IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

TV GUIDE ONLINE, INC. and TV GUIDE ONLINE, LLC, Plaintiffs and Counterclaim Defendants, v. TRIBUNE MEDIA SERVICES, INC., Defendant and Counterclaim Plaintiff.	)	C.A. No.: 05-725-*** **PUBLIC VERSION**

CONSOLIDATED APPENDIX OF EXHIBITS FOR
DEFENDANT TRIBUNE MEDIA SERVICES, INC.'S
RESPONSIVE SUMMARY JUDGMENT AND MARKMAN BRIEFING

Richard K. Herrmann (I.D. No. 405)
Mary B. Matterer (I.D. No. 2696)
MORRIS JAMES LLP
500 Delaware Avenue, Suite 1500
Wilmington, Delaware 19801
302.888.6800
rherrmann@morrisjames.com

Mark A. Pals, P.C.
Linda S. DeBruin, P.C.
Michael A. Parks
Meredith Zinanni
KIRKLAND & ELLIS LLP
200 East Randolph Drive
Chicago, Illinois 60601
312.861.2000

Counsel for Defendant Tribune Media Services, Inc.

Originally filed: November 21, 2007
Public version filed: November 28, 2007

Appendix B Index for *TV Guide v. TMS* Response Briefs

Document Name	Appendix B page #
Webster's New World Dictionary of Computer Terms, 5th Ed.	B 1-3
Webster's New World Computer Dictionary, 10th Ed.	B 4-8
The IEEE Standard Dictionary of Electrical and Electronics Terms, 6th Ed.	B 9-15
The Authoritative Dictionary of IEEE Standards Terms 7th Ed.	B 16-21
McGraw-Hill Dictionary of Sci. & Tech. Terms, 4th Ed.	B 22-24
McGraw Hill Dictionary of Sci. & Tech. Terms, 5th Ed.	B 25-27
Que's Computer User's Dictionary, 2d Ed.	B 28-30
Merriam-Webster's Collegiate Dictionary, 11th Ed.	B 31-34
U.S. Patent No. 4,908,713	B 35-45
09/21/07 Letter from Zinanni to Harnett	B 46-48
Levine Deposition Tr.	B 49-51
Berkov Deposition Tr.	B 52-54
Cole Deposition Tr.	B 55-57
2/9/07 Tjaden Report	B 58-61
12/15/06 Cole Report	B 62-68
2/28/07 Cole Supp. Report	B 69-72
11/20/07 Loose Declaration	B 73-76
11/20/07 Tjaden Declaration	B 77-91

Webster's

NEW WORLD DICTIONARY® OF COMPUTER TERMS

FIFTH EDITION

Compiled by
Donald Spencer

MACMILLAN • USA

Macmillan General Reference
A Prentice Hall Macmillan Company
15 Columbus Circle
New York, NY 10023

Copyright © 1994 by Simon & Schuster, Inc.
All rights reserved
including the right of reproduction
in whole or in part in any form

A Webster's New World™ Book

MACMILLAN is a registered trademark of Macmillan, Inc.
WEBSTER'S NEW WORLD DICTIONARY is a registered trademark of Simon & Schuster, Inc.

Prentice Hall is a registered trademark of Prentice-Hall, Inc.

Dictionary Editorial Offices:
New World Dictionaries
850 Euclid Avenue
Cleveland, Ohio 44114

Library of Congress Cataloging-in-Publication Data

Spencer, Donald.

ISBN: 0-671-89993-7

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

Fifth Edition

Intr

It is unlik
meanings
computer
a new and
to commu
componen
words, ph
computers

When
managers
sonnel are
know som
staff with
for this in

This n
hardware,
those use
intelligen
mathema

The te
the begin
person c
avoided s

knowledge. Model-based expert systems are more capable of handling unexpected situations than heuristic-based systems, which are based more on surface knowledge.

model coordinates The coordinate system used for describing a single object.

model driven In ARTIFICIAL INTELLIGENCE, pertaining to a method of inference that uses a model of a problem area in an expert system.

model, geometric A complete, geometrically accurate 3-D or 2-D representation of a shape, a part, or a geographic area, designed on a computer graphics system and stored in the database.

modeling **(1)** The process of accurately describing or representing certain parts of a system; using mathematics to describe a situation or a physical object. **(2)** The simulation of a condition or activity by performing a set of equations on a set of data. **(3)** The method of creating an object in COMPUTER GRAPHICS through computational descriptions of the object's polygonal makeup, surface shape, and attributes.

modem Acronym for **mo**dulator/**dem**odulator, a device that translates digital pulses from a computer into analog signals for telephone transmission, and analog signals from the telephone into digital pulses the computer can understand. Provides communication capabilities between pieces of computer equipment over common telephone facilities.

modification An addition or change to, or a deletion of, stored data.

modifier In OBJECT-ORIENTED PROGRAMMING, an operation that alters the state of an object.

modify **(1)** To alter a portion of an instruction so that its interpretation and execution will be other than normal. **(2)** To alter a program according to a defined parameter.

Modula-2 A high-level programming language similar to PASCAL. It supports separate compilation of modules, whereas Pascal does not. Modula-2 is very popular as a teaching language at colleges and universities.

Modula-3 A Digital
tend the Modula-2

modular architectur
that can be connect

modular coding A p
a program are divi
that each routine
PROGRAMMING.

modular constraint
of images such tha
the intersections of

modularity The co
format to promote

modular programmi
easily interchanged
requirements. Mod
limited segments
understandable in
verification of com
TURED PROGRAMMIN

modulation In data
acteristic of a high-
another, lower-fre
make computer t
facilities.

modulation depth
in a CRT display.

modulation transfe
nance contrast bet
number of lines in

modulator A device

Kirkland & Ellis LLP Library
5 0628 01204524 8

PRICE BOOKS Our
384456

WEBSTER'S NEW WORLD

COMPUTER DICTIONARY

TENTH EDITION

The Best Computer Dictionary Anywhere

Revised and updated

Contains extensive coverage of Internet and multimedia terms

Over 4,750 words, phrases, abbreviations, and acronyms

BRYAN PFAFFENBERGER

WE DEFINE YOUR WORLD™

B-4

WEBSTER'S NEW WORLD™

COMPUTER DICTIONARY

10TH EDITION

By Bryan Pfaffenberger, Ph.D.

