlled concentrations of donor or acceptor impurities. [*mat-1*]
- Doping** the intentional alloying of semiconducting materials with controlled concentrations of donor or acceptor impurities.[*mech-1*]
- Doppler coefficient** Another name used for the fuel temperature coefficient of reactivity. [*nuclear-1*]
- DORIS** 3-10 GeV center of mass electron-positron storage ring/collider at DESY . [*soft*]
- Dose, absorbed** The amount of energy deposited in any substance by ionizing radiation per unit mass of the substance. It is expressed numerically in rads or grays. [*nuclear-1*]

- Dose equivalent** The product of absorbed dose in tissue multiplied by a quality factor and then sometimes multiplied by other necessary modifying factors at the location of interest. It is expressed numerically in rems or sieverts. [*nuclear-1*]
- Dose rate** The ionizing radiation dose delivered per unit time. For example, rem or sieverts per hour. [*nuclear-1*]
- Dose** The absorbed dose, given in rads (or in SI units, grays), that represents the energy absorbed from the radiation in a gram of any material. Furthermore, the biological dose or dose equivalent, given in rem or sieverts, is a measure of the biological damage to living tissue from radiation exposure. [*nuclear-1*]
- Dosimeter** A small portable instrument (such as a film badge or thermoluminescent or pocket dosimeter) for measuring and recording the total accumulated personal dose of ionizing radiation. [*nuclear-1*]
- Dosimetry** The theory and application of the principles and techniques involved in the measurement and recording of ionizing radiation doses. [*nuclear-1*]
- DPS** Display PostScript . [*soft*]
- DQO** Data Quality Objectives [*soft*]
- Dragline** A large excavation machine used in surface mining to remove overburden (layers of rock and soil) covering a coal seam. The dragline casts a wire rope-hung bucket a considerable distance, collects the dug material by pulling the bucket toward itself on the ground with a second wire rope (or chain), elevates the bucket, and dumps the material on a spoil bank, in a hopper, or on a pile. [*mining-1*]
- DRAGON** An Esprit project aimed at providing effective support to reuse in real-time distributed Ada applications.. [*soft*]
- DRAGOON** A distributed concurrent object-oriented Ada -based language from the Esprit project. [*soft*]
- drag** the bottom half of a horizontally parted mold. [*mat-1*]
- Drainage** - The process of removing surplus ground or surface water either by artificial means or by gravity flow. [*mining-1*]
- Drawing** a deformation technique used to fabricate metal wire and tubing. Deformation is accomplished by pulling the material through a die by means of a tensile force applied on the exit side. [*mech-1*]
- Draw slate** - A soft slate, shale, or rock from approximately 1 cm to 10 cm thick and located immediately above certain coal seams, which falls quite easily when the coal support is withdrawn. [*mining-1*]
- Drift** - A horizontal passage underground. A drift follows the vein, as distinguished from a crosscut that intersects it, or a level or gallery, which may do either. [*mining-1*]
- Drift mine** An underground coal mine in which the entry or access is above water level and generally on the slope of a hill, driven horizontally into a coal seam. [*mining-1*]
- Drill** - A machine utilizing rotation, percussion (hammering), or a combination of both to make holes. If the hole is much over 0.4m in diameter, the machine is called a borer. [*mining-1*]
- Drilling** - The use of such a machine to create holes for exploration or for loading with explosives. [*mining-1*]
- Drywell** The containment structure enclosing a boiling water reactor vessel and its recirculation system. The drywell provides both a pressure suppression system and a fission product barrier under accident conditions. [*nuclear-1*]
- DS** Dansk Standard. The Danish standards association. [*soft*]
- DSDM** Dynamic Systems Development Method. A non-proprietary Rapid Application Development method [*soft*]
- DSE** Data Structure Editor. [*soft*]
- DSEE** Domain Software Engineering Environment: a proprietary CASE framework and configuration management system from Apollo . [*soft*]
- DSOM** Distributed SOM [*soft*]
- DSP** Digital Signal Processing. [*soft*]
- DSS** Decision Support Systems. Software tools to help with management tasks. [*soft*]
- DSSSL** Document Style Semantics and Specification Language. An ISO standard under preparation, addressing the semantics of high-quality composition in a manner independent of particular formatting systems or processes. DSSSL is intended as a complementary standard to SGML for the specification of semantics - More information. [*soft*]



**DTD** Document Type Definition: the definition of a document type in SGML, consisting of a set of markup tags and their interpretation. [*soft*]

**DTIC** Defense Technical Information Center of the US Dept. of Defense. [*soft*]

**DTI** UK Department of Trade and Industry. [*soft*]

**DTL** DVI Text Language. An ASCII DVI format. [*soft*]

**DTLS** Descriptive Top-Level Specification language: used in POSIX. [*soft*]

**DTP** Desktop publishing. [*soft*]

**DTS** Distributed Time Service. [*soft*]

**ductile fracture** a mode of fracture that is attended by extensive gross plastic deformation. [*mat-1*]

**ductile-to-brittle transition** the transition from ductile to brittle behavior with a decrease in temperature exhibited by BCC alloys; the temperature range over which the transition occurs is determined by Charpy and Izod impact tests. [*mat-1*]

**Ductility** a measure of a material's ability to undergo appreciable plastic deformation before fracture. [*mech-1*]

**ductility** a measure of a material's ability to undergo appreciable plastic deformation before fracture; it may be expressed as percent elongation or percent area reduction from a tensile test. [*mat-1*]

**Ductility** Ductility generally refers to the amount of inelastic deformation which a material or structure experiences before complete failure. Quantitatively, ductility can be defined as the ratio of the total displacement or strain at failure, divided by the displacement or strain at the elastic limit. [*struc-1*]

**Dummy** - A bag filled with sand, clay, etc., used for stemming a charged hole. [*mining-1*]

**Dump** - To unload; specifically, a load of coal or waste; the mechanism for unloading, e.g. a car dump (sometimes called tippel); or, the pile created by such unloading, e.g. a waste dump (also called heap, pile, tip, spoil pile, etc.). [*mining-1*]

**DVI** Device independent file format. A dvi file containing a description of the formatted document is the usual output of TeX. [*soft*]

**DWARF** A debugging information format for UNIX System V [*soft*]

**Dylan** An object-oriented dynamic language [*soft*]

**Dynamic equilibrium** Equilibrium which includes inertial forces. [*struc-1*]

**Dynamic Friction** Resistance to relative movement of two bodies that are already in motion. [*mech-3*]

## EF

**E** A database programming language developed for the EXODUS project. [*soft*]

**EAPLS** European Association for Programming Languages and Systems - More information. [*soft*]

**EARN** European Academic and Research Network. A self-managing network in the research community originally sponsored by IBM. It uses BITNET protocols and connects to BITNET in the US - More information. [*soft*]

**Earthquake, operating basis** An earthquake that could be expected to affect the reactor plant site, but for which the plant power production equipment is designed to remain functional without undue risk to public health and safety. [*nuclear-1*]

**EAST** A Eureka project developing a software engineering platform. [*soft*]

**EC** Electronic Commerce. Managing business transactions using networking and electronic means. [*soft*]

**ECFA** European Committee for Future Accelerators. This body, whose principal role is to take care of Europe's requirements for future particle accelerators, has also looked at particle physics data handling on a European-wide basis. [*soft*]

**ECHO** A public database service of the European Community - More information. [*soft*]

**ECHT** European Conference on Hypertext. [*soft*]

**ECIP2** An Esprit Project on the definition of a specification language at the requirement level. [*soft*]

**ECIS** European Committee for Interoperable Systems. [*soft*]

**ECMA** European Computer Manufacturers Association [*soft*]

**ECM** Enterprise Component Modelling. [*soft*]

- ECO** Engineering Change Order. [*soft*]
- ECOOP** European Conference on Object-oriented Programming. [*soft*]
- ECRC** Electronic Commerce Resource Centers. A network of US government sponsored centers that provide support to government and industry in developing and implementing strategies for business process improvement, implementing enabling technologies, and migrating to electronic commerce [*soft*]
- EDA** Product line from Dazix . [*soft*]
- Eden** An object-oriented distributed operating system based on an RPC mechanism . [*soft*]
- edge dislocation** a linear crystalline defect associated with the lattice distortion produced in the vicinity of the end of an extra half-plane of atoms within a crystal; the Burgers vector is perpendicular to the dislocation line. [*mat-1*]
- EDH** Electronic Document Handling (at CERN ) - More information. [*soft*]
- EDI** Electronic Data Interchange: a set of standards for exchanging orders and other business transactions by electronic mail - More information. [*soft*]
- EDIF** Electronic Design Interchange Format . [*soft*]
- EDM** Engineering Data Management. [*soft*]
- EDMS** Electronic Document Management System. [*soft*]
- EDUCOM** A nonprofit consortium of US higher education institutions promoting access to and use of information resources and technology - More information. [*soft*]
- EEMA** European Electronic Messaging Association. [*soft*]
- EER** An extended entity-relationship model . [*soft*]
- Effective Diameter** This is the diameter of an imaginary cylinder coaxial with the thread, which has equal metal and space widths. It is often referred to as pitch diameter. Sometimes referred to as the simple effective diameter to differentiate from the virtual effective diameter. [*mech-3*]
- Effective half-life** The time required for the amount of a radioactive element deposited in a living organism to be diminished 50 percent as a result of the combined action of radioactive decay and biological elimination. [*nuclear-1*]
- Effective Nut Diameter** Twice the effective nut radius. [*mech-3*]
- Effective Nut Radius** The radius from the centre of the nut to the point where the contact forces, generated when the nut is turned, can be considered to act. [*mech-3*]
- EFF** Electronic Frontier Foundation. An organisation working on civil rights issues in networking [*soft*]
- Efficiency, plant** The percentage of the total energy content of a power plant's fuel that is converted into electricity. The remaining energy is lost to the environment as heat. [*nuclear-1*]
- EHTS** Emacs HyperText System: an experimental multiuser hypertext system from the University of Aalborg. It consists of a text editor (based on Epoch and GNU and written in elisp) and a graphical browser (based on XView ) running under the X Window System and OpenWindows Both tools use HyperBase as database. [*soft*]
- EIA** Electronic Industries Association. [*soft*]
- Eiffel** An object-oriented programming language developed by B.Meyer et al. and commercialised by ISE [*soft*]
- Eiffel shelf** A set of user-contributed classes available with the Eiffel system. [*soft*]
- EIS** Executive Information System. [*soft*]
- EJO** Electronic Journals Online. A service of the OCLC . [*soft*]
- Elastic** A material or structure is said to behave elastically if it returns to its original geometry upon unloading. [*struc-1*]
- elastic deformation** nonpermanent deformation, totally recovered upon release of an applied stress. [*mat-1*]
- Elastic energy** The energy stored in deformed elastic material (e.g., a watch spring). Elastic energy equals where  $k$  is the stiffness, and is the associated deflection. Elastic energy is sometimes called elastic potential energy because it can be recovered when the object returns to its original shape; see potential energy. [*struc-1*]
- Elastic limit** The point beyond which the deformations of a structure or material are no longer purely elastic. [*struc-1*]
- Elastic Modulus** see Modulus of Elasticity [*mech-1*]

**elastomer** a polymeric material that may experience large and reversible elastic deformations. [*mat-1*]

**Elastomer** a polymeric material that may experience large and reversible elastic deformations. [*mech-1*]

**Electrical generator** An electromagnetic device that converts mechanical (rotational) energy into electrical energy. Most large electrical generators are driven by steam or water turbine systems. [*nuclear-1*]

**Electrical grounding** - To connect with the ground to make the earth part of the circuit. [*mining-1*]

**electrodeposition** (1) the deposition of a conductive material from a plating solution by the application of electrical current; (2) the deposition of a substance on an electrode by passing electric current through an electrolyte; electroplating, electroforming, electrorefining, and electrowinning result from electrodeposition. [*mat-1*]

**Electroless Nickel** A relatively thin, hard coating that can be applied to threads and deposited uniformly. Bright metallic in appearance this coating has excellent resistance to wear and corrosion. [*mech-3*]

**electrolyte** a solution through which an electric current may be carried by the motion of ions. [*mat-1*]

**Electromagnetic radiation** A traveling wave motion resulting from changing electric or magnetic fields. Familiar electromagnetic radiation range from x-rays (and gamma rays) of short wavelength, through the ultraviolet, visible, and infrared regions, to radar and radio waves of relatively long wavelength. [*nuclear-1*]

**electromagnetic radiation** energy propagated at the speed of light by an electromagnetic field. [*mat-1*]

**Electron** An elementary particle with a negative charge and a mass 1/1837 that of the proton. Electrons surround the positively charged nucleus and determine the chemical properties of the atom. [*nuclear-1*]

**electronegative** for an atom, having a tendency to accept valence electrons; also a term to describe non-metallic elements. [*mat-1*]

**Electronegativity** for an atom, having a tendency to accept valence electrons. [*mech-1*]

**Electronic Mail** A system allowing computer users to exchange messages via a network. [*soft*]

**electropositive** for an atom, having a tendency to release valence electrons; also a term to describe metallic elements. [*mat-1*]

**Element** One of the 103 known chemical substances that cannot be broken down further without changing its chemical properties. Some examples include hydrogen, nitrogen, gold, lead, and uranium. See the periodic table of elements [*nuclear-1*]

**Ellemtel** A C++ style guide originated by Ellemtel Telecom Systems, Stockholm. [*soft*]

**ELOT** The Greek standards association. [*soft*]

**ELSA** Electronic Library Services and Applications. A library of reusable public domain software supported by NASA - More information. [*soft*]

**emacs** A popular editor and associated utilities for UNIX [*soft*]

**email** See Electronic mail . [*soft*]

**E-mail** See Electronic mail . [*soft*]

**Embedment** Localized plastic deformation which occurs in the vicinity of clamped fasteners or in the fastener threads. [*mech-3*]

**EMDIR** The CERN Electronic Mail DIRectory utility. [*soft*]

**Emergency classifications** Response by an offsite organization is required to protect local citizens near the site. A request for assistance from offsite emergency response organizations may be required. [*nuclear-1*]

**Emergency core cooling systems (ECCS)** Reactor system components (pumps, valves, heat exchangers, tanks, and piping) that are specifically designed to remove residual heat from the reactor fuel rods should the normal core cooling system (reactor coolant system) fail. [*nuclear-1*]

**Emergency feedwater** Another name that may be used for auxiliary feedwater. [*nuclear-1*]

**E-Modulus** see modulus of elasticity. [*struc-1*]

**Encapsulation** The ability to provide users with a well-defined interface to a set of functions in a way which hides their internal workings. In object-oriented programming, the technique of keeping together data structures and the methods (procedures) which act on them. [*soft*]

**Energy** A property of a body related to its ability to move a force through a distance opposite the force's direction; energy is the product of the magnitude of the force times the distance. Energy may take several forms [*struc-1*]

- Engineering Ceramics** technical ceramics for structural applications. [*mech-1*]
- Entity-Relationship** An approach to data modelling proposed by P.Chen in 1976. [*soft*]
- Entity-Relationship diagram** A type of diagram used in the Entity-Relationship model. [*soft*]
- ENTOMB** A method of decommissioning in which radioactive contaminants are encased in a structurally long-lived material, such as concrete. The entombment structure is appropriately maintained and continued surveillance is carried out until the radioactivity decays to a level permitting decommissioning and ultimate unrestricted release of the property. [*nuclear-1*]
- Entry** - An underground horizontal or near-horizontal passage used for haulage, ventilation, or as a mainway; a coalheading; a working place where the coal is extracted from the seam in the initial mining; same as "gate" and "roadway," both British terms. [*mining-1*]
- Environmentally Assisted Cracking (Eac)** A process that can occur with the use of high strength steel fasteners in which crack initiation and growth occurs in the fastener at a comparatively low stress level as a result of interactions that occur with the environment. Hydrogen is suspected of causing EAC in high strength steel fasteners, the hydrogen being produced as a result of chemical reactions (galvanic corrosion in a moist environment) or being present from a plating process that may have been applied to the fastener. [*mech-3*]
- Environmental qualification** A process for ensuring that equipment will be capable of withstanding the ambient conditions that could exist when the specific function to be performed by the equipment is actually called upon to be performed under accident conditions. [*nuclear-1*]
- EOQ** European Organization for Quality. [*soft*]
- EOUG** European ORACLE Users Group. [*soft*]
- EPCS** Experimental Physics Control Systems: a group of the European Physical Society, focussing on all aspects of controls, especially informatics, in experimental physics, including accelerators and experiments. [*soft*]
- EPIC** Electronic Privacy Information Center. A US center working on privacy issues relating to the National Information Infrastructure - More information. [*soft*]
- EPICS** Experimental Physics and Industrial Control System. Software for accelerator, experiment, and process control from ANL - More information. [*soft*]
- Epoch** A version of GNU Emacs for the X Window system from NCSA . [*soft*]
- EPO** European Patent Office [*soft*]
- EPS** Encapsulated PostScript - More information. [*soft*]
- EQA** European Quality Award for process improvement. [*soft*]
- equiaxed** powder or grain shapes with approximately equal dimensions. [*mat-1*]
- Equilibrium** An object is in equilibrium if the resultant of the system of forces acting on it has zero magnitude. See static equilibrium and dynamic equilibrium. [*struc-1*]
- equilibrium (phase)** the state of a system where the phase characteristics remain constant over indefinite time periods; at equilibrium the free energy is a minimum. [*mat-1*]
- ERA** Entity-Relationship -Attribute. [*soft*]
- ERC** An extended entity-relationship model . [*soft*]
- ERCIM** European Research Consortium on Informatics and Mathematics. An association of European research organizations promoting cooperative research on key issues in information technology [*soft*]
- ERCS** Extended Reference Concrete Syntaxes for SGML , to support East Asian and other non-English languages - More information. [*soft*]
- ERD** Entity-relationship diagram. [*soft*]
- ER** Entity-Relationship . [*soft*]
- ESA** European Space Agency standards. [*soft*]
- ESF** Eureka Software Factory. [*soft*]
- ESI** European Software Institute. A network of organisations co-operating in strategic planning of process improvement [*soft*]
- ESIS** Element Structure Information Set produced by SGML parsers. [*soft*]
- ESML** Extended Systems Modelling Language: a real-time software engineering methodology based on RTSA . [*soft*]
- ESPIF** European Software Process Improvement Foundation [*soft*]



- Esprit** A funding programme to develop Informatics in the EEC. - More information. [*soft*]
- Estelle** A formal description technique developed for OSI protocol specification. [*soft*]
- ESUG** European Smalltalk Users' Group. [*soft*]
- etching** chemical surface corrosion, usually conducted in a controlled fashion on a polished surface of a material sample to reveal details of the microstructure. [*mat-1*]
- Ethernet** A 10-megabit/second local area network developed by Xerox and now widely adopted. Hosts are connected to a coaxial cable, and transmission conflicts are avoided by backing off and re-sending later. IEEE standard 802.3 defines the hardware and transport layers of the network. [*soft*]
- ETLA** Extended Three Letter Acronym. [*soft*]
- ETM** An active DBMS from the University of Karlsruhe. [*soft*]
- ETSI** European Telecommunications Standards Institute. [*soft*]
- EUnet** The European UNIX network: an Internet service provider. More information. [*soft*]
- Eureka** A European technological development programme. [*soft*]
- EuropaNET** A combination of pan-European backbone services run by DANTE . [*soft*]
- EUSIDIC** European Association of Information Services [*soft*]
- Eutectic Phase** one of the two phases found in the eutectic structure.[*mech-1*]
- eutectic** upon cooling, a liquid phase transforms isothermally and reversibly into two intimately mixed solid phases; the lowest melting composition in a material system. [*mat-1*]
- Eutectoid Phase**[*mech-1*]
- eutectoid** upon cooling, one solid phase transforms isothermally and reversibly into two new solid phases that are intimately mixed. [*mat-1*]
- EUUG** European UNIX User Group. [*soft*]
- Evaluation** - The work involved in gaining a knowledge of the size, shape, position and value of coal.[*mining-1*]
- EWOS** European Workshop for Open Systems. [*soft*]
- Excellerator** A set of CASE tools from Index Technology Corp. [*soft*]
- Exclusion area** The area surrounding the reactor where the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property. [*nuclear-1*]
- Excursion** A sudden, very rapid rise in the power level of a reactor caused by supercriticality. Excursions are usually quickly suppressed by the negative temperature coefficient, the fuel temperature coefficient or the void coefficient (depending upon reactor design), or by rapid insertion of control rods. [*nuclear-1*]
- EXODUS** An extensible database project developed at the University of Wisconsin. [*soft*]
- eXodus** A package from White Pines allowing the Macintosh to be used as an X server . [*soft*]
- Expert system** An intelligent computer program that contains a knowledge base, specialized software, and a set of algorithms or rules that infer new facts from knowledge and from incoming data. [*soft*]
- Exploration** - The search for mineral deposits and the work done to prove or establish the extent of a mineral deposit. Alt:Prospecting and subsequent evaluation.[*mining-1*]
- Explosive** - Any rapidly combustive or expanding substance.The energy released during this rapid combustion or expansion can be used to break rock.[*mining-1*]
- Exposure** Being exposed to ionizing radiation or to radioactive material. [*nuclear-1*]
- Express** A data modelling language adopted by the ISO working group on STEP . [*soft*]
- Extensible database** A DBMS that allows access to data from remote sources as if it were part of the database. [*soft*]
- External force** A surface force or body force acting on an object. External forces are sometimes called applied forces. [*struc-1*]
- External Force Or Load** Forces exerted on a fastener as a result of an applied loading to the joint. [*mech-3*]
- External radiation** Exposure to ionizing radiation when the radiation source is located outside the body. [*nuclear-1*]
- External Thread** A screw thread which is formed on an external cylinder, such as on bolts, screws, studs etc. [*mech-3*]

- Extraction** - The process of mining and removal of cal orore from a mine.[*mining-1*]
- Extremities** The hands, forearms, elbows, feet, knees, leg below the knees, and ankles. (Permissible radiation exposures in these regions are generally greater than in the whole body because they contain fewer blood forming organs and have smaller volumes for energy absorption.) [*nuclear-1*]
- Extrinsic Semiconductor** a semi-conducting material for hich the electrical behavior is determined by impurities.[*mech-1*]
- extrusion** a forming technique whereby a material is forced, by compression, through a die orifice. [*mat-1*]
- Extrusion** a forming technique whereby a material is forced, by compression, through a die orifice.[*mech-1*]
- EXUG** European X [*soft*]
- face-centered cubic (FCC)** a crystal structure found in some of the common elemental metals; within the cubic unit cell atoms are located at all corner and face-centered positions [*mat-1*]
- Face cleat** - The principal cleavage plane or joint at rightangles to the stratification of the coal seam.[*mining-1*]
- Face conveyor** - Any conveyor used parallel to a workingface which delivers coal into another conveyor or into a car.[*mining-1*]
- Face** The exposed area of a coal bed from which coal isbeing extracted.[*mining-1*]
- Factor of safety** - The ratio of the ultimate breakingstrength of the material to the force exerted against it. If a ropewill break under a load of 6000 lbs., and it is carrying a load of 2000 lbs., its factor of safety is 6000 divided by 2000 which equals3.[*mining-1*]
- Fall** - A mass of roof rock or coal which has fallen in anypart of a mine.[*mining-1*]
- Fan, auxiliary** - A small, portable fan used to supplementthe ventilation of an individual working place.[*mining-1*]
- Fan, booster** - A large fan installed in the main aircurrent, and thus in tandem with the main fan.[*mining-1*]
- Fan signal** - Automation device designed to give alarm ifthe main fan slows down or stops.[*mining-1*]
- Fast fission** Fission of a heavy atom (such as uranium-238) when it absorbs a high energy (fast) neutron. Most fissionable materials need thermal (slow) neutrons in order to fission. [*nuclear-1*]
- Fast neutron** A neutron with kinetic energy greater than its surroundings when released during fission. [*nuclear-1*]
- Fatigue** failure, at relatively low stress levels, of structures that are subjected to fluctuating and cyclic stresses.[*mech-1*]
- FATMEN** A distributed file and tape management system for HEP data - More information. [*soft*]
- Fault** - A slip-surface between two portions of the earth'ssurface that have moved relative to each other. A fault is a failure surface and is evidence of severe earth stresses.[*mining-1*]
- Fault zone** - A fault, instead of being a single clean-fracture, may be a zone hundreds or thousands of feet wide. The faultzone consists of numerous interlacing small faults or a confused zoneof gouge, breccia, or mylonite.[*mining-1*]
- FDDI** Fiber Distributed Data Interface: a new ANSI standard for a 100 megabits/second fibre optic token ring local area network [*soft*]
- FEA** Finite Element Analysis. [*soft*]
- Feature** An attribute or function of a class in Eiffel . [*soft*]
- Feeder** - A machine that feeds coal onto a conveyor beltevenly.[*mining-1*]
- feeder** part of the gating system that forms the reservoir of molten metal necessary to compensate for losses due to shrinkage as the metal solidifies; sometimes referred to as a riser. [*mat-1*]
- Feed-forward** A multilayer perceptron network in which the outputs from all neurons (see McCulloch-Pitts ) go to following but not preceding layers, so there are no feedback loops. [*soft*]
- Feedwater** Water supplied to the reactor pressure vessel (in a BWR) or the steam generator (in a PWR) that removes heat from the reactor fuel rods by boiling and becoming steam. The steam becomes the driving force for the plant turbine generator. [*nuclear-1*]
- Fermi Energy** for a metal, the energy corresponding to the highest filled electron state in the valence bond at 0 K.[*mech-1*]
- Ferrimagnetism**[*mech-1*]

- ferrimagnetism** permanent and large magnetizations found in some ceramic materials; it results from antiparallel spin coupling and incomplete magnetic moment cancellation. [*mat-1*]
- ferrite (ceramic)** ceramic oxide materials composed of both divalent and trivalent cations, some of which are ferrimagnetic. [*mat-1*]
- Ferrite (iron)** body-centered cubic crystal structure. [*mech-1*]
- ferrite (iron)** body-centered cubic iron; also iron and steel alloys that have the BCC crystal structure. [*mat-1*]
- Ferroelectric** a dielectric material that may exhibit polarization in the absence of an electric field. [*mech-1*]
- ferroelectricity** spontaneous alignment of electric dipoles within a material under the influence of an electric field, resulting in a hysteresis loop when the direction of electric field is switched. [*mat-1*]
- Ferromagnetism** permanent and large magnetizations found in some metals (e.g., Fe, Ni, and Co), which result from the parallel alignments of neighboring magnetic moments. [*mech-1*]
- ferromagnetism** spontaneous alignment of magnetic dipoles within a material under the influence of a magnetic field, resulting in a hysteresis loop when the direction of magnetic field is switched. [*mat-1*]
- ferrous alloy** a metal alloy for which iron is the prime constituent. [*mat-1*]
- Fertile material** A material, which is not itself fissile (fissionable by thermal neutrons), that can be converted into a fissile material by irradiation in a reactor. There are two basic fertile materials: uranium-238 and thorium-232. When these fertile materials capture neutrons, they are converted into fissile plutonium-239 and uranium-233, respectively. [*nuclear-1*]
- FFT** Fast Fourier Transform [*soft*]
- Fiber** any material that has been drawn into a cylinder with a length-to-diameter ratio greater than about ten. [*mech-1*]
- Fick's first law** the diffusion flux is proportional to the concentration gradient; this relationship is employed for steady-state diffusion situations. [*mat-1*]
- Fick's second law** the time rate of change of concentration is proportional to the second derivative of concentration; this relationship is employed in nonsteady-state diffusion situations. [*mat-1*]
- Fill** - Any material that is put back in place of the extracted ore to provide ground support. [*mining-1*]
- Filler** an inert foreign substance added to a matrix to improve or modify its properties. [*mech-1*]
- Film badge** Photographic film used for measurement of ionizing radiation exposure for personnel monitoring purposes. The film badge may contain two or three films of differing sensitivities, and it may also contain a filter that shields part of the film from certain types of radiation. [*nuclear-1*]
- FIMS** Form Interface Management System. [*soft*]
- FIPS** Federal Information Processing Standard: U.S. Government standards. [*soft*]
- Fire damp** - The combustible gas, methane, CH<sub>4</sub>. Also, the explosive methane-air mixtures with between 5
- firing** a high temperature heat treatment that increases the density and strength of a ceramic piece. [*mat-1*]
- Firing** a high-temperature heat treatment that increases the density and strength of a ceramic piece. [*mech-1*]
- Fiscal year** The 12-month period, from October 1 through September 30, used by the Federal Government in budget formulation and execution. The fiscal year is designated by the calendar year in which it ends. [*nuclear-1*]
- Fissile material** Although sometimes used as a synonym for fissionable material, this term has acquired a more restricted meaning. Namely, any material fissionable by thermal (slow) neutrons. The three primary fissile materials are uranium-233, uranium-235, and plutonium-239. [*nuclear-1*]
- Fissionable material** Commonly used as a synonym for fissile material, the meaning of this term has been extended to include material that can be fissioned by fast neutrons, such as uranium-238. [*nuclear-1*]
- Fission (fissioning)** The splitting of a nucleus into at least two other nuclei and the release of a relatively large amount of energy. Two or three neutrons are usually released during this type of transformation. [*nuclear-1*]

- Fission gases** Those fission products that exist in the gaseous state. In nuclear power reactors, this includes primarily the noble gases, such as krypton and xenon. [*nuclear-1*]
- Fission products** The nuclei (fission fragments) formed by the fission of heavy elements, plus the nuclide formed by the fission fragments' radioactive decay. [*nuclear-1*]
- Fissure** - An extensive crack, break, or fracture in the rocks. [*mining-1*]
- FITS** Flexible Image Transport System. The standard data interchange and archive format of the astronomy community [*soft*]
- Fixed carbon** The part of the carbon that remains behind when coal is heated in a closed vessel until all of the volatile matter is driven off. [*mining-1*]
- Fixed connection** In two dimensions, a fixed connection between two members restrains all three degrees of freedom of the connected member with respect to one another. A fixed connection is sometimes called a rigid connection or moment-resisting connection. [*struc-1*]
- Fixed support** In two dimensions, a fixed support restrains three degrees of freedom [*struc-1*]
- Flat-lying** - Said of deposits and coal seams with a dip up to 5 degrees. [*mining-1*]
- Flexibility** Flexibility is the inverse of stiffness. When a force is applied to a structure, there is a displacement in the direction of the force; flexibility is the ratio of the displacement divided by the force. High flexibility means that a small load produces a large displacement. [*struc-1*]
- Flexure** Bending deformation, i.e., deformation by increasing curvature. [*struc-1*]
- Flight** - The metal strap or crossbar attached to the drag chain and flight conveyor. [*mining-1*]
- Float dust** - Fine coal-dust particles carried in suspension by air currents and eventually deposited in return entries. Dust consisting of particles of coal that can pass through a No. 200 sieve. [*mining-1*]
- Floating Type Flange Joint** A conventional flanged joint in which a gasket is compressed by bolts - the gasket is not rigidly located. Calculation methods such as the ASME code in the USA and the EN1591 code in Europe. [*mech-3*]
- Floor** - That part of any underground working upon which a person walks or upon which haulage equipment travels; simply the bottom or underlying surface of an underground excavation. [*mining-1*]
- Floppy** A Fortran coding convention checker. The latest version has a feature for generating HTML . - More information. [*soft*]
- Flue Gas Desulfurization** Any of several forms of chemical/physical processes that remove sulfur compounds formed during coal combustion. The devices, commonly called "scrubbers," combine the sulfur in gaseous emissions with another chemical medium to form inert "sludge" which must then be removed for disposal. [*mining-1*]
- Fluidized Bed Combustion** A process with a high degree of ability to remove sulfur from coal during combustion. Crushed coal and limestone are suspended in the bottom of a boiler by an upward stream of hot air. The coal is burned in this bubbling, liquid-like (or "fluidized") mixture. Rather than released as emissions, sulfur from combustion gases combines with the limestone to form a solid compound recovered with the ash. [*mining-1*]
- Fluoro-Carbon Thread Coating** A low friction coating applied to threads. This type of coating is frequently used to prevent thread fouling when an assembly containing threaded fasteners is painted. Unless masked in some way before painting, electro deposited primers can cover the threads. If this occurs assembly difficulties can result unless the expensive chore of cleaning the threads is completed. A fluoro-carbon thread coating eliminates the need for masking or cleaning since paint will not adhere to the coating. This type of coating can also prevent problems caused by weld splatter obstructing the threads of weld nuts during their placement. Such coatings also have the property of reducing the torque-tension scatter during tightening. [*mech-3*]
- Flux** A term applied to the amount of some type of particle (neutrons, alpha radiation, etc.) or energy (photons, heat, etc.) crossing a unit area per unit time. The unit of flux is the number of particles, energy, etc., per square centimeter per second. [*nuclear-1*]
- flux** chemically or physically active formulation capable of cleaning oxides and enabling wetting of metals with solder. [*mat-1*]
- Fly ash** The finely divided particles of ash suspended in gases resulting from the combustion of fuel. Electrostatic precipitators are used to remove fly ash from the gases prior to their release from a power plant's smokestack. [*mining-1*]
- FNAL** Fermi National Accelerator Laboratory (Illinois, USA). [*soft*]



- foam** a polymer that has been made porous (or spongelike) by the incorporation of gas bubbles. [*mat-1*]
- FOOM** Formal Object Oriented Method. [*soft*]
- FOOT** Forum for Object Oriented Technology at CERN - More information. [*soft*]
- Force** A directed interaction between two objects that tends to change the momentum of both. Since a force has both direction and magnitude, it can be expressed as a vector [*struc-1*]
- Force System** see system of forces. [*struc-1*]
- Foresight** A software product from Nu Thena providing graphical modelling tools for high level system design and simulation. [*soft*]
- forging** mechanical forming of a metal by heating and hammering. [*mat-1*]
- Forging** mechanical forming of a metal by heating and hammering. [*mech-1*]
- Formal methods** Several formal approaches to program specification have been developed, such as those based on VDM or Z . They can be used to develop software with high reliability, for safety-critical or high-volume applications - More information. [*soft*]
- Formation** Any assemblage of rocks which have some character in common, whether of origin, age, or composition. Often, the word is loosely used to indicate anything that has been formed or brought into its present shape. [*mining-1*]
- FORML** Formal Object Role Modeling Language. [*soft*]
- Formula quantity** Strategic special nuclear material in any combination in a quantity of 5000 grams or more computed by the formula, grams = (grams contained U-235) + 2.5 (grams U-233 + grams plutonium). This class of material is sometimes referred to as a Category I quantity of material. [*nuclear-1*]
- FORTH** Greek FOundation for Research and Technology [*soft*]
- FORTRAN** FORmula TRANslating system: a programming language widely used for many years in scientific applications. [*soft*]
- Forward delta** The delta which, when combined with a version , creates a child version. See change management [*soft*]
- Forward engineering** The traditional process of moving from high-level abstractions and logical, implementation-independent designs to the physical implementation of a system. [*soft*]
- FORWISS** Bayerische Forschungszentrum fuer Wissensbasierte Systeme (Bavarian research centre for knowledge-based systems) in Passau - More information (in German). [*soft*]
- FOSI** Formatted Output Specification Instance template for SGML [*soft*]
- Fossil fuel** Any naturally occurring fuel of an organic nature, such as coal, crude oil and natural gas. [*mining-1*]
- Fourth generation language** A high-level language, usually non-procedural, to allow users inexperienced in programming to develop database applications. [*soft*]
- FPA** Function Point Analysis. [*soft*]
- FPM** Function Point Metric. [*soft*]
- Fracture** - A general term to include any kind of discontinuity in a body of rock if produced by mechanical failure, whether by shear stress or tensile stress. Fractures include faults, shears, joints, and planes of fracture cleavage. [*mining-1*]
- Fracture** [*mech-1*]
- Fracture toughness** critical value of the stress intensity factor for which crack extensions occurs. [*mech-1*]
- fracture toughness** . [*mat-1*]
- FrameMaker** Commercial publishing software available on a wide variety of workstations and addressing technical and scientific needs - More information. [*soft*]
- Framework** In object-oriented systems, a set of classes that embodies an abstract design for solutions to a number of related problems [*soft*]
- Free energy** a thermodynamic quantity that is a function of both the internal energy and entropy of a system. [*mech-1*]
- free energy** a thermodynamic quantity that is a function of both the internal energy and entropy (or randomness) of a system; at equilibrium the free energy is at a minimum. [*mat-1*]
- FreeHEP** An organisation offering a repository of software and related information for high energy physics applications [*soft*]
- Frenkel defect** in an ionic solid, a cation-vacancy and cation-interstitial pair. [*mat-1*]

