

McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS

**Sixth
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On the cover: Representation of a fullerene molecule with a noble gas atom trapped inside. At the Permian-Triassic sedimentary boundary the noble gases helium and argon have been found trapped inside fullerenes. They exhibit isotope ratios quite similar to those found in meteorites, suggesting that a fireball meteorite or asteroid exploded when it hit the Earth, causing major changes in the environment. (Image copyright © Dr. Luann Becker. Reproduced with permission.)

Over the six editions of the Dictionary, material has been drawn from the following references: G. M. Garrity et al., *Taxonomic Outline of the Prokaryotes*, Release 2, Springer-Verlag, January 2002; D. W. Linzey, *Vertebrate Biology*, McGraw-Hill, 2001; J. A. Pechenik, *Biology of the Invertebrates*, 4th ed., McGraw-Hill, 2000; U.S. Air Force Glossary of Standardized Terms, AF Manual 11-1, vol. 1, 1972; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, Department of Defense, 1967; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, National Aeronautics and Space Administration, 1965; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *ADP Glossary*, Department of the Navy, NAVSO P-3097; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology*, White Sands Missile Range, New Mexico, National Bureau of Standards, AD 467-424; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission.

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pests; examples are dichlorethyl ether, *p*-dichlorobenzene, and ethylene oxide. { 'fyü-mə-gənt }

fumigating [ENG] The use of a chemical compound in a gaseous state to kill insects, nematodes, arachnids, rodents, weeds, and fungi in confined or inaccessible locations; also used to control weeds, nematodes, and insects in the field. { 'fyü-mə-gäd-ig }

fuming nitric acid [INV ZOO] Concentrated nitric acid containing dissolved nitrogen dioxide; may be prepared by adding formaldehyde to concentrated nitric acid. { 'fyüm-ig 'nītrik ,as-əd }

fuming sulfuric acid [INV ZOO] Concentrated sulfuric acid containing dissolved sulfur trioxide. Also known as oleum. { 'fyüm-ig səl'fyür-ik ,as-əd }

fululus [METEOROL] A very thin cloud veil at any level, so delicate that it may be almost invisible. { 'fyü-myə-ləs }

funal See sthène. { 'fyün-əl }

Funariales [BOT] An order of mosses; plants are usually annual, are terrestrial, and have stems that are erect, short, simple, or sparingly branched. { fyü,nar-ē'a-léz }

function [COMPUT SCI] In FORTRAN, a subroutine of a particular kind which returns a computational value whenever it is called. [MATH] A mathematical rule between two sets which assigns to each member of the first, exactly one member of the second. { 'fəŋk-shən }

functional [COMPUT SCI] In a linear programming problem involving a set of variables x_j , $j = 1, 2, \dots, n$, a function of the form $c_1x_1 + c_2x_2 + \dots + c_nx_n$ (where the c_j are constants) which one wishes to optimize (maximize or minimize, depending on the problem) subject to a set of restrictions. [MATH] Any function from a vector space into its scalar field. { 'fəŋk-shən-əl }

functional analysis [MATH] A branch of analysis which studies the properties of mappings of classes of functions from one topological vector space to another. [SYS ENG] A part of the design process that addresses the activities that a system, software, or organization must perform to achieve its desired outputs, that is, the transformations necessary to turn available inputs into the desired outputs. { 'fəŋk-shən-əl ə'nal-ə-səs }

functional analysis diagram [SYS ENG] A representation of functional analysis and, in particular, the transformations necessary to turn available inputs into the desired outputs, the flow of data or items between functions, the processing instructions that are available to guide the transformation, and the control logic that dictates the activation and termination of functions. { 'fəŋk-shən-əl ə'nal-ə-səs ,dī-ə,gram }

functional anatomy [ANAT] The study of the human body and its parts with emphasis on those features that are directly involved in physiological function. { 'fəŋk-shə-nəl ə'nad-ə-mē }

functional application [COMPUT SCI] A program or computer system, particularly a real-time system, that deals with the primary, ongoing operations of a business enterprise. { 'fəŋk-shən-əl ,ap-lə'kā-shən }

functional bombing [ORD] The bombing of a specially selected class of key targets, such as dams or marshaling yards, that function within an industrial complex or transportation system, as opposed to the bombing of an entire system. { 'fəŋk-shən-əl 'bām-ig }

functional constraint [MATH] A mathematical equation which must be satisfied by the independent parameters in an optimization problem, representing some physical principle which governs the relationship among these parameters. { 'fəŋk-shən-əl kən'strənt }

functional decomposition [CONT SYS] The partitioning of a large-scale control system into a nested set of generic control functions, namely the regulatory or direct control function, the optimizing control function, the adaptive control function, and the self-organizing function. { 'fəŋk-shən-əl dē,kām-pə'zish-ən }