WILEY
Wiley Publishing, Inc.

Webster's New World™ Computer Dictionary, 10th Edition

Copyright © 2003 by Wiley Publishing, Inc., Indianapolis, Indiana

Published by Wiley Publishing, Inc., Indianapolis, Indiana
Published simultaneously in Canada

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except as permitted under Sections 107 or 108 of the 1976 United States Copyright Act, without either the prior written permission of the Publisher, or authorization through payment of the appropriate per-copy fee to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, (978) 750-8400, fax (978) 646-8700. Requests to the Publisher for permission should be addressed to the Legal Department, Wiley Publishing, Inc., 10475 Crosspoint Blvd., Indianapolis, IN 46256, (317) 572-3447, fax (317) 572-4447, E-mail: permcoordinator@wiley.com.

Trademarks: Wiley, the Wiley Publishing logo, Webster's New World, and the Webster's New World logo are trademarks or registered trademarks of Wiley Publishing, Inc., in the United States and other countries, and may not be used without written permission. All other trademarks are the property of their respective owners. Wiley Publishing, Inc., is not associated with any product or vendor mentioned in this book.

Limit of Liability/Disclaimer of Warranty: While the publisher and author have used their best efforts in preparing this book, they make no representations or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaim any implied warranties of merchantability or fitness for a particular purpose. No warranty may be created or extended by sales representatives or written sales materials. The advice and strategies contained herein may not be suitable for your situation. You should consult with a professional where appropriate. Neither the publisher nor author shall be liable for any loss of profit or any other commercial damages, including but not limited to special, incidental, consequential, or other damages.

For general information on our other products and services or to obtain technical support please contact our Customer Care Department within the U.S. at 800-762-2974, outside the U.S. at 317-572-3993 or fax 317-572-4002.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books.

Library of Congress Cataloging-in-Publication Data is available from the publisher.

ISBN 0-7645-2478-X

Manufactured in the United States of America

5 4 3 2

Dedic

Ackno
No work
book is no
Inc. in Inc
M. Faunett
bring to f
Ultimately,
mine alone
contributio

About
Bryan Pfa
at the Univ
the public, h
technology.

Tradem
All terms in
priately capi
Use of a terr
or service m

cut-and-paste and mail merge commands. The program relied on a unique set of keyboard commands that were memorized by millions of users and continued to affect keyboard shortcut layouts well into the 1980s. (The lingering influence of this keyboard command set is attested by the continued availability of a Microsoft Word add-on program that emulates WordStar keyboard commands.) Released in 1978 for the CP/M operating system, WordStar was made available in an MS-DOS version in 1982; however, the program met stiff competition from WordPerfect, which quickly dominated the market. A 16-bit version was made available for Microsoft Windows 3.0 in 1991, but the program failed to keep pace with its competitors. Rights to the WordStar code and various offshoots have been purchased and are still owned by a variety of companies, including Corel and The Learning Company, but the program is not expected to return to the market.

word wrap A feature of word processing programs, and other programs that include text-editing features, that wraps words down to the beginning of the next line if they go beyond the right margin.

workaround A way of circumventing a bug without actually fixing it. Workarounds may be desirable when time is short or programmers are unavailable.

workbook In a spreadsheet program, a collection of related worksheets kept in a single file. Workbooks make it easy to create hot links among worksheets.

workflow The precise, person-to-person or department-to-department path that a given type of work follows as it moves through an organization. For example, an order begins in sales, and successively moves through accounting, shipping, and inventory. See *workflow automation.*

workflow automation An information system in which documents are automatically sent to the people who need to see them.

workgroup **1.** A small group of employees assigned to work together on a specific project. Much of the work accomplished in large businesses is done in workgroups. If this work is to be done well and quickly, the workgroup needs to communicate effectively and share resources. Especially when linked in a local area network (LAN), personal computer technology is thought to enhance workgroup productivity by giving the group additional communication channels (in the form of e-mail), facilities for the group editing of documents (such as redlining and strikethrough), and shared access to a common database. **2.** The default name Microsoft Windows assigns to a peer-to-peer workgroup in a Windows networking setting. See *LAN.*

working directory See *current directory.*

working model See *crippled version.*

worksheet In spreadsheet programs, the two-dimensional matrix of rows and columns within which one enters headings, values, and formulas. The worksheet resembles the ledger sheet used in accounting. Synonymous with spreadsheet. See *spreadsheet program.*

worksheet window In spreadsheet programs, the portion of the worksheet visible onscreen. With up to 8,192 rows and 256 columns, modern electronic spreadsheets are larger than a two-car garage in size. The worksheet window displays only a small portion of the total area potentially available.

workstation In a local area network (LAN), a desktop computer that runs application programs and serves as an access point to the network. See *file server, personal computer (PC), professional workstation.*

World Wide Web (WWW) A global hypertext system that uses the Internet as its transport mechanism; the communication between Web clients (browsers) and Web servers is defined by the Hypertext Transport Protocol (HTTP). In a hypertext system, users navigate by clicking a hyperlink embedded in the current document.

this action
the same
Web docu
a declarati
formatting
Cascading
activity ca
embedded
guages su
hypermedi
and video)
medium fc
Internet ar
emerging
HTML,
JavaScript,

World Wi
An indepe
of universit
titioners th
standards tc
the World
Massachus
(MIT), W3
Hypertext
Hypertext
Cascading
Markup La
aspects of
HTTP, XM

worm A
over a comp
of itself and
networked
example is
by Cornell
Robert T. M
an "experir
contain bug
loaded serve
Internet ser
was subsequ
and sentenc
that worms
Horses. See

WORM S

wrap-arou
that it surro
around typ

this action displays a second document in the same or a separate browser window. Web documents are created using HTML, a declarative markup language; advanced formatting is possible through the use of Cascading Style Sheets (CSS), while interactivity can be achieved through the use of embedded scripts written in scripting languages such as JavaScript. Incorporating hypermedia (graphics, sounds, animations, and video), the Web has become the ideal medium for publishing information on the Internet and serves as the platform for the emerging electronic economy. See *CSS, HTML, HTTP, hypermedia, hypertext, JavaScript, Web browser, Web server.*