- Frenkel Defect** in an ionic solid, a cation-vacancy and cation-interstitial pair. [*mech-1*]
- Fresco** An object-oriented API for graphical user interfaces, under development by the X consortium as an open, multi-vendor standard. [*soft*]
- Friable** - Easy to break, or crumbling naturally. Descriptive of certain rocks and minerals. [*mining-1*]
- Friction** Mechanical resistance to the relative movement of two surfaces. There are two main types of friction; STATIC FRICTION and DYNAMIC FRICTION. Typically static friction is greater than dynamic friction. [*mech-3*]
- Friction Stabilizers** Coating materials used on fasteners with the intention of reducing the scatter in the thread and bearing surface friction coefficients. [*mech-3*]
- Friend** Relationship between classes in the language C++ . [*soft*]
- FSF** Free Software Foundation (675 Massachusetts Ave., Cambridge, MA 02139, USA): dedicated to promoting the development and use of free software, especially the GNU system. [*soft*]
- FSM** Finite State Machine. [*soft*]
- FTAM** File Transfer, Access, and Management: an application layer protocol for file transfer and remote manipulation (ISO 8571). [*soft*]
- FTP** File Transfer Protocol (based on TCP/IP ). Also the name of a utility program available on several operating systems which makes use of this protocol to access and transfer files on remote computers. [*soft*]
- FTR** Formal Technical Review. A software engineering technique - More information. [*soft*]
- Fuel assembly** A cluster of fuel rods (or plates). Also called a fuel element. Many fuel assemblies make up a reactor core. [*nuclear-1*]
- Fuel cycle** The series of steps involved in supplying fuel for nuclear power reactors. It can include mining, milling, isotopic enrichment, fabrication of fuel elements, use in a reactor, chemical reprocessing to recover the fissionable material remaining in the spent fuel, reenrichment of the fuel material, refabrication into new fuel elements, and waste disposal. [*nuclear-1*]
- Fuel reprocessing** The processing of reactor fuel to separate the unused fissionable material from waste material. [*nuclear-1*]
- Fuel rod** A long, slender tube that holds fissionable material (fuel) for nuclear reactor use. Fuel rods are assembled into bundles called fuel elements or fuel assemblies, which are loaded individually into the reactor core. [*nuclear-1*]
- Fuel temperature coefficient of reactivity** The change in reactivity per degree change in the fuel temperature. The physical property of fuel pellet material (uranium-238) that causes the uranium to absorb more neutrons away from the fission process as fuel pellet temperature increases. This acts to stabilize power reactor operations. This coefficient is also known as the Doppler coefficient. [*nuclear-1*]
- Full-custom** A technique used for the design of integrated circuits that involves the manipulation of circuit designs at the semiconductor device level. [*soft*]
- Full-time equivalent** A measurement equal to one staff person working a full-time work schedule for one year. [*nuclear-1*]
- Functional language** A general purpose, high-level programming language based on the mathematical notion of functions. A functional program consists of a set of (possibly recursive) function definitions. Its execution consists of the evaluation of a function . Programs written in a functional language are generally compact and elegant, but tend to run slowly and consume a lot of memory. [*soft*]
- Functional programming** See Functional language [*soft*]
- Function point** A unit for estimating the functionality of a program - More information. [*soft*]
- Fundamental Deviation** An intentional clearance between internal or external thread and the design form of the thread when the thread form is on its maximum metal condition. For metric threads the fundamental deviation are designated by letters, capitals for internal threads and small letters for external threads. Some tolerance classes have a fundamental deviation of zero. For imperial threads the fundamental deviation is called the allowance. [*mech-3*]
- Fundamental Triangle Height** The fundamental triangle height is normally designated with the letter H. This is the height of the thread when the profile is extended to a sharp vee form. For 60 degree thread forms such as metric and Unified thread series, H equals 0.866025 times the thread pitch. [*mech-3*]

**Funicular** A funicular shape is one similar to that taken by a suspended chain or string subjected to a particular loading. [*struc-1*]

**Fuse** - A cord-like substance used in the ignition of explosives. Black powder is entrained in the cord and, when lit, burns along the cord at a set rate. A fuse can be safely used to ignite a cap, which is the primer for an explosive. [*mining-1*]

**FUSE** A DEC software development environment for ULTRIX, offering an integrated toolkit for developing, testing, debugging and maintenance. [*soft*]

**Fusion** An object oriented analysis and design method developed by Hewlett Packard [*soft*]

**Fusion reaction** A reaction in which at least one heavier, more stable nucleus is produced from two lighter, less stable nuclei. Reactions of this type are responsible for enormous release of energy, as in the energy of stars, for example. [*nuclear-1*]

**Futurebus+** A high performance bus system specified by IEEE Std.896.2 [*soft*]

**Fuzzy logic** An alternative to traditional logic where truth values range between 0.0 and 1.0, with 0.0 representing absolute Falseness and 1.0 representing absolute Truth [*soft*]

**FVWM** A window manager for the X Window System derived from twm - More information. [*soft*]

**FWEB** See Literate Programming [*soft*]

**FWF** Free Widget Foundation [*soft*]

## GH

**G2** A real-time expert system from Gensym Corporation. [*soft*]

**GAIA** GUI Application Interoperability Architecture project of OSF [*soft*]

**Gallery** - A horizontal or a nearly horizontal underground passage, either natural or artificial. [*mining-1*]

**galling** (1) a condition whereby excessive friction between mating parts results in localized welding; subsequent spalling and a further roughening of the rubbing surfaces may follow; (2) a severe form of scuffing associated with gross damage to the surfaces or failure. [*mat-1*]

**Galling** A severe form of adhesive wear which occurs during sliding contact of one surface relative to another. Clumps of one part stick to the mating part and break away from the surface. (Can frequently occur when both the nut and bolt are zinc coated.) [*mech-3*]

**gall** to damage the surface of a powder metallurgy compact or die part through adhesion of powder to the die cavity wall or punch surface. [*mat-1*]

**galvanic cell** (1) a cell in which chemical change is the source of electrical energy; it usually consists of two dissimilar conductors in contact with each other and with an electrolyte, or of two similar conductors in contact with each other and with dissimilar electrolytes; (2) a cell or system in which a spontaneous oxidation-reduction reaction occurs, the resulting flow of electrons being conducted in an external part of the circuit. [*mat-1*]

**galvanic corrosion** corrosion associated with the current of a galvanic cell consisting of two dissimilar conductors in an electrolyte or two similar conductors in dissimilar electrolytes; where the two dissimilar metals are in contact, the resulting reaction is referred to as couple action. [*mat-1*]

**galvanic couple** a pair of dissimilar conductors, commonly metals, in electrical contact. [*mat-1*]

**galvanic current** the electric current that flows between metals or conductive nonmetals in a galvanic couple. [*mat-1*]

**galvanize** to coat a metal surface with zinc using various processes. [*mat-1*]

**gamma iron** the face-centered cubic form of pure iron, stable from 910 to 1400 C (1670 to 2550 F). [*mat-1*]

**Gamma radiation** High-energy, short wavelength, electromagnetic radiation emitted from the nucleus. Gamma radiation frequently accompanies alpha and beta emissions and always accompanies fission. Gamma rays are very penetrating and are best stopped or shielded by dense materials, such as lead or depleted uranium. Gamma rays are similar to x-rays. [*nuclear-1*]

**gamma ray** short-wavelength electromagnetic radiation, similar to x-rays but of nuclear origin, with a range of wavelength from about  $10^{-14}$  to  $10^{-10}$  m. [*mat-1*]

**GAMS** Guide to Available Mathematical Software at NIST [*soft*]

- GANDALF** A software development environment from Carnegie Mellon University. [*soft*]
- Gap** The space inside a reactor fuel rod that exists between the fuel pellet and the fuel rod cladding. [*nuclear-1*]
- Garbage collection** The process of reclaiming storage which is no longer in use. [*soft*]
- Garnet** A user interface development environment for Common Lisp or Macintosh from Carnegie Mellon [*soft*]
- Gas centrifuge** A uranium enrichment process that uses a large number of rotating cylinders in a series. These series of centrifuge machines, called trains, are interconnected to form cascades. In this process, UF<sub>6</sub> gas is placed in a drum or cylinder and rotated at high speed. This rotation creates a strong gravitational field so that the heavier gas molecules (containing U-238) move toward the outside of the cylinder and the lighter gas molecules (containing U-235) collect closer to the center. The stream that is slightly enriched in U-235 is withdrawn and fed into the next higher stage, while the slightly depleted stream is recycled back into the next lower stage. Significantly more U-235 enrichment can be obtained from a single unit gas centrifuge than from a single unit gaseous diffusion barrier. No gas centrifuge plants are operating in the United States, however, Louisiana Energy Services (LES) and the U.S. Enrichment Corporation (USEC) had plans to submit license applications in 2002 and 2004, respectively. [*nuclear-1*]
- Gas-cooled reactor** A nuclear reactor in which a gas is the coolant. [*nuclear-1*]
- Gaseous diffusion plant** A facility where uranium hexafluoride gas is filtered. Uranium-235 is separated from uranium-238, increasing the percentage of uranium-235 from 1 to about 3 percent. The process requires enormous amounts of electric power. [*nuclear-1*]
- Gases** A substance possessing perfect molecular mobility and the property of indefinite expansion, as opposed to a solid or liquid; any such fluid or mixture of fluids other than air. Normally, these formless substances completely fill the space, and take the shape of, their container. [*nuclear-1*]
- Gasification** Any of various processes by which coal is turned into low, medium, or high Btu gases. [*mining-1*]
- gas metal arc welding** an arc welding process that produces coalescence of metals by heating them with an arc between a continuous filler metal electrode and the workpieces; shielding is obtained entirely from an externally supplied gas. [*mat-1*]
- gate** the portion of the runner where the molten metal enters the mold cavity. [*mat-1*]
- Gathering conveyor; gathering belt** - Any conveyor which is used to gather coal from other conveyors and deliver it either into mine cars or onto another conveyor. The term is frequently used with belt conveyors placed in entries where a number of room conveyors deliver coal onto the belt. [*mining-1*]
- GBIP** General Purpose Interface Bus (IEEE 488). [*soft*]
- GCA** Graphic Communications Association. [*soft*]
- GCC** Gnu Compiler. [*soft*]
- GDB** Gnu Debugger. [*soft*]
- GDMO** Guidelines for the Definition of Managed Objects. A standard (ISO/IEC 10165-4 / ITU-T Rec. X.722) for defining data models on ASN.1 [*soft*]
- GEANT** A simulation, tracking and drawing package for HEP - More information. [*soft*]
- GEI** A German software engineering company. [*soft*]
- Geiger-Mueller counter** A radiation detection and measuring instrument. It consists of a gas-filled tube containing electrodes, between which there is an electrical voltage, but no current, flowing. When ionizing radiation passes through the tube, a short, intense pulse of current passes from the negative electrode to the positive electrode and is measured or counted. The number of pulses per second measures the intensity of the radiation field. It was named for Hans Geiger and W. Mueller, who invented it in the 1920s. It is sometimes called simply a Geiger counter or a G-M counter and is the most commonly used portable radiation instrument. [*nuclear-1*]
- Generation (gross)** The total amount of electric energy produced by a generating station as measured at the generator terminals. [*nuclear-1*]
- Generation (net)** The gross amount of electric energy produced less the electric energy consumed at a generating station for station use. [*nuclear-1*]
- Genericity** The possibility for a language to provide parameterized modules or types. e.g. List(of:Integer) or List(of:People). [*soft*]



- Generic Markup** In computerised document preparation, a method of adding information to the text indicating the logical components of a document, such as paragraphs, headers or footnotes: SGML is an example of such a system. Specific instructions for layout of the text on the page do not appear in the markup. [*soft*]
- Genesia** An expert system developed by Electricite de France and commercialised by STERIA (Paris). [*soft*]
- GEN-X** An expert system developed by General Electric. [*soft*]
- Geologist** - One who studies the constitution, structure, and history of the earth's crust, conducting research into the formation and dissolution of rock layers, analyzing fossil and mineral content of layers, and endeavoring to fix historical sequence of development by relating characteristics to known geological influences (historical geology). [*mining-1*]
- GEOS** An object-oriented operating system project [*soft*]
- ghostscript** The gnu interpreter. [*soft*]
- ghostview** An X window interface to the ghostscript interpreter. [*soft*]
- Gibbs free energy** determines the relative stability of a material system at constant temperature and pressure;  $G = H - TS$ , where  $H$  is enthalpy,  $T$  is absolute temperature, and  $S$  is entropy of the system. [*mat-1*]
- GIF** Graphics Interchange Format: a standard for digitised images compressed with the LZW algorithm - More information. [*soft*]
- Gigawatthour** One billion watt-hours. [*nuclear-1*]
- Gigawatt** One billion watts. [*nuclear-1*]
- GILS** Government Information Locator Service. A plan for a decentralised collection of information locators and associated public services to find information throughout the US government. [*soft*]
- GINA** Generic INteractive Application. A toolkit of useful classes and functions for authoring GUIs built on CLM, CLX, from GMD [*soft*]
- GKS-3D** The three-dimensional version of GKS, a standard for graphics I/O (ISO 8805). [*soft*]
- GKS** Graphical Kernel System: a standard for graphics I/O (ANSI X3.124) - More information. [*soft*]
- GL** A graphics package from Silicon Graphics. [*soft*]
- glass** an amorphous material with three-dimensional primary atomic bonding. [*mat-1*]
- Glass** an inorganic product of fusion which has cooled to a rigid condition without crystallizing. [*mech-1*]
- Glass-ceramic** a fine-grained crystalline material that was formed as a glass (crystallized). [*mech-1*]
- glass transition temperature** the temperature at which, upon cooling, a noncrystalline ceramic or polymer transforms from a supercooled liquid into a rigid glass. [*mat-1*]
- Global climate change** This term usually refers to the gradual warming of the earth caused by the greenhouse effect. Many believe this is the result of man-made emissions of greenhouse gases such as carbon dioxide, chlorofluorocarbons (CFC) and methane. [*mining-1*]
- GLUT** OpenGL Utility Toolkit [*soft*]
- GMD** Gesellschaft fuer Mathematik und Datenverarbeitung (German Institute for Mathematics and Data Processing), D-53754 Sankt Augustin - More information. [*soft*]
- GNAT** The GNU 95 compiler [*soft*]
- GNU** GNU's Not UNIX: a popular range of portable software from FSF, upwardly compatible with UNIX [*soft*]
- Gob** - The term applied to that part of the mine from which the coal has been removed and the space more or less filled up with waste. Also, the loose waste in a mine. Also called goaf. [*mining-1*]
- GOOD** An object-oriented framework for graphical applications from TU Ilmenau running under X Windows with special support to IRIS GL, OpenGL, VOGL, etc. - More information. [*soft*]
- Gopher** A Campus Wide Information System designed at the University of Minnesota [*soft*]
- GPIB** General Purpose Interface Bus: an 8-bit parallel bus (IEEE 488). [*soft*]
- GPM** General Purpose Macrogenerator written by C. Strachey around 1965. The author said "It contains in itself all the undesirable features of every possible machine code... It can also be almost impenetrably opaque". [*soft*]
- GQM** Goal/Question/Metrics. A software engineering assessment method by V. Basili. [*soft*]
- grain** an individual crystal in a polycrystalline metal or ceramic. [*mat-1*]

- Grain** - In petrology, that factor of the texture of a rock composed of distinct particles or crystals which depends upon their absolute size. [*mining-1*]
- Grammar** A grammar is a mathematical system for defining a language, as well as a device for giving the sentences in the language a useful structure. [*soft*]
- Grapevine** A distributed system project. [*soft*]
- Graphite** A form of carbon, similar to that used in pencils, used as a moderator in some nuclear reactors. [*nuclear-1*]
- GRAS** A public domain graph-oriented database system for software engineering applications from RWTH Aachen [*soft*]
- GRASPIN** An Esprit project to develop a personal software engineering environment to support the construction and verification of distributed and non-sequential software systems. [*soft*]
- Grasshopper** An experimental operating system for persistent systems - More information. [*soft*]
- Gravity** An attractive force between two objects; each object accelerates at a rate equal to the attractive force divided by the object's mass. Objects near the surface of the earth tend to accelerate toward the earth's center at a rate of  $g$ ; this value is often called the gravitational constant and denoted as  $g$ . [*struc-1*]
- Gray (Gy)** The international system (SI) unit of absorbed dose. One gray is equal to an absorbed dose of 1 Joule/kilogram (one gray equals 100 rads) [*nuclear-1*]
- GRIB** GRid In Binary. World Meteorological Organization data format - More information. [*soft*]
- Grip Length** Total distance between the underside of the nut to the bearing face of the bolt head; includes washer, gasket thickness etc. [*mech-3*]
- Grizzly** - Course screening or scalping device that prevents oversized bulk material from entering a material transfer system; constructed of rails, bars, beams, etc. [*mining-1*]
- Ground control** - The regulation and final arresting of the closure of the walls of a mined area. The term generally refers to measures taken to prevent roof falls or coal bursts. [*mining-1*]
- Ground pressure** - The pressure to which a rock formation is subjected by the weight of the superimposed rock and rock material or by diastrophic forces created by movements in the rocks forming the earth's crust. Such pressures may be great enough to cause rockshaving a low compressional strength to deform and be squeezed into and close a borehole or other underground opening not adequately strengthened by an artificial support, such as casing or timber. [*mining-1*]
- Groupware** see CSCW. [*soft*]
- GROW** GNU Remote Operations Web. An architecture for building networked applications and services using WWW [*soft*]
- Guide** A hypertext system from the University of Kent (GB) and OWL for displaying online documentation. [*soft*]
- GUIDE** Graphical User Interface Development Environment from Sun. [*soft*]
- GUI** Graphical User Interface. [*soft*]
- GUILE** An interpreter for the GROW project. [*soft*]
- Guinier-Preston (G-P) zone** a small precipitation domain in a supersaturated metallic solid solution; it has no well-defined crystalline structure of its own and contains an abnormally high concentration of solute atoms; the formation of G-P zones constitutes the first stage of precipitation and is usually accompanied by a change in properties of the solid solution in which they occur. [*mat-1*]
- Gunite** - A cement applied by spraying to the roof and sides of a mine passage. [*mining-1*]
- gunzip** The decompression utility corresponding to gzip. [*soft*]
- gzip** A compression utility available with the gnu software. [*soft*]
- Half-life, biological** The time required for the body to eliminate one half of the material taken in by natural biological means. [*nuclear-1*]
- Half-life, effective** The time required for a radionuclide contained in a biological system, such as a human or an animal, to reduce its activity by one-half as a combined result of radioactive decay and biological elimination. [*nuclear-1*]
- Half-life** The time in which one half of the atoms of a particular radioactive substance disintegrate into another nuclear form. Measured half-lives vary from millionths of a second to billions of years. Also called physical or radiological half-life. [*nuclear-1*]
- Half-thickness** Any given absorber that will reduce the intensity of an original beam of ionizing radiation to one-half of its initial value. [*nuclear-1*]

- Hall Effect** the phenomenon whereby a force is brought to bear on a moving electron or hole by a magnetic field that is applied perpendicular to the direction of motion. The force direction is perpendicular to both the magnetic field and the particle motion directions. *[mech-1]*
- hardenability** a measure of the depth to which a specific ferrous alloy may be hardened by the formation of martensite upon quenching from a temperature above the upper critical temperature. *[mat-1]*
- Hardenability** a measure of the depth to which a specific ferrous alloy may be hardened by the formation of martensite upon quenching from a temperature above the upper critical temperature. *[mech-1]*
- Hardened Washers** The force under the head of a bolt or nut can exceed, at high preloads, the compressive yield strength of the clamped material. If this occurs excessive embedding and deformation can result in bolt preload loss. To overcome this hardened washers under the bolt head can be used to distribute the force over a wider area into the clamped material. A more modern alternative is to use a flange headed nuts and bolts. *[mech-3]*
- Hard Joint** A joint in which the plates and material between the nut and bolt bearing surfaces have a high stiffness when subjected to compression by the bolt load. A joint is usually defined as hard if the bolt is tightened to its full torque and it rotates through an angle of 30 degrees or less after it has been tightened to its snug condition. *[mech-3]*
- hardness** the measure of a material's resistance to deformation by surface indentation or by abrasion. *[mat-1]*
- Hardness** the measure of some materials' resistance to deformation by surface indentation or by abrasion. *[mech-1]*
- Hardware description language** A language used for the conceptual design of integrated circuits. Examples are VHDL and Verilog. *[soft]*
- Harmony** A real-time operating system developed by the SEL in Canada. *[soft]*
- Harvest** An information discovery and access system for the Internet from the University of Colorado - More information. *[soft]*
- h** A simple markup language intended for quick conversion of existing text to hypertext - More information. *[soft]*
- Haskell** A functional language (Hudak et al.). *[soft]*
- Haulage** - The horizontal transport of ore, coal, supplies, and waste. The vertical transport of the same is called hoisting. *[mining-1]*
- Haulageway** - Any underground entry or passageway that is designed for transport of mined material, personnel, or equipment, usually by the installation of track or belt conveyor. *[mining-1]*
- HBOOK** A histogramming package in the CERN program library *[soft]*
- HCI** Human Computer Interface (or Interaction) *[soft]*
- HCS** Heterogeneous Computer System: a distributed system project. *[soft]*
- hc** The compiler for the h hyperbook language. *[soft]*
- HDF** Hierarchical Data Format from NCSA - More information. *[soft]*
- HDL** Hardware description language. *[soft]*
- HDTV** High Definition Television. *[soft]*
- Headframe** - The structure surmounting the shaft which supports the hoist rope pulley, and often the hoist itself. *[mining-1]*
- Heading** - A vein above a drift. An interior level or airway driven in a mine. In longwall workings, a narrow passage driven upward from a gangway in starting a working in order to give a loose end. *[mining-1]*
- Head, reactor vessel** The removable top section of a reactor pressure vessel. It is bolted in place during power operation and removed during refueling to permit access of fuel handling equipment to the core. *[nuclear-1]*
- Head section** - A term used in both belt and chain conveyor work to designate that portion of the conveyor used for discharging material. *[mining-1]*
- Health physics** The science concerned with the recognition, evaluation, and control of health and environmental hazards that may arise from the use and application of ionizing radiation. *[nuclear-1]*
- Heap leach** A method of extracting uranium from ore using a leaching solution. Small ore pieces are placed in a heap on an impervious material (plastic, clay, asphalt) with perforated pipes under the heap. Acidic solution is then sprayed over the ore, dissolving the uranium. The solution in the pipes is collected and transferred to an ion-exchange system for concentration of the uranium. *[nuclear-1]*

- heat capacity** the quantity of heat required to produce a unit temperature rise per mole of material. [*mat-1*]
- Heat exchanger** Any device that transfers heat from one fluid (liquid or gas) to another fluid or to the environment. [*nuclear-1*]
- Heat sink** Anything that absorbs heat. It is usually part of the environment, such as the air, a river, or a lake. [*nuclear-1*]
- Heat Tightening** Heat tightening utilises the thermal expansion characteristics of the bolt. The bolt is heated and expands: the nut is indexed (using the angle of turn method) and the system allowed to cool. As the bolt attempts to contract it is constrained longitudinally by the clamped material and a preload results. Methods of heating include direct flame, sheathed heating coil and carbon resistance elements. The process is slow, especially if the strain in the bolt is to be measured, since the system must return to ambient temperature for each measurement. This is not a widely used method and is generally used only on very large bolts. [*mech-3*]
- Heatup** The rise in temperature of the reactor fuel rods resulting from an increase in the rate of fission in the core. [*nuclear-1*]
- Heaving** - Applied to the rising of the bottom after removal of the coal; a sharp rise in the floor is called a "hogsback". [*mining-1*]
- Heavy water (D2O)** Water containing significantly more than the natural proportions (one in 6,500) of heavy hydrogen (deuterium, D) atoms to ordinary hydrogen atoms. Heavy water is used as a moderator in some reactors because it slows down neutrons effectively and also has a low probability of absorption of neutrons. [*nuclear-1*]
- Heavy water moderated reactor** A reactor that uses heavy water as its moderator. Heavy water is an excellent moderator and thus permits the use of unenriched uranium as a fuel. [*nuclear-1*]
- Hebbian** Refers to the most common way for a neural network to learn, namely supervised learning. Using a training sample which should produce known responses, the connection weights are adjusted so as to minimize the differences between the desired and actual outputs for the training sample. [*soft*]
- Helix** A hardware description language from Silvar-Lisco. [*soft*]
- HEPDB** A database management system for HEP [*soft*]
- HEP** High Energy (Particle) Physics. [*soft*]
- HEPiX** A recently formed collaboration among various HEP institutes aiming at providing "compatible" versions of the UNIX operating system at their sites [*soft*]
- HEPnet** An association concerned with networking requirements for high energy physicists [*soft*]
- HEPVm** A collaboration among various HEP institutes to implement "compatible" versions of IBM's VM-CMS operating system at their sites. [*soft*]
- HERA** An electron-proton collider at DESY, W. Germany. [*soft*]
- Hermes** An experimental object-oriented distributed systems language from IBM Watson Research Centre. [*soft*]
- hermetic** sealing of an object so it is airtight. [*mat-1*]
- Hesiod** The name server of the Athena project. [*soft*]
- Heuristic** A rule of thumb, simplification or educated guess that reduces or limits the search for solutions in domains that are difficult and poorly understood. Unlike algorithms, heuristics do not guarantee solutions. [*soft*]
- Hewlett-Packard** [*soft*]
- Hexagonal Close-Packed (HCP)** a crystal structure found for some metals. The HCP unit cell is of hexagonal geometry and is generated by the stacking of close-packed planes of atoms. [*mech-1*]
- hexagonal close-packed (HCP)** the unit cell is of hexagonal geometry and is generated by the stacking of close-packed planes of atoms. [*mat-1*]
- High-enriched uranium** Uranium enriched to 20 percent or greater in the isotope uranium-235. [*nuclear-1*]
- High-level waste** Radioactive materials at the end of a useful life cycle that should be properly disposed of, including- 1. The highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste directly in reprocessing and any solid material derived from such liquid waste that contains fission products in concentrations; 2. Irradiated reactor fuel; and 3. Other highly radioactive material that the Commission, consistent with existing law, determines by rule require permanent isolation. High-level waste (HLW) is primarily in the form of spent fuel discharged from commercial nuclear



power reactors. It also includes HLW from activities and a small quantity of reprocessed commercial HLW [*nuclear-1*]

**High radiation area** Any area with dose rates greater than 100 millirems (1 millisievert) in one hour 30 centimeters from the source or from any surface through which the ionizing radiation penetrates. Areas at licensee facilities must be posted as "high radiation areas" and access into these areas is maintained under strict control. [*nuclear-1*]

**High Strength Friction Grip Bolts** Sometimes abbreviated to HSFG bolts. Bolts which are of high tensile strength used in conjunction with high strength nuts and hardened steel washers in structural steelwork. The bolts are tightened to a specified minimum shank tension so that transverse loads are transferred across the joint by friction between the plates rather than by shear across the bolt shank. [*mech-3*]

**Highwall miner** A highwall mining system consists of a remotely controlled continuous miner which extracts coal and conveys it via augers, belt or chain conveyors to the outside. The cut is typically a rectangular, horizontal cut from a highwall bench, reaching depths of several hundred feet or deeper. [*mining-1*]

**Highwall** The unexcavated face of exposed overburden and coal in a surface mine or in a face or bank on the uphill side of a contour mine excavation. [*mining-1*]

**HIGZ** High Level Interface to Graphics and Zebra. Part of the PAW system [*soft*]

**HiPAC** An active DBMS from Xerox Advanced Information Technology. [*soft*]

**HIPPI** High Performance Parallel Interface: a 100 Mbyte/sec data transfer system with associated interfaces and switches, developed at Los Alamos National Lab and now ANSI standard X3T9/88-127. [*soft*]

**HISTORIAN** A source code management system sold by OPCODE, Inc.. [*soft*]

**History** For more information on the history of computing, see the The Virtual Museum of Computing [*soft*]

**Hogsback** - A sharp rise in the floor of a seam. [*mining-1*]

**Hoist** - A drum on which hoisting rope is wound in the engine house, as the cage or skip is raised in the hoisting shaft. [*mining-1*]

**Hoisting** - The vertical transport of coal or material. [*mining-1*]

**HOL** An interactive theorem proving system based on Higher Order Logic - More information. [*soft*]

**Hold And Drive Bolts** Special bolts that have a tang at the threaded end of the shank. This tang is gripped by the tightening tool during assembly so that the reaction torque is absorbed whilst the nut is tightened from the same side. Such bolts allow what used to have to be done by two men to become a one-man task. [*mech-3*]

**Hole (electron)** for semi-conductors and insulators, a vacant electron state in the valence band that behaves as a positive charge carrier in an electric field. [*mech-1*]

**Home Page** The starting point for a WWW session. Many system administrators set up "home pages" which are the default page shown when a user begins a session. These pages usually have a lot of options and menu items that apply to that particular institution and then have links to other places. Here is the CERN home page. [*soft*]

**Homopolymer** a polymer having a chain structure in which all mer units are of the same type. [*mech-1*]

**HOOD** Hierarchical Object Oriented Design: a method for Architectural Design primarily for software to be developed in Ada, leading to automated checking, documentation and source code generation. [*soft*]

**Hope** A functional language (Burstall et al. 1980). [*soft*]

**Hopfield** John Hopfield in the early 1980's investigated a particular kind of neural network which is now commonly referred to as the Hopfield network or Hopfield model. In the Hopfield network, there are no special input or output neurons (see McCulloch-Pitts), but all are both input and output, and all are connected to all others in both directions (with equal weights in the two directions). Input is applied simultaneously to all neurons which then output to each other and the process continues until a stable state is reached, which represents the network output. [*soft*]

**Horizon** - In geology, any given definite position or interval in the stratigraphic column or the scheme of stratigraphic classification; generally used in a relative sense. [*mining-1*]

**Horseback** - A mass of material with a slippery surface in the roof; shaped like a horse's back. [*mining-1*]

**Hot** A colloquial term meaning highly radioactive. [*nuclear-1*]

**Hot Bolting** This term is used for the completion of maintenance work on a bolted joint when the joint is under loading. This can involve the replacement of individual bolts. There are risks both to the joint itself and to health and safety associated with this technique. [*mech-3*]

**hot isostatic pressing** (1) a process for simultaneously heating and forming a compact in which the powder is contained in a sealed flexible sheet metal or glass enclosure and subjected to equal pressure from all directions at a temperature high enough to permit plastic deformation and sintering; (2) a process that subjects a component (casting, powder forgings, etc.) to both elevated temperature and isostatic gas pressure in an autoclave; simultaneous application of heat and pressure virtually eliminates internal voids and microporosity through a combination of plastic deformation, creep, and diffusion. [*mat-1*]

**HotJava** A WWW browser from Sun based on the Java [*soft*]

**hot pressing** a method used to densify a material, whereby heat and pressure are applied simultaneously, and the pressure is typically applied unidirectionally via rigid tooling. [*mat-1*]

**Hot spot** The region in a radiation/contamination area where the level of radiation/contamination is significantly greater than in neighboring regions in the area. [*nuclear-1*]

**Hot Working** any metal forming operation that is performed above a metal recrystallization temperature. [*mech-1*]

**hot working** any metal forming operation that is performed above a metal's recrystallization temperature. [*mat-1*]

**HP** Hewlett-Packard . [*soft*]

**HPLOT** A graphical output facility for HBOOK - More information. [*soft*]

**HPPI** An earlier name for HIPPI . [*soft*]

**HP-UX** The version of UNIX running on Hewlett-Packard workstations. [*soft*]

**HP VEE** Visual Engineering Environment from Hewlett-Packard: a package similar in intention to LabVIEW running on UNIX workstations with OSF . [*soft*]

**HTML** HyperText Markup Language. An SGML document type used to mark up hypertext in the WWW [*soft*]

**HTTP** HyperText Transfer Protocol. The protocol used between client and server in the WWW project. [*soft*]

**Hydraulic** - Of or pertaining to fluids in motion. Hydraulic cement has a composition which permits it to set quickly under water. Hydraulic jacks lift through the force transmitted to the movable part of the jack by a liquid. Hydraulic control refers to the mechanical control of various parts of machines, such as coal cutters, loaders, etc., through the operation or action of hydraulic cylinders. [*mining-1*]

**Hydraulic Set Cement** a cement that sets through reaction with water. [*mech-1*]

**Hydraulic Tensioner** A hydraulic tool used to tighten a fastener by stretching it rather than applying a large torque to the nut. After the fastener has been stretched, the nut is run down the thread to snug up with the joint, the hydraulically applied load is then removed resulting in tension being induced into the fastener. [*mech-3*]

**Hydrocarbon** A family of chemical compounds containing carbon and hydrogen atoms in various combinations, found especially in fossil fuels. [*mining-1*]

**Hydrogen Bond** a strong secondary interatomic bond which exists between a bound hydrogen atom (its unscreened proton) and the electrons of adjacent atoms. [*mech-1*]

**Hydrogen Embrittlement** Steel fasteners exposed to hydrogen can fail prematurely at a stress level well below the materials yield strength. Hydrogen embrittlement occurs in fasteners usually as a result of the part being exposed to hydrogen at some time during its manufacturing process but it can also occur through in-service corrosion. Electroplating is generally considered to be a major cause of hydrogen absorption in steel fasteners due to the release of hydrogen during this process. Higher strength steels are more susceptible to hydrogen embrittlement than lower strength steels, however it is considered that there is no lower strength limit. As a rule of thumb, steels below Rockwell C 35 are considered to be far less susceptible. Tests such as the incremental load hydrogen embrittlement test can be completed to assess if hydrogen embrittlement is present in a batch of fasteners. [*mech-3*]

**HyperBase** An experimental active multiuser database for hypertext systems from the University of Aalborg, written in C++ .It is built on the client-server model enabling distributed, concurrent, and shared access from workstations in a local area network. See EHTS . [*soft*]

**Hyperbole** An information management and hypertext system [*soft*]

**Hypercard** A software package for the Macintosh for storage and retrieval of information. It can handle images, and is designed for browsing. The powerful customisable interactive user interface allows new applications to be easily constructed by manipulating objects on the screen, often without conventional programming. [*soft*]

**hypereutectoid alloy** for an alloy system displaying a eutectoid, an alloy for which the concentration of solute is greater than the eutectoid composition. [*mat-1*]

**Hypereutectoid Alloy** for an alloy system displaying a eutectoid, an alloy for which the concentration of solute is greater than the eutectoid composition.[*mech-1*]

**Hyper-G** A hypertext system from TU Graz - More information. [*soft*]

**Hyper-Man** A browser available with Epoch capability for the UNIX manual. [*soft*]

**Hypermedia** Hypertext systems where the nodes can contain text, graphics, audio, video, as well as source code or other forms of data [*soft*]

**HyperNeWS** A Hypertext system from the Turing Institute Glasgow, based on NeWS . [*soft*]

**HyperODA** ODA extensions for hypermedia . [*soft*]

**Hypertalk** The language for writing procedures associated with objects in Hypercard . [*soft*]

**Hypertext** An approach to information management in which text is stored in a network of nodes connected by links. The nodes are meant to be viewed through an interactive browser. A link is something which connects a piece of text to a destination piece of text; the source and destination areas are usually marked on a display by highlighting or special graphics. You are reading hypertext now by courtesy of WWW [*soft*]

**hypoeutectoid alloy** for an alloy system displaying a eutectoid, an alloy for which the concentration of solute is less than the eutectoid composition. [*mat-1*]

**Hypoeutectoid Alloy** for an alloy system displaying a eutectoid, an alloy for which the concentration of solute is less than the eutectoid composition[*mech-1*]

**Hysteresis (magnetic)** the irreversible magnetic flux density-versus-magnetic field strength ( $B$ -versus- $H$ ) behavior found for ferromagnetic and ferrimagnetic materials.[*mech-1*]

**hysteresis (magnetic)** the irreversible magnetic flux density-versus-magnetic field strength ( $B$ -versus- $H$ ) behavior found for ferromagnetic and ferrimagnetic materials; a closed  $B$ - $H$  loop is formed upon field reversal. [*mat-1*]

**HyTime** Hypermedia/Time-based Structuring Language: an ANSI Standard (ISO/IEC 10744) from the SGML Users' Group's Special Interest Group on Hypertext and Multimedia ) - More information. [*soft*]