functional design [COMPUT SCI] A level of the design process in which subtasks are specified and the relationships among them defined, so that the total collection of subsystems performs the entire task of the system. [SYS ENG] The aspect of system design concerned with the system's objectives and functions, rather than its specific components. { 'fəŋk-shən-əl dī'zīn }

functional diagram [COMPUT SCI] A diagram that indicates the functions of the principal parts of a total system and also

shows the important relationships and interactions among these parts. { 'fəŋk-shən-əl 'dī-ə,gram }

functional disorder [MED] A disorder in which the performance of an organ or organ system is abnormal, but not as a result of known changes in structure. { 'fəŋk-shən-əl dis'ōrd-ər }

functional electrical stimulation [MED] Therapeutic application of controlled amounts of electric current to muscles to make them contract in a nearly normal manner. { 'fəŋk-shən-əl i'lek-trə-kəl ,stim-yə'lā-shən }

functional error recovery [COMPUT SCI] A procedure whereby the operating system intervenes in certain common errors and attempts actions to allow execution of the computer program to continue. { 'fəŋk-shən-əl 'er-ər ri,kəv-ə-rē }

functional failure [COMPUT SCI] Failure of a computer system to generate the correct results for a set of inputs. { 'fəŋk-shən-əl 'fāl-yər }

functional forms analysis chart See form process chart. { 'fəŋk-shən-əl 'fōrmz ə,nal-ə-səs ,çārt }

functional generator See function generator. { 'fəŋk-shən-əl 'jen-ə,rād-ər }

functional group [ORG CHEM] An atom or group of atoms, acting as a unit, that has replaced a hydrogen atom in a hydrocarbon molecule and whose presence imparts characteristic properties to this molecule; frequently represented as R-. Also known as functionality. { 'fəŋk-shən-əl 'grüp }

functional interleaving [COMPUT SCI] Alternating the parts of a number of sequences in a cyclic fashion, such as a number of accesses to memory followed by an access to a data channel. { 'fəŋk-shən-əl 'in-tər,lēv-ig }

functionalism [ARCH] The view that a social system is an expression of human biological and social needs. { 'fəŋk-shə-nəl-iz-əm }

functionality See functional group. { 'fəŋk-shə-nal-ə-dē }

functional multiplier See function multiplier. { 'fəŋk-shən-əl 'māl-tə,plī-ər }

functional paralysis See hysterical paralysis. { 'fəŋk-shən-əl pə'ral-ə-səs }

functional programming [COMPUT SCI] A type of computer programming in which functions are used to control the processing of logic. { 'fəŋk-shən-əl 'prō,gram-ig }

functional requirement [COMPUT SCI] The documentation which accompanies a program and states in detail what is to be performed by the system. { 'fəŋk-shən-əl rī'kwīr-mənt }

functional residual capacity [PHYSIO] The volume of gas which remains within the lungs at expiratory standstill. { 'fəŋk-shən-əl rī'zjī-ə-wəl kə'pas-əd-ē }

functional specifications [COMPUT SCI] The documentation for the design of an information system, including the data base; the human and machine procedures; and the inputs, outputs, and processes for each data entry, query, update, and report program in the system. { 'fəŋk-shən-əl ,spes-ə-fə'kā-shənz }

functional switching circuit [ELECTR] One of a relatively small number of types of circuits which implements a Boolean function and constitutes a basic building block of a switching system; examples are the AND, OR, NOT, NAND, and NOR circuits. { 'fəŋk-shən-əl 'swich-ig ,sər-kət }

functional unit [COMPUT SCI] The part of the computer required to perform an elementary process such as an addition or a pulse generation. { 'fəŋk-shən-əl 'yü-nət }

function code [COMPUT SCI] Special code which appears on a medium such as a paper tape and which controls machine functions such as a carriage return. { 'fəŋk-shən ,kōd }

function-evaluation routine [COMPUT SCI] A canned routine such as a log function or a sine function. { 'fəŋk-shən i,vəl-yə'wā-shən rū,tēn }

function failure safety [ENG] The capability of an electronic-mass measuring instrument to withhold the release of an incorrect measurement when there is a function failure. { 'fəŋk-shən 'fāl-yər ,sāf-tē }

function generator [ELECTR] 1. Also known as functional generator. 2. An analog computer device that indicates the value of a given function as the independent variable is increased. 3. A signal generator that delivers a choice of a number of different waveforms, with provisions for varying the frequency over a wide range. { 'fəŋk-shən 'jen-ə,rād-ər }

function hole See designation punch. { 'fəŋk-shən ,hōl }

function key [COMPUT SCI] A special key on a keyboard