World Wide Web Consortium (W3C) An independent standards body composed of university researchers and industry practitioners that is devoted to setting effective standards to promote the orderly growth of the World Wide Web. Housed at the Massachusetts Institute of Technology (MIT), W3C sets key Web standards such as Hypertext Markup Language (HTML), the Hypertext Transport Protocol (HTTP), Cascading Style Sheets (CSS), Extensible Markup Language (XML), and many other aspects of Web usage. See *CSS, HTML, HTTP, XML.*

worm A program that propagates itself over a computer network by making copies of itself and sending them on to additional networked workstations. The canonical example is the Internet Worm, developed by Cornell University graduate student Robert T. Morris. Described by Morris as an "experiment," the program proved to contain bugs that, after its release, overloaded servers to the extent that widespread Internet service outages occurred. Morris was subsequently convicted, fined $10,000, and sentenced to community service. Note that worms are not viruses or Trojan Horses. See *Trojan Horse, virus.*

WORM See *write-once, read-many.*

wrap-around type Type contoured so that it surrounds a graphic. Because wrap-around type is harder to read than noncontoured type, use wrap-around type sparingly.

wrapper In computer programming, a script that precedes some other function and serves to limit or circumscribe its activity.

write A fundamental processing operation in which the central processing unit (CPU) records information to the computer's random access memory (RAM) or to the computer's secondary storage media, such as disk drives. In personal computing, the term most often refers to storing information on floppy or hard disks, removable storage media, CD-ROM and other optical media, or any other write-enabled secondary storage medium.

write-back One of four basic operations carried out by the control unit of a microprocessor. The write-back operation involves writing the results of previous operations to an internal register.

write-back cache A type of cache memory that stores information written to memory as well as information read from memory. Write-back caches, particularly those used in secondary caches, are considered to be technically superior to write-through caches.

write-black engine See *print engine.*

write-enabled Able to record new data. When used to refer to a storage medium, this term is synonymous with read/write.

write head See *read/write head.*

write-once, read-many (WORM) An optical disc drive with storage capacities of up to 1TB. After one writes data to the disk, it becomes a read-only storage medium. WORM drives can store huge amounts of information and have been touted as an excellent technology for organizations that need to publish large databases internally (such as collections of engineering drawings or technical documentation). The advent of fully read/write-capable optical disc drives, however, has greatly diminished the appeal

IEEE Std 100-1996

LIBRARY
KIRKLAND & ELLIS
AUG 03 1999
LOS ANGELES

The IEEE Standard Dictionary of Electrical and Electronics Terms

Sixth Edition

Standards Coordinating Committee 10, Terms and Definitions
Jane Radatz, Chair

This standard is one of a number of information technology dictionaries being developed by standards organizations accredited by the American National Standards Institute. This dictionary was developed under the sponsorship of voluntary standards organizations, using a consensus-based process.

ISBN 1-55937-833-6



Introduction

Since the first edition in 1941 of the American Standard Definitions of Electrical Terms, the work now known as IEEE Std 100, The IEEE Standard Dictionary of Electrical and Electronics Terms, has evolved into the unique compendium of terms that it is today.

The current edition includes all terms defined in approved IEEE standards through December 1996. Terms are categorized by their technical subject area. They are also associated with the standards or publications in which they currently appear. In some cases, terms from withdrawn standards are included when no current source can be found. Earlier editions of IEEE Std 100 included terms from sources other than IEEE standards, such as technical journals, books, or conference proceedings. These terms have been maintained for the sake of consistency and their sources are listed with the standards in the back of the book.

The practice of defining terms varies from standard to standard. Many working groups that write standards prefer to work with existing definitions, while others choose to write their own. Thus terms may have several similar, although not identical, definitions. Definitions have been combined wherever it has been possible to do so by making only minor editorial changes. Otherwise, they have been left as written in the original standard.

Users of IEEE Std 100 occasionally comment on the surprising omission of a particular term commonly used in an electrical or electronics field. This occurs because the terms in IEEE Std 100 represent only those defined in the existing or past body of IEEE standards. To respond to this, some working groups obtain authorization to create a glossary of terms used in their field. All existing, approved standard glossaries have been incorporated into this edition of IEEE Std 100, including the most current glossaries of terms for computers and power engineering.

IEEE working groups are encouraged to refer to IEEE Std 100 when developing new or revised standards to avoid redundancy. They are also encouraged to investigate deficiencies in standard terms and create standard glossaries to alleviate them.

The sponsoring body for this document was Standards Coordinating Committee 10 on Definitions (SCC10), which consisted of the following members:

Jane Radatz, *Chair*

John W. Balde
Arthur Ballato
Bruce Barrow
William Carey
Frank A. Denbrock
Jay Forster
Chris Heegard
John Horch
J. L. Koepfinger
Allen H. Meitzler
Frank D. Myers
David B. Roberts
F. A. Saal
Ralph M. Showers
Edward N. Skomal
Kenneth L. Swinth
Raymond S. Turgel
Edward F. Vance

When the IEEE Standards Board approved this standard on 10 December 1996, it had the following membership.

Donald C. Loughry, *Chair* **Richard J. Holleman,** *Vice Chair*
Andrew G. Salem, *Secretary*

Gilles A. Baril
Clyde R. Camp
Joseph A. Cannatelli
Stephen L. Diamond
Harold E. Epstein
Donald C. Fleckenstein
Jay Forster*
Donald N. Heirman
Ben C. Johnson
E. G. "Al" Kiener
Joseph L. Koepfinger*
Stephen R. Lambert
Lawrence V. McCall
L. Bruce McClung
Marco W. Migliaro
Mary Lou Padgett
John W. Pope
Jose R. Ramos
Arthur K. Reilly
Ronald H. Reimer
Gary S. Robinson
Ingo Rüsch
John S. Ryan
Chee Kiow Tan
Leonard L. Tripp
Howard L. Wolfman

*Member Emeritus

Also included are the following nonvoting IEEE Standards Board liaisons:

Satish K. Aggarwal
Alan H. Cookson
Chester C. Taylor

Kim Breitfelder (1995-present), *IEEE Std 100 Editor*
Stephen Huffman (1993-1995), *IEEE Std 100 Editor*

Assistance was provided by the IEEE Standards editorial staff.