## IJK

**IAB** The Internet Architecture Board of the Internet Society [*soft*]

**IAD** A dynamic analyser from IBM giving information on run time performance and code utilisation. [*soft*]

**IAFA** Internet Archives. An IETF working group. [*soft*]

**IANA** Internet Assigned Numbers Authority - More information. [*soft*]

**IBM** International Business Machines [*soft*]

**IBN** The Belgian standards institute. [*soft*]

**ICADD** International Committee for Accessible Document Design. Dedicated to making printed materials accessible to persons with print disabilities. Works on the generation of Braille, large print or electronically navigable editions of books from desktop publishing files [*soft*]

**I-CASE** Integrated CASE : another term for an IPSE . [*soft*]

**ICCP** Institute for Certification of Computing Professionals. [*soft*]

**ICSI** International Computer Science Institute at Berkeley, CA. - More information. [*soft*]

**IDEA** International Data Encryption Algorithm (used by PGP ). [*soft*]

- IDE** Interactive Development Environments: a US Software Engineering Company. [*soft*]
- IDL** Interactive Data Language. A package for interactive reduction, analysis, and visualization of scientific data, from Research Systems, Inc. [*soft*]
- IDL** Interface Definition Language: an OSF standard for defining RPC stubs. [*soft*]
- IDL** Interface Definition Language: associated with the CORBA [*soft*]
- IDSS** Intelligent Decision Support Systems. [*soft*]
- IEC** International Electrotechnical Commission: a standardisation body at the same level as ISO [*soft*]
- IEEE 1076** The IEEE .. [*soft*]
- IEEE 488** The IEEE . [*soft*]
- IEEE 802** The IEEE standards for local area networks (LAN standard is 802.3, the IBM Token Ring is IEEE 802.5. [*soft*]
- IEEE** Institute of Electrical and Electronics Engineers (USA) - More information. [*soft*]
- IEF** Information Engineering Facility. A CASE tool from Texas Instruments which generates code from graphical business process models. [*soft*]
- IESG** Internet Engineering Steering Group. Part of the Internet Society responsible for technical management of IETF activities and the Internet Standards process [*soft*]
- IETF** Internet Engineering Task Force. A group of people who make technical and other contributions to the engineering and evolution of the Internet and its technologies. It is the principal body engaged in the development of new Internet Standard specifications [*soft*]
- IETM** Interactive Electronic Technical Manual. [*soft*]
- IFAC** International Federation of Automatic Control, involved in informatics related to control systems. [*soft*]
- IFDL** Independent Form Description Language: DEC's language for describing form-based human interfaces in DECforms . [*soft*]
- IFIP** International Federation of Information Processing - More information. [*soft*]
- IFPUG** International Function-point Users Group [*soft*]
- IGES** Initial Graphics Exchange Specification: an ASME/ANSI standard for the exchange of CAD data. [*soft*]
- IIDMS/R** Integrated database management system: a DBMS from Cullinet Software Inc. [*soft*]
- IIS** International Institute of Informatics and Systemics. [*soft*]
- ILU** Inter-Language Unification. A system from Xerox PARC that promotes software interoperability via interfaces [*soft*]
- Immediate roof** - The roof strata immediately above the coalbed, requiring support during the excavation of coal. [*mining-1*]
- Immediate version** See Child version . [*soft*]
- Impact Wrench** A wrench, usually powered by electricity or air, in which repeated blows from little hammers are used to generate torque to tighten fasteners. The torque applied to the fastener depends upon the time and the air pressure applied to the tool (for pneumatic wrenches). The torque applied by an impact wrench to a fastener is influenced by the joint stiffness. [*mech-3*]
- IMSE** Integrated Modelling Support Environment: an Esprit programme. [*soft*]
- IMS** Information Management System: a DBMS from IBM. [*soft*]
- Inby** - In the direction of the working face. [*mining-1*]
- Incline** - Any entry to a mine that is not vertical (shaft) or horizontal (adit). Often incline is reserved for those entries that are too steep for a belt conveyor (+17 degrees -18 degrees), in which case a hoist and guide rails are employed. A belt conveyor incline is termed a slope. Alt: Secondary inclined opening, driven upward to connect levels, sometimes on the dip of a deposit; also called "inclined shaft". [*mining-1*]
- inclusion** foreign particle present as an undesirable impurity in a material. [*mat-1*]
- Incompetent** - Applied to strata, a formation, a rock, or a rock structure not combining sufficient firmness and flexibility to transmit a thrust and to lift a load by bending. [*mining-1*]
- INCOSE** International Council on Systems Engineering. An international organization formed to develop, nurture and enhance the system engineering approach to multi-disciplinary system product development [*soft*]
- Index of Refraction** see Refractive Index [*mech-1*]



**Indicated coal resources** Coal for which estimates of the rank, quality, and quantity have been computed partly from sample analyses and measurements and partly from reasonable geologic projections. The points of observation are to 1 mile apart. Indicated coal is projected to extend as an 1 mile wide belt that lies more than 1 mile from the outcrop or points of observation or measurement. [*mining-1*]

**Individual plant examination for external events (IPEEE)** While the "individual plant examination" takes into account events that could challenge the design from things that could go awry internally (in the sense that equipment might fail because components do not work as expected), the "individual plant examination for external events" considers challenges such as earthquakes, internal fires, and high winds. [*nuclear-1*]

**Individual plant examination (IPE)** As requested by the NRC in Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities" (November 23, 1988), a risk analysis that considers the unique aspects of a particular nuclear power plant, identifying the specific vulnerabilities to severe accident of that plant. [*nuclear-1*]

**Inelastic** Not surprisingly, the opposite of elastic. A deformation of a structure or material under load is described as inelastic when the deformation remains after the load is removed. The term plastic is often used with the same meaning. [*struc-1*]

**Inertial Force** A fictitious force used for convenience in visualizing the effects of forces on bodies in motion. For an accelerating body, the inertial force is considered as a body force whose resultant acts at the object's center of gravity in a direction opposite the acceleration. The magnitude of the force is the mass of the object times the magnitude of the acceleration. [*struc-1*]

**Inertia** The tendency of an object at rest to remain at rest, and of an object in motion to remain in motion. [*struc-1*]

**Inference engine** A program that infers facts from a set of knowledge or inputs. [*soft*]

**Inference** The logical process by which new facts are derived from known facts. [*soft*]

**Inferred coal resources** Coal in unexplored extensions of the demonstrated resources for which estimates of the quality and size are based on geologic evidence and projection. Quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for

which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repetition of which there is geologic evidence; this evidence may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. The points of observation are 1 to 6 miles apart. [*mining-1*]

**INFN** Istituto Nazionale di Fisica Nucleare: an Italian State research organisation [*soft*]

**Informix** A relational DBMS vendor. [*soft*]

**infrared reflow** technique in which long wavelength light (IR) serves as the heat source to reflow solder and form solder joints. [*mat-1*]

**INGRES** A relational DBMS vendor. [*soft*]

**Inheritance** In object-oriented programming, the ability to derive new classes from existing classes. A derived class inherits the instance variables and methods of the base class, and may add new instance variables and methods. A new method may be defined with the same names as one in the base class, in which case it overrides the original one. [*soft*]

**inorganic flux** an aqueous flux solution of inorganic acids and halides. [*mat-1*]

**INRIA** Institut National de Recherche en Informatique et Automatique, French computer science research institute [*soft*]

**In situ** - In the natural or original position. Applied to a rock, soil, or fossil when occurring in the situation in which it was originally formed or deposited. [*mining-1*]

**In situ leach** A process using a leaching solution to extract uranium from underground ore bodies in place (in other words, in situ). The leaching agent, which contains an oxidant such as oxygen with sodium carbonate, is injected through wells into the ore body in a confined aquifer to dissolve the uranium. This solution is then pumped via other wells to the surface for processing. [*nuclear-1*]

**Instantaneous Centre Of Rotation** The point in space that an eccentrically shear loaded joint rotates about. The deformation and the load sustained by an individual bolt in a bolt group is dependent upon the distance that the bolt is from the instantaneous centre. The direction that the individual bolt force acts is perpendicular to a line joining that bolt to the instantaneous centre. [*mech-3*]

- Instantiation** A more precisely defined version of some object which was already partially defined. In object-oriented programming, a particular example of an object produced from its class template. [*soft*]
- Intrinsic Semiconductor** a semiconductor material for which the electrical behavior is characteristic of the pure material. [*mech-1*]
- Insulator (electrical)** a nonmetallic material that has filled valence band at 0 K and a relatively wide energy band gap. [*mech-1*]
- insulator (electric)** a nonmetallic material that has a filled valence band at 0 K and a relatively wide energy band gap; consequently the room-temperature electrical conductivity is very low. [*mat-1*]
- Intake** - The passage through which fresh air is drawn or forced into a mine or to a section of a mine. [*mining-1*]
- Integral Fastener** A term used to describe types of fasteners which are highly resistant to vibration loosening and/or removal. Some types have special thread forms. [*mech-3*]
- integrated circuit** a microcircuit that consists of interconnected elements inseparably associated and formed in-situ on or within a single substrate, usually silicon, to perform an electronic circuit function. [*mat-1*]
- Integrated plant evaluation** An evaluation that considers the plant as a whole rather than system by system. [*nuclear-1*]
- InterBase** A commercial active DBMS . [*soft*]
- interdiffusion** diffusion of atoms of one metal into another metal. [*mat-1*]
- Interface Architect** An interface builder for Motif distributed by Hewlett-Packard (see UIMX ). [*soft*]
- intergranular fracture** fracture of polycrystalline materials by crack propagation along grain boundaries. [*mat-1*]
- Interleaf** A document preparation system available on the Sun, VAX, Apollo and other workstations. [*soft*]
- INTERLINK** A commercial product comprising hardware and software for file transfer between IBM and VAX computers. [*soft*]
- Intermedia** A hypertext system developed by a research group at IRIS (Brown University). [*soft*]
- Intermedia Interchange Format** A Standard Hypertext Interchange format from IRIS . [*soft*]
- Intermediate section** - A term used in belt and chainconveyor network to designate a section of the conveyor frame occupying a position between the head and foot sections. [*mining-1*]
- intermediate solid solution** a solid solution or phase having a composition range that does not extend to either of the pure components of the system. [*mat-1*]
- Intermetallic** a compound of two metals that has a distinct chemical formula. The bonds in intermetallic compounds are often partly ionic. [*mech-1*]
- Intermetrics** A software engineering company . [*soft*]
- Internal force** Forces which hold an object together when external forces or other loads are applied. Internal forces are sometimes called resisting forces since they resist the effects of external forces. [*struc-1*]
- Internal hinge** see pin connection. [*struc-1*]
- Internal Thread** A screw thread which is formed in holes, such as in nuts. [*mech-3*]
- Internet Address** A thirty-two-bit number that uniquely identifies an Internet host. It is usually represented as four 8-bit numbers separated by dots e.g. 128.121.4.5. It consists of a network number and a host number, and can be subdivided in several ways. [*soft*]
- Internet** A loosely-organized international collaboration of autonomous, interconnected networks, supporting host-to-host communication through voluntary adherence to open protocols and procedures defined by Internet Standards, typically based on the TCP/IP protocol suite [*soft*]
- Interpress** A page description language from Xerox. [*soft*]
- Interstice** [*mech-1*]
- interstitial site** octahedral and tetrahedral open spaces within a close-packed arrangement of atoms or ions in which a cation can fit. [*mat-1*]
- interstitial solid solution** a solid solution wherein relatively small solute atoms occupy interstitial positions between the solvent or host atoms. [*mat-1*]

- InterViews** An object-oriented toolkit developed at Stanford University for building graphical user interfaces. It is implemented in C++ and provides a library of objects and a set of protocols for composing them. [*soft*]
- Intrinsics** A library package on top of Xlib, extending the basic functions of the X Window System. It provides mechanisms for building widget sets and application environments.. [*soft*]
- Invariant Point** a point on a binary phase diagram at which three phases are in equilibrium. [*mech-1*]
- Inventor** See Open Inventor. [*soft*]
- Inverse engineering** The process of extracting high-level abstract specifications from source code using program transformations [*soft*]
- investment casting** this process is based on surrounding (investing) an expendable pattern, typically wax, with a ceramic mold and then removing (by melting or vaporizing) the pattern prior to pouring molten alloy into the mold; also known as lost wax and precision casting. [*mat-1*]
- In vitro** From the Latin for "in glass," isolated from the living organism and artificially maintained, as in a test tube. [*nuclear-1*]
- In vivo** From the Latin for "in one that is living," occurring within the living. [*nuclear-1*]
- Iodine spiking factor** The magnitude of a rapid, short-term increase in the appearance rate of radioiodine in the reactor coolant system. This increase is generally caused by a reactor transient that results in a rapid drop in reactor coolant system pressure relative to the fuel rod internal pressure. [*nuclear-1*]
- ion** an atom with a positive charge because it has had electrons removed or a negative charge because it has had electrons added. [*mat-1*]
- Ion-exchange** A common method for concentrating uranium from a solution. The uranium solution is passed through a resin bed where the uranium-carbonate complex ions are transferred to the resin by exchange with a negative ion like chloride. After build-up of the uranium complex on the resin, the uranium is eluted with a salt solution and the uranium is precipitated in another process. [*nuclear-1*]
- ionic bonding** a coulombic interatomic bond that exists between two adjacent and oppositely charged ions; one of the primary types of atomic bonding in ceramics. [*mat-1*]
- ION Implementation-Oriented Notation.** A notation designed to graphically document object-oriented programs [*soft*]
- IP address** An Internet address. [*soft*]
- IPC** Inter-Process Communication. [*soft*]
- IPE** Integrated Programming Environment. [*soft*]
- IPF** Information Presentation Facility. A document markup system for OS/2. [*soft*]
- IP** Internet transport layer Protocol. [*soft*]
- IPSE** Integrated Project Support Environment: a term for a set of management and technical tools to support software development, usually integrated in a coherent framework: equivalent to an SEE. [*soft*]
- IPTES** Incremental Prototyping Technology for Embedded Realtime Systems, an Esprit project. [*soft*]
- IPVR** Institute of Parallel and Distributed High-Performance Systems (Stuttgart). [*soft*]
- IQA** Institute of Quality Assurance (UK). [*soft*]
- IRC** Internet Relay Chat. A system whereby a number of people can participate in a discussion in real time on the Internet. [*soft*]
- IRD** Internet Resource Discovery. [*soft*]
- IRDS** Information Resource Dictionary System. A set of ISO repositories. It governs the definition of data dictionaries to be implemented on top of relational databases (see repository, data dictionary). [*soft*]
- Iris** An object-oriented DBMS. [*soft*]
- IRIS Explorer** A visualisation system [*soft*]
- IRIS** Institute for Research in Information and Scholarship of Brown University (Providence RI). [*soft*]
- IRIS** See IRIS Explorer [*soft*]
- ISA** An Esprit project continuing the ANSA project. [*soft*]
- ISA** International Smalltalk Association (now disbanded). [*soft*]
- ISAM** Indexed Sequential Access Method: a file access method supporting both sequential and indexed access. [*soft*]
- ISBN** International Standard Book Numbering. [*soft*]

- ISCN** International Software Consulting Network. A network of process improvement experts. [*soft*]
- ISDE** Integrated Software Development Environment: equivalent to an IPSE . [*soft*]
- ISDN** Integrated Services Digital Network: a set of CCITT standards to support many types of signal traffic (speech, data, video) via a digital transmission system, eventually intended to replace current telephone systems. The Basic rate is 64 kbits/sec [*soft*]
- ISEE** Integrated Software Engineering Environment: equivalent to SEE . [*soft*]
- ISE** Interactive Software Engineering: a software engineering company marketing Eiffel among other products. [*soft*]
- ISERN** International Software Engineering Research Network - More information. [*soft*]
- ISF** Information Systems Factory: equivalent to an SEE . [*soft*]
- ISIS** A toolkit for implementing fault-tolerant distributed systems, developed at Cornell and now available commercially [*soft*]
- ISOC** The Internet Society. A professional society concerned with the growth and evolution of the Internet , with the way it is used, and with related social, political, and technical issues [*soft*]
- ISODE** ISO Development Environment: software that implements a set of OSI upper-layer services. It supports OSI applications on top of OSI and TCP/IP networks [*soft*]
- ISO** International Organisation for Standardisation [*soft*]
- isomerism** the phenomenon whereby two or more polymer molecules or mer units have the same composition but different structural arrangements and properties. [*mat-1*]
- Isopach** - A line, on a map, drawn through points of equal thickness of a designated unit. Synonym for isopachous line; isopachyte. [*mining-1*]
- isotactic** a type of polymer chain configuration where all side groups are positioned on the same side of the chain molecule. [*mat-1*]
- Isotactic** a type of polymer chain configuration wherein all side groups are positioned on the same side of the chain molecule. [*mech-1*]
- isothermal** at a constant temperature. [*mat-1*]
- Isotope** Any two or more forms of an element having identical or very closely related chemical properties and the same atomic number but different atomic weights or mass numbers. [*nuclear-1*]
- Isotope** atoms of the same element having the different masses. [*mech-1*]
- isotropic** having identical values of a property in all crystallographic directions. [*mat-1*]
- ISPE** International Society for Productivity Enhancement. [*soft*]
- ISTAR** An experimental IPSE . from Imperial Software Technology. [*soft*]
- ISV** Independent Software Vendor (not a hardware manufacturer). [*soft*]
- ITHACA** An Esprit project to put a "4th generation" object-oriented system to practical use in an industrial environment. The ITHACA environment offers an application support system incorporating advanced technologies in the fields of object-oriented programming, programming languages, database technologies, user interface systems and software development tools [*soft*]
- IT** Information Technology. [*soft*]
- ITU** International Telecommunications Union [*soft*]
- Izod Impact Test** one of two tests that may be used to measure the impact energy of standard notched specimen. [*mech-1*]
- Izod test** a type of impact test in which a V-notched specimen, mounted vertically, is subjected to a sudden blow delivered by the weight at the end of a pendulum arm; the energy required to break off the free end is a measure of the impact strength or toughness of the material. [*mat-1*]
- Jackleg** - A percussion drill used for drifting or stopping that is mounted on a telescopic leg which has an extension of about 2.5 m. The leg and machine are hinged so that the drill need not be in the same direction as the leg. [*mining-1*]
- Jackrock** A caltrop or other object manufactured with one or more rounded or sharpened points, which when placed or thrown present at least one point at such an angle that it is peculiar to and designed for use in puncturing or damaging vehicle tires. Jackrocks are commonly used during labor disputes. [*mining-1*]
- Jackson method** A proprietary structured method for software analysis, design and programming. [*soft*]



- Jam Nuts** See LOCKNUT [*mech-3*]
- JANET** The Joint Academic NETwork which links U.K. academic and research institutes. [*soft*]
- Java** An Object-Oriented language from Sun, now widely used in WWW browsers - More information. [*soft*]
- JAZELLE** A data management system for HEP from SLAC. [*soft*]
- JEDI** Joint Electronic Document Interchange [*soft*]
- JEPI** Joint Electronic Payment Initiative. A joint project between W3C and CommerceNet in the field of electronic payment using WWW . [*soft*]
- JFIF** A data stream-oriented file format used for transmitting JPEG encoded bitmap data [*soft*]
- Job Safety Analysis (J.S.A.)** - A job breakdown that gives a safe, efficient job procedure. [*mining-1*]
- Joint** - A divisional plane or surface that divides a rock along which there has been no visible movement parallel to the plane or surface. [*mining-1*]
- Joint Control Tightening** See YIELD CONTROLLED TIGHTENING [*mech-3*]
- JOOP** Journal of Object-Oriented Programming. [*soft*]
- JPEG** A standardized image compression mechanism. JPEG stands for Joint Photographic Experts Group, the original name of the committee that wrote the standard. JPEG is designed for compressing either full-color or gray-scale digital images of "natural", real-world scenes. It does not work so well on non-realistic images, such as cartoons or line drawings. JPEG does not handle black-and-white (1-bit-per-pixel) images, or motion picture compression. Standards for compressing those types of images are being worked on by other committees, named JBIG and MPEG - More information. [*soft*]
- jpg** See JPEG . [*soft*]
- JSA** Japanese Standards Association [*soft*]
- JSD** Jackson System Development [*soft*]
- JTC** Joint Technical Committee (of ISO and IEC). [*soft*]
- Kala** A persistent data server: a link library providing an engine for applications needing persistence, transactions, crash recovery and rollback, versioning, distribution, and other facilities for which DBMSs are commonly used [*soft*]
- KAPPA** An object-oriented workbench for Sun workstations from Intellicorp. [*soft*]
- KBS** Knowledge-based system. [*soft*]
- KDD** Knowledge Discovery in Databases. A branch of Artificial Intelligence . [*soft*]
- Keeps** A pre-assembled nut and washer assembly (the washer is attached to the nut so that it won't fall off)- a trademark of ITW Shakeproof. The origin of the word came from Sha [*mech-3*]
- Kerberos** An authentication system from the Athena project, adopted by OSF as the basis of security for DME [*soft*]
- Kerf** - The undercut of a coal face. [*mining-1*]
- KERMIT** A protocol for file transfer. Mainly used for transfers to and from PC's. [*soft*]
- kernel** The essential part of UNIX or other operating systems, responsible for resource allocation etc. [*soft*]
- Kettle bottom** - A smooth, rounded piece of rock, cylindrical in shape, which may drop out of the roof of a mine without warning. The origin of this feature is thought to be the remains of the stump of a tree that has been replaced by sediments so that the original form has been rather well preserved. [*mining-1*]
- K Factor** The factor in the torque tightening equation:  $T = KDF$  where T is the fastener tightening torque in Newton metres, D is the fastener diameter in metres, F is the fasteners preload in Newtons and K is a factor whose value is often taken as 0.2. The formula gives the approximate tightening torque for standard fasteners used under normal conditions. [*mech-3*]
- Khoros** A visualisation system from Khoral Research . [*soft*]
- KIF** Knowledge Interchange Format. For knowledge sharing and communication among heterogeneous agents. [*soft*]
- killed steel** steel treated with a strong deoxidizing agent, such as aluminum or silicon, in order to reduce the oxygen content to a level so no reaction occurs between carbon and oxygen during solidification. [*mat-1*]
- kiln** a furnace in which ceramics are fired. [*mat-1*]
- Kilo-** A Greek prefix meaning "thousand" in the nomenclature of the metric system. This prefix multiplies a unit by 1000. [*nuclear-1*]
- Kilovolt** The unit of electrical potential equal to 1000 volts. [*nuclear-1*]

**Kinetic Energy** The energy of a moving mass; equal to  $\frac{1}{2}mv^2$ . Where  $m$  is mass and  $v$  is the magnitude of the velocity. [*struc-1*]

**Kinetic energy** The energy that a body possesses by virtue of its mass and velocity. Also called the energy of motion. [*nuclear-1*]

**KISS** An Object-Oriented analysis and design approach [*soft*]

**KISS** Keep It Simple Stupid. A homespun design philosophy. [*soft*]

**KMS** Knowledge Management System: a distributed hypermedia system for managing knowledge in organisations A commercial system from Knowledge Systems Inc running on workstations, based on previous research with ZOG at Carnegie Mellon University. [*soft*]

**Knoop hardness test** an indentation hardness test using calibrated machines to force a rhombic-based pyramidal diamond indenter having specified edge angles, under specified conditions, into the surface of the test material and to measure the long diagonal after load removal. [*mat-1*]

**Knowledge Engineering** The acquisition of knowledge from a human expert or similar source and its coding in an expert system. [*soft*]

**Knowledge Representation** A subset of AI. [*soft*]

**Kohonen** T. Kohonen of the University of Helsinki has been studying neural networks for many years with the idea of modelling as closely as possible the behaviour of biological systems, and his name is commonly associated with a particular kind of neural network in which there are only two kinds of neurons (see McCulloch-Pitts), input and others. All the input neurons are connected to all others, and the others are connected only to their other nearest neighbors. The training algorithm is a relatively simple one based on the geometric layout of the neurons, and makes use of annealing. [*soft*]

**KQML** Knowledge Query and Manipulation Language. [*soft*]

**KR** Knowledge Representation. [*soft*]

**KUIP** Kernel User Interface Package: the human interface to PAW. [*soft*]

## LMN

**Labview** A package from National Instruments Corp originally developed to provide a graphical interface to instruments connected by the

IEEE 488 (GPIB) bus. It has powerful graphical editing facilities for defining and interconnecting "virtual instruments". [*soft*]

**LAMPF** Los Alamos Meson Physics Facility (An 800 MeV proton and negative H ion high-current LINAC, 1mA average, 12mA peak). [*soft*]

**Lamp** - The electric cap lamp worn for visibility. Also, the flame safety lamp used in coal mines to detect methane gas concentrations and oxygen deficiency. [*mining-1*]

**Language-Based Editor** An editor that is aware of the syntactic, semantic and in some cases the structural rules of a specific programming language and provides a framework for the user to enter source code. Programs or changes to previously stored programs are incrementally parsed into an abstract syntax tree and automatically checked for correctness. [*soft*]

**LANL** Los Alamos National Laboratory - Los Alamos, NM, USA - More information. [*soft*]

**LAN** Local area network [*soft*]

**lapping** a surface finishing operation used to achieve a fine polish and close tolerances. [*mat-1*]

**laser** acronym for light amplification by stimulated emission of radiation; a source of concentrated coherent light generated by stimulating electronic or molecular transitions to lower energy levels. [*mat-1*]

**laser soldering** method of soldering in which the heat required to reflow a solder interconnection is provided by a laser (YAG or CO<sub>2</sub>); the solder joints are heated sequentially and cooled rapidly. [*mat-1*]

**latent heat** the thermal energy absorbed or released when a material experiences a phase change. [*mat-1*]

**LaTeX** A document preparation system based on TeX, popular in the HEP community. It adds a collection of commands to simplify typesetting, and lets the user concentrate on the structure of the text rather than on formatting commands [*soft*]

**Lattice Parameter** the combination of unit cell edge lengths and interaxial angles that defines the unit cell geometry. [*mech-1*]

**lattice parameter** the length of any side in a crystal structure's unit cell. [*mat-1*]

**Lattice** the regular geometrical arrangement of points in crystal space. [*mech-1*]

- lattice** the space arrangement of atoms in a crystal. [*mat-1*]
- Layout** - The design or pattern of the main roadways and workings. The proper layout of mine workings is the responsibility of the manager aided by the planning department. [*mining-1*]
- LBE** Language-Based Editor . [*soft*]
- LBL** Lawrence Berkeley Laboratory, Berkeley, CA, USA. [*soft*]
- LCF** Logic for Computable Functions. A system for interactive automated reasoning. [*soft*]
- leaching** process of liquid solder dissolving a metal coating. [*mat-1*]
- lead** a wire that connects two points in a circuit; it is usually self-supporting. [*mat-1*]
- LEAR** Low Energy Antiproton Ring. [*soft*]
- LEDA** Library of Efficient Data types and Algorithms. A class library with graph classes from Uni Saarbruecken. [*soft*]
- Lefthand Thread** A screw thread that is screwed in by rotating counterclockwise. [*mech-3*]
- Legacy** Legacy system is a term used to describe old software systems still in use but which could benefit from re-engineering using more modern methods. [*soft*]
- Length Of Engagement** The axial distance over which an external thread is in contact with an internal thread. [*mech-3*]
- LEP** Large Electron Positron Collider. A 27km circumference accelerator at CERN , which brings bunches of electrons and positrons into collision. [*soft*]
- Lethal dose (LD)** The dose of radiation expected to cause death to 50 percent of an exposed population within 30 days (LD 50/30). Typically, the LD 50/30 is in the range from 400 to 450 rem (4 to 5 sieverts) received over a very short period. [*nuclear-1*]
- lever rule** in a phase diagram, the relative proportions of the conjugate phases, at a stated value of temperature and pressure, or both, is such that a state of mechanical balance would obtain, if the corresponding weight of each phase were placed upon its composition point upon the tie-element (tie-line, tie-triangle, etc.) and the fulcrum were located at the gross composition point of the mixture. [*mat-1*]
- Lever Rule** mathematical expression whereby the relative phase amounts in a two-phase alloy at equilibrium may be computed. [*mech-1*]
- lex** A lexical analysis tool for the UNIX environment. [*soft*]
- LHC** Large Hadron Collider: proposed to be built in the LEP . [*soft*]
- Licensing basis** The collection of documents or technical criteria that provides the basis upon which the NRC issues a license to possess radioactive materials, conduct operations involving emission of radiation, use special nuclear materials, or dispose of radioactive waste. [*nuclear-1*]
- Lifecycle** See Life-Cycle . [*soft*]
- Life-Cycle** The software life-cycle consists of phases: requirements analysis, design, construction, testing and maintenance. The development process tends to run iteratively through these phases rather than linearly; several models (spiral, waterfall etc) have been proposed to describe this process. [*soft*]
- LIFIA** Laboratoire d'Informatique Fondamentale et d'Intelligence Artificielle. [*soft*]
- LIFN** Location Independent File Name [*soft*]
- Lift** - The amount of coal obtained from a continuous miner in one mining cycle. [*mining-1*]
- LIGHT** Lifecycle Global HyperText. A project in the CERN ECP/IPT group whereby documents resulting from the software life cycle are available as hypertext [*soft*]
- light metal** one of the low-density metals, such as aluminum, magnesium, titanium, beryllium, or their alloys. [*mat-1*]
- Light water** Ordinary water as distinguished from heavy water [i/reading-rm/basic-ref/glossary/heavy-water-d2o.html](#). [*nuclear-1*]
- Light water reactor** A term used to describe reactors using ordinary water as coolant, including boiling water reactors (BWRs) and pressurized water reactors (PWRs), the most common types used in the United States. [*nuclear-1*]
- Limiting condition for operation** The section of Technical Specifications that identifies the lowest functional capability or performance level of equipment required for safe operation of the facility. [*nuclear-1*]
- Limiting safety system settings** Settings for automatic protective devices related to those variables having significant safety functions. Where

- a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting will ensure that automatic protective action will correct the abnormal situation before a safety limit is exceeded. [*nuclear-1*]
- Linda** A portable parallel language to simplify parallel programming. Extensions to C and Fortran, available from Scientific Computing Associates, Inc. [*soft*]
- Linear** A structure is said to behave linearly when its the deformation response is directly proportional to the loading (i.e. doubling the load doubles the displacement response). For a material, linear means that the stress is directly proportional to the strain. [*struc-1*]
- Linear Elastic** A force-displacement relationship which is both linear and elastic. For a structure, this means the deformation is proportional to the loading, and deformations disappear on unloading. For a material, the concept is the same except strain substitutes for deformation, and stress substitutes for load. [*struc-1*]
- Linear heat generation rate** The heat generation rate per unit length of fuel rod, commonly expressed in kilowatts per foot (kw/ft) of fuel rod. [*nuclear-1*]
- Line of Action** The line of action of a force is the infinite line defined by extending along the direction of the force from the point where the force acts. [*struc-1*]
- link** see Hypertext [*soft*]
- lint** A C language preprocessor which carries out more thorough checks on the code than is usual with C compilers themselves. [*soft*]
- Linux** An implementation of UNIX written from scratch with no proprietary code for IBM PC compatibles by Linus Torvalds and distributed under the GNU public licence - More information. [*soft*]
- Liquefaction** The process of converting coal into asynthetic fuel, similar in nature to crude oil and/or refinedproducts, such as gasoline.[*mining-1*]
- Liquidus**[*mech-1*]
- liquidus** the line on the phase equilibrium diagram above which only liquids are stable and below which some solid is present; the lowest temperature at which a metal or alloy is completely liquid. [*mat-1*]
- LISP** A List Processing Language suitable for symbolic and logical programming [*soft*]
- LispView** CLOS based windowing system on OpenWindows . [*soft*]
- Literate programming** Combining the use of a language such as TeX and a conventional programming language, so as to maintain documentation and source together [*soft*]
- Lithology** - The character of a rock described in terms of its structure, color, mineral composition, grain size, and arrangement of its component parts; all those visible features that in the aggregate impart individuality of the rock. Lithology is the basis of correlation in coal mines and commonly is reliable over a distance of a few miles.[*mining-1*]
- LitProg** Literate Programming [*soft*]
- Lml** A functional language (Johnson 1984). [*soft*]
- Load** An external force. The term load is sometimes used to describe more general actions such as temperature differentials or movements such as foundation settlements. [*struc-1*]
- Loading machine** - Any device for transferring excavated coal into the haulage equipment.[*mining-1*]
- Loading pocket** - Transfer point at a shaft where bulk material is loaded by bin, hopper, and chute into a skip.[*mining-1*]
- Load** - To place explosives in a drill hole. Also, to transfer broken material into a haulage device.[*mining-1*]
- Local Area Network** Usually abbreviated to LAN: a communications network which is geographically limited (typically to a 1 km. radius) allowing easy interconnection of terminals, microprocessors and computers within adjacent buildings. Ethernet and FDDI are examples of standard LANs. [*soft*]
- Lock Nut** There are two common usage's of this term: 1. A nut which provides extra resistance to vibration loosening by either providing some form of prevailing torque, or, in free spinning nuts, by deforming and/or biting into mating parts when fully tightened. 2. The term is sometimes used for thin (or jam) nuts used to lock a thicker nut. When used in this way the thin nut should be adjacent to the joint surface and tightened against the thick nut. If placed on top of the thick nut the thin nut would sustain loads it was not designed to sustain. [*mech-3*]
- LOC** Line of code. Used as a simple software metric. [*soft*]



- Locus** A distributed system project supporting transparent access to data through a network-wide file system. [*soft*]
- Logic Programming** Programming in a language such as Prolog, which allows the programmer to make a series of assertions which are interpreted by an inference engine [*soft*]
- LOGISCOPE** Software quality analysis tools from Verilog SA, used to evaluate the quality of software both statically (based on software metrics) and dynamically [*soft*]
- Lojban** An artificial language designed to be used by people in communication with each other, and possibly in the future with computers [*soft*]
- Longwall**
- Looking Glass** A desktop manager for UNIX from Visix. [*soft*]
- Loop** In a pressurized water reactor, the coolant flow path through piping from the reactor pressure vessel to the steam generator, to the reactor coolant pump, and back to the reactor pressure vessel. Large PWRs may have as many as four separate loops. [*nuclear-1*]
- LOOPS** Lisp Object-oriented Programming System from Intelligent Systems Laboratory, Xerox Palo Alto Research Center. [*soft*]
- Loose coal** - Coal fragments larger in size than coaldust. [*mining-1*]
- Loss of coolant accident (LOCA)** Those postulated accidents that result in a loss of reactor coolant at a rate in excess of the capability of the reactor makeup system from breaks in the reactor coolant pressure boundary, up to and including a break equivalent in size to the double-ended rupture of the largest pipe of the reactor coolant system. [*nuclear-1*]
- LOTOS** A formal description technique used for protocol specification in ISO standards (ISO 8807). [*soft*]
- Low-level waste** A general term for a wide range of wastes having low levels of radioactivity. Industries; hospitals and medical, educational, or research institutions; private or government laboratories; and nuclear fuel cycle facilities (e.g., nuclear power reactors and fuel fabrication plants) that use radioactive materials generate low-level wastes as part of their normal operations. These wastes are generated in many physical and chemical forms and levels of contamination Low-level radioactive wastes containing source, special nuclear, or byproduct material are acceptable for disposal in a land disposal facility. [*nuclear-1*]
- Low population zone (LPZ)** An area of low population density often required around a nuclear installation before it's built. The number and density of residents is of concern in emergency planning so that certain protective measures (such as notification and instructions to residents) can be accomplished in a timely manner. [*nuclear-1*]
- Low voltage** - Up to and including 660 volts by federal standards. [*mining-1*]
- LSE** Language Sensitive Editor: from DEC. [*soft*]
- Luder bands** elongated surface markings or depressions in sheet metal caused by discontinuous yielding. [*mat-1*]
- Lynx** A WWW browser from University of Kansas - More information. [*soft*]
- LynxOS** A POSIX compliant real-time operating system from Lynx Real-Time Systems, Los Gatos, California, with a UNIX-like interface to application programs. [*soft*]
- LZW** Lempel-Ziv-Welch data compression algorithm. [*soft*]
- MACAnalyst** An analysis CASE tool for the Mac from Excel Software Inc. [*soft*]
- MACDesigner** A design CASE tool for the Mac from Excel Software Inc. [*soft*]
- Mach** An operating system kernel under development at Carnegie-Mellon University to support distributed and parallel computation. Mach is designed to support computing environments consisting of networks of uniprocessors and multiprocessors. Mach is the kernel of the OSF/1 system. [*soft*]
- Macintosh** A range of personal computers manufactured by Apple Computer Inc. [*soft*]
- macromolecule** a huge molecule made up of thousands of atoms. [*mat-1*]
- MacX** A package allowing the Macintosh to be used as an X server. [*soft*]
- Madaline** A structure of many ADALINE units. [*soft*]
- magnetic field strength ( $H$ )** the intensity of an externally applied magnetic field. [*mat-1*]
- Magnetic Field Strength** the intensity of an externally applied magnetic field. [*mech-1*]
- magnetic flux density ( $B$ )** the magnetic field produced in a substance by an external magnetic field. [*mat-1*]