How to use this dictionary

The terms defined in this dictionary are listed in *letter-by-letter* alphabetical order. Spaces are ignored in this style of alphabetization, so *cable value* will come before *cab signal*. Descriptive categories associated with the term in earlier editions of IEEE Std 100 will follow the term in parentheses. New categories appear after the definitions (see Categories, below), followed by the designation of the standard or standards that include the definition. If a standard designation is followed by the letter s, it means that edition of the standard was superseded by a newer revision and the term was not included in the revision. If a designation is followed by the letter w, it means that edition of the standard was withdrawn and not replaced by a revision. A bracketed number refers to the non-IEEE standard sources given in the back of the book.

Acronyms and abbreviations are no longer listed in a separate section in the dictionary; rather, they are incorporated alphabetically with other terms. Each acronym or abbreviation refers to its expanded term, where it is defined. Acronyms and abbreviations for which no definition was included in past editions have been deleted from this edition of IEEE Std 100.

Abstracts of the current set of approved IEEE standards are provided in the back of the book. It should be noted that updated information about IEEE standards can be obtained at any time from the IEEE Standards World Wide Web site at http://standards.ieee.org/.

Categories

The category abbreviations that are used in this edition of IEEE Std 100 are defined below. This information is provided to help elucidate the context of the definition. Older terms for which no category could be found have had the category "Std100" assigned to them. Note that terms from sources other than IEEE standards, such as the National Electrical Code® (NEC®) or the National Fire Protection Association, may not be from the most recent editions; the reader is cautioned to check the latest editions of all sources for the most up-to-date terminology.

Categories sorted by abbreviation

AE	aerospace and electronic systems
AHDL	computer—Analog Hardware Descriptive Language
AMR	automatic meter reading and energy management
AP	antennas and propagation
ATL	computer—Abbreviated Test Language for All Systems
BA	computer—bus architecture
BT	broadcast technology
C	computer
CAS	circuits and systems
CE	consumer electronics
CHM	components, hybrids, and manufacturing technology
COM	communications
CS	control systems
DA	computer—design automation
DEI	dielectrics and electrical insulation
DESG	dispersed energy storage and generation
DIS	computer—distributed interactive simulation
ED	electron devices
EDU	education
EEC	electrical equipment and components
ELM	electricity metering
EM	engineering management
EMB	engineering in medicine and biology
EMC	electromagnetic compatibility
GRS	geoscience and remote sensing
GSD	graphic symbols and designations
IA	industry applications
IE	industrial electronics
II	information infrastructure
IM	instrumentation and measurement
IT	information theory
IVHS	intelligent vehicle highway systems
LEO	lasers and electro-optics
LM	computer—local and metropolitan area networks
MAG	magnetics
MIL	military
MM	computer—microprocessors and microcomputers
MTT	microwave theory and techniques
NEC	National Electrical Code
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NI	nuclear instruments
NIR	non-ionizing radiation
NN	neural networks
NPS	nuclear and plasma sciences
ODM	computer—optical disk and multimedia platforms
OE	oceanic engineering
PA	computer—portable applications
PE	power engineering
PEL	power electronics
PQ	power quality
PSPD	surge protective devices
PV	photovoltaics
QUL	quantities, units, and letter symbols
R	reliability
RA	robotics and automation
REM	rotating electrical machinery

RL	roadway lighting
S&P	computer—security and privacy
SB	stationary batteries
SE	computer—software engineering
SMC	systems, man, and cybernetics
SP	signal processing
Std100	Standard 100 legacy data
SUB	substations
SWG	power switchgear
T&D	transmission and distribution
TF	time and frequency
TRR	transformers, regulators, and reactors
TT	test technology
UFFC	ultrasonics, ferroelectrics, and frequency control
VT	vehicular technology

Categories sorted by name

aerospace and electronic systems	AE
antennas and propagation	AP
automatic meter reading and energy management	AMR
broadcast technology	BT
circuits and systems	CAS
communications	COM
components, hybrids, and manufacturing technology	CHM
computer	C
computer—Abbreviated Test Language for All Systems	ATL
computer—Analog Hardware Descriptive Language	AHDL
computer—bus architecture	BA
computer—design automation	DA
computer—distributed interactive simulation	DIS
computer—local and metropolitan area networks	LM
computer—microprocessors and microcomputers	MM
computer—optical disk and multimedia platforms	ODM
computer—portable applications	PA
computer—security and privacy	S&P
computer—software engineering	SE
consumer electronics	CE
control systems	CS
dielectrics and electrical insulation	DEI
dispersed energy storage and generation	DESG
education	EDU
electrical equipment and components	EEC
electricity metering	ELM
electromagnetic compatibility	EMC
electron devices	ED
engineering in medicine and biology	EMB
engineering management	EM
geoscience and remote sensing	GRS
graphic symbols and designations	GSD
industrial electronics	IE
industry applications	IA
information infrastructure	II
information theory	IT
instrumentation and measurement	IM
intelligent vehicle highway systems	IVHS
lasers and electro-optics	LEO
magnetics	MAG
microwave theory and techniques	MTT

military	MIL
National Electrical Code	NEC
National Electrical Safety Code	NESC
National Fire Protection Association	NFPA
neural networks	NN
non-ionizing radiation	NIR
nuclear and plasma sciences	NPS
nuclear instruments	NI
oceanic engineering	OE
photovoltaics	PV
power electronics	PEL
power engineering	PE
power quality	PQ
power switchgear	SWG
quantities, units, and letter symbols	QUL
reliability	R
roadway lighting	RL
robotics and automation	RA
rotating electrical machinery	REM
signal processing	SP
Standard 100 legacy data	Std100
stationary batteries	SB
substations	SUB
surge-protective devices	PSPD
systems, man, and cybernetics	SMC
test technology	TT
time and frequency	TF
transformers, regulators, and reactors	TRR
transmission and distribution	T&D
ultrasonics, ferroelectrics, and frequency control	UFFC
vehicular technology	VT

Trademarks

The following is a list of trademarks that may be used in IEEE Std 100-1996, The IEEE Standard Dictionary of Electrical and Electronics Terms.