- Magnetic Flux Density** the magnetic field produced in a substance by an external magnetic field. [*mech-1*]
- Magnetic Induction** see Magnetic Flux Density [*mech-1*]
- Magnetic Susceptibility** the proportionality constant between the magnetization  $M$  and the magnetic field strength  $H$ . [*mech-1*]
- Magnetization** the total magnetic moment per unit volume of material. Also, a measure of the contribution to the magnetic flux by some material within an  $H$  field. [*mech-1*]
- magnetization** the total magnetic moment per unit volume of material; also, a measure of the contribution to the magnetic flux by some material within an  $H$  field. [*mat-1*]
- Magnitude** A scalar value having physical units. [*struc-1*]
- Main entry** - A main haulage road. Where the coal hascleats, main entries are driven at right angles to the facecleats. [*mining-1*]
- Main fan** - A mechanical ventilator installed at the surface; operates by either exhausting or blowing to induce airflow through the mine roadways and workings. [*mining-1*]
- Maintenance** An important part of the software life-cycle. Maintenance is expensive in manpower and resources, and software engineering techniques aim to reduce its cost. [*soft*]
- Major Diameter** This is the diameter of an imaginary cylinder parallel with the crests of the thread; in other words it is the distance from crest to crest for an external thread, or root to root for an internal thread. [*mech-3*]
- Make** A popular tool on UNIX systems to automate the recompilation, linking etc. of programs, taking account of the interdependencies of modules. [*soft*]
- Makedoc** A program from Carleton University, Ottawa that generates documentation for Objective C programs. It will also generate a class hierarchy diagram. The output format is similar to that used by StepStone. [*soft*]
- malleable cast iron** white cast iron that has been heat treated to convert the cementite into graphite clusters; a relatively ductile cast iron. [*mat-1*]
- Manhole** - A safety hole constructed in the side of a gangway, tunnel, or slope in which miner can be safe from passing locomotives and car. Also called a refuge hole. [*mining-1*]
- Man trip** - A carrier of mine personnel, by rail or rubber tire, to and from the work area. [*mining-1*]
- Manway** - An entry used exclusively for personnel to travel from the shaft bottom or drift mouth to the working section; it is always on the intake air side in gassy mines. Also, a small passage at one side or both sides of a breast, used as a traveling way for the miner, and sometimes, as an airway, or chute, or both. [*mining-1*]
- Maple** A mathematics package developed by the University of Waterloo and ETH Zurich. [*soft*]
- MAP** Manufacturers Automation Protocol, a set of protocols developed by General Motors based on Token Bus (IEEE 802.4) and giving predictable response in real time. [*soft*]
- MARC** MACHine Readable Cataloging: a record format for bibliographic information interchange based on the ANSI / NISO Z39.2 standard. [*soft*]
- Markowitz** The author of the original Simscript language. [*soft*]
- Markup** In computerised document preparation, a method of adding information to the text indicating the logical components of a document, or instructions for layout of the text on the page. [*soft*]
- Martensite** a metastable Fe-C composition consisting of supersaturated carbon in iron that is the product of a diffusionless (athermal) transformation from austenite. [*mech-1*]
- martensite** a metastable iron phase supersaturated in carbon that is the product of a diffusionless (athermal) transformation from austenite. [*mat-1*]
- Martensitic Transformation** [*mech-1*]
- MASCOT** Modular Approach to Software Construction Operation and Test: a method for software design aimed at real-time embedded systems from the Royal Signals and Research Establishment, UK. [*soft*]
- Mass** A property of an object measured by the degree that it resists acceleration. [*struc-1*]
- Mass-energy equation** The equation developed by Albert Einstein, which is usually given as  $E = mc^2$ , showing that, when the energy of a body changes by an amount  $E$  (no matter what form the energy takes), the mass ( $m$ ) of the body will change by an amount equal to  $E/c^2$ . The factor  $c$  squared, the speed of light in a vacuum ( $3 \times 10$  to the eighth power), may be regarded as the conversion factor relating units of mass and

- energy. The equation predicted the possibility of releasing enormous amounts of energy by the conversion of mass to energy. It is also called the Einstein equation. [*nuclear-1*]
- Mass number** The number of nucleons (neutrons and protons) in the nucleus of an atom. Also known as the atomic weight. [*nuclear-1*]
- Mathematica** A general program for symbolic computing and programming from Wolfram Research [*soft*]
- Matrix** The body constituent of a composite or two-phase alloy that completely surrounds the dispersed phase and gives the body its bulk form. [*mech-1*]
- matrix** the continuous phase in a composite or two-phase alloy microstructure in which a second phase is dispersed. [*mat-1*]
- Maximum dependable capacity (gross)** In a nuclear power reactor, dependable main-unit gross generating capacity, winter or summer, whichever is smaller. The dependable capacity varies because the unit efficiency varies during the year due to temperature variations in cooling water. It is the gross electrical output as measured at the output terminals of the turbine generator during the most restrictive seasonal conditions (usually summer). [*nuclear-1*]
- Maximum dependable capacity (net)** In a nuclear power reactor, gross maximum dependable generating capacity less the normal station service loads. [*nuclear-1*]
- MBONE** Multicast backbone: a virtual network on top of the Internet to support routing of IP multicast packets, intended for multimedia transmission [*soft*]
- McCulloch-Pitts** The McCulloch-Pitts neuron is the basic building block of neural networks. It receives one or more inputs and produces one or more identical outputs, each of which is a simple non-linear function of the sum of the inputs to the neuron. The non-linear function is typically a threshold or step function which is usually smoothed (i.e. a sigmoid) to facilitate learning. [*soft*]
- MCS** Meta Class System: a portable object-oriented extension of Common Lisp from GMD . It integrates the functionality of CLOS . [*soft*]
- MDL** An early object-oriented language from MIT . [*soft*]
- Meanshift** The difference in tightening torque values produced by the same tightening tool on hard and soft joints. A hard joint typically gives a higher torque value than a soft joint. Generally speaking, the lower the meanshift of a tightening tool, the better it will be in achieving a specified torque value irrespective of the joint condition. [*mech-3*]
- Measured coal resources** Coal for which estimates of the rank, quality, and quantity have been computed from sample analyses and measurements from closely spaced and geologically well-known sample sites, such as outcrops, trenches, mine workings, and drillholes. The points of observation and measurement are so closely spaced and the thickness and extent of coals are so well defined that the tonnage is judged to be accurate within 20 percent of true tonnage. Although the spacing of the points of observation necessary to demonstrate continuity of the coal differs from region to region according to the character of the coal beds, the points of observation are no greater than mile apart. Measured coal is projected to extend as a -mile wide belt from the outcrop or points of observation or measurement. [*mining-1*]
- Mega-** A prefix that multiplies a basic unit by 1,000,000 (10 to the sixth power). [*nuclear-1*]
- Megacurie** One million curies. [*nuclear-1*]
- Megawatt hour (MWh)** One million watt-hours. [*nuclear-1*]
- Megawatt (MW)** One million watts. [*nuclear-1*]
- Mellor** see Schlaer-Mellor . [*soft*]
- Melting Point** the temperature at which a solid substance changes to a liquid state. [*mech-1*]
- Member Function** In C++ , the name given to a method . [*soft*]
- Meridian** - A surveying term that establishes a line of reference. The bearing is used to designate direction. The bearing of a line is the acute horizontal angle between the meridian and the line. Azimuths are angles measured clockwise from any meridian. [*mining-1*]
- MERISE** Methode d'Etude et de Realisation Informatique pour les Systemes d'Entrepise: a Software Engineering method popular in France; many IPSE s are based on it. [*soft*]
- mer** the group of atoms that constitutes a polymer chain repeat unit. [*mat-1*]
- Mer** the group of atoms that constitutes a polymer chain repeat unit. [*mech-1*]

- Mesa** An early object-oriented programming language developed at the Xerox Palo Alto research centre. [*soft*]
- Message** In object-oriented programming sending a message to an object (to invoke a method) is equivalent to calling a procedure in traditional programming languages, except that the actual code executed may only be selected at run-time depending on the class of the object. Thus, in response to the message "drawSelf", the method code invoked would be different if the target object were a circle or a square. [*soft*]
- MetaCard** A commercial human interface and hypertext system for UNIX, similar to Hypercard. [*soft*]
- Meta-CASE tool** A term sometimes used for software packages (like TBK) which allow users to develop or customise their own CASE tools. [*soft*]
- Metaclass** The class of a class. A metaclass is a class whose instances are themselves classes. [*soft*]
- Metadata** Data definitions describing aspects of the actual data items, such as name, format etc. [*soft*]
- Metafile** Typically a file of graphics data for transport between different machines. [*soft*]
- metal** an opaque lustrous elemental chemical substance that is a good conductor of heat and electricity and, when polished, a good reflector of light; most elemental metals are malleable, ductile, and are generally denser than the other elemental substances; metals are structurally distinguished from nonmetals by their atomic bonding and electron availability; the electron band structure of metals is characterized by a partially filled valence band; the "free electrons" lost from the outer shells of metallic atoms are available to carry an electric current; the defining property of a metal is that it is an element with a positive thermal coefficient of resistivity, meaning the electrical resistivity of a metal continuously increases as temperature increases. [*mat-1*]
- metallic bond** a primary interatomic bond involving the nondirectional sharing of nonlocalized valence electrons ("sea of electrons") which are mutually shared by all the atoms in the metallic solid. [*mat-1*]
- metallurgy** the science and technology of metals and alloys. [*mat-1*]
- Metal** the electropositive elements and alloys based on these elements. [*mech-1*]
- Metal To Metal Contact Flange Joint** A flanged joint in which a gasket is compressed by bolts - the gasket being located in a recess within the joint so that it is compressed by the bolt loads until metal to metal contact occurs. Unlike the FLOATING TYPE FLANGE JOINT, for metal to metal type joints there are no standardised gasket factor definitions, test procedures, nor generally acknowledged calculation procedures available. [*mech-3*]
- metastable** (1) nonequilibrium state of a material with respect to some transition, conversion, or reaction but stabilized kinetically either by rapid cooling or by some molecular characteristics; (2) possessing a state of pseudoequilibrium that has a free energy higher than that of the true equilibrium state. [*mat-1*]
- Metastable** nonequilibrium state that may persist for a very long time. [*mech-1*]
- Methane** A potentially explosive gas formed naturally from the decay of vegetative matter, similar to that which formed coal. Methane, which is the principal component of natural gas, is frequently encountered in underground coal mining operations and is kept within safe limits through the use of extensive mine ventilation systems. [*mining-1*]
- Methane monitor** - An electronic instrument often mounted on a piece of mining equipment, that detects and measures the methane content of mine air. [*mining-1*]
- Methodology** A term for a codified set of procedures for some phase of software engineering, such as analysis and design. [*soft*]
- Method** The name given in Smalltalk (and sometimes in other object-oriented languages) to a procedure or routine associated with an object. [*soft*]
- Metric** see Software Metrics. [*soft*]
- Metric ton** Approximately 2200 pounds in the English system of measurements. (Note: In the international system of measurements, 1 metric ton = 1000 kg.) [*nuclear-1*]
- Meyer** Bertrand Meyer, the author of the Eiffel Language and many articles on object-oriented software techniques. [*soft*]
- Micro-** A prefix that divides a unit into one million parts (0.000001). [*nuclear-1*]
- Microcurie** One millionth of a curie. That amount of radioactive material that disintegrates (decays) at the rate of 37 thousand atoms per second. [*nuclear-1*]



- Microkernel** An approach to operating systems design which puts emphasis on small modules which implement the basic features of the system and can be flexibly configured. [*soft*]
- micron** one millionth of a meter (0.000001), and another term for micrometer ( $10^{-6}$ ). [*mat-1*]
- microscopy** the investigation of microstructural elements using some type of microscope, e.g. scanning electron microscopy (SEM), light optical microscopy (LOM). [*mat-1*]
- Microsoft** A vendor of systems and application software for personal computers and similar platforms [*soft*]
- microstructure** the microscopic assemblage of grains, grain boundaries, amorphous phases, pores, and inclusions, that make up a material. [*mat-1*]
- Microstructure** the structural features of an alloy that are subject to observation under a microscope. [*mech-1*]
- microvoid coalescence (MVC)** occurs due to the nucleation of microvoids, followed by their growth and eventual coalescence; initiation is caused by particle cracking or interfacial failure between an inclusion or precipitate particle and the surrounding matrix. [*mat-1*]
- Midas** A Motif-based toolkit for interactive data analysis by T. Johnson, SLAC. The basis for the Midas-WWW browser. [*soft*]
- Midas-WWW** A Motif-based browser for WWW [*soft*]
- MIDI** Musical Instrument Digital Interface. [*soft*]
- MID** Metafile for Interactive Documents. A standard sponsored by the DoD. [*soft*]
- MIFF** Machine Independent File Format. A bitmap format [*soft*]
- Miller-Bravis Indices** a set of four integers that designate crystallographic planes in hexagonal crystals. [*mech-1*]
- Miller indices** a set of three integers (four for hexagonal) that designate crystallographic planes, as determined from reciprocals of fractional axial intercepts. [*mat-1*]
- Miller Indices** a set of three integers that designate crystallographic planes, as determined from reciprocals of fractional axial intercepts. [*mech-1*]
- Milli-** A prefix that divides a basic unit by 1000. [*nuclear-1*]
- Millirem** One thousandth of a rem (0.001 rem). [*nuclear-1*]
- Milliroentgen (mR)** One thousandth of a roentgen (R).  $1\text{mR} = 10^{-3}\text{R} = 0.001\text{R}$ . [*nuclear-1*]
- Mill tailings** Naturally radioactive residue from the processing of uranium ore into yellowcake in a mill. Although the milling process recovers about 93 percent of the uranium, the residues, or tailings, contain several naturally-occurring radioactive elements, including uranium, thorium, radium, polonium, and radon. [*nuclear-1*]
- MIMD** Multiple Instruction Multiple Data: a form of parallelism in multiprocessor computing where there are several instruction streams (programs) operating concurrently on several data streams. [*soft*]
- MIME** Multimedia Internet Mail Extensions. A method of processing multi-part, multimedia messages on the Internet 1521-1522 etc.) - More information. [*soft*]
- Mine development** - The term employed to designate the operations involved in preparing a mine for ore extraction. These operations include tunneling, sinking, cross-cutting, drifting, and raising. [*mining-1*]
- Mine mouth electric plant** A coal burning electric-generating plant built near a coal mine. [*mining-1*]
- Mineral** - An inorganic compound occurring naturally in the earth's crust, with a distinctive set of physical properties, and a definite chemical composition. [*mining-1*]
- Miner** - One who is engaged in the business or occupation of extracting ore, coal, precious substances, or other natural materials from the earth's crust. [*mining-1*]
- Mining Engineer** - A person qualified by education, training, and experience in mining engineering. A trained engineer with knowledge of the science, economics, and arts of mineral allocation, extraction, concentration and sale, and the administrative and financial problems of practical importance in connection with the profitable conduct of mining. [*mining-1*]
- Mining** One of three major underground coal mining methods currently in use. Employs a steel plow, or rotation drum, which is pulled mechanically back and forth across a face of coal that is usually several hundred feet long. The loosened coal falls onto a conveyor for removal from the mine. [*mining-1*]

- Minor Diameter** This is the diameter of an imaginary cylinder which just touches the roots of an external thread, or the crests of an internal thread. [*mech-3*]
- MINUIT** A Program for Function Minimization and Error Analysis - More information. [*soft*]
- MIPS** A microprocessor vendor . [*soft*]
- Misfire** - The complete or partial failure of a blasting charge to explode as planned. [*mining-1*]
- MIS** Management Information Systems. [*soft*]
- MIT** Massachusetts Institute of Technology [*soft*]
- mixed dislocation** a dislocation that has both edge and screw components. [*mat-1*]
- Mixed Dislocation** a dislocation that has both edge and screw components. [*mech-1*]
- Mixed oxide (MOX) fuel** A mixture of uranium oxide and plutonium oxide used to fuel a reactor. Mixed oxide fuel is often called "MOX." Conventional nuclear fuel is made of pure uranium oxide. [*nuclear-1*]
- ML** A functional language - More information. [*soft*]
- MMM** A WWW based on the Caml language [*soft*]
- Model Engineers Thread (M.E.)** A thread based upon the Whitworth thread form that was established in 1912. A very fine thread (a 3/32 inch thread having 60 tpi for example). [*mech-3*]
- Moderator** A material, such as ordinary water, heavy water, or graphite, that is used in a reactor to slow down high-velocity neutrons, thus increasing the likelihood of fission. [*nuclear-1*]
- Moderator temperature coefficient of reactivity** As the moderator (water) increases in temperature, it becomes less dense and slows down fewer neutrons, which results in a negative change of reactivity. This negative temperature coefficient acts to stabilize atomic power reactor operations. [*nuclear-1*]
- MODSIM** A general-purpose modular block-structured language from CACI , which provides support for object-oriented programming and discrete event simulation. It is intended for building large process-based discrete event simulation models through modular and object-oriented mechanisms similar to those of Modula-2 - More information. [*soft*]
- Modula-2** A high-level programming language designed by N.Wirth. It is a derivative of Pascal with well-defined interfaces between modules, and facilities for parallel computation. [*soft*]
- Modula-3** A member of the Pascal family of languages. Designed in the late 1980s at Digital Equipment Corporation and Olivetti, it aims to correct deficiencies of Pascal and Modula-2 [*soft*]
- modulus of elasticity ( $E$ )** the ratio of stress to strain when deformation is totally elastic; also a measure of the stiffness of a material. [*mat-1*]
- Modulus of elasticity** The proportional constant between stress and strain for material with linear elastic behavior [*struc-1*]
- Modulus of Elasticity** the ratio of stress to strain for a material under perfectly elastic deformation. [*mech-1*]
- modulus of rupture** breaking strength in a non-ductile solid as measured by bending. [*mat-1*]
- Molecule** A group of atoms held together by chemical forces. A molecule is the smallest unit of a compound that can exist by itself and retain all of its chemical properties. [*nuclear-1*]
- molecule** a group of atoms that are bound together by primary interatomic bonds. [*mat-1*]
- Molybdenum Disulphide** A solid lubricant that acts as a high pressure resistant film. Can be used by itself as a dry lubricant as well as in with other solid lubricants and in oils and greases. Used in threads, such lubricants act as a separating film to prevent corrosion formation on the thread surface (even under adverse temperature and environmental conditions) ensuring the release of the threaded connection. Such films can also act as friction stabilisers. [*mech-3*]
- Moment of inertia** Moment of inertia has two distinct but related meanings [*struc-1*]
- Moment Release** see pin connection. [*struc-1*]
- Moment resisting-connection** see fixed connection. [*struc-1*]
- Moment** The resultant of a system of forces causing rotation without translation. A moment can be expressed as a couple [*struc-1*]
- Monitoring of radiation** Periodic or continuous determination of the amount of ionizing radiation or radioactive contamination present in a region, as a safety measure, for the purpose of health or environmental protection. Monitoring is done for air, surface and ground water, soil and sediment, equipment surfaces, and personnel (for example, bioassay or alpha scans). [*nuclear-1*]
- monomer** a molecule consisting of a single mer. [*mat-1*]

- Monomer** a molecule consisting of a single mer .[*mech-1*]
- Montage** An object-relational database management system from Montage Software: the commercialisation of POSTGRES [*soft*]
- MOOD** Material's Object-Oriented Database. An object oriented database system from Tohoku University [*soft*]
- MOOSE** An object-oriented R&D project at CERN [*soft*]
- Mosaic** An X-Window based browser for WWW from NCSA [*soft*]
- MOSES** Methodology for Object-oriented Software Engineering of Systems [*soft*]
- MOSFET** Metal-oxide-silicon field effect transistor, an integrated circuit element.[*mech-1*]
- Motif** The standard Graphical User Interface and window manager , running on theX Window System - More information. [*soft*]
- MPEG** Moving Pictures Experts Group of ISO that generates standards for digital video (sequences of images in time) and audio compression . [*soft*]
- MPV** Extension of the VRTX real-time operating system to support multi-processing. [*soft*]
- MS-DOS** An operating system developed by Microsoft Corporation for computers using the Intel 16 and 32-bit family of processors. [*soft*]
- MSHA** - Mine Safety and Health Administration; the federalagency which regulates coal mine health and safety.[*mining-1*]
- MTBF** Mean Time Between Faults [*soft*]
- Mud cap** - A charge of high explosive fired in contact withthe surface of a rock after being covered with a quantity of wet mud,wet earth, or sand, without any borehole being used. Also termedadobe, dobie, and sandblast (illegal in coal mining).[*mining-1*]
- Multibus** A bus standard for microprocessor-based systems, specified by IEEE Std.796 [*soft*]
- Multimedia** Human computer interaction involving text, graphics, voice, video etc [*soft*]
- Multi-media** See Multimedia . [*soft*]
- Multiple Inheritance** In object-oriented programming, the possibility that a sub-class may be derived from multiple parents which are themselves not derived one from the other. [*soft*]
- Muse** An electronic journal project at Johns Hopkins [*soft*]
- MVC** Model View Controller architecture for interactive software - More information. [*soft*]
- MVE** Modular Visualisation Environment. A type of application builder for scientific and other visualisation systems (such as AVS , IBM Data Explorer , IRIS Explorer ). [*soft*]
- NAG** Numerical Algorithms Group [*soft*]
- Nano-** A prefix that divides a basic unit by one billion ( $10^{-9}$  ). [*nuclear-1*]
- Nanocurie** One billionth  $10^{-9}$  of a curie. [*nuclear-1*]
- NAPLPS** North American Presentation Layer Protocol Syntax. [*soft*]
- NASA** National Aeronautics and Space Administration (USA). NASA has many software engineering projects [*soft*]
- NAS** Network Application Support: DEC's approach to applications integration across a distributed multivendor environment. [*soft*]
- Natural circulation** The circulation of the coolant in the reactor coolant system without the use of the reactor coolant pumps. The circulation is due to the natural convection resulting from the different densities of relative cold and heated portions of the system. [*nuclear-1*]
- Natural uranium** Uranium as found in nature. It contains 0.7 percent uranium-235, 99.3 percent uranium-238, and a trace of uranium-234 by weight. In terms of the amount of radioactivity, it contains approximately 2.2 percent uranium-235, 48.6 percent uranium-238, and 49.2 percent uranium-234. [*nuclear-1*]
- Natural ventilation** - Ventilation of a mine without the aidof fans or furnaces.[*mining-1*]
- NBS** National Bureau of Standards: part of the U.S. Department of Commerce, now NIST . [*soft*]
- NCOSE** National Council On Systems Engineering (USA) [*soft*]
- NCSA** National Center for Supercomputing Applications, Urbana, IL, USA - More information. [*soft*]
- NCS** Network Computing System: Apollo's RPC system used by DEC and Hewlett-Packard.The protocol has been adopted by OSF . [*soft*]
- NCSS** Non-Commented Source Statements. Used as a simple software metric. [*soft*]

**NDL** National Database Language: a US standard for portability of database definitions and application programs. [*soft*]

**necking** reduction of the cross-sectional area of a material in a localized area caused by uniaxial tension. [*mat-1*]

**Neptune** A hypertext system for computer assisted software engineering, developed at Tektronix. [*soft*]

**netCDF** Network Common Data Form. A machine-independent, self-describing file format for scientific data [*soft*]

**NetClasses** A C++ class library for object transport and remote method invocation from Stanford [*soft*]

**Net summer capability** The steady hourly output that generating equipment is expected to supply to system load exclusive of auxiliary power, as demonstrated by tests at the time of summer peak demand. [*nuclear-1*]

**network polymer** a polymer composed of trifunctional mer units that form three-dimensional molecules. [*mat-1*]

**NeuDL** Neural network Description Language from the University of Alabama [*soft*]

**Neumann's Law** the symmetry of the physical properties of a crystal must include the symmetry of the point group of the crystal. [*mat-1*]

**Neural net** See Neural network [*soft*]

**Neural network** A computing device which converts one or more input signals to one or more output signals by means of an interconnected set of elementary non-linear signal processors called neurons. Animal brains are examples of biological neural networks. Artificial Neural Networks are man-made computing devices modelled after their biological counterparts. The features which distinguish artificial neural networks from traditional Von Neumann (sequential) computers are: (a) the elementary processors are highly non-linear (in the limit, they are simple threshold discriminators), (b) the neurons are highly interconnected which allows a high degree of parallelism and (c) there is no idle memory containing data and programs, but rather each neuron is pre-programmed and continuously active - More information. [*soft*]

**Neural** See Neural network [*soft*]

**Neuron** See Neural network , also McCulloch-Pitts [*soft*]

**Neutron** An uncharged elementary particle, with a mass slightly greater than that of the proton, found in the nucleus of every atom heavier than hydrogen. [*nuclear-1*]

**Neutron capture** The reaction that occurs when a nucleus captures a neutron. The probability that a given material will capture a neutron is proportional to its neutron capture cross section and depends on the energy of the neutrons and the nature of the material. [*nuclear-1*]

**Neutron chain reaction** A process in which some of the neutrons released in one fission event cause other fissions to occur. There are three types of chain reactions: (1) Nonsustaining—An average of less than one fission is produced by the neutrons released by each previous fission (reactor subcriticality); (2) Sustaining—An average of exactly one fission is produced by the neutrons released by each previous fission (reactor criticality); and (3) Multiplying—An average of more than one fission is produced by the neutrons released by previous fission (reactor supercriticality). [*nuclear-1*]

**Neutron flux** A measure of the intensity of neutron radiation in neutrons/cm<sup>2</sup> -sec. It is the number of neutrons passing through 1 square centimeter of a given target in 1 second. Expressed as  $n\nu$ , where  $n$  = the number of neutrons per cubic centimeter and  $\nu$  = their velocity in centimeters per second. [*nuclear-1*]

**Neutron generation** The release, thermalization, and absorption of fission neutrons by a fissile material and the fission of that material producing a second generation of neutrons. In a typical nuclear power reactor system, there are about 40,000 generations of neutrons every second. [*nuclear-1*]

**Neutron leakage** Neutrons that escape from the vicinity of the fissionable material in a reactor core. Neutrons that leak out of the fuel region are no longer available to cause fission and must be absorbed by shielding placed around the reactor pressure vessel for that purpose. [*nuclear-1*]

**Neutron source** Any material that emits neutrons, such as a mixture of radium and beryllium, that can be inserted into a reactor to ensure a neutron flux large enough to be distinguished from background to register on neutron detection equipment. [*nuclear-1*]

**Neutron, thermal** A neutron that has (by collision with other particles) reached an energy state equal to that of its surroundings, typically on the order of 0.025 eV (electron volts). [*nuclear-1*]



- NeWS** Network extensible Window System from Sun Microsystems, offering facilities similar to those of the X Window System . Communication is based on PostScript , and server functions can be extended. [*soft*]
- NewWave** A graphical user interface and object-oriented environment from Hewlett-Packard, based on Windows and available on UNIX workstations. [*soft*]
- NeXTstep** A graphical interface builder, object-oriented application builder, and windowing software for the NeXT and IBM AIX systems. [*soft*]
- NFF** Neutral File Format. A minimal scene description language - More information. [*soft*]
- NFS** Network File System: developed by Sun to allow a computer to access files over a network as if they were on local disks; now public domain, a de facto standard. [*soft*]
- NFT** Network File Transfer. An INTERLINK command. [*soft*]
- Nial** Nested Interactive Array Language. A high-level array-oriented procedural language based on a mathematical theory of arrays, developed at Queen's University. It combines APL data structure ideas with LISP -style evaluation concepts and a conventional control structure syntax - More information. [*soft*]
- NIAM** Natural Language (or Nijssen) Information Analysis Method: a method for data modelling. (see "Conceptual Scheme and Relational Database Design", Nijssen and Halpin, Prentice-Hall, 1989) [*soft*]
- Nicked Threads** Nicks or indentations in threads can occur during the manufacturing process and during fastener transportation. In general, nicked thread problems tend to increase as the thread diameter increases and for fine pitches. There are acceptance tests for nicked threads that involve measuring the maximum torque required to drive a GO gauge down the thread. Examples of acceptance tests are SAE J123 and the Ford Motor specification WA990 1993. Nicks and indentations in threads are sometimes referred to as gouges. [*mech-3*]
- NIHCL** A class library for C++ - More information. [*soft*]
- NIH** The US National Institutes of Health [*soft*]
- NII** National Information Infrastructure (USA) [*soft*]
- Nip** - Device at the end of the trailing cable of a mining machine used for connecting the trailing cable to the trolley wire and ground. [*mining-1*]
- NISO** National Information Standards Organisation (USA). NISO Standards cover many aspects of library science, publishing, and information services, and address the application of both traditional and new technologies to information services [*soft*]
- NIST** National Institute of Standards and Technology, USA (formerly NBS) - More information. [*soft*]
- NITF** National Imagery Transmission Format [*soft*]
- NLP** Natural Language Processing. [*soft*]
- NLS** Native Language System: a set of interfaces specified by X/Open for developing applications to run in different natural language environments. [*soft*]
- NLSR** Natural Language Software Registry. A summary of the capabilities and sources of language processing software available to researchers [*soft*]
- NMF** Network Management Forum of OSI [*soft*]
- NNTP** Network News Transfer Protocol: the protocol used for distributing news on the Internet . [*soft*]
- Noble gas** A gaseous chemical element that does not readily enter into chemical combination with other elements. An inert gas. Examples are helium, argon, krypton, xenon, and radon. [*nuclear-1*]
- noble metal** a metal with high resistance to chemical reaction, especially oxidation and solution by organic acids; sometimes called a precious metal. [*mat-1*]
- Node** see Hypertext [*soft*]
- Nominal Diameter** The diameter equal to the external diameter of the threads. [*mech-3*]
- noncrystalline** the solid state wherein there is no long-range atomic order; sometimes the terms *amorphous*, *glassy*, and *vitreous* are used synonymously. [*mat-1*]
- Noncrystalline** the solid state wherein there is no long-range atomic order. Sometimes used synonymously with the terms *amorphous* . [*mech-1*]
- nondestructive testing** (NDT) a procedure for determining the quality or characteristics of a material, part, or assembly without permanently altering it or its properties; examples include ultrasonic and radiographic inspection. [*mat-1*]

- Nonpower reactor** Reactors used for research, training, and test purposes, and for the production of radioisotopes for medical and industrial uses. [*nuclear-1*]
- nonsteady-state diffusion** the diffusion condition for which there is some net accumulation or depletion of diffusing species; the diffusion flux is dependent on time. [*mat-1*]
- Non-stochastic effect** The health effects of radiation, the severity of which vary with the dose and for which a threshold is believed to exist. Radiation-induced cataract formation is an example of a non-stochastic effect (also called a deterministic effect). [*nuclear-1*]
- Non-vital plant systems** Systems at a nuclear facility that may or may not be necessary for the operation of the facility (i.e., power production) but that would have little or no effect on public health and safety should they fail. These systems are not safety related. [*nuclear-1*]
- Normal form** A relation in a relational database is said to be in normal form if it satisfies certain constraints. Codd's original work defined three such forms. [*soft*]
- normalizing** for ferrous alloys, austenitizing above the upper critical temperature, then cooling in air; the objective of this heat treatment is to enhance toughness by refining the grain size. [*mat-1*]
- Normal strain** Strain measuring the intensity of deformation along an axis. Normal strain is usually denoted by  $\epsilon$ . Average normal strain between two points is calculated as  $\frac{\Delta L}{L}$ , where  $L$  is the original distance between the points, and  $\Delta L$  is the change in that distance. Normal strain is often simply called strain. [*struc-1*]
- Normal stress** Stress acting perpendicular to an imaginary plane cutting through an object. Normal stress has two senses [*struc-1*]
- NoteCards** An ambitious hypertext system developed at Xerox PARC, "designed to support the task of transforming a chaotic collection of unrelated thoughts into an integrated, orderly interpretation of ideas and their interconnections". [*soft*]
- Novell** A proprietary local area network protocol developed by Novell Netware for the interconnection of PC s over Ethernet . [*soft*]
- NOWEB** A system of structured programming and documentation from M.Speh in DESY. See Literate Programming [*soft*]
- Nozzle** As used in power water reactors and boiling water reactors, the interface (inlet and outlet) between reactor plant components (pressure vessel, coolant pumps, steam generators, etc.) and their associated piping systems. [*nuclear-1*]
- NQIC** National Quality Information Centre of the IQA systems. [*soft*]
- NQS** Batch processing software for UNIX systems. [*soft*]
- NREN** National Research and Education Network (USA) [*soft*]
- NSAI** National Standards Authority of Ireland. [*soft*]
- NSE** Network Software Environment: a proprietary CASE framework from Sun Microsystems. [*soft*]
- NSF** National Science Foundation (USA) [*soft*]
- NSRD** National Software Reuse Directory. A directory of reusable software in the ASSET system, now incorporated in the Asset Reuse Library. [*soft*]
- NTIS** National Technical Information Service of the US Department of Commerce. [*soft*]
- NTP** Network Time Protocol: a protocol built on top of TCP/IP that allows local clocks to be synchronised with reference clocks on the Internet . [*soft*]
- Nuclear energy** The energy liberated by a nuclear reaction (fission or fusion) or by radioactive decay. [*nuclear-1*]
- Nuclear force** A powerful short-ranged attractive force that holds together the particles inside an atomic nucleus. [*nuclear-1*]
- Nuclear power plant** An electrical generating facility using a nuclear reactor as its heat source to provide steam to a turbine generator. [*nuclear-1*]
- Nuclear steam supply system** The reactor and the reactor coolant pumps (and steam generators for a pressurized water reactor) and associated piping in a nuclear power plant used to generate the steam needed to drive the turbine generator unit. [*nuclear-1*]
- Nuclear waste** A particular type of radioactive waste that is produced as part of the nuclear fuel cycle (i.e., those activities needed to produce nuclear fission, or splitting of the atom). These include extraction of uranium from ore, concentration of uranium, processing into nuclear fuel, and disposal of byproducts. Radioactive waste is

a broader term that includes all waste that contains radioactivity. Residues from water treatment, contaminated equipment from oil drilling, and tailings from the processing of metals such as vanadium and copper also contain radioactivity but are not "nuclear waste" because they are produced outside of the nuclear fuel cycle. NRC generally regulates only those wastes produced in the nuclear fuel cycle (uranium mill tailings, depleted uranium, spent fuel rods, etc.). [*nuclear-1*]

**nucleation** the initial stage in a phase transformation; it is evidenced by the formation of small particles (nuclei) of the new phase which are capable of growing. [*mat-1*]

**Nucleation** the initial stage in a phase transformation. It is evidenced by the formation of small particles (nuclei) of the new phase, which are capable of growing. [*mech-1*]

**Nucleon** Common name for a constituent particle of the atomic nucleus. At present, applied to protons and neutrons, but may include any other particles found to exist in the nucleus. [*nuclear-1*]

**Nucleus** The small, central, positively charged region of an atom. Except for the nucleus of ordinary hydrogen, which has only a proton, all atomic nuclei contain both protons and neutrons. The number of protons determines the total positive charge or atomic number. This number is the same for all the atomic nuclei of a given chemical element. The total number of neutrons and protons is called the mass number. [*nuclear-1*]

**Nuclide** A general term referring to all known isotopes, both stable (279) and unstable (about 2,700), of the chemical elements. [*nuclear-1*]

**NURBS** Non-Uniform Rational B-Splines, a technique used in CAD [*soft*]

**Nut Dilation** Under load, the wedging action of the threads causes dilation of the nut resulting in an increase in the minor diameter of the nut, and reducing the effective shear areas of both the external and internal threads. [*mech-3*]

**Nu Thena** A software vendor specialising in rapid prototyping tools for real-time hardware and software systems, collaborating with DAZIX . [*soft*]

**NuThena** See Nu-Thena [*soft*]

**Nut Runner** A torque control fastener tightening tool that is usually powered by compressed air. The design of the tool is such that attempts are

made to ensure that the applied torque is independent of joint stiffness. Nyloc Nut [*mech-3*]

**Nyloc Nut** A torque prevailing nut that uses a nylon patented insert to provide a locking feature. The nylon insert, it is claimed, helps to seal the bolt thread against seepage of water, oil, petrol, paraffin and other liquids. The nut is covered by UK patent 8028437 and European patent 81303450-1. Nyloc is a registered trade name of Forest Fasteners. [*mech-3*]