ABBET is pending trademark registration by the Institute of Electrical and Electronics Engineers, Inc.

Analog devices is a trademark of Analog Devices, Inc.

BOCA is a registered trademark of Building Officials and Code Administrators International, Inc.

Futurebus+ is a registered trademark of the Institute of Electrical and Electronics Engineers, Inc.

IBM is a registered trademark of International Business Machines, Inc.

Mylar is a registered trademark of E.I. du Pont de Nemours and Company.

NEC and National Electrical Code are registered trademarks of the National Fire Protection Association.

NESC and National Electrical Safety Code are registered trademarks and service marks of the Institute of Electrical and Electronics Engineers, Inc.

NESC is a registered trademark and service mark of the Institute of Electrical and Electronics Engineers, Inc.

Netbios is a registered trademark of International Business Machines, Inc.

mode conversion gain (waveguide) The gain due to the conversion of power from one waveguide mode to another. (MTT) 146-1980w

mode conversion loss (waveguide) The loss due to the conversion of power from one waveguide mode to another. (MTT) 146-1980w

mode coupler (waveguides) A coupler that provides preferential coupling to a specific wave mode. *See also:* waveguide. (IM) [40]

mode coupling (fiber optics) In an optical waveguide, the exchange of power among modes. The exchange of power may reach statistical equilibrium after propagation over a finite distance that is designated the equilibrium length. *See also:* equilibrium length; equilibrium mode distribution; mode; mode scrambler. (Std100) 812-1984w

mode dispersion *See:* multimode distortion.

modal distortion *See:* multimode distortion.

mode distortion *See:* multimode distortion.

mode filter (1) (fiber optics) A device used to select, reject, or attenuate a certain mode or modes. (Std100) 812-1984w

(2) (waveguide components) A device designed to pass energy along a waveguide in one or more selected modes of propagation, and substantially to reject energy carried in other modes. (MTT) 147-1979w

mode, higher-order (waveguide or transmission line) Any mode of propagation characterized by a field configuration other than that of the fundamental or first-order mode with lowest cutoff frequency. (IM) [40]

MODEL An application-oriented language used widely for simulating digital circuits. (C) 610.13-1993

model (1) A mathematical or physical representation of the system relationships. *See also:* mathematical model; system. (SMC) [63]

(2) (software) A representation of a real world process, device, or concept. *See also:* analytical model; availability model; debugging model; error model; process; reliability model; simulation; statistical test model. (C/SE) 1233-1996, 729-1983s

(3) (A) (modeling and simulation) An approximation, representation, or idealization of selected aspects of the structure, behavior, operation, or other characteristics of a real-world process, concept, or system. *Note:* Models may have other models as components. **(B) (modeling and simulation)** To serve as a model as in definition (A). **(C) (modeling and simulation)** To develop or use a model as in definition (A). (C) 610.3-1989

(4) (computer graphics) An accurate and complete graphical representation of an object. *See also:* modeling system. (C) 610.6-1991

(5) A representation of one or more aspects of a system. (C/SE) 1016.1-1993

model accreditation (or simulation accreditation) The official certification that a model or simulation is acceptable for use for a specific purpose. (C/DIS) 1278.3-1996

mode-less A state that does not interfere with the user performing any other action. (C) 1295-1993

modeling Technique of system analysis and design using mathematical or physical idealizations of all or a portion of the system. Completeness and reality of the model are dependent on the questions to be answered, the state of knowledge of the system, and its environment. *See also:* system. (SMC) [63]

modeling system A system in which a computer graphics model can be defined or transformed using world coordinates. (C) 610.6-1991

model space The coordinate system used by a computer graphics model. (C) 610.6-1991

MODEL 204 (M204) A database manipulation language with English-like syntax. (C) 610.13-1993

model validation (1) The process of determining the degree to which the requirements, design, or implementation of a model are a realization of selected aspects of the system being modeled. *Contrast:* model verification. *See also:* fidelity. (C) 610.3-1989

(2) The process of determining the degree to which a model is an accurate representation of the real world from the perspective of the intended use(s) of the model. (C/DIS) 1278.3-1996

model verification (1) The process of determining the degree of similarity between the realization steps of a model; for example, between the requirements and the design, or between the design and its implementation. *Contrast:* model validation. (C) 610.3-1989

(2) The process of determining that a model implementation accurately represents the developer's conceptual description and specifications. (C/DIS) 1278.3-1996

modem (1) (data transmission) A contraction of MOdulator-DEModulator, an equipment that connects data terminal equipment to a communication line. (PE) 599-1985w

(2) (supervisory control, data acquisition, and automatic control) A modulator/demodulator device that converts serial binary digital data to and from the signal form appropriate for the respective communication channel. (PE/SWG/SUB) C37.1-1994, C37.100-1992

(3) (broadband local area networks) A modulator-demodulator device. The modulator encodes digital information onto an analog carrier signal by varying the amplitude, frequency, or phase of that carrier. The demodulator extracts digital information from a similarly modified carrier. A modem transforms digital signals into a form suitable for transmission over an analog medium. (C/LM) 802.7-1989

(4) A device that modulates and demodulates signals transmitted over data communication facilities. One of the functions of a modem is to enable digital data to be transmitted over analog transmission facilities. (PE/SUB) 999-1992

(5) (A) A device that performs modulation and demodulation functions necessary to transmit signals over communication lines. *Note:* This term originated as an abbreviation for modulator-demodulator. *Synonyms:* data set; demodulator-modulator; modulator-demodulator. *See also:* acoustic coupler. **(B)** A device that transforms a digital signal received into an analog signal and vice versa. (C) 610.7-1995

modem control The monitoring of modem status lines. (C/PA) 2003.1-1992

mode mixer *See:* mode scrambler.

mode of operation (rectifier circuits) The characteristic pattern of operation determined by the sequence and duration of commutation and conduction. *Note:* Most thyristor converters and rectifier circuits have several modes of operation, which may be identified by the shape of the current wave. The particular mode obtained at a given load depends upon the circuit constants. *See also:* rectification; rectifier circuit element. (IA) 444-1973r

mode of propagation (A) (waveguides) A form of propagation of guided waves that is characterized by a particular field pattern in a plane transverse to the direction of propagation, which field pattern is independent of position along the axis of the waveguide. *Note:* In the case of uniconductor waveguides the field pattern of a particular mode of propagation is also independent of frequency. *See also:* waveguide. **(B)** A form of electromagnetic wave than can advance and can transport energy along the axis of a transmission line without change in the form of the electromagnetic field pattern in successive transverse sections (except for a monotonic decrease in amplitude along the direction of propagation, due to energy dissipation, which is present to some degree in every transmission line). (MTT) 1004-1987w

mode of propagation, ionospheric Representation of a transmission path by the number of hops between the end points of the path, the ionospheric layers producing the ionospheric

IEEE 100
The Authoritative Dictionary of IEEE Standards Terms

Seventh Edition

IEEE
Published by
Standards Information Network
IEEE Press

Trademarks and disclaimers

IEEE believes the information in this publication is accurate as of its publication date; such information is subject to change without notice. IEEE is not responsible for any inadvertent errors.

Other tradenames and trademarks in this document are those of their respective owners.

The Institute of Electrical and Electronics Engineering, Inc.
3 Park Avenue, New York, NY, 10016-5997, USA

Copyright © 2000 by the Institute of Electrical and Electronics Engineers, Inc. All rights reserved. Published December 2000. Printed in the United States of America.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

To order IEEE Press publications, call 1-800-678-IEEE.

Print: ISBN 0-7381-2601-2 *SP1122*

See other standards and standards-related product listings at: http://standards.ieee.org/

The publisher believes that the information and guidance given in this work serve as an enhancement to users, all parties must rely upon their own skill and judgement when making use of it. The publisher does not assume any liability to anyone for any loss or damage caused by any error or omission in the work, whether such error or omission is the result of negligence or any other cause. Any and all such liability is disclaimed.

This work is published with the understanding that the IEEE is supplying information through this publication, not attempting to render engineering or other professional services. If such services are required, the assistance of an appropriate professional should be sought. The IEEE is not responsible for the statements and opinions advanced in this publication.

Library of Congress Cataloging-in-Publication Data

IEEE 100 : the authoritative dictionary of IEEE standards terms.—7th ed. .
p. cm.
ISBN 0-7381-2601-2 (paperback : alk. paper)
1. Electric engineering—Dictionaries. 2. Electronics—Dictionaries. 3. Computer engineering—Dictionaries. 4. Electric engineering—Acronyms. 5. Electronics—Acronyms. 6. Computer engineering—Acronyms. I. Institute of Electrical and Electronics Engineers.

TK9 .I28 2000
621.3'03—dc21 00-050601

How to Use This Dictionary

The terms defined in the Dictionary are listed in *letter-by-letter* alphabetical order. Spaces are ignored in this style of alphabetization, so *cable value* will come before *cab signal*. Descriptive categories associated with the term in earlier editions of the Dictionary will follow the term in parentheses. New categories appear after the definitions (see Categories, below), followed by the designation of the standard or standards that include the definition. If a standard designation is followed by the letter *s*, it means that edition of the standard was superseded by a newer revision and the term was not included in the revision. If a designation is followed by the letter *w*, it means that edition of the standard was withdrawn and not replaced by a revision. A bracketed number refers to the non-IEEE standard sources given in the back of the book.

Abstracts of the current set of approved IEEE standards are provided in the back of the book. It should be noted that updated information about IEEE standards can be obtained at any time from the IEEE Standards World Wide Web site at http://standards.ieee.org/.

Categories

The category abbreviations that are used in this edition of the Dictionary are defined below. This information is provided to help elucidate the context of the definition. Older terms for which no category could be found have had the category *Std100* assigned to them. Note that terms from sources other than IEEE standards, such as the National Electrical Code® (NEC®) or the National Fire Protection Association, may not be from the most recent editions; the reader is cautioned to check the latest editions of all sources for the most up-to-date terminology.

Categories sorted by abbreviation

AES	aerospace and electronic systems
AHDL	computer—Analog Hardware Descriptive Language
AMR	automatic meter reading and energy management
AP	antennas and propagation
ATL	computer—Abbreviated Test Language for All Systems
BA	computer—bus architecture
BT	broadcast technology
C	computer
CAS	circuits and systems
CE	consumer electronics
CHM	components, hybrids, and manufacturing technology
COM	communications
CS	control systems
DA	computer—design automation
DEI	dielectrics and electrical insulation
DESG	dispersed energy storage and generation
DIS	computer—distributed interactive simulation
ED	electron devices
EDU	education
EEC	electrical equipment and components
ELM	electricity metering
EM	engineering management
EMB	engineering in medicine and biology
EMC	electromagnetic compatibility
GRS	geoscience and remote sensing
GSD	graphic symbols and designations
IA	industry applications
IE	industrial electronics
II	information infrastructure
IM	instrumentation and measurement
IT	information theory

ipaces are ignored in
categories associated
ses. New categories
the standard or stan-
it means that edition
in the revision. If a
withdrawn and not
es given in the back

f the book. It should
time from the IEEE

d below. This infor-
ch no category could
ces other than IEEE
tection Association,
ditions of all sources

IVHS	intelligent vehicle highway systems
LEO	lasers and electro-optics
LM	computer—local and metropolitan area networks
MAG	magnetics
MIL	military
MM	computer—microprocessors and microcomputers
MTT	microwave theory and techniques
NEC	National Electrical Code
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NI	nuclear instruments
NIR	non-ionizing radiation
NN	neural networks
NPS	nuclear and plasma sciences
ODM	computer—optical disk and multimedia platforms
OE	oceanic engineering
PA	computer—portable applications
PE	power engineering
PEL	power electronics
PQ	power quality
PSPD	power surge protective devices
PV	photovoltaics
QUL	quantities, units, and letter symbols
R	reliability
RA	robotics and automation
REM	rotating electrical machinery
RL	roadway lighting
S&P	computer—security and privacy
SB	stationary batteries
SE	computer—software engineering
SMC	systems, man, and cybernetics
SP	signal processing
Std100	Standard 100 legacy data
SUB	substations
SWG	power switchgear
T&D	transmission and distribution
TF	time and frequency
TRR	transformers, regulators, and reactors
TT	test technology
UFFC	ultrasonics, ferroelectrics, and frequency control
VT	vehicular technology