## OPQ

**OAK** An early name for Java [*soft*]

**OATH** Object-oriented Abstract Type Hierarchy, a class library from Texas Instruments [*soft*]

**Oberon** A programming language developed by N. Wirth and J. Gutknecht as a successor to Modula 2 [*soft*]

**ObjectBroker** A distributed object system from DEC based on the CORBA standard. [*soft*]

**ObjectCenter** A product offering similar facilities to CodeCenter language, plus class browsing facilities etc (formerly Saber-C++) - More information. [*soft*]

**Objectteering** An Object Oriented design tool from Softeam, based on the Class Relation Methodology, with C++ code generation [*soft*]

**Object** In object-oriented programming, an instance of a data structure defined according to the template provided by its class, and which can respond to the messages defined by its class. [*soft*]

**Objective C** A Smalltalk -like extension of the C language which provides the possibility to use object-oriented programming constructs [*soft*]

**Objective PASCAL** An extension of the PASCAL language which provides the possibility to use object-oriented programming constructs. [*soft*]

**Object management system** In an IPSE , the system which maintains information about the system under development. [*soft*]

**Object-oriented** Applied to analysis, design and programming. The basic concept in this approach is that of objects, which consist of data structures encapsulated with a set of routines, often called "methods" which operate on the data. Operations on the data must be performed

- via these methods, which are common to all instances of objects of a particular class. Thus, the interface to objects is well defined, and allows the code implementing the methods to be changed so long as the interface remains the same [*soft*]
- Object-oriented database** A system offering DBMS facilities in an object-oriented environment. [*soft*]
- Object-oriented programming** see object-oriented [*soft*]
- Objectworks** An object-oriented development environment developed by ParcPlace, available under Smalltalk . [*soft*]
- OBST** A persistent object management system developed by FZI Karlsruhe for the STONE [*soft*]
- Occam** A programming language which facilitates writing parallel programs, allowing the programmer to specify whether processes are to be executed sequentially or in parallel. Based on CSP , it was originally developed for the Transputer [*soft*]
- OCLC** Online Computer Library Center [*soft*]
- OCR** Optical Character Recognition: recognition of printed or written characters by computer [*soft*]
- OCS** Object Compatibility Standard: an 88open standard for compilers and linkers. [*soft*]
- Octagon Head** A bolt or screw whose head cross section is a regular polygon with 8 sides. [*mech-3*]
- Octahedral position** the void space among closed-packed, hard sphere atoms or ions for which there are six nearest neighbors. An octahedron (double pyramid) is circumscribed by lines constructed from centers of adjacent spheres.[*mech-1*]
- octahedral position** the void space among close-packed, hard sphere atoms or ions for which there are six nearest neighbors; an octahedron (double pyramid) is circumscribed by the lines constructed from centers of adjacent spheres. [*mat-1*]
- ODAC** The ODA consortium. [*soft*]
- ODA** Open (formerly Office) Document Architecture: an ISO standard (8613) for describing documents. It allows text, graphics, and facsimile documents to be transferred between different systems. [*soft*]
- ODIF** Open Document Interchange Format: part of the ODA standard. [*soft*]
- ODL** Object Definition Language from ODMG . [*soft*]
- ODMG** Object Data Management Group. A vendor consortium developing standards for Object Data Definition and Manipulation Languages - More information. [*soft*]
- ODP** Open Distributed Processing. An ISO standardisation activity. [*soft*]
- ODT** Open Desktop. [*soft*]
- OEW** Object Engineering Workbench. A design tool for C++ - More information. [*soft*]
- OFF** Object File Format for interchange and archiving of 3D objects, from Digital Equipment Corporation [*soft*]
- OLE** Object Linking and Embedding. A distributed object system from Microsoft [*soft*]
- OLTP** On-Line Transaction Processing: the processing of transactions by computers in real time . [*soft*]
- OMA** Object Management Architecture: a set of standards under study by OMG . [*soft*]
- OMF** Object Management Facility: part of the DAA proposed by Hewlett-Packard and Sun. [*soft*]
- OMF** Open Model Forum for modelling and simulation tool standards - More information. [*soft*]
- OMG** Object Management Group: a consortium aimed at setting standards in object-oriented programming, especially for distributed applications [*soft*]
- OML** Object Manipulation Language from ODMG . [*soft*]
- OML** OPEN Modelling Language [*soft*]
- OMT** An object-oriented methodology . [*soft*]
- OMTool** A graphical tool from General Electric Advanced Concepts Center for design and analysis of systems with the OMT methodology with some C++/SQL code generation [*soft*]
- ONC** Open Network Computing: Sun's network protocols. [*soft*]
- OnX** A graphics package from LAL Orsay [*soft*]
- OOA** Object-oriented Analysis. [*soft*]
- OODBMS** Object-oriented database management system. [*soft*]
- OODL** Object-oriented Dynamic Language. [*soft*]



- OOD** Object-oriented Design. [*soft*]
- OO** Object-oriented : for example Analysis (OOA), Design (OOD), Programming (OOP), Programming Language (OOP), Data Bases (OODBMS) etc. [*soft*]
- OOPL** Object-oriented programming language: a language such as C++ , Objective-C etc designed to support object-oriented programming. [*soft*]
- OOP** Object-oriented programming. [*soft*]
- OOPSLA** Conference on Object-oriented Programming Systems, Languages and Applications. [*soft*]
- OOSD** Object-oriented structured design: a design method elaborated from structured design and incorporating the essential features of the object-oriented approach. [*soft*]
- Open Desktop** A UNIX environment from SCO . (part of the ACE initiative). [*soft*]
- OpenDoc** A compound document architecture from CIL based on CORBA . It aims to enable embedding of features from different applications into a single working document [*soft*]
- Open end pillaring** - A method of mining pillars in which nostump is left; the pockets driven are open on the gob side and therooof is supported by timber.[*mining-1*]
- OpenGL** An emerging graphics standard providing advanced rendering capabilities [*soft*]
- Open Inventor** An object-oriented toolkit for developing interactive 3D graphics applications. It also defines an ASCII file format for exchanging 3D data among applications, which is the basis for VRML [*soft*]
- Open Look** A graphical user interface and window manager from Sun and AT&T. [*soft*]
- Open Software Foundation** See OSF . [*soft*]
- OpenWindows** A server program for the Sun which handles SunView and X Window System protocols. [*soft*]
- Operable** A system, subsystem, train, component, or device is operable or has operability when it is capable of performing its specified functions and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication, or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its functions are also capable of performing their related support functions. [*nuclear-1*]
- Operational mode** In a nuclear power reactor, an operational mode corresponds to any one inclusive combination of core reactivity condition, power level, and average reactor coolant temperature. [*nuclear-1*]
- OQL** Object Query Language from ODMG . [*soft*]
- Oracle** A vendor of database management systems: also their relational DBMS . [*soft*]
- Oracle Card** A hypercard -like product from Oracle for constructing DB applications, running on PC and Macintosh. [*soft*]
- Oracle** [*soft*]
- Oracle Toolkit** See Adaptable User Interface . [*soft*]
- ORB** Object Request Broker: part of the OMG standard. [*soft*]
- ordering** positioning of host and substitution ions in an ordered, repetitious pattern rather than in a random arrangement. [*mat-1*]
- ore** a natural mineral mined and treated for extraction of its components. [*mat-1*]
- orientation** arrangements in space of the axes of a crystal lattice with respect to a coordinate system. [*mat-1*]
- ORKID** Open Real-time Kernel Interface Definition. [*soft*]
- OS/2** An operating system from IBM and Microsoft for the PS/2 range of microcomputers [*soft*]
- OSA** Open Scripting Architecture. A CIL approach to the coexistence of multiple scripting systems. [*soft*]
- OSE** Open Systems Environment. [*soft*]
- OSF** Open Software Foundation. A foundation created by nine computer vendors, (Apollo, DEC, Hewlett-Packard, IBM, Bull, Nixdorf, Philips, Siemens and Hitachi) to promote "Open Computing". It is planned that common operating systems and interfaces, based on developments of UNIX , the X Window System , etc. will be forthcoming for a wide range of different hardware architectures [*soft*]
- OSI** Open Systems Interconnection: a seven-layer reference model developed by ISO as a framework for the development of standards for interconnecting heterogeneous computers [*soft*]
- OSTC** Open Systems Testing Consortium. An open organisation operating harmonised conformance testing services for OSI telecommunications and IT protocols. [*soft*]

- OTI** Open Tool Interface. [*soft*]
- Outby; outbye** - Nearer to the shaft, and hence farther from the working face. Toward the mine entrance. The opposite of inby. [*mining-1*]
- Outcrop** Coal that appears at or near the surface. [*mining-1*]
- outgassing** gaseous emission or de-aeration of a material. [*mat-1*]
- Overburden** Layers of soil and rock covering a coal seam. Overburden is removed prior to surface mining and replaced after the coal is taken from the seam. [*mining-1*]
- Overcast (undercast)** - Enclosed airway which permits one air current to pass over (under) another without interruption. [*mining-1*]
- Overtapping** Tapping of a thread following a plating operation so that the thread tolerances comply within specification allowing the internal and external threads to assemble. It is normal practice to overtap the internal rather than the external thread. [*mech-3*]
- OVL** Object Verification Language from ODMG . [*soft*]
- OWL** A software company offering the Guide hypertext system . [*soft*]
- oxidation** a reaction in which there is an increase in valence resulting from a loss of electrons; often associated with the corrosion of metals, where the corroded metal forms an oxide; elevated temperatures increase the rate of oxidation. [*mat-1*]
- P2P** Person to Person. A range of desktop conferencing products from IBM [*soft*]
- PACS** Public Access Computer Systems. [*soft*]
- Page Description Language** A language such as Adobe PostScript or Xerox Interpress which allow the appearance of a printed page to be described in a high-level device-independent way. Printing then becomes a two-stage process: an application produces a description in the language, which is then interpreted by a specific output device. Such a language can serve as an interchange standard for transmission and storage of printable documents - More information. [*soft*]
- Panda** An Internet navigation and information retrieval system from the University of Iowa [*soft*]
- Panel** - A coal mining block that generally comprises one operating unit. [*mining-1*]
- Panic bar** - A switch, in the shape of a bar, used to cutoff power at the machine in case of an emergency. [*mining-1*]
- Pansophic** A Software Engineering company in the US. [*soft*]
- PARADIGM PLUS** A configurable object-oriented CASE tool from Proto Soft Inc. - More information. [*soft*]
- Paramagnetism** a relatively weak form of magnetism that results from the independent alignment of atomic dipoles (magnetic) with an applied magnetic field. [*mech-1*]
- paramagnetism** property of a material that, when placed in a magnetic field, is magnetized parallel to the field to an extent proportional to the field; this does not apply at very low temperatures or in extremely large magnetic fields. [*mat-1*]
- PaRC** A workstation cluster for engineering computing at CERN [*soft*]
- PARC** See Xerox PARC . [*soft*]
- Parent** A radionuclide that upon radioactive decay or disintegration yields a specific nuclide (the daughter). [*nuclear-1*]
- Parlog++** An object-oriented extension to MacParlog. It combines object-oriented and parallel logic programming , giving the benefits of both paradigms within a single coherent development environment. [*soft*]
- Parser** A function that recognizes valid sentences of a language by analysing the syntax structure of a set of tokens passed to it from a lexical analyzer. [*soft*]
- Parting** - (1) A small joint in coal or rock; (2) a layer of rock in a coal seam; (3) a side track or turnout in a haulage road. [*mining-1*]
- Parts per million (ppm)** Parts (molecules) of a substance contained in a million parts of another substance (e.g., water). [*nuclear-1*]
- Pascal** A programming language designed by N.Wirth for teaching purposes, emphasising structured programming constructs, data structures and strong typing. [*soft*]
- PATCHY** A FORTRAN code management program written at CERN . [*soft*]
- Pattern** A formal way to describe a solution to a commonly recurring programming problem [*soft*]
- PAW++** An extended version of PAW with a Motif human interface. [*soft*]

- PAW** Physics Analysis Workbench - general purpose portable tool for analysis and presentation of physics data [*soft*]
- PCA** A dynamic analyser from DEC giving information on run time performance and code utilisation. [*soft*]
- P-CAD** A CAE system marketed by CADAM, an IBM company. [*soft*]
- PCL** Portable Common LOOPS . A portable CLOS implementation. [*soft*]
- PCL** Printer Control Language (from Hewlett Packard). [*soft*]
- PC** Personal Computer . [*soft*]
- PCTE+** A European NATO specification based on PCTE with security enhancements. [*soft*]
- PCTE** Portable Common Tool Environment: an ECMA standard framework for software tools developed in the Esprit programme. It is based on an entity-relationship Object Management System and defines the way in which tools access this [*soft*]
- PCX** A bitmap format from Zsoft [*soft*]
- PDDM** Product Data and Document Management. [*soft*]
- PDF** Portable Document Format from Adobe Systems - More information. [*soft*]
- PDL** Page Description Language . [*soft*]
- PDL** Program Design Language. [*soft*]
- PDM** Product Data Management. An integrated system for managing all types of technical data concerning a product. [*soft*]
- PDSA cycle** Plan, Do, See, Approve (from Japan). [*soft*]
- PDS** Planetary Data Systems format from - More information. [*soft*]
- Pearlite** a two-phase microstructure found in some steels and cast irons. It results from the transformation of austenite of eutectoid compositions and consists of alternating layers of alpha-ferrite and cementite. [*mech-1*]
- Peat** The partially decayed plant matter found in swamps and bogs, one of the earliest stages of coal formation. [*mining-1*]
- Peierls stress** the stress required to move a dislocation. [*mat-1*]
- Pellet, fuel** As used in pressurized water reactors and boiling water reactors, a pellet is a small cylinder approximately 3/8-inch in diameter and 5/8-inch in length, consisting of uranium fuel in a ceramic form—uranium dioxide,  $UO_2$  . Typical fuel pellet enrichments in nuclear power reactors range from 2.0 percent to 3.5 percent uranium-235. [*nuclear-1*]
- PEM** Privacy Enhanced Mail. An Internet standard (RFC 1421-1424). [*soft*]
- PEP** Protocol Extension Protocol. A proposed system to allow HTTP clients and servers to negotiate protocol extensions. [*soft*]
- Percentage extraction** - The proportion of a coal seam which is removed from the mine. The remainder may represent coal in pillars or coal which is too thin or inferior to mine or lost in mining. Shallow coal mines working under townships, reservoirs, etc., may extract 50
- Perceptron** This term is sometimes used to refer to a single McCulloch-Pitts neuron, but may also refer to a network of neurons in which the output(s) of some neurons are connected through weighted connections to the input(s) of other neurons. The term multilayer perceptron specifically refers to a network composed of more than one layer of neurons, with some or all of the outputs of each layer connected to one or more of the inputs of another layer. The first layer is called the input layer, the last one is the output layer, and in between there may be one or more hidden layers. [*soft*]
- Percussion drill** - A drill, usually air powered, that delivers its energy through a pounding or hammering action. [*mining-1*]
- Performance-based regulation** Required results or outcome of performance rather than a prescriptive process, technique, or procedure. [*nuclear-1*]
- Performance-based regulatory action** Licensee attainment of defined objectives and results without detailed direction from the NRC on how these results are to be obtained. (See the Communication Plan for Performance-Based Regulation by using accession number ML021120533 in ADAMS [i/reading-rm/adams.html](http://reading-rm/adams.html).) [*nuclear-1*]
- Periodic table** An arrangement of chemical elements in order of increasing atomic number. Elements of similar properties are placed one under the other, yielding groups or families of elements. Within each group, there is a variation of chemical and physical properties, but in general, there

- is a similarity of chemical behavior within each group. [*nuclear-1*]
- peritectic** an isothermal reversible reaction in metals where a liquid phase reacts with a solid phase to produce a single (and different) solid phase upon cooling. [*mat-1*]
- Peritectic**[*mech-1*]
- peritectoid** an isothermal reversible reaction where a solid phase reacts with a second solid phase to produce a single (and different) solid phase upon cooling. [*mat-1*]
- Peritectoid**[*mech-1*]
- Perl** Practical Extraction and Report Language. An interpreted scripting language for scanning text files, extracting information, and printing reports. It combines features of `c`, `sed`, `awk` and `sh` [*soft*]
- permeability** (1) passage or diffusion of a gas, vapor, liquid, or solid through a material without physically or chemically affecting it; (2) term used to express various relationships between magnetic induction and magnetizing force; either absolute permeability or specific (relative) permeability. [*mat-1*]
- Permissible** - That which is allowable or permitted. It is most widely applied to mine equipment and explosives of all kinds which are similar in all respects to samples that have passed certain tests of the MSHA and can be used with safety in accordance with specified conditions where hazards from explosive gas or coal dust exist. [*mining-1*]
- Permit** As it pertains to mining, a document issued by a regulatory agency that gives approval for mining operations to take place. [*mining-1*]
- Permittivity** the proportionality constant between the dielectric displacement  $D$  and the electric field  $E$ . [*mech-1*]
- Personal Computer** A general-purpose single-user microcomputer designed to be operated by one person at a time. [*soft*]
- Personnel monitoring** The use of portable survey meters to determine the amount of radioactive contamination on individuals, or the use of dosimetry to determine an individual's occupational radiation dose. [*nuclear-1*]
- Petri net** A graphical representation of concurrent systems in terms of tokens, places and transition bars [*soft*]
- pewter** tin-base white metal containing antimony and copper; 1 to 8% Sb and 0.25 to 3% Cu. [*mat-1*]
- PEX** (PHIGS Extension to X) Extension to the X Window System providing 3-D graphics support. [*soft*]
- PGP** Pretty Good Privacy. A set of encryption tools for electronic mail etc. [*soft*]
- Phase** a homogeneous region of matter. [*mech-1*]
- phase** a portion of a material system whose properties and composition are homogeneous and which is physically distinct from other parts of the system. [*mat-1*]
- Phase Diagram** a graphical representation of the relationships between environmental constraints, composition, and regions of phase stability, ordinarily under conditions of equilibrium. [*mech-1*]
- phase diagram** graphical representation of the temperature and composition limits of phase fields in an alloy or ceramic system; it can be an equilibrium diagram, approximation to an equilibrium diagram, or a representation of metastable conditions or phases. [*mat-1*]
- phase rule** this states that the maximum number of phases ( $P$ ) that may coexist at equilibrium is two plus the number of components ( $C$ ) in the mixture minus the number of degrees of freedom ( $F$ ):  $P + F = C + 2$ . [*mat-1*]
- Phase Transformation** a change in the number and/or character of the phases that constitute the microstructure of an alloy. [*mech-1*]
- phase transformation** changes that can occur within a given material system; how one or more phases in an alloy change into a new phase or mixture of phases; transformation occurs because the initial state of the alloy is unstable relative to the final state; at constant temperature and pressure the relative stability of a system is determined by its Gibbs free energy. [*mat-1*]
- PHIGS** Programmers Hierarchical Interactive Graphics System: an ANSI/ISO standard. [*soft*]
- Phonon** a single quantum of vibrational or elastic energy. [*mech-1*]
- photolithography** science of replicating complex circuitry onto the surface of a specimen. [*mat-1*]
- Photon** A quantum (or packet) of energy emitted in the form of electromagnetic radiation. Gamma rays and x-rays are examples of photons. [*nuclear-1*]



- Photon** a quantum unit of electromagnetic energy. [*mech-1*]
- pH** the negative logarithm of hydrogen-ion activity denoting the degree of acidity or basicity of a solution; at 25 degrees C 7.0 (on a scale of 0 to 14) is the neutral value, with decreasing values below 7.0 indicating increasing acidity, and increasing values above 7.0 indicating increasing basicity. [*mat-1*]
- pickling** the chemical removal of surface oxides and other contaminants from a material by immersion in an aqueous acid solution; sulfuric and hydrochloric acids are common pickling solutions. [*mat-1*]
- Pico-** A prefix that divides a basic unit by one trillion ( $10^{-12}$ ). [*nuclear-1*]
- Picocurie** One trillionth ( $10^{-12}$ ) of a curie. [*nuclear-1*]
- PICS** Platform for Internet Content Selection. [*soft*]
- Piezoelectric** a dielectric material in which polarization is induced by the application of external forces. [*mech-1*]
- piezoelectricity** elastic strain caused when an electrical current is applied to a piezoelectric material and conversely, an electric current produced when pressure is applied to a piezoelectric material; these materials exhibit the Perovskite crystal structure. [*mat-1*]
- Pig** A colloquial term describing a container (usually lead or depleted uranium) used to ship or store radioactive materials. The thick walls of this shielding device protect the person handling the container from radiation. Large containers used for spent fuel storage are commonly called casks. [*nuclear-1*]
- pig** a metal casting used in remelting. [*mat-1*]
- Piggy-back** - A bridge conveyor. [*mining-1*]
- PII** Process Improvement Institute [*soft*]
- Pile** A colloquial term describing the first nuclear reactors. They are called piles because the earliest reactors were "piles" of graphite and uranium blocks. [*nuclear-1*]
- Piles** Term used in structural engineering for the joint plates. [*mech-3*]
- Pillar** - An area of coal left to support the overlying strata in a mine; sometimes left permanently to support surface structures. [*mining-1*]
- Pillar robbing** - The systematic removal of the coal pillars between rooms or chambers to regulate the subsidence of the roof. Also termed "bridging back" the pillar, "drawing" the pillar, or "pulling" the pillar. [*mining-1*]
- PIM** Product Information Management. See PDM [*soft*]
- Pinch** A compression of the roof and floor of a coal seam so as to "squeeze" out the coal. [*mining-1*]
- Pinch** - A compression of the walls of a vein or the roof and floor of a coal seam so as to "squeeze" out the coal. [*mining-1*]
- Pin connection** In two dimensions, a pin connection restrains two translation degrees of freedom but does not restrain rotation. Since the rotation degree of freedom is unrestrained at a pin connection, it transfers no moment. [*struc-1*]
- PinK** PinK is not KUIP. An interface between Tcl, BLT, ADAMO from DESY [*soft*]
- Pinning** - Roof bolting. [*mining-1*]
- Pin support** In two dimensions, a pin support restrains two translation degrees of freedom but does not restrain rotation. When considering reaction forces, a pin support is usually considered to have two force components [*struc-1*]
- Pitch** - The inclination of a seam; the rise of a seam. [*mining-1*]
- Pitch** The nominal distance between two adjacent thread roots or crests. [*mech-3*]
- Plan** - A map showing features such as mine workings or geological structures on a horizontal plane. [*mining-1*]
- Planck's Constant** a universal constant that has a value of  $6.63 \times 10^{-34}$  J. [*mech-1*]
- plane strain** thin plate and  $\omega = 0$ ; 2D strain / 3D stress. [*mat-1*]
- plane stress** thick sections; 2D stress / 3D strain. [*mat-1*]
- Planned special exposure** An infrequent exposure to radiation, separate from and in addition to the annual dose limits. [*nuclear-1*]
- Plastic** a solid material in the primary ingredient of which is an organic polymer of high molecular weight. [*mech-1*]
- Plastic Deformation** deformation that is permanent or nonrecoverable after release of the applied load. [*mech-1*]

- plastic deformation** the permanent (inelastic) distortion of a material under an applied stress that strains the material beyond its elastic limit; the ability of a material to be permanently deformed without fracture. [*mat-1*]
- Plasticizer** a low molecular weight polymer additive that enhances flexibility and workability and reduces stiffness and brittleness. [*mech-1*]
- Plastic** see inelastic. [*struc-1*]
- plating** forming an adherent layer of metal on an object; often used as a shop term for electroplating. [*mat-1*]
- Plausible accidents** Postulated events that meet a probability test rather than the more challenging test represented by a design-basis event. [*nuclear-1*]
- Plexus** A set of modular WWW server software written in Perl [*soft*]
- Plutonium (Pu)** A heavy, radioactive, manmade metallic element with atomic number 94. Its most important isotope is fissile plutonium-239, which is produced by neutron irradiation of uranium-238. It exists in only trace amounts in nature. [*nuclear-1*]
- Ply** A single thickness of steel forming part of a structural joint. [*mech-3*]
- PMM** Process Maturity Model. [*soft*]
- Pneumoconiosis** - A chronic disease of the lung arising from breathing coal dust. [*mining-1*]
- PNG** Portable Network Graphics. A standard for bitmapped image files - More information. [*soft*]
- Pocket dosimeter** A small ionization detection instrument that indicates ionizing radiation exposure directly. An auxiliary charging device is usually necessary. [*nuclear-1*]
- Point Defect** a crystalline defect associated with one or, at most, several atomic sites. [*mech-1*]
- Poison, neutron** In reactor physics, a material other than fissionable material in the vicinity of the reactor core that will absorb neutrons. The addition of poisons, such as control rods or boron, into the reactor is said to be an addition of negative reactivity. [*nuclear-1*]
- Poisson's Ratio** for elastic deformation, the negative ratio of lateral and axial strains that result from an applied axial stress. [*mech-1*]
- Poisson's ratio** the ratio of the transverse contracting strain to the longitudinal elongational strain when a tensile stress is applied to a material. [*mat-1*]
- polarization** displacement of the centers of positive and negative charge. [*mat-1*]
- Polarization (electronic)** for an atom, the displacement of the center of the negatively charged electron cloud relative to the positive nucleus, which is induced by an electric field. [*mech-1*]
- Polarization (ionic)** polarization as a result of the displacement of anions and cations in opposite directions. [*mech-1*]
- Polarization (orientation)** polarization resulting from the alignment (by rotation) of permanent electric dipole moments with an applied electric field. [*mech-1*]
- Polar Molecule** a molecule in which there exists a permanent electric dipole moment by virtue of the asymmetrical distribution of positively and negatively charged regions. [*mech-1*]
- Polycrystalline** referring to crystalline materials that are composed of more than one crystal or grain. [*mech-1*]
- polyimide** thermosetting ring chain polymer characterized by -NH group; it's increasingly used as dielectrics in high performance circuits. [*mat-1*]
- Polymer** a solid, nonmetallic (normally organic) compound of high molecular weight the structure of which is composed of small repeat (or mer) units. [*mech-1*]
- polymorphism** different crystal structures at different temperatures or pressures for a single compound. [*mat-1*]
- Polymorphism** In object-oriented programming, the term is used to describe variables which may refer at run-time to objects of different classes. For example, the variable "myVehicle" could refer to an object of class "motorCar" or "Truck". [*soft*]
- Polymorphism** the ability of a solid material to exist in more than one form or crystal structure. [*mech-1*]
- Poaching** Poaching is a term sometimes used to describe the effect of the area immediately surrounding a tapped hole being raised up as a result of the tension from the stud. Tapped holes are often bored out for the first couple of threads to eliminate this problem. [*mech-3*]

- Pool reactor** A reactor in which the fuel elements are suspended in a pool of water that serves as the reflector, moderator, and coolant. Popularly called a "swimming pool reactor," it is used for research and training, not for electrical generation. [*nuclear-1*]
- porosity** fine holes, voids, interstitials, or open spaces between grains or trapped in grains of a material's microstructure. [*mat-1*]
- Portal bus** - Track-mounted, self-propelled personnelcarrier that holds 8 to 12 people.[*mining-1*]
- Portal** - The structure surrounding the immediate entrance to a mine; the mouth of an adit or tunnel.[*mining-1*]
- Portland Cement**[*mech-1*]
- Positron** Particle equal in mass but opposite in charge to the electron. A positive electron. [*nuclear-1*]
- POSIX** Portable Operating System Interface for computer environments. A set of IEEE standards designed to provide application portability. IEEE1003.1 defines a UNIX -like operating system interface, 1003.2 the shell and utilities, and 1003.4 real-time extensions. [*soft*]
- Possession-only license** A form of license that allows possession but not operation. [*nuclear-1*]
- POSS** Persistent Object Service Specification: an OMG specification. [*soft*]
- POSTGRES** An active DBMS from Univ. of Calif. Berkeley. [*soft*]
- Postscript** A page description language from Adobe Systems Inc. Its primary application is to describe the appearance of text, graphical shapes and sampled images on printed or displayed pages. A program in PostScript can communicate a document description from a composition system to a printing system in a device-independent way. Many printers now interpret PostScript directly [*soft*]
- Post** - The vertical member of a timber set.[*mining-1*]
- Potential Energy** The energy stored in a raised object (e.g. the weights in a grandfather clock). Potential energy equals  $mgh$ , where  $m$  is mass,  $g$  is the acceleration of gravity, and  $h$  is the vertical distance from a reference location. It is called potential energy because the energy can be regained when the object is lowered. This type of potential energy is sometimes called gravitational potential energy in order to distinguish it from elastic potential energy [*struc-1*]
- Power coefficient of reactivity** The change in reactivity per percent change in power. The power coefficient is the summation of the moderator temperature coefficient of reactivity, the fuel temperature coefficient of reactivity, and the void coefficient of reactivity. [*nuclear-1*]
- Power defect** The total amount of reactivity added due to a given change in power. It can also be expressed as the integrated power coefficient over the range of the power change. [*nuclear-1*]
- Power reactor** A reactor designed to produce heat for electric generation (as distinguished from reactors used for research), for producing radiation or fissionable materials or for reactor component testing. [*nuclear-1*]
- PPP** Point to Point Protocol. [*soft*]
- PPTP** Point to Point Tunneling Protocol. [*soft*]
- Pragma** A standardised form of kluge in Ada . [*soft*]
- Precipitation Hardening** hardening and strengthening of a metal alloy by extremely small and uniformly dispersed particles that precipitate from a supersaturated solid solution.[*mech-1*]
- precipitation hardening** increase the hardness of a supersaturated solid solution by heat treating it to cause a second phase to precipitate out; coherency of the precipitate/matrix interface and how well the two lattices match up greatly influence the effect of precipitate. [*mat-1*]
- precipitation heat treatment** artificial aging of metals in which a constituent precipitates from a supersaturated solid solution. [*mat-1*]
- precipitation** in metals, the separation of a new phase from solid or liquid solution, usually with changing conditions of temperature, pressure, or both. [*mat-1*]
- Predicate calculus** A notation for representing logical statements which goes beyond propositional calculus in certain ways. [*soft*]
- Preload** The tension created in a fastener when first tightened. Reduces after a period of time due to embedding and other factors. [*mech-3*]
- PREMO** Presentation Environment for Multimedia Objects. An ISO standard under development for creation, presentation and interaction with information using single or multiple media [*soft*]
- Preparation plant** - A place where coal is cleaned, sized, and prepared for market.[*mining-1*]

- Prepreg** continuous fiber reinforcement pre-impregnated with a polymer resin which is then partially cured. [mech-1]
- Presentation Manager** The user interface to the OS/2 system. [soft]
- Pressure** Pressure is a similar idea to stress, the force intensity at a point, except that pressure means something acting on the surface of an object rather than within the material of the object. When discussing the pressure within a fluid, the meaning is equivalent to stress. [struc-1]
- Pressure vessel** A strong-walled container housing the core of most types of power reactors. It usually also contains the moderator, neutron reflector, thermal shield, and control rods. [nuclear-1]
- Pressurized water reactor (PWR)** A power reactor in which heat is transferred from the core to an exchanger by high temperature water kept under high pressure in the primary system. Steam is generated in a secondary circuit. Many reactors producing electric power are pressurized water reactors. [nuclear-1]
- Pressurizer** A tank or vessel that acts as a head tank (or surge volume) to control the pressure in a pressurized water reactor. [nuclear-1]
- Prevailing Torque** The torque required to run a nut down a thread on certain types of nuts designed to resist vibration loosening. The resistance can be provided by a plastic insert or a noncircular head. [mech-3]
- Primary Bond** interatomic bonds that are relatively strong and for which bonding energies are relatively large. Proportional Limit [mech-1]
- Primary roof** - The main roof above the immediate top. Its thickness may vary from a few to several thousand feet. [mining-1]
- Primary system** A term that may be used for referring to the reactor coolant system. [nuclear-1]
- Primer (booster)** - A package or cartridge of explosive which is designed specifically to transmit detonation to other explosives and which does not contain a detonator. [mining-1]
- Probabilistic risk analysis** A systematic method for addressing the risk triplet as it relates to the performance of a complex system to understand likely outcomes, sensitivities, areas of importance, system interactions, and areas of uncertainty. The risk triplet is the set of three questions that the NRC uses to define ?risk?: (1) What can go wrong? (2) How likely is it? and (3) What are the consequences? NRC identifies important scenarios from such an assessment. [nuclear-1]
- ProDoc** A set of tools for software documentation from SPC [soft]
- Production expense** Production expenses are a component of generation expenses that includes costs associated with operation, maintenance, and fuel. [nuclear-1]
- Project assurance** The process of specifying the support system: techniques, internal standards, measurements, tools, and training for a project; counseling the project team in the application of these elements and monitoring the adherence to the standards. [soft]
- Project management** The process of planning, organizing, staffing, directing, and controlling the production of a system. Software tools are available to help with this [soft]
- Project planning** See Project management . [soft]
- PROLOG** A language for PROgramming in LOGic. [soft]
- Prometheus** A high-level programming language designed for logic, mathematics, and artificial intelligence. It contains elements from C, Pascal, LISP and Prolog plus novel features [soft]
- Proof Load** The proof load of a nut is the axially applied load the nut must withstand without thread stripping or rupture. The proof load of a bolt, screw or stud is the specified load the product must withstand without permanent set. [mech-3]
- Prop** - Coal mining term for any single post used as roof support. Props may be timber or steel; if steel-screwed, yieldable, or hydraulic. [mining-1]
- Property Class** A designation system which defines the strength of a bolt or nut. For metric fasteners, property classes are designated by numbers where increasing numbers generally represent increasing tensile strengths. The designation symbol for bolts consists of two parts: 1. The first numeral of a two digit symbol or the first two numerals of a three digit symbol approximates 1/100 of the minimum tensile strength in MPa. 2. The last numeral approximates 1/10 of the ratio expressed as a percentage between minimum yield stress and minimum tensile stress. Hence a fastener with a property class of 8.8 has a minimum tensile strength of 800 MPa and a yield stress of  $0.8 \times 800 = 640$  MPa. The designation system for metric nuts is a single or double digit symbol. The numerals approximate 1/100



- of the minimum tensile strength in MPa. For example a nut of property class 8 has a minimum tensile strength of 800 MPa. A bolt or screw of a particular property class should be assembled with the equivalent or higher property class of nut to ensure that thread stripping does not occur. [*mech-3*]
- Proportional counter** A radiation instrument in which an electronic detection system receives pulses that are proportional to the number of ions formed in a gas-filled tube by ionizing radiation. [*nuclear-1*]
- Propositional calculus** A system of symbolic logic. [*soft*]
- Proprietary information** Privately owned knowledge or data, such as that protected by a registered patent, copyright, or trademark. [*nuclear-1*]
- PROST** Programme for Research in Open Systems Testing of the DTI [*soft*]
- Protocol** An agreement about how to transmit data, especially across networks. Low level protocols define the electrical and physical standards to be observed, and deal with the transmission and error detection and correction of the bit stream. High level protocols deal with the data formatting, including the form of messages, the terminal to computer dialogue, files, etc. [*soft*]
- Proton** An elementary nuclear particle with a positive electric charge located in the nucleus of an atom. [*nuclear-1*]
- Prototyper** An interface builder for the Macintosh from Smethers Barnes . [*soft*]
- Prototyping** The creation of a model and the simulation of all aspects of a product. CASE tools support different degrees of prototyping. Some offer the end-user the ability to review all aspects of the user interface and the structure of documentation and reports before code is generated. [*soft*]
- Proximate analysis** - A physical, or non-chemical, test of the constitution of coal. Not precise, but very useful for determining the commercial value. Using the same sample (1 gram) under controlled heating at fixed temperatures and time periods, moisture, volatile matter, fixed carbon and ash content are successfully determined. Sulfur and Btu content are also generally reported with approximate analysis. [*mining-1*]
- Prying** The amplification of an external force acting on a bolt by a lever action which can occur when that force is an eccentric tensile load. [*mech-3*]
- PSA** Problem Statement Analyzer: see PSL/PSA . [*soft*]
- Pseudocode** A notation resembling a programming language but not intended for actual compilation. It usually combines some of the structure of a programming language with an informal natural-language description of the computations to be carried out. It is often produced by CASE systems as a basis for later hand coding. [*soft*]
- PSL** Problem Statement Language: see PSL/PSA . [*soft*]
- PSL** Problem Statement Language: see PSL/PSA . [*soft*]
- PSL/PSA** Problem Statement Language/Problem Statement Analyser: a CASE system developed by D.Teichroew. It allows computer-based development and analysis of a statement of requirements, and assistance during the design phase. [*soft*]
- PS** PostScript . [*soft*]
- PSP** Personal Software Process. Methods to improve the quality of work of software engineers. [*soft*]
- PTI** Portable Tool Interface: a standard such as PCTE , allowing interworking between different software tools via defined interfaces to the user and to the repository or object management system. [*soft*]
- p-type Semiconductor** a semiconductor for which the predominant charge carriers responsible for electrical conduction are holes. Normally, acceptor impurity atoms give rise to the excess holes. [*mech-1*]
- PureLink** An incremental linker from Pure Software [*soft*]
- Purify** A debugging tool from Pure Software [*soft*]
- PURL** Persistent URL . Instead of pointing directly to the location of an Internet resource, a PURL points to a resolution service that associates the PURL with the actual URL and returns that URL to the client. See the OCLC PURL Service . [*soft*]
- PV WAVE** Interactive scientific visualisation software from Visual Numerics - More information. [*soft*]
- Pyrite** - A hard, heavy, shiny, yellow mineral, FeS<sub>2</sub> or iron disulfide, generally in cubic crystals. Also called iron pyrites, fool's gold, sulfur balls. Iron pyrite is the most common sulfide found in coal mines. [*mining-1*]