Categories sorted by name

aerospace and electronic systems	AES
antennas and propagation	AP
automatic meter reading and energy management	AMR
broadcast technology	BT
circuits and systems	CAS
communication	COM
components, hybrids, and manufacturing technology	CHM
computer	C
computer—Abbreviated Test Language for All Systems	ATL
computer—Analog Hardware Descriptive Language	AHDL
computer—bus architecture	BA
computer—design automation	DA
computer—distributed interactive simulation	DIS
computer—local and metropolitan area networks	LM
computer—microprocessors and microcomputers	MM
computer—optical disk and multimedia platforms	ODM
computer—portable applications	PA
computer—security and privacy	S&P
computer—software engineering	SE
consumer electronics	CE

control systems	CS
dielectrics and electrical insulation	DEI
dispersed energy storage and generation	DESG
education	EDU
electrical equipment and components	EEC
electricity metering	ELM
electromagnetic compatibility	EMC
electron devices	ED
engineering in medicine and biology	EMB
engineering management	EM
geoscience and remote sensing	GRS
graphic symbols and designations	GSD
industrial electronics	IE
industry applications	IA
information infrastructure	II
information theory	IT
instrumentation and measurement	IM
intelligent vehicle highway systems	IVHS
lasers and electro-optics	LEO
magnetics	MAG
microwave theory and techniques	MTT
military	MIL
National Electrical Code	NEC
National Electrical Safety Code	NESC
National Fire Protection Association	NFPA
neural networks	NN
non-ionizing radiation	NIR
nuclear and plasma sciences	NPS
nuclear instruments	NI
oceanic engineering	OE
photovoltaics	PV
power electronics	PEL
power engineering	PE
power quality	PQ
power surge protective devices	PSPD
power switchgear	SWG
quantities, units, and letter symbols	QUL
reliability	R
roadway lighting	RL
robotics and automation	RA
rotating electrical machinery	REM
signal processing	SP
Standard 100 legacy data	Std100
stationary batteries	SB
substations	SUB
systems, man, and cybernetics	SMC
test technology	TT
time and frequency	TF
transformers, regulators, and reactors	TRR
transmission and distribution	T&D
ultrasonics, ferroelectrics, and frequency control	UFFC
vehicular technology	VT

h natural frequency.
i/PE) C37.100-1992, C37.81-1989r
a performance of telephone sets)
r of the lips of a modal head. Also,
ace point of an artificial mouth, the
ne of the lip ring.
(COM/TA) 269-1983s
ion performance of telephone sets)
-set handset assumes when the ear-
d in close contact with the ear of a
lal direction is in the plane defined
aitter cap and ear-cap.
(COM/TA) 269-1983s
lent floating-point arithmetic) (bi-
thmetic) A variable that a user may
tore to control the execution of sub-
tions. The default mode is the mode
ne to be in effect unless an explicitly
cluded in either the program or its
ring mode is implemented: 1) Round-
tion of rounding errors. 2) In certain
ng precision, to shorten the precision
nentor may, at his option, implement
ips disabled or enabled, to handle ex-
(MM/C) 854-1987r, 754-1985r
tate of a vibrating system to which
possible resonance frequencies (or
Note: Not all dissipative systems have
itory circuit. (ED) 161-1971w, [45]
y cavity or transmission line, one of
ield distributions that satisfies Max-
e boundary conditions. The field pat-
on the wavelength, refractive index,
le geometry. *See also:* bound mode;
le; single mode optical waveguide;
; unbound mode; multimode distor-
tic mode; multimode optical wave-
ric mode; hybrid mode; multimode
equilibrium mode distribution; leaky
fundamental mode; equilibrium mode
node attenuation.
(Std100) 812-1984w
gation) A characteristic solution to the
ified boundary conditions. Other uses
common. *See also:* mode of propaga
(AP/PROP) 211-1990
omputing) A variable that a user may
store to control the execution of sub-
rations. (C) 1084-1986
lition of a function, subfunction, o
e system. (C/SE) 1220-1
ibutes that specifies a file's type and
e also: file access permissions.
45-1-1996, 9945-2-1993, 1003.5-
atures or functional capabilities
off-line, and maintenance mode
(C/SE) 136
guide) The transformation of a
n one mode of propagation to
(MTT) 146-1
(waveguide) The gain due to th
one waveguide mode to another
(MTT) 146
waveguide) The loss due to th
one waveguide mode to an
(MTT) 14
ides) A coupler that provides
ific wave mode. *See also:* w
(IM/HF
ptics) In an optical waveguid
ng modes. The exchange of
ibrium after propagation lo

distance that is designated the equilibrium length. *See also:* equilibrium length; equilibrium mode distribution; mode; mode scrambler. (Std100) 812-1984w

mode dispersion *See:* multimode distortion.

modal distortion *See:* multimode distortion.

mode distortion *See:* multimode distortion.

mode filter (1) (fiber optics) A device used to select, reject, or attenuate a certain mode or modes. (Std100) 812-1984w
(2) (waveguide components) A device designed to pass energy along a waveguide in one or more selected modes of propagation, and substantially to reject energy carried in other modes. (MTT) 147-1979w

mode, higher-order *See:* higher-order mode.