**QAM** Quality Assurance Management. [*soft*]

**QA** Quality Assurance. [*soft*]

**QBE** A query language. [*soft*]

**QIP** Quality Improvement Paradigm. [*soft*]

**Quality factor** The factor by which the absorbed dose (rad or gray) is to be multiplied to obtain a quantity that expresses, on a common scale for all ionizing radiation, the biological damage (rem or sievert) to an exposed individual. It is used because some types of radiation, such as alpha particles, are more biologically damaging internally than other types. [*nuclear-1*]

**Quantify** A performance analysis tool from Pure Software [*soft*]

**Quantum theory** The concept that energy is radiated intermittently in units of definite magnitude, called quanta, and absorbed in a like manner. [*nuclear-1*]

**quench** rapidly cool a material; typically done to retain a structure at room temperature that otherwise is only stable at high temperature. [*mat-1*]

**Query language** A language such as SQL whereby users of a database system can interactively formulate requests, generate reports etc. [*soft*]

## RST

**Racking** The distortion of a rectangular shape to a skewed parallelogram. [*struc-1*]

**Radiation area** Any area with radiation levels greater than 5 millirems (0.05 millisievert) in one hour at 30 centimeters from the source or from any surface through which the radiation penetrates. [*nuclear-1*]

**Radiation detection instrument** A device that detects and displays the characteristics of ionizing radiation. [*nuclear-1*]

**Radiation (ionizing radiation)** Alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. [*nuclear-1*]

**Radiation, nuclear** Particles (alpha, beta, neutrons) or photons (gamma) emitted from the nucleus of unstable radioactive atoms as a result of radioactive decay. [*nuclear-1*]

**Radiation shielding** Reduction of radiation by interposing a shield of absorbing material between any radioactive source and a person, work area, or radiation-sensitive device. [*nuclear-1*]

**Radiation sickness (syndrome)** The complex of symptoms characterizing the disease known as radiation injury, resulting from excessive exposure (greater than 200 rads or 2 gray) of the whole body (or large part) to ionizing radiation. The earliest of these symptoms are nausea, fatigue, vomiting, and diarrhea, which may be followed by loss of hair (epilation), hemorrhage, inflammation of the mouth and throat, and general loss of energy. In severe cases, where the radiation exposure has been approximately 1000 rad (10 gray) or more, death may occur within two to four weeks. Those who survive six weeks after the receipt of a single large dose of radiation to the whole body may generally be expected to recover. [*nuclear-1*]

**Radiation source** Usually a sealed source of radiation used in teletherapy and industrial radiography, as a power source for batteries (as in use in space craft), or in various types of industrial gauges. Machines, such as accelerators and radioisotope generators, and natural radionuclides may be considered sources. [*nuclear-1*]

**Radiation standards** Exposure standards, permissible concentrations, rules for safe handling, regulations for transportation, regulations for industrial control of radiation, and control of radioactive material by legislative means. [*nuclear-1*]

**Radiation warning symbol** An officially prescribed symbol (a magenta or black trefoil) on a yellow background that must be displayed where certain quantities of radioactive materials are present or where certain doses of radiation could be received. [*nuclear-1*]

**Radioactive contamination** Deposition of radioactive material in any place where it may harm persons or equipment. [*nuclear-1*]

**Radioactive decay** Large unstable atoms can become more stable by emitting radiation. This process is called radioactive decay. This radiation can be emitted in the form of a positively charged alpha particle, a negatively charged beta particle, or gamma rays or x-rays. Radioactive Decay of an Atom [*nuclear-1*]

**Radioactive series** A succession of nuclides, each of which transforms by radioactive disintegration into the next until a stable nuclide results. The first member is called the parent, the intermediate members are called daughters, and the

- final stable member is called the end product. [*nuclear-1*]
- radioactivity** spontaneous decay of some isotopes in nuclei. [*mat-1*]
- Radioactivity** The spontaneous emission of radiation, generally alpha or beta particles, often accompanied by gamma rays, from the nucleus of an unstable isotope. Also, the rate at which radioactive material emits radiation. Measured in units of becquerels or disintegrations per second. Radioactive Decay of an Atom [*nuclear-1*]
- radiography** nondestructive method of internal examination in which metal objects are exposed to a beam of X-ray or gamma radiation; differences in thickness, density, or absorption caused by internal defects or inclusions are apparent in the shadow image produced on a fluorescent screen or photographic film placed behind the object. [*mat-1*]
- Radiography** The making of a shadow image on photographic film by the action of ionizing radiation. [*nuclear-1*]
- Radioisotope** An unstable isotope of an element that decays or disintegrates spontaneously, emitting radiation. Approximately 5,000 natural and artificial radioisotopes have been identified. [*nuclear-1*]
- Radiological survey** The evaluation of the radiation hazards accompanying the production, use, or existence of radioactive materials under a specific set of conditions. Such evaluation customarily includes a physical survey of the disposition of materials and equipment, measurements or estimates of the levels of radiation that may be involved, and a sufficient knowledge of processes affecting these materials to predict hazards resulting from expected or possible changes in materials or equipment. [*nuclear-1*]
- Radiology** That branch of medicine dealing with the diagnostic and therapeutic applications of radiant energy, including x-rays and radioisotopes. [*nuclear-1*]
- Radionuclide** A radioisotope. [*nuclear-1*]
- Radiosensitivity** The relative susceptibility of cells, tissues, organs, organisms, or other substances to the injurious action of radiation. [*nuclear-1*]
- Radium (Ra)** A radioactive metallic element with atomic number 88. As found in nature, the most common isotope has a mass number of 226. It occurs in minute quantities associated with uranium in pitchblende, camotite, and other minerals. [*nuclear-1*]
- Radon (Rn)** A radioactive element that is one of the heaviest gases known. Its atomic number is 86. It is a daughter of radium. [*nuclear-1*]
- RAD** Rapid Application Development. Often applied to tools such as Microsoft Visual Basic, Borland Delphi, Oracle Power Objects. [*soft*]
- Rad** The special unit for radiation absorbed dose, which is the amount of energy from any type of ionizing radiation (e.g., alpha, beta, gamma, neutrons, etc.) deposited in any medium (e.g., water, tissue, air). A dose of one rad means the absorption of 100 ergs (a small but measurable amount of energy) per gram of absorbing tissue (100 rad = 1 gray). [*nuclear-1*]
- RAID** Redundant Array of Inexpensive Disks. A data storage technique. [*soft*]
- Raise** - A secondary or tertiary inclined opening, vertical or near-vertical opening driven upward from a level to connect with the level above, or to explore the ground for a limited distance above one level. [*mining-1*]
- RAL** Rutherford Appleton Laboratory (UK) [*soft*]
- Ramp** - A secondary or tertiary inclined opening, driven to connect levels, usually driven in a downward direction, and used for haulage. [*mining-1*]
- Random Copolymer** a polymer in which two different mer units are randomly distributed along the molecular chain. [*mech-1*]
- Ranks of coal** The classification of coal by degree of hardness, moisture and heat content. "Anthracite" is hard coal, almost pure carbon, used mainly for heating homes. "Bituminous" is soft coal. It is the most common coal found in the United States and is used to generate electricity and to make coke for the steel industry. "Subbituminous" is a coal with a heating value between bituminous and lignite. It has low fixed carbon and high percentages of volatile matter and moisture. "Lignite" is the softest coal and has the highest moisture content. It is used for generating electricity and for conversion into synthetic gas. In terms of Btu or "heating" content, anthracite has the highest value, followed by bituminous, subbituminous and lignite. [*mining-1*]
- RARE** Reseaux Associes pour la Recherche Europeenne: an association of national and international European networks and users - More information. [*soft*]
- RBSE** Repository Based Software Engineering. A NASA research and development programme [*soft*]

**RCS** A code management system. [*soft*]

**RDBA** Remote Database Access: a standard permitting the exchange of information between different DBMS systems. [*soft*]

**Rdb** DEC's SQL-based relational DBMS for VAX/VMS. [*soft*]

**RDBMS** Relational database management system. [*soft*]

**Reaction** Any process involving a chemical or nuclear change. [*nuclear-1*]

**Reaction** A reaction is a force exerted by a support on an object [*struc-1*]

**Reactivity** A term expressing the departure of a reactor system from criticality. A positive reactivity addition indicates a move toward supercriticality (power increase). A negative reactivity addition indicates a move toward subcriticality (power decrease). [*nuclear-1*]

**Reactor coolant system** The system used to remove energy from the reactor core and transfer that energy either directly or indirectly to the steam turbine. [*nuclear-1*]

**Reactor, nuclear** A device in which nuclear fission may be sustained and controlled in a self-supporting nuclear reaction. The varieties are many, but all incorporate certain features, including fissionable material or fuel, a moderating material (unless the reactor is operated on fast neutrons), a reflector to conserve escaping neutrons, provisions of removal of heat, measuring and controlling instruments, and protective devices. The reactor is the heart of a nuclear power plant. [*nuclear-1*]

**Real-time** Generally used to describe systems that must guarantee a response to an external event within a given time [*soft*]

**Realtime** see real-time [*soft*]

**Reasonable** Rational, sensible, or resulting from sound judgment. [*nuclear-1*]

**reciprocal lattice** a group of points arranged about a center in such a way that the line joining each point of the center is perpendicular to a family of planes in the crystal, and the length of this line is inversely proportional to their interplanar distance. [*mat-1*]

**Reciprocal Lattice**[*mech-1*]

**Reclamation** The restoration of land and environmental values to a surface mine site after the coal is extracted. Reclamation operations are usually

underway as soon as the coal has been removed from a mine site. The process includes restoring the land to its approximate original appearance by restoring topsoil and planting native grasses and ground covers. [*mining-1*]

**Recovery** - The proportion or percentage of coal or ore mined from the original seam or deposit. [*mining-1*]

**Recrystallization** the formation of a new set of strain-free grains within a previously cold-worked material; normally an annealing heat treatment is necessary. [*mech-1*]

**Red dog** - A nonvolatile combustion product of the oxidation of coal or coal refuse. Most commonly applied to material resulting from in situ, uncontrolled burning of coal or coal refuse piles. It is similar to coal ash. [*mining-1*]

**Redocumentation** The creation or revision of a semantically equivalent representation within the same relative abstraction level. The resulting forms of representation are usually considered alternate views intended for a human audience. [*soft*]

**Reduced Shank Bolt** A bolt whose shank diameter is smaller than the nominal diameter of the bolt (normally the shank diameter of such a bolt is approximately equal to the effective diameter of the thread). [*mech-3*]

**Reengineering** see Reverse engineering [*soft*]

**Re-engineering** The examination and modification of a system to reconstitute it in a new form and the subsequent implementation of the new form - More information. [*soft*]

**Reference man** A person with the anatomical and physiological characteristics of an average individual that is used in calculations assessing internal dose (also may be called "standard man"). [*nuclear-1*]

**REFINE** A set of reverse engineering tools from Reasoning Systems [*soft*]

**Reflection** deflection of a light beam at the interface between two media. [*mech-1*]

**Reflector** A layer of material immediately surrounding a reactor core that scatters back (or reflects) into the core many neutrons that would otherwise escape. The returned neutrons can then cause more fissions and improve the neutron economy of the reactor. Common reflector materials are graphite, beryllium, water, and natural uranium. [*nuclear-1*]



- reflow soldering** process of joining metallic surfaces through the mass heating of solder/solder paste to form solder fillets at metallized areas; it creates a mechanical and electrical connection between components and a PCB. [*mat-1*]
- Refraction** bending of a light beam upon passing from one medium into another. [*mech-1*]
- Refractive Index** the ratio of the velocity of light in a vacuum to the velocity of light in some medium. [*mech-1*]
- refractory** a heat-resistant material. [*mat-1*]
- Refractory** a metal or ceramic that may be exposed to extremely high temperatures without deteriorating rapidly or without melting. [*mech-1*]
- Regulator** - Device (wall, door) used to control the volume of air in an air split. [*mining-1*]
- Reinforcement** [*mech-1*]
- Relational database** See Relational DBMS . [*soft*]
- Relational DBMS** A DBMS based on the relational model developed by Codd. It allows the definition of data structures, storage and retrieval operations, and integrity constraints. In such a database, the data and relations between them are organised in tables. INGRES and Oracle are well-known examples. [*soft*]
- Relation** A table in a relational database [*soft*]
- Relative Magnetic Permeability** the ratio of the magnetic permeability of some medium to that of a vacuum. [*mech-1*]
- Relaxation** The loss of clamping force in a bolt which commonly occurs as a result of embedment. Can also be caused by gasket creep, differential temperature expansion or vibration loosening. [*mech-3*]
- Released version** A version of an object that is not modifiable, as designated by some person. Also known as baseline. See change management . [*soft*]
- Rem** The acronym for roentgen equivalent man is a standard unit that measures the effects of ionizing radiation on humans. The dose equivalent in rems is equal to the absorbed dose in rads multiplied by the quality factor of the type of radiation. [*nuclear-1*]
- Rendezvous** In Ada , the method of synchronising the activity of different tasks. [*soft*]
- Repository** The core of a CASE tool is typically a DBMS where all development documents are stored. [*soft*]
- REQUEST** REliability and QUality of European Software Technology. An Esprit project (now terminated). [*soft*]
- Requirements** The first stage of software development should be to define requirements with the potential users. In modern methods these requirements should be testable, and will usually be traceable in later development stages [*soft*]
- Reserve** That portion of the identified coal resource that can be economically mined at the time of determination. The reserve is derived by applying a recovery factor to that component of the identified coal resource designated as the reserve base. [*mining-1*]
- residual stress** internal stress in a material often resulting from thermal or mechanical straining. [*mat-1*]
- resilience** the tendency of a material to return to its original shape after the removal of a stress that has produced elastic strain. [*mat-1*]
- resin** an organic polymer that crosslinks to form a thermosetting plastic when mixed with a curing agent. [*mat-1*]
- Resin bolting** - A method of permanent roof support in which steel rods are grouted with resin. [*mining-1*]
- resin flux** a resin and small amounts of organic activators in an organic solvent. [*mat-1*]
- resistance welding** type of welding process in which the work pieces are heated by the passage of an electric current through the contact; this includes spot welding, seam or line welding, and percussion welding; flash and butt welding are sometimes considered as resistance welding processes. [*mat-1*]
- Resisting force** see internal force. [*struc-1*]
- Resistivity** the reciprocal of electrical conductivity, and a measure of a material's resistance to the passage of electric current. [*mech-1*]
- Resources** Concentrations of coal in such forms that economic extraction is currently or may become feasible. Coal resources broken down by identified and undiscovered resources. Identified coal resources are classified as demonstrated and inferred. Demonstrated resources are further broken down as measured and indicated. Undiscovered resources are broken down as hypothetical and speculative. [*mining-1*]
- Respirable dust** - Dust particles 5 microns or less in size. [*mining-1*]

- Respirable dust sample** - A sample collected with an approved coal mine dust sampler unit attached to a miner, or so positioned as to measure the concentration of respirable dust to which the miner is exposed, and operated continuously over an entire workshift of such miner. [*mining-1*]
- Restricted area** Any area to which access is controlled for the protection of individuals from exposure to radiation and radioactive materials. [*nuclear-1*]
- Restructuring** The transformation from one representation form to another at the same relative abstraction level, while preserving the subject system's external behavior (functionality and semantics). [*soft*]
- Resultant** The resultant of a system of forces is a single force or moment whose magnitude, direction, and location make it statically equivalent to the system of forces. [*struc-1*]
- Retreat mining** - A system of robbing pillars in which the robbing line, or line through the faces of the pillars being extracted, retreats from the boundary toward the shaft or mine mouth. [*mining-1*]
- Return idler** - The idler or roller underneath the cover or cover plates on which the conveyor belt rides after the load which it was carrying has been dumped at the head section and starts the return trip toward the foot section. [*mining-1*]
- Return** - The air or ventilation that has passed through all the working faces of a split. [*mining-1*]
- Reusability** The possibility of using code developed for one application in another application: traditionally achieved using program libraries. Object-oriented programming offers the potential for greater reusability of code via its techniques of inheritance, genericity etc. Class libraries with intelligent browsers and application generators are under development to help in this process. [*soft*]
- Reuse** The planned use of software artefacts for the solution of multiple problems [*soft*]
- Reverse Engineering** The process of analyzing an existing system to identify its components and their interrelationships, and create representations of the system in another form or at a higher level of abstraction. Usually undertaken in order to redesign the system for better maintainability [*soft*]
- RFC** Request For Comment. The name by which Internet standards are known [*soft*]
- RFT** Request For Technology - process established by OSF to get proposals for new standards. [*soft*]
- rheology** study of flow characteristics. [*mat-1*]
- Rib** - The side of a pillar or the wall of an entry. The solid coal on the side of any underground passage. Same as rib pillar. [*mining-1*]
- Rider** - A thin seam of coal overlying a thicker one. [*mining-1*]
- RIFF** Resource Interchange File Format from Microsoft [*soft*]
- Righthand Thread** A screw thread that is screwed in by rotating clockwise. The majority of screw threads are right handed. [*mech-3*]
- Rigid** An idealized concept meaning something which does not deform under loading. In fact, all objects deform under loading, but in modelling it can be useful to idealize very stiff objects as rigid. [*struc-1*]
- Rigid connection** see fixed connection. [*struc-1*]
- RIPE** Réseau IP Européens. A collaborative organisation of European Internet service providers - More information. [*soft*]
- Ripper** - A coal extraction machine that works by tearing the coal from the face. [*mining-1*]
- RISC** Reduced Instruction Set Computer; one whose design is based on the rapid execution of a sequence of simple instructions rather than on the provision of a large variety of complex instructions. [*soft*]
- Risk-based decisionmaking** An approach to regulatory decisionmaking in which such decisions are made solely based on the results of a probabilistic risk analysis. [*nuclear-1*]
- Risk-informed decisionmaking** An approach to decisionmaking in which insights from probabilistic risk analyses are considered with other engineering insights. [*nuclear-1*]
- Risk-informed regulation** Incorporating an assessment of safety significance or relative risk in NRC regulatory actions. Making sure that the regulatory burden imposed by individual regulations or processes is commensurate with the importance of that regulation or process to protecting public health and safety and the environment. [*nuclear-1*]
- Risk-significant** When used to qualify an object, such as a system, structure, component, accident

sequence, or cut set, this term identifies that object as exceeding a predetermined criterion related to its contribution to the risk from the facility being addressed. One that is associated with a level of risk that exceeds a predetermined significance criterion. [*nuclear-1*]

**Risk** The combined answers to (1) What can go wrong? (2) How likely is it? and (3) What are the consequences? [*nuclear-1*]

**RLF** Reuse Library Framework of the DoD [*soft*]

**RM-ODP** The ISO Reference Model for Open Distributed Environments. [*soft*]

**RMP** Reliable Multicast Protocol [*soft*]

**RNIS** Reseau Numerique a Integration de Services. French for ISDN . [*soft*]

**Robbed out area** - Describes that part of a mine from which the pillars have been removed. [*mining-1*]

**Rob** - To extract pillars of coal previously left for support. [*mining-1*]

**Roentgen (R)** A unit of exposure to ionizing radiation. It is the amount of gamma or x-rays required to produce ions resulting in a charge of 0.000258 coulombs/kilogram of air under standard conditions. Named after Wilhelm Roentgen, the German scientist who discovered x-rays in 1895. [*nuclear-1*]

**Roll** - (1) A high place in the bottom or a low place in the top of a mine passage, (2) a local thickening of roof or floor strata, causing thinning of a coal seam. [*mining-1*]

**Rolled Thread** A thread formed by plastically deforming a blank rather than by cutting. The majority of standard fasteners have their threads formed by rolling. Most threads are rolled before any heat treatment operation. Significant improvements in fatigue life can be achieved by rolling the thread after heat treatment, this improvement is due to compressive stresses being induced in the roots of the thread. However, because of the increased hardness of the bolt blank, the die life can be significantly reduced. Rolling the thread also generally improves the surface finish which can have a beneficial effect on fatigue life. [*mech-3*]

**Roller support** In two dimensions, a roller support restrains one translation degree of freedom. [*struc-1*]

**Roll protection** - A framework, safety canopy, or similar protection for the operator when equipment overturns. [*mining-1*]

**Roof bolt** - A long steel bolt driven into the roof of underground excavations to support the roof, preventing and limiting the extent of roof falls. The unit consists of the bolt (up to 4 feet long), steel plate, expansion shell, and pal nut. The use of roofbolts eliminates the need for timbering by fastening together, or "laminating," several weaker layers of roof strata to build a "beam." [*mining-1*]

**Roof fall** - A coal mine cave-in especially in permanent areas such as entries. [*mining-1*]

**Roof jack** - A screw- or pump-type hydraulic extension post made of steel and used as temporary roof support. [*mining-1*]

**Roof sag** - The sinking, bending, or curving of the roof, especially in the middle, from weight or pressure. [*mining-1*]

**Roof stress** - Unbalanced internal forces in the roof or sides, created when coal is extracted. [*mining-1*]

**Roof support** Posts, jacks, roof bolts and beams used to support the rock overlying a coal seam in an underground mine. A good roof support plan is part of mine safety and coal extraction. [*mining-1*]

**Roof** - The stratum of rock or other material above a coal seam; the overhead surface of a coal working place. Same as "back" or "top." [*mining-1*]

**Roof trusses** - A combination of steel rods anchored into the roof to create zones of compression and tension forces and provide better support for weak roof and roof over wide areas. [*mining-1*]

**Room and pillar mining** A method of underground mining in which approximately half of the coal is left in place to support the roof of the active mining area. Large "pillars" are left while "rooms" of coal are extracted. [*mining-1*]

**Room neck** - The short passage from the entry into a room. [*mining-1*]

**ROOM** Real-Time Object-Oriented Modeling. An Object-Oriented analysis and design approach - More information. [*soft*]

**ROOT** An object oriented framework for large scale data analysis at CERN [*soft*]

**Root Diameter** Identical to MINOR DIAMETER [*mech-3*]

**Root version** The initial value of an object. See change management . [*soft*]

**rosin** a hard, natural resin, consisting of abietic acid and pimaric acids and their isomers, some fatty acids, and terpenic hydrocarbons; the resin is extracted from pine trees and subsequently refined. [*mat-1*]

**rosin flux** rosin in an organic solvent or rosin as a paste with activators. [*mat-1*]

**Rotation** Motion of an object where the path of every point is a circle or circular arc. A rotation is defined by a point and vector which determine the axis of rotation. The direction of the vector is the direction of the axis and the magnitude of the vector is the angle of rotation. [*struc-1*]

**Round** - Planned pattern of drill holes fired in sequence intunneling, shaft sinking, or stopping. First the cut holes are fired, followed by relief, lifter, and rib holes. [*mining-1*]

**Royalty** - The payment of a certain stipulated sum on the mineral produced. [*mining-1*]

**RPC** Remote Procedure Call: a call to a routine that results in code being executed on a different system from the one where the request originated. An RPC system allows calling procedures and called procedures to execute on different systems without the programmer needing to explicitly code for this. [*soft*]

**RSA** Rivest, Shamir, Adleman public key encryption technique (used by PGP) [*soft*]

**RSVP** Rapid System Virtual Prototyping. [*soft*]

**RTEE** Real Time Engineering Environment: a set of CASE tools produced by Westmount Technology B.V. [*soft*]

**RTF** Rich Text Format: an interchange format from Microsoft for exchange of documents between Word and other document preparation systems - More information. [*soft*]

**RTL** Register Transfer Language: a kind of HDL used in describing the registers of a computer or digital electronic system, and the way in which data is transferred between them. [*soft*]

**RTSA** Real-time structured analysis: versions of structured analysis capable of modelling real-time aspects of software. [*soft*]

**Rubbing surface** - The total area (top, bottom, and sides) of an airway. [*mining-1*]

**Rubblization** A decommissioning technique involving demolition and burial of formerly operating nuclear facilities. All equipment from buildings is removed and the surfaces are decontaminated. Above-grade structures are demolished

into rubble and buried in the structure's foundation below ground. The site surface is then covered, regraded and, landscaped for unrestricted use. [*nuclear-1*]

**Rule-based** Having to do with systems that infer or use "rules" (i.e. logical statements). [*soft*]

**Run-of-mine** - Raw material as it exists in the mine; average grade or quality. [*mining-1*]

**Rupture** failure that is accompanied by significant plastic deformation. [*mech-1*]

**SAA** Systems Application Architecture: IBM's family of standard interfaces which enable software to be written independently of hardware and operating systems. [*soft*]

**Saber-C** see CodeCenter . [*soft*]

**Saber-C++** see ObjectCenter . [*soft*]

**SADT** Structured Analysis and Design Technique. [*soft*]

**Safeguards** As used in regulation of domestic nuclear facilities and materials, the use of material control and accounting programs verify that all special nuclear material is properly controlled and accounted for, and the physical protection (also referred to as physical security) equipment and security forces. As used by the International Atomic Energy Agency (IAEA), verifying that the "peaceful use" commitments made in binding non-proliferation agreements, both bilateral and multilateral, are honored. [*nuclear-1*]

**Safe shutdown earthquake** Is the maximum earthquake potential for which certain structures, systems, and components, important to safety, are designed to sustain and remain functional. [*nuclear-1*]

**Safety fuse** - A train of powder enclosed in cotton, jute yarn, or waterproofing compounds, which burns at a uniform rate; used for firing a cap containing the detonation compound which in turn set off the explosive charge. [*mining-1*]

**Safety injection** The rapid insertion of a chemically soluble neutron poison (such as boric acid) into the reactor coolant system to ensure reactor shutdown. [*nuclear-1*]

**Safety lamp** - A lamp with steel wire gauze covering every opening from the inside to the outside so as to prevent the passage of flame should explosive gas be encountered. [*mining-1*]

**Safety limit** A restriction or range placed upon important process variables that are necessary to



reasonably protect the integrity of the physical barriers that guard against the uncontrolled release of radioactivity. [*nuclear-1*]

**Safety related** In the regulatory arena, this term applies to systems, structures, components, procedures, and controls of a facility or process that are relied upon to remain functional during and following design-basis events. Their functionality ensures that key regulatory criteria, such as levels of radioactivity released, are met. Examples of safety related functions include shutting down a nuclear reactor and maintaining it in a safe shutdown condition. [*nuclear-1*]

**Safety-significant** When used to qualify an object, such as a system, structure, component, accident sequence, or cut set, this term identifies that object as having an impact on safety, whether determined through risk analysis or other means, that exceeds a predetermined significance criterion. [*nuclear-1*]

**SAFSTOR** A method of decommissioning in which the nuclear facility is placed and maintained in such condition that the nuclear facility can be safely stored and subsequently decontaminated to levels that permit release for unrestricted use. [*nuclear-1*]

**SAGE** System Administrators Guild. A Special Technical Group within USENIX. [*soft*]

**Sampling** - Cutting a representative part of an ore (or coal) deposit, which should truly represent its average value. [*mining-1*]

**Sandstone** - A sedimentary rock consisting of quartz sand united by some cementing material, such as iron oxide or calcium carbonate. [*mining-1*]

**saponifier** an alkaline chemical added to water to improve its ability to dissolve rosin flux residues. [*mat-1*]

**SARA** Stichting Academisch Rekencentrum Amsterdam (Academic Computing Services Amsterdam) [*soft*]

**SASD** Structured Analysis, Structured Design. [*soft*]

**SA** Structured Analysis. [*soft*]

**SATAN** Security Administrator Tool for Analyzing Networks - More information. [*soft*]

**Sather** An object-oriented programming language that is a simplified optimized variant of Eiffel [*soft*]

**SBM** Solution Based Modelling. a software development process described in the book "Developing Object-Oriented Software for the Macintosh" written by Neal Goldstein and Jeff Alger, published by Addison Wesley in 1992. [*soft*]

**Scalar** A mathematical entity which has a numeric value but no direction (in contrast to a vector). [*struc-1*]

**Scaling** - Removal of loose rock from the roof or walls. This work is dangerous and a long bar (called a scaling bar) is often used. [*mining-1*]

**Scattered radiation** Radiation that, during its passage through a substance, has been changed in direction. It may also have been modified by a decrease in energy. It is one form of secondary radiation. [*nuclear-1*]

**SCCS** Source Code Control System: a popular code management systems. [*soft*]

**Schematic capture** The process of entering the logical design of an electronic circuit into a CAE system by creating a schematic representation of components and interconnections. [*soft*]

**Scheme** A dialect of Lisp. [*soft*]

**Schlaer-Mellor** An Object-Oriented Analysis (OOA) modeling method that addresses the integration of structural and behavioral properties. [*soft*]

**Scintillation detector** The combination of phosphor, photomultiplier tube, and associated electronic circuits for counting light emissions produced in the phosphor by ionizing radiation. [*nuclear-1*]

**SCI** Scalable Coherent Interface, IEEE Std 1596-1992 [*soft*]

**SCM** Software Configuration management or Source Code management. [*soft*]

**Scoop** - A rubber tired-, battery- or diesel-powered piece of equipment designed for cleaning runways and hauling supplies. [*mining-1*]

**SCOPE** Software Assessment and Certification Programme. An Esprit [*soft*]

**SCO** The Santa Cruz Operation, a leading supplier of UNIX systems for systems based on Intel microprocessors. Suppliers of Xenix and Open Desktop [*soft*]

**SCPI** Standard Commands for Programmable Instruments: a standard complementing IEEE 488 developed by Hewlett-Packard and promoted by the SCPI Consortium, 8380 Hercules Drive, Suite P3, La Mesa, CA 91942, USA [*soft*]

- Scram** The sudden shutting down of a nuclear reactor, usually by rapid insertion of control rods, either automatically or manually by the reactor operator. May also be called a reactor trip. It is actually an acronym for "safety control rod axeman," the worker assigned to insert the emergency rod on the first reactor (the Chicago Pile) in the U.S. [*nuclear-1*]
- Screw** A headed threaded fastener that is designed to be used in conjunction with a pre formed internal thread or alternatively forming its own thread. Historically, it was a threaded fastener with the thread running up to the head of the fastener that has no plain shank. However this definition has largely been superseded to avoid confusion over the difference between a bolt and a screw. [*mech-3*]
- Screw Thread** A ridge of constant section which is manufactured so that a helix is developed on the internal or external surface of a cylinder. [*mech-3*]
- ScriptX** A dynamic object-oriented programming language and class library for multimedia from Kaleida Labs - More information. [*soft*]
- Scrubber** Any of several forms of chemical/physical devices that remove sulfur compounds formed during coal combustion. These devices, technically know as flue gas desulfurization systems, combine the sulfur in gaseous emissions with another chemical medium to form inert "sludge," which must then be removed for disposal. [*mining-1*]
- SCSI** Small Computer Systems Interface. [*soft*]
- SDD** Software Design Description. ANSI/IEEE 1016-1987 specifies IEEE Recommended Practice for SDD. [*soft*]
- SDE** Software Development Environment: equivalent to SEE . [*soft*]
- SDIF** SGML Document Interchange Format. [*soft*]
- SDL** Specification and Design Language: defined by the CCITT (recommendation Z100) to provide a tool for unambiguous specification and description of the behaviour of telecommunications systems. The area of application also includes process control and real-time applications. SDL provides a Graphic Representation (SDL/GR) and a textual Phrase Representation (SDL/PR), which are equivalent representations of the same semantics. A system is specified as a set of interconnected abstract machines which are extensions of the Finite State Machine (FSM) [*soft*]
- SDM** Schematic Data Model. [*soft*]
- SDS** Schema Definition Set in PCTE . [*soft*]
- SD** Structured Design: a program design method. [*soft*]
- Sealed source** Any radioactive material or byproduct encased in a capsule designed to prevent leakage or escape of the material. [*nuclear-1*]
- Seam** - A stratum or bed of coal. [*mining-1*]
- Secondary radiation** Radiation originating as the result of absorption of other radiation in matter. It may be either electromagnetic or particulate in nature. [*nuclear-1*]
- Secondary roof** - The roof strata immediately above the coalbed, requiring support during the excavating of coal. [*mining-1*]
- Secondary system** The steam generator tubes, steam turbine, condenser, and associated pipes, pumps, and heaters used to convert the heat energy of the reactor coolant system into mechanical energy for electrical generation. Most commonly used in reference to pressurized water reactors. (see also [i/reading-rm/doc-collections/cfr/part020/part020-1003.html](#); 10 CFR 20.1003 [i/reading-rm/doc-collections/cfr/part020/part020-1003.html](#).) [*nuclear-1*]
- Section** - A portion of the working area of a mine. [*mining-1*]
- Section Modulus** A property of a cross sectional shape, which depends on shape, and orientation. Section modulus is usually denoted S, and  $S = I/c$ , where I = moment of inertia about an axis through the centroid, and c is the distance from the centroid to the extreme edge of the section. [*struc-1*]
- SEE** Simultaneous Engineering Environment: a CAE framework from DAZIX. [*soft*]
- SEE** Software Engineering Environment: a set of management and technical tools to support software development, usually integrated in a coherent framework; equivalent to an IPSE. [*soft*]
- Seismic category I** Structures, systems, and components that are designed and built to withstand the maximum potential earthquake stresses for the particular region where a nuclear plant is sited. [*nuclear-1*]
- SEI** Software Engineering Institute (Carnegie Mellon University) - More information. [*soft*]
- Selective mining** - The object of selective mining is to obtain a relatively high-grade mine product;

this usually entails the use of a much more expensive stopping system and high exploration and development costs in searching for and developing the separate bunches, stringers, lenses, and bands of ore. [*mining-1*]

**Selector** In Smalltalk or Objective-C, the syntax of a message which selects a particular method in the target object. [*soft*]

**Self** An object oriented programming language from Stanford, and an object oriented programming system from Sun Microsystems [*soft*]

**Self-contained breathing apparatus** - A self-contained supply of oxygen used during rescue work from coal mine fires and explosions; same as SCSR (self-contained self rescuer). [*mining-1*]

**Self-rescuer** A small filtering device carried by a coal miner underground, either on his belt or in his pocket, to provide him with immediate protection against carbon monoxide and smoke in case of a mine fire or explosion. It is a small canister with a mouthpiece directly attached to it. The wearer breathes through the mouth, thenose being closed by a clip. The canister contains a layer of fused calcium chloride that absorbs water vapor from the mine air. The device is used for escape purposes only because it does not sustain life in atmospheres containing deficient oxygen. The length of time a self-rescuer can be used is governed mainly by the humidity in the mine air, usually between 30 minutes and one hour. [*mining-1*]

**SEL** Software Engineering Laboratory. The Institute for Information Technology of the National Research Council Canada - More information . Also NASA's Goddard Space Flight Center [*soft*]

**Semaphore** The classic method for restricting access to data shared between several cooperating processes . [*soft*]

**Sems** A screw and washer assembly. A screw or bolt which has a captive washer. The washer is frequently loose on the plain shank of the fastener, the shank diameter being equal to the effective diameter of the thread; the thread being rolled from this diameter. The origin of the word is a frequent question. In the 1930's E. C. Crowther was a representative for a company that sold both shakeproof washers and screws. He came up with the idea of placing the washer on the screw before it was thread rolled. The major diameter of the screw being larger than the washer hole prevents it from coming off. The Illinois Tool Works made machines that produced these patented pre-as [*mech-3*]

**SE-ODP** Support Environment for Open Distributed Processing: an ECMA standard. [*soft*]

**SEP** A SASD . [*soft*]

**SERC** Software Engineering Research Center (Purdue University). [*soft*]

**Server** A computer which, by means of network connections, carries out parts of a computing task on behalf of one or more remote computers. [*soft*]

**SE** Software Engineering, the methods used in developing software. [*soft*]

**SES/workbench** An iconic simulation and design tool, linked to some of the major CASE systems now available or in development. [*soft*]

**Setext** A markup scheme intended for documents that are both human- and computer-readable [*soft*]

**Set Screw** A set screw is a threaded fastener that is typically used to hold a sleeve, collar or gear on a shaft to prevent relative motion. It is a threaded member that normally does not have a head. Unlike most other threaded fasteners it is basically a compression device normally used to generate axial thrust. Various socket types are provided to allow the set screw to be rotated. These types include hexagon socket, fluted socket, screwdriver slot and square head. Various point designs are available (the part of the set screw that rotates against the shaft being secured) and include: Cup - Hollowed end, is the most commonly used point style. Used when the digging in of the point is not undesirable. Cone - Pointed end, this type generates the highest torsional holding power and is typically used for a permanent connection. Oval - Rounded end that is typically used when frequent adjustment is required. The oval end prevents/reduces indentation. Flat - Cause little damage to the shaft and are used when frequent adjustment is required. Dog - Flat end with the threads stopping short of the end with the end fitting into a hole. [*mech-3*]

**SET** Standard d'Echange et de Transfert: a French standard for exchange of CAD data. [*soft*]

**Severance** The separation of a mineral interest from other interests in the land by grant or reservation. A mineral dead or grant of the land reserving a mineral interest, by the landowner before releasing, accomplishes a severance as does his execution of a mineral lease. [*mining-1*]

**Severe accident** A type of accident that may challenge safety systems at a level much higher than expected. [*nuclear-1*]

- SFA** Software Frameworks Association - More information. [*soft*]
- SGI** Silicon Graphics Incorporated, a vendor of graphical workstations and software [*soft*]
- SGML Open** A non-profit, international consortium of providers of products and services, dedicated to accelerating the further adoption, application, and implementation of SGML - More information. [*soft*]
- SGML** Standard Generalised Markup Language (ISO 8879). A generic markup language for representing documents. SGML is a system for defining structured document types, and markup languages to represent instances of those document types [*soft*]
- Shaft** - A primary vertical or non-vertical opening through mine strata used for ventilation or drainage and/or for hoisting of personnel or materials; connects the surface with underground workings. [*mining-1*]
- Shaft mine** An underground mine in which the main entry or access is by means of a vertical shaft. [*mining-1*]
- Shale** - A rock formed by consolidation of clay, mud, or silt, having a laminated structure and composed of minerals essentially unaltered since deposition. [*mining-1*]
- Shank** That portion of a bolt between the head and the threaded portion. [*mech-3*]
- ShapeTools** A code management system for UNIX from TU Berlin. [*soft*]
- Shape\_VC** A code management system which offers version control functionality similar to systems like RCS with some extensions and a more UNIX-like command interface. [*soft*]
- SHARE** An international users group of IBM and compatible hardware and software [*soft*]
- Shear** An system of internal forces whose resultant is a force acting perpendicular to the longitudinal axis of a structural member or assembly [*struc-1*]
- Shearer** - A mining machine for longwall faces that uses a rotating action to "shear" the material from the face as it progresses along the face. [*mining-1*]
- Shear modulus** The ratio of shear stress divided by the corresponding shear strain in a linear elastic material. [*struc-1*]
- Shear strain** Strain measuring the intensity of racking in the material. Shear strain is measured as the change in angle of the corners of a small square of material. [*struc-1*]
- Shear stress** Stress acting parallel to an imaginary plane cut through an object. [*struc-1*]
- Shelf** A public library of classes for the Eiffel language. [*soft*]
- Shell Script** A program written to be interpreted by the shell of an operating system, especially UNIX. [*soft*]
- Shell** The outer part of an operating system, especially UNIX, which provides the user interface, as opposed to the kernel which provides the basic services to processes. The commonest UNIX shells are the c shell (csh) and the Bourne shell (sh). [*soft*]
- Shen** A security scheme for WWW [*soft*]
- Shielding** Any material or obstruction that absorbs radiation and thus tends to protect personnel or materials from the effects of ionizing radiation. [*nuclear-1*]
- SHIFT** Scalable Heterogeneous Integrated Facility Testbed. A parallel processing project at CERN. [*soft*]
- Shift** - The number of hours or the part of any day worked. [*mining-1*]
- Shortwall** An underground mining method in which small areas are worked (15 to 150 feet) by a continuous miner in conjunction with the use of hydraulic roof supports. [*mining-1*]
- Shoulder Screws** A threaded fastener with a plain, precision machined, shank that is used for location purposes. They are typically used for pulleys and linkages. [*mech-3*]
- Shutdown** A decrease in the rate of fission (and heat production) in a reactor (usually by the insertion of control rods into the core). [*nuclear-1*]
- Shutdown margin** The instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full-length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth that is assumed to be fully withdrawn. [*nuclear-1*]
- Shuttle car** A self-discharging truck, generally with rubber tires or caterpillar-type treads, used for



- receiving coal from the loading or mining machine and transferring it to an underground loading point, mine railway or belt conveyor system. [*mining-1*]
- SICL** Standard Instrument Control Library: a platform-independent API for software to control and test electronic instruments conforming to IEE 488 [*soft*]
- SICS** Swedish Institute for Computer Science [*soft*]
- Sievert (Sv)** The international system (SI) unit for dose equivalent equal to 1 Joule/kilogram. 1 sievert = 100 rem. Named for physicist Rolf Sievert. [*nuclear-1*]
- SIGhyper** Special Interest Group on Hypertext and Multimedia of the SGML [*soft*]
- SIMD** Single Instruction Multiple Data: a form of parallelism in multiprocessor computing where there is a single instruction stream (programs) operating concurrently on several data streams. [*soft*]
- SIMEX** A set of C++ classes from the University of Minnesota, that provides a framework for building discrete event simulation models [*soft*]
- SIMON** System of Internet Mapping for Organised Navigation [*soft*]
- Simscrip** A free-form, English-like general-purpose simulation language. SIMSCRIPT II.5 from CACI has evolved from the original work on SIMSCRIPT by H. Markowitz. [*soft*]
- SIMULA** A program based on Algol 60 with extensions for simulation, which was a precursor of the object-oriented approach. [*soft*]
- Single Inheritance** The property of an object-oriented language which restricts a sub-class to be derived from only one parent. [*soft*]
- Sinking** - The process by which a shaft is driven. [*mining-1*]
- sintering** densification of a particulate ceramic compact involving a removal of the pores between the starting particles (accompanied by equivalent shrinkage) combined with coalescence and strong bonding between adjacent particles. [*mat-1*]
- Sisal** Streams and Iterations in a Single-Assignment Language. A general-purpose functional language. [*soft*]
- Skid** - A track-mounted vehicle used to hold trips or cars from running out of control. Also it is a flat-bottom personnel or equipment carrier used in low coal. [*mining-1*]
- Skidmore Bolt Tension Calibrator** The Skidmore-Wilhelm bolt tension calibrator is a hydraulic load cell used to determine the tension in a bolt or other threaded fastener. The tension in the bolt compresses fluid in a hydraulic cylinder, a pressure gauge connected to the cylinder is then calibrated to read in terms of force rather than pressure. [*mech-3*]
- Skip** - A car being hoisted from a slope or shaft. [*mining-1*]
- Slack** - Small coal; the finest-sized soft coal, usually less than one inch in diameter. [*mining-1*]
- Slag** - The waste product of the process of smelting. [*mining-1*]
- Slate** - A miner's term for any shale or slate accompanying coal. Geologically, it is a dense, fine-textured, metamorphic rock, which has excellent parallel cleavage so that it breaks into thin plates or pencil-like shapes. [*mining-1*]
- Slate bar** - The proper long-handled tool used to pry down loose and hazardous material from roof, face, and ribs. [*mining-1*]
- Slickenside** - A smooth, striated, polished surface produced on rock by friction. [*mining-1*]
- Slip** - A fault. A smooth joint or crack where the strata have moved on each other. [*mining-1*]
- SLIP** Serial Line IP. [*soft*]
- Slope mine** An underground mine with an opening that slopes upward or downward to the coal seam. [*mining-1*]
- Slope** - Primary inclined opening, connection the surface with the underground workings. [*mining-1*]
- Sloughing** - The slow crumbling and falling away of material from roof, rib, and face. [*mining-1*]
- Smalltalk** A pioneering object-oriented programming system developed at the Xerox Palo Alto research centre. It includes a language (usually interpreted), a programming environment, and an extensive object library [*soft*]
- SMA** Software Maintenance Association. [*soft*]
- SMCC** Sun Microsystems Computer Corporation [*soft*]
- SMDL** Standard Music Description Language, based on HyTime [*soft*]
- SMG** Screen Management Guidelines - a VMS package of run-time library routines providing windows on VT100 terminals. [*soft*]

- SML/NJ** Standard ML of New Jersey. [*soft*]
- SML** Standard ML : a functional language . [*soft*]
- SMSL** Standard Multimedia Scripting Language [*soft*]
- SNA** Systems Network Architecture - IBM's networking standard. [*soft*]
- Sniff** A C++/C programming environment providing browsing, cross-referencing, design visualization, documentation, and editing support. Developed by UBS Switzerland and marketed by takeFive Salzburg. (See also SNiFF+ ) [*soft*]
- SNOBOL** String Oriented Symbolic Language. A language from the 1960s for string manipulation. [*soft*]
- Snugging** The process of pulling parts of a joint together, most of the input turn during this process is absorbed in the joint with little tension being given to the bolt. [*mech-3*]
- Snug Torque** The torque required to pull plates together so that direct contact occurs; often used in angle control tightening. The snug torque ensures that metal to metal contact occurs at all the interfaces within the joint. It is only at this point that the required angle of rotation start in order that the bolt is tightened sufficiently. The snug torque is usually determined experimentally on the actual joint. [*mech-3*]
- Socket Head Cap Screw** A screw with a round head, usually with a hexagon indentation in the head for tightening purposes. Used on machine parts and is typically made from high strength steel (grade 12.9 in metric). [*mech-3*]
- SoftBench** An IPSE from Hewlett-Packard. [*soft*]
- Soft Joint** A joint in which the plates and material between the nut and bolt bearing surfaces have a low stiffness when subjected to compression by the bolt load. In such a joint, the bolt (or nut) typically has to be tightened by two or more complete turns, after it has been torqued to the snug condition, before the full tightening torque is achieved. Often the placement of a gasket in a joint results in a soft joint. [*mech-3*]
- Softlab** A software engineering company strong in UK and Germany. [*soft*]
- Soft Torque** An alternative name, used by some manufacturers, for snug torque. [*mech-3*]
- Software AG** SE company from FRG. [*soft*]
- Software BackPlane** A CASE framework from Atherton . [*soft*]
- Software bus** A support environment for heterogeneous distributed processing, such as the ANSA Testbench. [*soft*]
- Software Engineering** A systematic approach to the analysis, design, implementation and maintenance of software. It usually involves the use of CASE tools . There are various models of the software life-cycle, and many methodologies for the different phases. [*soft*]
- Software Metrics** Measures of software quality which indicate the complexity, understandability, testability, description and intricacy of code. [*soft*]
- Software through Pictures** see StP . [*soft*]
- SOIF** Summary Object Interchange Format in the Harvest system. [*soft*]
- solder** a low melting point alloy, usually of lead (Pb) and tin (Sn), that can wet copper, conduct current, and mechanically join conductors. [*mat-1*]
- solder balls** small spheres of solder adhering to the laminate, mask, or conductor surfaces usually after wave or reflow soldering. [*mat-1*]
- solder bridging** when solder paste or solder on two or more adjacent pads come into contact to form a conductive path or bridge. [*mat-1*]
- soldering** process of joining metallic surfaces with solder without melting the base material. [*mat-1*]
- solder mask** a dielectric material used to cover the entire surface (except where the joints are to be formed) of a PCB primarily to protect the circuitry from environmental damage; it also helps to reduce bridging. [*mat-1*]
- solder paste** mixture of minute spherical solder particles, activators, solvent, and a gelling or suspension agent. [*mat-1*]
- solidification range** the temperature between the liquidus and solidus. [*mat-1*]
- solidification shrinkage crack** a crack that forms due to internal stresses developed from shrinkage during solidification of a metal casting; also called a hot crack. [*mat-1*]
- solidification** the change from liquid state to solid state upon cooling through the melting temperature or melting range. [*mat-1*]
- Solid** - Mineral that has not been undermined, sheared out, or otherwise prepared for blasting. [*mining-1*]

- solid solution** a single, solid, homogeneous crystalline phase containing two or more chemical species. [*mat-1*]
- solidus** the temperature in a phase equilibrium diagram below which no liquids are present; the highest temperature at which a metal or alloy is completely solid. [*mat-1*]
- solution heat treatment** heating an alloy to a suitable temperature, holding at that temperature for enough time to allow one or more constituents to enter into solid solution, and then rapidly cooling to hold the constituents in solution. [*mat-1*]
- solvent** solution capable of dissolving a solute. [*mat-1*]
- solvus** the curve on a phase equilibrium diagram that defines the limits of solid solubility. [*mat-1*]
- SOMA** Semantic Object Modelling Approach. An Object-Oriented analysis and design approach - More information. [*soft*]
- Somatic effects of radiation** Effects of radiation limited to the exposed individual, as distinguished from genetic effects, that may also affect subsequent unexposed generations. [*nuclear-1*]
- SOM** System Object Model. An implementation of CORBA [*soft*]
- Sounding** - Knocking on a roof to see whether it is sound and safe to work under. [*mining-1*]
- Source material** Uranium or thorium, or any combination thereof, in any physical or chemical form or ores that contain by weight 1/20 of one percent (0.05 percent) or more of (1) uranium, (2) thorium, or (3) any combination thereof. Source material does not include special nuclear material. [*nuclear-1*]
- Spad** A spad is a flat spike hammered into a wooden plug anchored in a hole drilled into the mine ceiling from which is threaded a plumbline. The spad is an underground survey station similar to the use of stakes in marking survey points on the surface. A pointer spad, or sight spad, is a station that allows a mine foreman to visually align entries or breaks from the mainpad. [*mining-1*]
- Span** - The horizontal distance between the side supports or solid abutments along sides of a roadway. [*mining-1*]
- SPARC** see ANSI/SPARC Architecture . [*soft*]
- Sparcstation** A family of workstations from Sun . [*soft*]
- SPC** Software Productivity Centre. A non-profit organization based in Vancouver, BC, Canada with the mandate to assist software developers to improve their software engineering process [*soft*]
- SPDL** Standard Page Description Language : a draft within the ODA standard. [*soft*]
- Special nuclear material** Plutonium, uranium-233, or uranium enriched in the isotopes uranium-233 or uranium-235. [*nuclear-1*]
- Specific gravity** - The weight of a substance compared with the weight of an equal volume of pure water at 4 degrees Celsius. [*mining-1*]
- Specific markup** In computerised document preparation, a method of adding formatting commands to the text to control layout, such as new line, new page, center text etc. (see Generic markup ). [*soft*]
- SPEC** Standard Performance Evaluation Corporation. Formed to establish, maintain and endorse a standardized set of relevant benchmarks that can be applied to the newest generation of high-performance computers [*soft*]
- Spent (depleted) fuel** Nuclear reactor fuel that has been used to the extent that it can no longer effectively sustain a chain reaction. [*nuclear-1*]
- Spent fuel pool** An underwater storage and cooling facility for spent (used) fuel elements that have been removed from a reactor. [*nuclear-1*]
- Spent nuclear fuel** Fuel that has been removed from a nuclear reactor because it can no longer sustain power production for economic or other reasons. [*nuclear-1*]
- spinodal structure** a fine homogeneous mixture of two phases that form by growth of composition waves in a solid solution during suitable heat treatment; the phases differ in composition from each other and the parent phase, but have the same crystal structure as the parent phase. [*mat-1*]
- SPIN** Software Process Improvement Network. Local interest groups sponsored by SEI . [*soft*]
- SPI** Software Process Improvement. [*soft*]
- Split** - Any division or branch of the ventilating current. Also, the workings ventilated by one branch. Also, to divide a pillar by driving one or more roads through it. [*mining-1*]
- Spreadsheet** A type of application which manipulates data in rows and columns of cells. The value in a cell is calculated by a formula which can involve other cells. Popular in commercial applications. [*soft*]

- Spring** A distributed object-oriented operating system from Sun [*soft*]
- Sprite** An operating system from Berkeley supporting multiprocessing and distributed files. [*soft*]
- SPT** Software Process Technology. [*soft*]
- SQL2** An extended version of the SQL standard. [*soft*]
- SQL/DS** A database package from IBM including a relational DBMS. [*soft*]
- SQL** Structured Query Language: ISO , ANSI standard user front end to a relational database management system. [*soft*]
- Squeeze** - The settling, without breaking, of the roof and the gradual upheaval of the floor of a mine due to the weight of the overlying strata. [*mining-1*]
- SRI** Stanford Research Institute. [*soft*]
- SSADM** A software engineering method and toolset required by some UK government agencies. [*soft*]
- SSII** Societe de Service en Ingenierie Informatique. [*soft*]
- SSL** Secure Sockets Layer. A scheme for secure WWW communications [*soft*]
- Stability** Stability is best defined as the opposite of instability, which is the occurrence of large structural deformations which are not the result of material failure. [*struc-1*]
- Stable isotope** An isotope that does not undergo radioactive decay. [*nuclear-1*]
- stainless steel** any steel containing at least 10.5% Cr as the principal alloying element. [*mat-1*]
- Standard Review Plan** A document that provides guidance to the staff for reviewing an application to obtain an NRC license to construct or operate a nuclear facility or to possess or use nuclear materials. [*nuclear-1*]
- Standards** Although boring, standards are necessary for interworking, portability and reusability. They may be de facto standards for various communities, or officially recognised national or international standards. Some important bodies concerned in one way or another with Software standards are ISO , ANSI , ECMA , IETF [*soft*]
- Standard Technical Specifications** NRC staff guidance on model technical specifications for an operating license. (See also Technical Specifications.) [*nuclear-1*]
- StarBurst** An active DBMS from IBM Almaden Research Center. [*soft*]
- STARS** Software Technology for Adaptable Reliable Systems. A DARPA project [*soft*]
- Startup** An increase in the rate of fission (and heat production) in a reactor (usually by the removal of control rods from the core). [*nuclear-1*]
- STAS** Scientific and Technical Attribute and element Set. Defines standard identifiers for referring to searchable fields in scientific databases. [*soft*]
- State Diagram** see State Transition Diagram. [*soft*]
- State transition diagram** A diagram consisting of circles to represent states and directed line segments to represent transitions between the states. One or more actions may be associated with each transition. The diagram represents a Finite State Machine. [*soft*]
- Statically determinate** A statically determinate structure is one where there is only one distribution of internal forces and reactions which satisfies equilibrium. In a statically determinate structure, internal forces and reactions can be determined by considering nothing more than equations of equilibrium. [*struc-1*]
- Statically equivalent** Two force systems are statically equivalent when their resultants are equal. Physically, this means that the force systems tend to impart the same motion when applied to an object; note that the distribution of resulting internal forces in the object may be different. [*struc-1*]
- Statically indeterminate** A statically indeterminate structure is one where there is more than one distribution of internal forces and/or reactions which satisfies equilibrium. [*struc-1*]
- Static equilibrium** Equilibrium which does not include inertial forces. [*struc-1*]
- Static Friction** Friction at rest; a force is required to initiate relative movement between two bodies - static friction is the force that resists such relative movement. Sometimes referred to as stiction. [*mech-3*]
- Stay time** The period during which personnel may remain in a restricted area in a reactor before accumulating some permissible occupational dose. [*nuclear-1*]
- STD** State Transition Diagram . [*soft*]



- STDWIN** A windowing interface from CWI with windows, menus, modal dialogs, mouse and keyboard input, scroll bars, drawing primitives, etc that is portable between platforms. STDWIN is available for Macintosh and the X Window System . [*soft*]
- Steam generator** The heat exchanger used in some reactor designs to transfer heat from the primary (reactor coolant) system to the secondary (steam) system. This design permits heat exchange with little or no contamination of the secondary system equipment. [*nuclear-1*]
- steel** an iron-based alloy containing manganese, usually carbon, and other alloying elements. [*mat-1*]
- Steeply inclined** - Said of deposits and coal seams with adip of from 0.7 to 1 rad (40 degrees to 60 degrees).[*mining-1*]
- Stemming** - The noncombustible material used on top or in front of a charge or explosive.[*mining-1*]
- Step-Lock Bolt (Slb)** The Step-Lock Bolt (SLB) is a thread form that has been modified to resist vibration loosening. The thread has several horizontal portions (i.e. no lead angle) whose purpose is to prevent torsion being developed in the bolt as a result of the loosening purpose. It is these horizontal portions that are known as steps. Published literature indicates that the thread form performs well when tested on a transverse vibration test machine. However manufacturing difficulties may prevent its widespread adoption. [*mech-3*]
- STEP** Standard for the exchange of product model data: a draft ISO standard for the exchange of CAD data. [*soft*]
- StepStone** Corporation founded by Brad Cox, responsible for Objective-C . [*soft*]
- Stiffness** This is a general term which may be applied to materials or structures. When a force is applied to a structure, there is a displacement in the direction of the force; stiffness is the ratio of the force divided by the displacement. High stiffness means that a large force produces a small displacement. When discussing the stiffness of a material, the concept is the same, except that stress substitutes for force, and strain substitutes for displacement; see modulus of elasticity. [*struc-1*]
- Stiffnut** A term used to describe a lock nut which has a prevailing torque. [*mech-3*]
- STL** Semantic Transfer Language. IEEE 1175: IEEE Trial-Use Standard Reference Model for Computing System Tool Interconnections. [*soft*]
- STL** Standard Template Library for C++ - More information. [*soft*]
- Stochastic effects** Effects that occur by chance, generally occurring without a threshold level of dose, whose probability is proportional to the dose and whose severity is independent of the dose. In the context of radiation protection, the main stochastic effects are cancer and genetic effects. [*nuclear-1*]
- stoichiometry** refers generally to the composition of a material and specifically to the relative atomic proportions of cations and anions. [*mat-1*]
- STONE** A Structured and Open Environment: a project supported by the German Ministry of Research and Technology (BMFT) to design, implement and distribute a SEE for research and teaching. [*soft*]
- StP** Software through Pictures: a set of CASE tools - More information. [*soft*]
- Strain** The intensity of deformation at a point in an object. See normal strain and shear strain. [*struc-1*]
- strain** the unit of change in the size or shape of a body due to force; a dimensionless number that characterizes the change in dimensions of an object during a deformation or flow process. [*mat-1*]
- Strand** A concurrent programming language from Strand Software Technologies Limited. [*soft*]
- Strength** A very general term that may be applied to a material or a structure. In a material, strength refers to a level of stress at which there is a significant change in the state of the material, e.g., yielding or rupture. In a structure, strength refers to a level of level of loading which produces a significant change in the state of the structure, e.g., inelastic deformations, buckling, or collapse. [*struc-1*]
- Strength Grade** See PROPERTY CLASS [*mech-3*]
- Stress Area** The effective cross sectional area of a thread when subjected to a tensile force. It is based upon a diameter which is the mean of the pitch (or effective) and the minor (or root) diameters of the thread. The use of this diameter stems from the work of E. M. Slaughter in the 1930's. He completed carefully controlled tests

- using various sizes of standard threads and compared their strength with machined bars made from the same bar of material. He found that this mean diameter gave results that agreed with the tensile test results to within about 3%. The error on the minor and pitch diameters was about 15%. Tests completed subsequent to these by other investigators have also shown that the stress diameter is a reasonable approximation to a thread's tensile strength. (Reference: 'Tests on Thread Sections Show Exact Strengthening Effect of Threads.' by E. M. Slaughter, Metal Progress, vol 23, March 1933 pp. 18-20) [*mech-3*]
- stress intensity factor** ( $K$ ) a scale factor to define the magnitude of the crack-tip stress field; the functionality depends on the configuration of the cracked component and the manner in which the loads are applied. [*mat-1*]
- stress**  $\omega$ , force per unit area. [*mat-1*]
- Stress resultant** A system of forces which is statically equivalent to a stress distribution over an area. [*struc-1*]
- Stress** The intensity of internal force acting at a point in an object. Stress is measured in units of force per area. See shear stress and normal stress. [*struc-1*]
- Strike** - The direction of the line of intersection of a bed or vein with the horizontal plane. The strike of a bed is the direction of a straight line that connects two points of equal elevation on the bed. [*mining-1*]
- Stripping ratio** The unit amount of overburden that must be removed to gain access to a similar unit amount of coal or mineral material. [*mining-1*]
- Struct** A data type in C corresponding to a record in Ada. [*soft*]
- Structural Bolt** A structural bolt is a heavy hexagon head bolt having a controlled thread length intended for use in structural connections and assembly of such structures as buildings and bridges. The controlled thread length is to enable the thread to stop before the joint ply interface to improve the fastener's direct shear performance. This term is used in civil and structural engineering but is not frequently used in mechanical engineering. [*mech-3*]
- Structural model** An idealization for analysis purposes of a real or conceived structure. A structural model includes boundaries limiting the scope of the analysis. Supports occur at these boundaries, representing things which hold the structure in place. [*struc-1*]
- Structured analysis** One of a number of requirements analysis methods used in software engineering. [*soft*]
- Structured design** One of a number of systematic top-down design techniques used in software engineering, usually after structured analysis. [*soft*]
- Stud** A fastener which is threaded at both ends with an unthreaded shank in between. One end (which often has a thread tolerance which results in more thread interference) is secured into a tapped hole, the other is used with a nut. [*mech-3*]
- Stump** - Any small pillar. [*mining-1*]
- Subbituminous** Coal of a rank intermediate between lignite and bituminous. [*mining-1*]
- Subcriticality** The condition of a nuclear reactor system when the rate of production of fission neutrons is lower than the rate of production in the previous generation owing to increased neutron leakage and poisons. [*nuclear-1*]
- Sublanguage** One of the languages associated with a DBMS, for example data-definition language or query language. [*soft*]
- Subsidence** The gradual sinking, or sometimes abrupt collapse, of the rock and soil layers into an underground mine. Structures and surface features above the subsidence area can be affected. [*mining-1*]
- Sumping** - To force the cutter bar of a machine into or under the coal. Also called a sumping cut, or sumping in. [*mining-1*]
- Sump** - The bottom of a shaft, or any other place in a mine, that is used as a collecting point for drainage water. [*mining-1*]
- SunOS** The version of UNIX running on Sun workstations. [*soft*]
- Sun** Sun Microsystems, a US workstation manufacturer with manufacturing capacity in Europe. [*soft*]
- SunView** A windowing system from Sun Microsystems, superseded by NeWS. [*soft*]
- Superclass** The class from which another class inherits (see Inheritance). [*soft*]
- Supercriticality** The condition for increasing the level of operation of a reactor. The rate of fission neutron production exceeds all neutron losses, and the overall neutron population increases. [*nuclear-1*]

- Supercritical reactor** A reactor in which the power level is increasing with time. [*nuclear-1*]
- Superheating** The heating of a vapor, particularly steam, to a temperature much higher than the boiling point at the existing pressure. This is done in some power plants to improve efficiency and to reduce water damage to the turbine. [*nuclear-1*]
- Support** A support contributes to keeping a structure in place by restraining one or more degrees of freedom. In a structural model, supports represent boundary entities which are not included in the model itself, e.g., foundations, abutments, or the earth itself. For each restrained translation degree of freedom at a support, there is a corresponding reaction force; for each restrained rotation degree of freedom, there is a reaction moment. [*struc-1*]
- Support** - The all-important function of keeping the mineworkings open. As a verb, it refers to this function; as a noun it refers to all the equipment and materials—timber, roof bolts, concrete, steel, etc.—that are used to carry out this function. [*mining-1*]
- Surface force** A force applied to the surface of an object. [*struc-1*]
- surface insulation resistance** the electrical resistance of an insulating material between a pair of contacts or conductors; SIR is determined under specified environmental and electrical conditions. [*mat-1*]
- Surface mine** A mine in which the coal lies near the surface and can be extracted by removing the covering layers of rock and soil. [*mining-1*]
- surface mount technology** method of assembling printed circuit boards where the components are mounted onto the surface of the board rather than being inserted into holes in the board. [*mat-1*]
- Survey meter** Any portable radiation detection instrument especially adapted for inspecting an area or individual to establish the existence and amount of radioactive material present. [*nuclear-1*]
- Suspension** - Weaker strata hanging from stronger, overlying strata by means of roof bolts. [*mining-1*]
- SVID** System V Interface Definition: allowing source code portability between different platforms running UNIX System V. [*soft*]
- SWOT** Strengths, Weaknesses, Opportunities, Threats commercial product analysis. [*soft*]
- Sybase** A relational DBMS vendor. [*soft*]
- Symmetrical Thread** A symmetrical thread is one which has both flanks of the thread profile inclined at the same angle. [*mech-3*]
- Syncline** - A fold in rock in which the strata dip inward from both sides toward the axis. The opposite of anticline. [*mining-1*]
- System of Forces** One or more forces and/or moments acting simultaneously. [*struc-1*]
- System V** One of the two major versions of the UNIX system, due to AT&T. (see BSD). [*soft*]
- TAE Plus** A GUI builder from Century Computing - More information. [*soft*]
- TAFIM** Technical Architecture Framework for Information Management: a DoD standard [*soft*]
- Tailgate** - A subsidiary gate road to a conveyor face as opposed to a main gate. The tailgate commonly acts as the return airway and supplies road to the face. [*mining-1*]
- Tailpiece** - Also known as foot section pulley. The pulley or roller in the tail or foot section of a belt conveyor around which the belt runs. [*mining-1*]
- Tail section** - A term used in both belt and chain conveyor work to designate that portion of the conveyor at the extreme opposite end from the delivery point. In either type of conveyor it consists of a frame and either a sprocket or a drum on which the chain or belt travels, plus such other devices as may be required for adjusting belt or chain tension. [*mining-1*]
- Taligent** A software company set up by Apple, IBM and Hewlett-Packard - More information. [*soft*]
- Taos** An operating system kernel for parallel systems from Tao Systems - More information. [*soft*]
- TAPI** Telephony Application Programming Interface. A CTI standard from Microsoft and Intel. [*soft*]
- Taylor-Forge Method** A method developed by four engineers of the Taylor-Forge Company in Chicago in the 1930's that subsequently formed the basis of the ASME code for flanged joint design. The assumptions made by the method are now generally regarded as too simplistic. This method gives rise to the m and y gasket factors. [*mech-3*]

- TBK** Tool Builder Kit: a product from IPSYS which allows users to develop CASE tools appropriate to any software engineering methodology [*soft*]
- TCA** Trigger, Condition, Action model. [*soft*]
- TC/IX** The LynxOS kernel ported to the MIPS R3000 RISC processor by CDC. [*soft*]
- Tcl/Tk** See Tk . [*soft*]
- Tcl** Tool command language. A command language and associated library package running on a number of platforms [*soft*]
- TCP/IP** A reliable connection-oriented protocol originated by DARPA for internetworking, encompassing both network and transport level protocols. While the terms TCP and IP specify two protocols, TCP/IP is often used to refer to the entire DoD protocol suite based upon these, including Telnet , UDP . [*soft*]
- Teamwork** A SASD tool from CADRE Technologies. [*soft*]
- Tecate** A software system for exploratory visualization of data from networked sources including WWW - More information. [*soft*]
- Technical Ceramic** a ceramic that exhibits a high degree of industrial efficiency through carefully designed microstructures and superb dimensional precision.[*mech-1*]
- Technical Specifications** Part of an NRC license authorizing the operation of a nuclear production or utilization facility. A Technical Specification establishes requirements for items such as safety limits, limiting safety system settings, limiting control settings, limiting conditions for operation, surveillance requirements, design features, and administrative controls. (See also Standard Technical Specifications.) [*nuclear-1*]
- TEI** Text Encoding Initiative. Defines a common interchange format for literary and linguistic data [*soft*]
- TELEPAC** The Swiss PTT X.25 Network. [*soft*]
- TeleUSE** An interface builder for Motif . [*soft*]
- Telnet** The Internet standard protocol for remote terminal connection service, running over TCP/IP . Telnet allows a user to log onto a remote host computer. [*soft*]
- TELOS** The object system of LeLisp Version 16 and EULISP. [*soft*]
- Template code** Pseudocode generated by an automated CASE system and requiring further hand-coding before compilation. [*soft*]
- Tension** - The act of stretching.[*mining-1*]
- Tension Washers** A general name given to spring washers, curved washers, Belleville washers and disc springs. This type of washer provides a relatively low stiffness (compared to the joint stiffness) and can be used to act as a spring take-up with a bolt to prevent movement between parts. [*mech-3*]
- Terrestrial radiation** The portion of the natural background radiation that is emitted by naturally occurring radioactive materials, such as uranium, thorium, and radon in the earth. [*nuclear-1*]
- Tertiary** - Lateral or panel openings (e.g., ramp,crosscut).[*mining-1*]
- TestCenter** A testing environment for C and C++ programs from CenterLine Software - More information. [*soft*]
- Testing** The process of exercising a product to identify differences between expected and actual results and performance. Typically testing is bottom-up: unit test, integrate test and finally system test - More information. [*soft*]
- TET** Test Environment Toolkit project coordinated by X/Open [*soft*]
- TeX** A computer typesetting program by D.E.Knuth popular for document preparation in the HEP community. It provides specific markup for text processing - More information. . [*soft*]
- Texel** An object-oriented methodology (see "Object Oriented Methods" by Ian Graham). [*soft*]
- Thermal breeder reactor** A breeder reactor in which the fission chain reaction is sustained by thermal neutrons. [*nuclear-1*]
- thermal expansion** change in dimensions of a material resulting from a change in temperature. [*mat-1*]
- Thermalization** The process undergone by high-energy (fast) neutrons as they lose energy by collision. [*nuclear-1*]
- Thermal power** The total core heat transfer rate to the reactor coolant. [*nuclear-1*]
- Thermal reactor** A reactor in which the fission chain reaction is sustained primarily by thermal neutrons. Most current reactors are thermal reactors. [*nuclear-1*]



- Thermal shield** A layer, or layers, of high-density material located within a reactor pressure vessel or between the vessel and the biological shield to reduce radiation heating in the vessel and the biological shield. [*nuclear-1*]
- thermal shock** stresses induced in a material because of a rapid temperature change or a thermal gradient. [*mat-1*]
- Thermoluminescent dosimeter** A small device used to measure radiation by measuring the amount of visible light emitted from a crystal in the detector when exposed to ionizing radiation. [*nuclear-1*]
- Thermonuclear** An adjective referring to the process in which very high temperatures are used to bring about the fusion of light nuclei, such as those of the hydrogen isotopes deuterium and tritium, with the accompanying liberation of energy. [*nuclear-1*]
- Think C** An extension of ANSIC for the Macintosh by Symantec Corporation, similar to C++ , to support object-oriented programming techniques. [*soft*]
- Thread Crest** The top part of the thread. For external threads, the crest is the region of the thread which is on it's outer surface, for internal threads it is the region which forms the inner diameter. [*mech-3*]
- Thread Flank** The thread flanks join the thread roots to the crest. [*mech-3*]
- Thread Height** This is the distance between the minor and major diameters of the thread measured radially. [*mech-3*]
- Thread Length** Length the portion of the fastener with threads. [*mech-3*]
- Threadlocker** Can be a term used for a number of vibration resistant products but is now usually reserved for threadlocking adhesives. Specifically, a liquid anaerobic adhesive applied to nut or bolt thread, once hardened it fills the inner spaces between the threads to produce a solid plastic of a known shear strength. [*mech-3*]
- Thread Root** The thread root is the bottom of the thread, on external threads the roots are usually rounded so that fatigue performance is improved. [*mech-3*]
- Thread Runout** The portion at the end of a threaded shank which is not cut or rolled to full depth, but which provides a transition between full depth threads and the fastener shank or head. [*mech-3*]
- Through-steel** - A system of dust collection from rock or roof drilling. The drill steel is hollow, and a vacuum is applied at the base, pulling the dust through the steel and into a receptacle on the machine. [*mining-1*]
- TickIT** A software industry quality assessment scheme [*soft*]
- TIFF** Tag Image File Format from Aldus [*soft*]
- Timber** - A collective term for underground wood supports. [*mining-1*]
- Timbering** - The setting of timber supports in mine workings or shafts for protection against falls from roof, face, or rib. [*mining-1*]
- Timber set** - A timber frame to support the roof, sides, and sometimes the floor of mine roadways or shafts. [*mining-1*]
- Tin/Zinc Alloy Electroplating** Tin/zinc alloy coatings (typically 70% tin and 30% zinc) are applied to threaded fasteners to provide a corrosion resistant coating. One of the advantages of such coatings is that bimetallic corrosion will not occur when placed into contact with such metals as aluminium or steel. [*mech-3*]
- Tipple** - Originally the place where the mine cars were tipped and emptied of their coal, and still used in that same sense, although now more generally applied to the surface structures of a mine, including the preparation plant and loading tracks. [*mining-1*]
- Tk** An extension to Tcl providing an interface to the X windows . [*soft*]
- TLA** Three Letter Acronym. [*soft*]
- Token** A basic, grammatically indivisible unit of a language. [*soft*]
- Token ring** A computer network arbitration scheme in which conflicts in the transmission of messages are avoided by the granting of "tokens" which give permission to send. A station keeps the token while transmitting a message, if it has a message to transmit, and then passes it on to the next station. [*soft*]
- Tolerance Class** A combination of tolerance grade and a fundamental deviation which is given to an internal or external thread. A tolerance class for an internal thread when combined with the tolerance class for an external thread gives the class of fit for the mating threads. [*mech-3*]
- Tolerance Grade** The difference between maximum and minimum metal conditions for a tolerance applied to a screw thread. For metric

- threads the tolerance grade is given a number. [*mech-3*]
- Ton** A short or net ton is equal to 2,000 pounds; a long or British ton is 2,240 pounds; a metric ton is approximately 2,205 pounds. [*mining-1*]
- Toolbuilder** see TBK [*soft*]
- Top** - A mine roof; same as "back." [*mining-1*]
- TOP** Technical/Office Protocol: a protocol stack for office automation developed by Boeing following the OSI model. This protocol is very similar to MAP except at the lowest levels, where it uses Ethernet (IEEE 802.3) rather than Token Bus (IEEE 802.4). [*soft*]
- Torque Multiplier** A gearbox used to increase the torque produced by a small hand wrench. [*mech-3*]
- Torque Wrench** A manual wrench which incorporates a gauge or other method to indicate the amount of torque transferred to the nut or bolt. [*mech-3*]
- Torque wrench** - A wrench that indicates, as on a dial, the amount of torque (in units of foot-pounds) exerted in tightening a roof bolt. [*mining-1*]
- toughness** a measure of the energy absorbed before and during the fracture process; it is equal to the area under the tensile stress-strain curve. [*mat-1*]
- Tractor** - A battery-operated piece of equipment that pull trailers, skids, or personnel carriers. Also used for supplies. [*mining-1*]
- Tram** - Used in connection with moving self-propelled mining equipment. A tramping motor may refer to an electric locomotive used for hauling loaded trips or it may refer to the motor in a cutting machine that supplies the power for moving or tramping the machine. [*mining-1*]
- Transaction** A unit of interaction with a DBMS or similar system. It must be treated in a coherent and reliable way independent of other transactions. [*soft*]
- Transfer** - A vertical or inclined connection between two or more levels and used as an ore pass. [*mining-1*]
- Transfer point** - Location in the materials handling system, either haulage or hoisting, where bulk material is transferred between conveyances. [*mining-1*]
- transgranular** through or across crystals or grains; also called intracrystalline or transcrySTALLINE. [*mat-1*]
- Transient** A change in the reactor coolant system temperature and/or pressure due to a change in power output of the reactor. Transients can be caused (1) by adding or removing neutron poisons, (2) by that is increasing or decreasing electrical load on the turbine generator, or (3) by accident conditions. [*nuclear-1*]
- transition metal** a metal having available electron energy levels occupied so that the *d*-band contains less than its maximum number of ten electrons per atom; the incompletely filled *d*-levels cause the unique properties of the transition metals; included in this class are iron, cobalt, nickel, and tungsten. [*mat-1*]
- transition temperature** an arbitrarily defined temperature that lies within the temperature range where metal fracture characteristics change rapidly; an example is the ductile-to-brittle transition temperature (DBTT). [*mat-1*]
- Translation** Motion of an object where the path of every point is a straight line. [*struc-1*]
- Transmissibility** The principle stating that a force has the same external effect on an object regardless of where it acts along its line of action. [*struc-1*]
- Transputer** A family of microprocessors from Inmos with interprocessor links, programmable in Occam. [*soft*]
- Transuranic element** An artificially made, radioactive element that has an atomic number higher than uranium in the periodic table of elements such as neptunium, plutonium, americium, and others. [*nuclear-1*]
- Transuranic waste** Material contaminated with transuranic elements that is produced primarily from reprocessing spent fuel and from use of plutonium in fabrication of nuclear weapons. [*nuclear-1*]
- Trellis** An object-oriented application development system from DEC, based on the Trellis language. [*soft*]
- tribology** the science and technology of interacting surfaces in relative motion and of the practices related thereto; the science concerned with the design, friction, lubrication, and wear of contacting surfaces that move relative to one another (e.g. bearings, cams, gears). [*mat-1*]
- triclinic** having three axes of any length with none of the included angles being equal to one another or 90 degrees. [*mat-1*]
- Trip** - A train of mine cars. [*mining-1*]

**Trip, reactor** A term that is used by pressurized water reactors for a reactor scram (see Scram). [*nuclear-1*]

**Tritium** A radioactive isotope of hydrogen (one proton, two neutrons). Because it is chemically identical to natural hydrogen, tritium can easily be taken into the body by any ingestion path. It decays by beta emission. It has a radioactive half-life of about 12.5 years. [*nuclear-1*]

**Troughing idlers** - The idlers, located on the upperframework of a belt conveyor, which support the loaded belt. They are so mounted that the loaded belt forms a trough in the direction of travel, which reduces spillage and increases the carrying capacity of a belt for a given width. [*mining-1*]

**true strain** the ratio of the change in dimension, resulting from a given load, to the magnitude of the dimension immediately prior to applying the load; the natural logarithm of the ratio of the gage length at the moment of observation to the original gage length. [*mat-1*]

**true stress** the load applied to a material divided by the cross sectional area over which it acts. [*mat-1*]

**TRUSIX** TRUSTed unIX operating system. [*soft*]

**TSAPI** Telephony Services Application Programming Interface. A CTI standard from Novell and AT&T. [*soft*]

**TSEE** Technical and Engineering Environment: part of the RTEE toolset. [*soft*]

**TULIP** The University Licensing Program. A cooperative research project for networked delivery and use of journals, by Elsevier Science and nine US Universities. [*soft*]

**Tunes** A project to design a new computing environment at all levels of software [*soft*]

**Tunnel** - A horizontal, or near-horizontal, underground passage, entry, or haulageway, that is open to the surface at both ends. A tunnel (as opposed to an adit) must pass completely through a hill or mountain. [*mining-1*]

**Turbine** A rotary engine made with a series of curved vanes on a rotating shaft, usually turned by water or steam. Turbines are considered the most economical means to turn large electrical generators. [*nuclear-1*]

**Turbine generator (TG)** A steam (or water) turbine directly coupled to an electrical generator. The two devices are often referred to as one unit. [*nuclear-1*]

**Turn Of The Nut Method** See ANGLE CONTROLLED TIGHTENING [*mech-3*]

**twin bands** bands across a crystal grain where crystallographic orientations have a mirror image relationship to the orientation of the matrix grain across a composition plane usually parallel to the sides of the band. [*mat-1*]

**twin** two portions of a crystal with a definite orientation relationship; the orientation of one portion is a mirror image of the orientation of the other portion across a twinning plane or an orientation derived by rotating one portion about a twinning axis. [*mat-1*]

**TXL** A hybrid functional and rule-based language for source transformation applications from Queen's Univ. Canada. [*soft*]

## UVW

**UAA** Unified Agent Architecture. [*soft*]

**U Bolt** A U shaped fastener threaded at both ends used primarily in suspension and related areas of vehicles. [*mech-3*]

**UCS** Universal Character Set (Universal Multiple-Octet Coded Character Set) of ISO 10646. [*soft*]

**UDP** User Datagram Protocol: the Internet standard protocol for sending datagrams between user programs. This protocol neither guarantees delivery nor does it require a connection. As a result it is lightweight and efficient, but all error processing and retransmission must be taken care of by the application program. This protocol is built on top of IP and uses IP for datagram delivery (see TCP/IP). [*soft*]

**UIL** User Interface Language: in OSF /Motif, a language for specifying widget hierarchies etc. [*soft*]

**UIMS** User Interface Management System: a system supporting the development and execution of user interfaces, usually on top of windowing systems. [*soft*]

**UIMX** An interface builder for Motif from Visual Edge. [*soft*]

**UIS** A VMS graphics programming interface package for VAXstations. [*soft*]

**UI UNIX International:** a consortium including Sun and AT&T, promoting an open environment base on UNIX System V including the Open Look windowing system. [*soft*]

**Ultimate analysis** - Precise determination, by chemical means, of the elements and compounds in coal. [*mining-1*]

**Ultimate Tensile Strength** [*mech-1*]

**Ultrasonic Extensometer** An instrument which can measure the change in length of a fastener ultrasonically as the fastener is tightened (or measure the length before and after it is tightened). [*mech-3*]

**Ultraviolet** Electromagnetic radiation of a wavelength between the shortest visible violet and low energy x-rays. [*nuclear-1*]

**Ultrix** A version of UNIX based on the Berkeley version, designed and implemented by DEC to run on their VAX and DECstation series of processors. [*soft*]

**Uncertainty range** Defines an interval within which a numerical result is expected to lie within a specified level of confidence. The interval often used is the 5-95 percentile of the distribution reporting the uncertainty. [*nuclear-1*]

**under-cooling** cooling a material below the temperature of an equilibrium phase change fast enough to not allow the occurrence of the transformation. [*mat-1*]

**Undercut** - To cut below or undermine the coal face by chipping away the coal by pick or mining machine. In some localities the terms "undermine" or "underhole" are used. [*mining-1*]

**Underground mine** Also known as a "deep" mine. Usually located several hundred feet below the earth's surface, an underground mine's coal is removed mechanically and transferred by shuttle car or conveyor to the surface. [*mining-1*]

**Underground station** - An enlargement of an entry, drift, or level at a shaft at which cages stop to receive and discharge cars, personnel, and material. An underground station is any location where stationary electrical equipment is installed. This includes pump rooms, compressor rooms, hoist rooms, battery-charging rooms, etc. [*mining-1*]

**UNI Ente Nazionale Italiano di Unificazione:** the Italian national standards body, a member of ISO. [*soft*]

**Unit Cell** the basic structural unit of a crystal structure. [*mech-1*]

**unit cell** the smallest repetitive volume that comprises the complete pattern of a crystal. [*mat-1*]

**Unit train** A long train of between 60 and 150 or more hopper cars, carrying only coal between a single mine and destination. [*mining-1*]

**Universal coal cutter** - A type of coal cutting machine which is designed to make horizontal cuts in a coal face at any point between the bottom and top or to make shearing cuts at any point between the two ribs of the place. The cutter bar can be twisted to make cuts at any angle to the horizontal or vertical. [*mining-1*]

**UNIX** Computer operating system developed by Bell Labs. Since it was written in C, it was possible to port it to run on different hardware architectures. It is now offered by many manufacturers and is the subject of an international standardisation effort. See also OSF [*soft*]

**UNIX International** A consortium of AT&T and others formed to advise on the development of UNIX. [*soft*]

**Unnecessary regulatory burden** Regulatory criteria that go beyond the levels that would be reasonably expected to be imposed on licensees given that regulations apply to conditions that incorporate normal operation and design-basis conditions. [*nuclear-1*]

**UNO** Universal Network Objects. [*soft*]

**Unrestricted area** The area outside the owner-controlled portion of a nuclear facility (usually the site boundary). An area in which a person could not be exposed to radiation levels in excess of 2 millirems in any one hour from external sources. [*nuclear-1*]

**Unstable isotope** A radioactive isotope (see also stable isotope). [*nuclear-1*]

**Upcast shaft** - A shaft through which air leaves the mine. [*mining-1*]

**Uranium** A radioactive element with the atomic number 92 and, as found in natural ores, an atomic weight of approximately 238. The two principal natural isotopes are uranium-235 (0.7 percent of natural uranium), which is fissile, and uranium-238 (99.3 percent of natural uranium), which is fissionable by fast neutrons and is fertile. Natural uranium also includes a minute amount of uranium-234. [*nuclear-1*]



- Uranium fuel fabrication facility** A facility that (1) manufactures reactor fuel containing uranium for any of the following: (i) preparation of fuel materials; (ii) formation of fuel materials into desired shapes; (iii) application of protective cladding; (iv) recovery of scrap material; and (v) storage associated with such operations; or (2) conducts research and development activities. [*nuclear-1*]
- Uranium hexafluoride production facility** A facility that receives natural uranium in the form of ore concentrate, processes the concentrate, and converts it into uranium hexafluoride (UF<sub>6</sub>). [*nuclear-1*]
- URC** Uniform (previously Universal) Resource Characteristic (Citation) - More information. [*soft*]
- URI** Uniform (previously Universal) Resource Identifier - More information. [*soft*]
- URL** Uniform (previously Universal) Resource Locator [*soft*]
- URN** Uniform (previously Universal) Resource Name [*soft*]
- Usenet** The practice of using computer networks to exchange items of information grouped into "newsgroups" by topic. This is supported by a number of diverse and informally applied mechanisms and conventions [*soft*]
- USENIX** The UNIX and Advanced Computing Systems Professional and Technical Association [*soft*]
- USL** UNIX System Laboratories: the software subsidiary of AT&T, responsible for UNIX System V and related software. [*soft*]
- USMARC** See MARC . [*soft*]
- UTF** UCS Transformation Format of ISO 10646. [*soft*]
- UTF** Universal Text Format, an SGML standard for the news distribution industry [*soft*]
- UUCP** The large international network of UNIX machines using the UUCP protocol to exchange news and electronic mail. . [*soft*]
- Vacancy** a normally occupied lattice site from which an atom or ion is missing. [*mech-1*]
- vacancy** an unfilled lattice site in a crystal structure. [*mat-1*]
- valence** the charge on an ion based on the number of electrons transferred or shared within a specific structure. [*mat-1*]
- Validation** The process of evaluating software at the end of the development process to ensure compliance with software requirements. [*soft*]
- Valuation** - The act or process of valuing or of estimating the value or worth; appraisal. [*mining-1*]
- van der Waals Bond** a secondary interatomic bond between adjacent molecular dipoles, which may be permanent or induced. [*mech-1*]
- Vapor** The gaseous form of substances that are normally in liquid or solid form. [*nuclear-1*]
- V** A testbed for distributed system research . [*soft*]
- VAX** A range of 32-bit computers manufactured by DEC. [*soft*]
- VAX DOCUMENT** A document preparation system from DEC. [*soft*]
- VAXset** A set of software development tools from DEC, including a language-sensitive editor, compilers etc. [*soft*]
- VAXstation** A family of workstations from DEC based on their VAX computer architecture. [*soft*]
- VAX/VMS** see VMS . [*soft*]
- VB** Visual Basic [*soft*]
- VDL** Vienna Definition Language: an algebraic definition language, see VDM . [*soft*]
- VDM** Vienna Definition Method: a program development method based on formal specification using the Meta-IV language [*soft*]
- VDM** Virtual Device Metafile. [*soft*]
- Vector** A mathematical entity having a magnitude and a direction in space. [*struc-1*]
- VEE** see HP VEE . [*soft*]
- Velocity** A vector quantity equal to the rate that position changes with time. [*struc-1*]
- Velocity** - Rate of airflow in lineal feet per minute. [*mining-1*]
- Ventilation** - The provision of a directed flow of fresh and return air along all underground roadways, traveling roads, workings, and service parts. [*mining-1*]
- Verification** The process of determining whether or not the products of a given phase in the life-cycle fulfill a set of established requirements. [*soft*]
- Verilog** A Hardware Description Language for electronic design and gate level simulation. [*soft*]

- Verilog SA** A French real-time software engineering company. [*soft*]
- Version** A variant of the original value of an object. See change management [*soft*]
- Very high radiation area** An area accessible to individuals, in which radiation levels exceed 500 rad (5 gray) in one hour at 1 meter from the source or from any surface that the radiation penetrates. [*nuclear-1*]
- VHDL** Very High Speed Integrated Circuit Description Language: a high-level VLSI design language, now standardised as IEEE Std.1076 - More information. [*soft*]
- VHE** Virtual Home Environment: a tool for using NFS on HP UX . [*soft*]
- Viability assessment** A Department of Energy decisionmaking process to judge the prospects for geologic disposal of high-level radioactive wastes at Yucca Mountain based on (1) specific design work on the critical elements of the repository and waste package, (2) a total system performance assessment that will describe the probable behavior of the repository, (3) a plan and cost estimate for the work required to complete a license application, and (4) an estimate of the costs to construct and operate the repository. [*nuclear-1*]
- VIFF** Visualization Image File Format [*soft*]
- Viola** An experimental hypercard -like interpreted hypertext system by Pei Y. Wei of Berkeley. [*soft*]
- Violation** - The breaking of any state or federal mininglaw.[*mining-1*]
- VIPA** VMEbus International Physics Association. [*soft*]
- VIP** Virtual Internet Protocol - More information. [*soft*]
- virgin** a metal made directly from ore by smelting. [*mat-1*]
- Virgin** - Unworked; untouched; often said of areas where there has been no coal mining.[*mining-1*]
- Virtual Effective Diameter** The effective diameter of a thread but allowing for errors in pitch and flank angles. [*mech-3*]
- Viscoelasticity** a type of deformation exhibiting the mechanical characteristics of viscous flow and elastic deformation.[*mech-1*]
- viscosity** coefficient of resistance to flow. [*mat-1*]
- Viscosity** the ratio of the magnitude of an applied shear stress to the velocity gradient that it produces.[*mech-1*]
- Visual Basic** A programming language and development environment for Windows - More information. [*soft*]
- Visualisation** A method by which a computer system presents data to the user - More information. [*soft*]
- Visualization** A method by which a computer system presents data to the user - More information. [*soft*]
- VITAL** VHDL Initiative Towards ASIC Libraries [*soft*]
- VITA** VMEbus International Trade Association. [*soft*]
- VLIW** Very Long Instruction Word. [*soft*]
- VLSI** Very Large Scale Integration. Refers to semiconductor chips composed of very many tightly packed logic elements or memories - More information. [*soft*]
- VM/CMS** Virtual Machine / Conversational Monitor System: an IBM operating system running on 43xx and 30xx series machines, providing efficient support for large numbers of interactive users. [*soft*]
- VMEbus** A widely accepted backplane interconnection bus system developed by a consortium of companies led by Motorola, now standardized as IEEE Std. 1014. [*soft*]
- VME** Common abbreviation for VMEbus . [*soft*]
- VM** see VM/CMS . [*soft*]
- VMS** The operating system offered by DEC as the standard system for their VAX range of processors. [*soft*]
- Void** - A general term for pore space or other openings in rock. In addition to pore space, the term includes vesicles, solution cavities, or any openings either primary or secondary. [*mining-1*]
- Void coefficient of reactivity** A rate of change in the reactivity of a water reactor system resulting from a formation of steam bubbles as the power level and temperature increase. [*nuclear-1*]
- Void** In a nuclear power reactor, an area of lower density in a moderating system (such as steam bubbles in water) that allows more neutron leakage than does the more dense material around it. [*nuclear-1*]

- Volatile matter** - The gaseous part, mostly hydrocarbons, of coal. [*mining-1*]
- VPN** Virtual Private Network. A computer network that appears to be a dedicated network to a particular set of users, whilst in fact using the infrastructure of public switched networks. [*soft*]
- VRML** Virtual Reality Modeling Language [*soft*]
- VRTX** Virtual Real-Time Executive: a real-time operating system from ReadySystems for the Motorola 68000 family of microprocessors. [*soft*]
- VSF** Virtual Software Factory: a product from Systematica which allows users to develop CASE tools appropriate to any software engineering methodology. [*soft*]
- VSX** Verification Suite for X/open [*soft*]
- VTS** A suite of test programs for Motif from OSF. [*soft*]
- VUE** Visual User Environment: a desktop manager from Hewlett-Packard. [*soft*]
- VUIT** Visual User Interface Tool: a WYSIWYG editor from DEC for building human interfaces to applications using OSF. It provides an interactive interface to UIL and the Motif toolkit. [*soft*]
- Vulcanization** nonreversible chemical reaction involving sulfur or other suitable agent wherein cross-links are formed between molecular chains in rubber materials. [*mech-1*]
- VxWorks** A real-time software development environment and multitasking operating system from Wind River Systems that uses the VRTX kernel. [*soft*]
- W3C** The World Wide Web Consortium [*soft*]
- W3** See WWW. [*soft*]
- WABI** A software package to emulate Windows under X [*soft*]
- Waisted Shank Bolt** A bolt whose diameter is less than the minor diameter of the thread. Frequently the shank of the bolt is 0.9 times the root diameter. [*mech-3*]
- WAIS** Wide Area Information Servers: a distributed document retrieval system supported by Apple, Thinking Machines and Dow Jones. Servers answer questions from personal workstations following a standard protocol [*soft*]
- WAN** Wide Area Network. [*soft*]
- Warehouse** See Data Warehouse. [*soft*]
- WARIA** Workflow And Reengineering International Association [*soft*]
- Wasserman** A.I.(Tony) Wasserman: president of IDE. [*soft*]
- Waste, radioactive** Radioactive materials at the end of a useful life cycle or in a product that is no longer useful and should be properly disposed of. [*nuclear-1*]
- Waste** - That rock or mineral which must be removed from mine to keep the mining scheme practical, but which has no value. [*mining-1*]
- Waterfall** A software life-cycle model showing the phases of the cycle and their interrelations on a characteristic diagram. [*soft*]
- Water Gauge (standard U-tube)** - Instrument that measures differential pressures in inches of water. [*mining-1*]
- Watt** An electrical unit of power. 1 watt = 1 Joule/second. It is equal to the power in a circuit in which a current of one ampere flows across a potential difference of one volt. [*nuclear-1*]
- Watt-hour** An electrical energy unit of measure equal to 1 watt of power supplied to, or taken from, an electrical circuit steadily for 1 hour. [*nuclear-1*]
- WE** A hypertext authoring system developed at the University of North Carolina. [*soft*]
- WEB** See Literate Programming and also World-Wide Web [*soft*]
- Web** See WWW. [*soft*]
- Wedge** - A piece of wood tapering to a thin edge and used for tightening in conventional timbering. [*mining-1*]
- Weight** - Fracturing and lowering of the roof strata at the face as a result of mining operations, as in "taking weight". [*mining-1*]
- Weighting factor (WT)** Multipliers of the equivalent dose to an organ or tissue used for radiation protection purposes to account for different sensitivities of different organs and tissues to the induction of stochastic effects of radiation. [*nuclear-1*]
- Weight** The force on an object resulting from gravity. [*struc-1*]
- welding** the joining of two metal surfaces that have been heated, melted, and fused together. [*mat-1*]

- Well-logging** All operations involving the lowering and raising of measuring devices or tools that contain licensed material or are used to detect licensed materials in wells for the purpose of obtaining information about the well or adjacent formations that may be used in oil, gas, mineral, groundwater, or geological exploration. [*nuclear-1*]
- Westmount** A Netherlands software engineering vendor of RTEE and other products. [*soft*]
- WFMS** WorkFlow Management System. Software to manage workflow in an organisation. [*soft*]
- Wheeling service** The movement of electricity from one system to another over transmission facilities of intervening systems. Wheeling service contracts can be established between two or more systems. [*nuclear-1*]
- Whetstone** A benchmark program. [*soft*]
- White damp** - Carbon monoxide, CO. A gas that may be present in the afterdamp of a gas- or coal-dust explosion, or in the gases given off by a mine fire; also one of the constituents of the gases produced by blasting. Rarely found in mines under other circumstances. It is absorbed by the hemoglobin of the blood to the exclusion of oxygen. One-tenth of 1
- Whole-body counter** A device used to identify and measure the radioactive material in the body of human beings and animals. It uses heavy shielding to keep out naturally existing background radiation and ultrasensitive radiation detectors and electronic counting equipment. [*nuclear-1*]
- Whole-body exposure** Whole body exposure includes at least the external exposure, head, trunk, arms above the elbow, or legs above the knee. Where a radioisotope is uniformly distributed throughout the body tissues, rather than being concentrated in certain parts, the irradiation can be considered as whole-body exposure. [*nuclear-1*]
- Widget** In the X Window System, a window with its associated input and output functions. Widgets, provided by a library package, are used as building blocks to construct a wide variety of application environments [*soft*]
- Width** - The thickness of a lode measured at right angles to the dip. [*mining-1*]
- Willow** A Motif-based user interface program for bibliographic information retrieval systems, from Washington University [*soft*]
- WIMP** Windows, Icons, Menus and Pointers (or maybe Windows, Icons, Mouse, Pull-down menus). The style of user interface made popular by the Apple Macintosh and now available in other GUIs, such as OSF and NeWS. [*soft*]
- Windowing** The ability to interact at will with several processes in a computer through reserved areas, or windows, on a VDU screen. [*soft*]
- Window manager** In a window system, a program which manages windows on a screen. It is responsible for moving and resizing windows, and other practical functions. [*soft*]
- Windows 4GL** INGRES/Windows 4GL is a graphical tool running on top of workstation native windowing systems, to help developers to build user interfaces to INGRES applications. [*soft*]
- Windows** A window system and user interface software from Microsoft for MS-DOS. [*soft*]
- Window system** Software which supports windowing. Examples are the X Window System, and proprietary systems on the Macintosh, NeXT and Sun. [*soft*]
- Winning** - The excavation, loading, and removal of coal ore from the ground; winning follows development. [*mining-1*]
- Winze** - Secondary or tertiary vertical or near-vertical opening sunk from a point inside a mine for the purpose of connecting with a lower level or of exploring the ground for a limited depth below a level. [*mining-1*]
- Wipe sample** A sample made for the purpose of determining the presence of removable radioactive contamination on a surface. It is done by wiping, with slight pressure, a piece of soft filter paper over a representative type of surface area. It is also known as a "swipe" or "smear" sample. [*nuclear-1*]
- Wire rope** - A steel wire rope used for winding in shafts and underground haulages. Wire ropes are made from medium carbon steels. Various constructions of wire rope are designated by the number of strands in the rope and the number of wires in each strand. The following are some common terms encountered: airplane strand; cable laid rope; cane rope; elevator rope; extra-flexible hoisting rope; flat rope; flattened-strand rope; guy rope; guy strand; hand rope; haulage rope; hawser; hoisting rope; lang lay rope; lay; left lay rope; left twist; nonspinning rope; regular lay; reverse-laid rope; rheostat rope; right lay; right twist; running rope; special flexible hoisting rope; standing rope; towing hawser; transmission rope. [*mining-1*]



**Wire Thread Insert** A threaded insert that is typically used for tapped hole repair or to improve the thread stripping strength of softer metals such as zinc and aluminium. The inserts are assembled into a previously tapped hole using a special driving tool. A thread locking compound is frequently used to secure the insert if the assembly is subject to vibration. [*mech-3*]

**WISE** Web-Integrated Software metrics Environment. A WWW based software management and metrics system from NASA [*soft*]

**WISE** World Wide Information System for Support of R&D Efforts. A project funded by the Commission of the European Communities to encourage "Transborder Telework and Research Co-operation" [*soft*]

**WIT** WWW Interactive Talk [*soft*]

**WizDOM** Software for distributed UNIX system management from TIVOLI Systems of Austin, Texas [*soft*]

**Word** A document processing program from Microsoft. [*soft*]

**work angle** in arc welding, the angle between the electrode and one of the joints. [*mat-1*]

**Workflow** The way in which work units (information or actions) are routed through an organisation. It can be formalised in terms of rules incorporating dependencies, staff roles etc. and hence automated - More information. [*soft*]

**work hardening (strain hardening)** increase dislocation density in metals through straining a material with an applied stress; degree of hardening may be manipulated through recovery and recrystallization. [*mat-1*]

**Working face** - Any place in a mine where material is extracted during a mining cycle. [*mining-1*]

**Working place** - From the outby side of the last open crosscut to the face. [*mining-1*]

**Working section** - From the faces to the point where coal is loaded onto belts or rail cars to begin its trip to the outside. [*mining-1*]

**Workings** - The entire system of openings in a mine for the purpose of exploitation. [*mining-1*]

**Working** - When a coal seam is being squeezed by pressure from roof and floor, it emits creaking noises and is said to be "working". This often serves as a warning to the miners that additional support is needed. [*mining-1*]

**Workstation** A general-purpose computer designed to be used by one person at a time and which offers higher performance than normally found in a PC, especially with respect to graphics, processing power and the ability to carry out several tasks at the same time. [*soft*]

**WOSC** World Organisation of Systemics and Cybernetics. [*soft*]

**wrought alloy** an alloy that is suitable for mechanical forming below melting-point temperatures. [*mat-1*]

**wrought iron** commercial iron that contains less than 0.3% carbon and 1.0 or 2.0% slag, giving it ductility and toughness. [*mat-1*]

**WSL** Wide Spectrum Language developed for program transformation - More information. [*soft*]

**WSRD** Worldwide Software Resources Discovery. An ASSET service. [*soft*]

**WWW** World-Wide Web: a project originated at CERN, aimed at providing hypertext-style access to information from a wide range of sources [*soft*]

**WYSIWYG** What You See Is What You Get: a feature of document preparation systems allowing the user to work on a document displayed on a screen in exactly the same form as it will appear when printed. [*soft*]

## XYZ

**X11R4** Version 11 release 4 of the X protocol; the current standard. [*soft*]

**X11R5** Version 11 release 5 of the X protocol; the new standard. [*soft*]

**X.25** A standard networking protocol suite approved by the CCITT and ISO. This protocol suite defines standard physical, link, and networking layers (layers 1 through 3). X.25 networks are in use throughout the world. [*soft*]

**X3J16** The C++ standard technical committee. [*soft*]

**X.400** The set of CCITT communications standards covering mail services provided by data networks. [*soft*]

**X.500** The set of CCITT standards covering electronic mail directory services. [*soft*]

**X** An abbreviation for the X Window System. [*soft*]

- Xanadu** An electronic publishing project due to Ted Nelson, the inventor of the term hypertext [soft]
- Xaw** The Athena Set: a set of widgets distributed with the X Window System . [soft]
- X client** An application process in the X Window System : it gains access to windowing services via the Xlib library. These are translated by the system into messages to an X server . [soft]
- X Consortium** A vendor consortium supporting development of the X Window System [soft]
- X-designer** A user interface builder for Motif from Imperial Software Technology. [soft]
- X.desktop** A desktop manager for UNIX from IXI. [soft]
- XDR** eXternal Data Representation - universal machine independent form of data sent by RPC systems. Described in RFC 1014. [soft]
- XENIX** UNIX . [soft]
- Xerox PARC** The Palo Alto Research Center of the Xerox Corporation [soft]
- Xerox** The Document Company [soft]
- XIE** X Image Extension: extensions to the X protocol to handle images. [soft]
- Xlib** X library: program interface to the X Window System . [soft]
- XML** Xperimental Markup Language based on CML . [soft]
- xmosaic** See Mosaic [soft]
- XMP** The X/Open Management Protocols. [soft]
- XNS** Xerox Network Services: a proprietary networking architecture developed by Xerox. [soft]
- XOM** The X/Open Abstract Data Manipulation API . [soft]
- X/Open** An international consortium of vendors whose purpose is to define the X/Open Common Applications Environment designed to provide applications portability [soft]
- Xopen** See X/Open [soft]
- XPG3** Version 3 of XPG . [soft]
- XPG** X/open Portability Guide: defines the interfaces of the X/Open Common Applications Environment. [soft]
- X protocol** A standard used by clients (applications) and servers in the X Window System for exchanging requests for window manipulations. [soft]
- X-radiation** electromagnetic radiation of the same nature as visible light, but having a wavelength approximately one thousandth that of visible light. [mat-1]
- X-rays** Penetrating electromagnetic radiation (photon) having a wavelength that is much shorter than that of visible light. These rays are usually produced by excitation of the electron field around certain nuclei. In nuclear reactions, it is customary to refer to photons originating in the nucleus as x-rays. [nuclear-1]
- X-ray tube** a device that produces X-rays by the impact of high-speed electrons on a metal target. [mat-1]
- XRemote** A serial line protocol for the X Window System . [soft]
- XRN** A newsreader program for Usenet news base on the X Window System . host. [soft]
- X server** A process which controls a bitmap display device.in an X Window System . It performs operations on request from client applications. [soft]
- XSI** X/Open System Interface specification: part of the X/Open Common Applications Environment. [soft]
- X terminal** An intelligent terminal which operates as an X server directly connected to Ethernet . [soft]
- X-terminal** An intelligent terminal with a built-in implementation of an X server , which can therefore communicate with computers running X clients . [soft]
- Xterminal** See X-terminal [soft]
- XTI** X/open Transport Interface. [soft]
- Xt** The intrinsics of theX Window System Toolkit. [soft]
- XUI** X User Interface: program interface to the X Window System supported by DEC. [soft]
- Xv++** A library of classes from Interface Engineering, Stevenage, providing a C++ Application Programmer's Interface to the XView toolkit. [soft]
- XView** A toolkit from Sun, derived from SunView , providing an Open Look user interface for X applications. [soft]

- XVT** eXtensible Virtual Toolkit: a product allowing applications to be developed independent of GUI. [*soft*]
- Xwindow** See X Window System [*soft*]
- X Windows** See X Window System. [*soft*]
- X Window System** A specification for device-independent windowing operations on bitmap display devices, developed by MIT and now a de facto standard supported by the X consortium - More information. [*soft*]
- yacc** Yet Another Compiler Compiler. A parser generator for UNIX by S.C.Johnson [*soft*]
- YACL** Yet Another Class Library - More information. [*soft*]
- Y++** An Object-Oriented analysis and design approach [*soft*]
- Yellowcake** Yellowcake is the product of the uranium extraction (milling) process; early production methods resulted in a bright yellow compound, hence the name /yellowcake/. The material is a mixture of uranium oxides that can vary in proportion and in color from yellow to orange to dark green (blackish) depending at which temperature the material was dried (level of hydration and impurities). Higher drying temperatures produce a darker, less soluble material. Yellowcake is commonly referred to as U3O8 and is assayed as pounds U3O8 equivalent. This fine powder is packaged in drums and sent to a conversion plant that produces uranium hexafluoride (UF6) as the next step in the manufacture of nuclear fuel. [*nuclear-1*]
- Yield Controlled Tightening** A fastener tightening method which allows a fastener to be tightened to yield. The angle of rotation of the fastener is measured relative to the applied torque, yield being assessed when the slope of the relationship changes to below a certain value. Sometimes called joint controlled tightening. [*mech-3*]
- Yield strain** A material deformed beyond its yield strain, no longer exhibits linear elastic behavior. See yield stress. [*struc-1*]
- Yield Strength** the stress required to produce a very slight yet specified amount of plastic strain. [*mech-1*]
- Yield stress** A material loaded beyond its yield stress, no longer exhibits linear elastic behavior. Metals, particularly mild steel, generally have a very well defined yield stress compared to other materials. Yield stress is sometimes called yield strength. [*struc-1*]
- Young's Modulus** see Modulus of Elasticity the ratio of stress to strain when deformation is totally elastic. [*mech-1*]
- YP** Yellow Pages: a name server in NFS to link clients desiring a service with servers who can provide it. [*soft*]
- YSM** Yourdon Structured Method [*soft*]
- Z39.50** Information Retrieval Service Definition and Protocol Specification for Library Applications. Developed by NISO, this standard specifies an OSI application layer service to allow an application on one computer to query a database on another; it is used by WAIS [*soft*]
- Z** A formal specification language developed at Oxford University for describing computing systems, based on set theory and predicate calculus [*soft*]
- ZEBRA** A data management package in the CERN Program Library [*soft*]
- Zinc/Cobalt Alloy Electroplating** This coating is similar to zinc electroplating completed in an acid chloride bath - a small amount of cobalt (typically about 1%) is added to increase the plating speed. [*mech-3*]
- Zinc Electroplating** Zinc electroplating is a common way to protect threaded fasteners from the effects of corrosion. Zinc electroplating can be completed in acid chloride, alkaline or cyanide baths. Supplemental coatings are frequently applied to zinc electroplating. These coatings, such as zinc phosphate or chromate conversion, provide a protective passivation layer on the zinc which assists in reducing the corrosion rate. [*mech-3*]
- Zinc Phosphate Conversion Coating** A zinc phosphate conversion coating is frequently added to zinc electroplated parts, such as bolt threads, to improve corrosion resistance. This type of chemical conversion coating provides a protective passivation layer on the zinc improving its corrosion resistance. [*mech-3*]
- ZOG** A high-performance hypertext system developed at Carnegie-Mellon University. [*soft*]
- zone** any group of crystal planes that are all parallel to one line, called the zone axis. [*mat-1*]

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