MODEL An application-oriented language used widely for simulating digital circuits. (C) 610.13-1993w

model (1) A mathematical or physical representation of the system relationships. (SMC) [63]
(2) (A) (modeling and simulation) An approximation, representation, or idealization of selected aspects of the structure, behavior, operation, or other characteristics of a real-world process, concept, or system. *Note:* Models may have other models as components. (B) (modeling and simulation) To serve as a model as in definition (A). (C) (modeling and simulation) To develop or use a model as in definition (A). (C) 610.3-1989
(3) (computer graphics) An accurate and complete graphical representation of an object. *See also:* modeling system. (C) 610.6-1991w
(4) A representation of one or more aspects of a system. (C/SE) 1016.1-1993w
(5) An analog representation, which may be conceptual, qualitative, or quantitative. (PE/NP) 1082-1997
(6) A representation of a real world process, device, or concept. (C/SE) 1233-1998
(7) (A) A representation of something that suppresses certain aspects of the modeled subject. This suppression is done in order to make the model easier to deal with and more economical to manipulate and to focus attention on aspects of the modeled subject that are important for the intended purpose of the model. For instance, an accurate model of the solar system could be used to predict when planetary conjunctions will take place and the phases of the moon at a particular time. Such a model would generally not attempt to represent the internal workings of the sun or the surface composition of each planet. (B) An interpretation of a theory for which all the axioms of the theory are true, [logic sense]. (C/SE) 1320.2-1998
(8) a cell The creation of a specific elaboration of a model [illegible] Search. (C/DA) 1481-1999

model accreditation (or simulation accreditation) The official determination that a model or simulation is acceptable for use for a specific purpose. (DIS/C) 1278.3-1996

model state A state that does not interfere with the user performing any other action. (C) 1295-1993w

model vocabulary The collection of the names and definitions of the unique concepts that appear within the views of a model. (C/SE) 1320.2-1998

model hierarchy The diagrams that correspond to the nodes of the hierarchical graph structure of an IDEF0 model. (C/SE) 1320.1-1998

modeling A technique of system analysis and design using mathematical or physical idealizations of all or a portion of the system. The completeness and reality of the model are dependent upon the questions to be answered, the state of knowledge of the system and its environment. *See also:* system. (SMC) [63]

modeling actions The action of a circuit with respect to its power. These actions include creating segments [illegible] determining the propagation properties, and setting [illegible] flow equations to use. (C/DA) 1481-1999

modeling statements Delay calculation language (DCL) statements that map cell configurations to modeling procedures. (C/DA) 1481-1999

modeling system A system in which a computer graphics model can be defined or transformed using world coordinates. (C) 610.6-1991w

model name A unique, descriptive name that distinguishes one IDEF0 model from other IDEF0 models with which it may be associated. An IDEF0 model's model name and model name abbreviation are placed in the A-0 context diagram along with the model's purpose statement and viewpoint statement. (C/SE) 1320.1-1998

model name abbreviation A unique short form of a model name that is used to construct diagram references. (C/SE) 1320.1-1998

model note A textual and/or graphical component of a diagram that records a fact not otherwise depicted by a diagram's boxes and arrows. (C/SE) 1320.1-1998

model note number An integer number, placed inside a small square, that unambiguously identifies a model note in a specific diagram. (C/SE) 1320.1-1998

model page A logical component of an IDEF0 model that can be presented on a single sheet of paper. Model pages include diagram, text, FEO, and glossary pages. (C/SE) 1320.1-1998

model space The coordinate system used by a computer graphics model. (C) 610.6-1991w

MODEL 204 (M204) A database manipulation language with English-like syntax. (C) 610.13-1993w

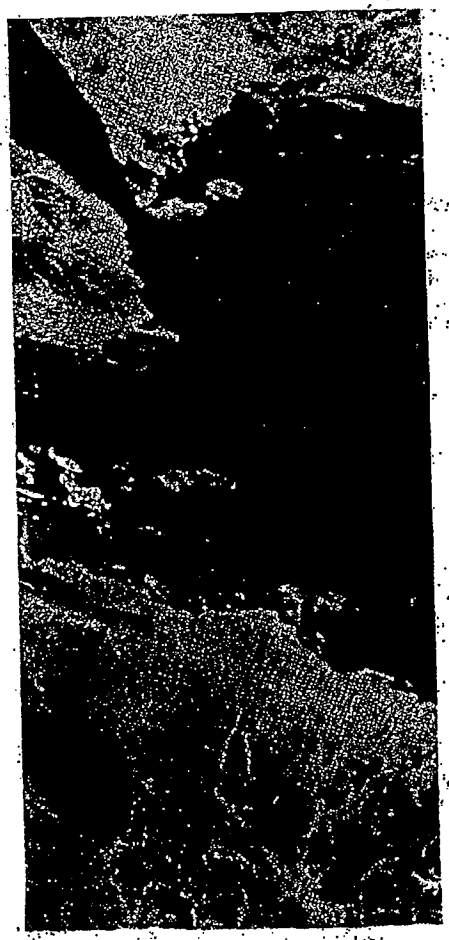
model validation (1) The process of determining the degree to which the requirements, design, or implementation of a model are a realization of selected aspects of the system being modeled. *Contrast:* model verification. *See also:* fidelity. (C) 610.3-1989w
(2) The process of determining the degree to which a model is an accurate representation of the real world from the perspective of the intended use(s) of the model. (DIS/C) 1278.3-1996

model verification (1) The process of determining the degree of similarity between the realization steps of a model; for example, between the requirements and the design, or between the design and its implementation. *Contrast:* model validation. (C) 610.3-1989w
(2) The process of determining that a model implementation accurately represents the developer's conceptual description and specifications. (DIS/C) 1278.3-1996

modem (1) (data transmission) A contraction of MOdulator-DEModulator, an equipment that connects data terminal equipment to a communication line. (PE) 599-1985w
(2) (supervisory control, data acquisition, and automatic control) A modulator/demodulator device that converts serial binary digital data to and from the signal form appropriate for the respective communication channel. (SWG/PE/SUB) C37.100-1992, C37.1-1994
(3) (broadband local area networks) A modulator-demodulator device. The modulator encodes digital information onto an analog carrier signal by varying the amplitude, frequency, or phase of that carrier. The demodulator extracts digital information from a similarly modified carrier. A modem transforms digital signals into a form suitable for transmission over an analog medium. (LM/C) 802.7-1989r
(4) A device that modulates and demodulates signals transmitted over data communication facilities. One of the functions of a modem is to enable digital data to be transmitted over analog transmission facilities. (SUB/PE) 999-1992w
(5) (A) A device that performs modulation and demodulation functions necessary to transmit signals over communication lines. *Note:* This term originated as an abbreviation for modulator-demodulator. *Synonyms:* modulator-demodulator; demodulator-modulator; data set. *See also:* acoustic coupler.
(B) A device that transforms a digital signal received into an analog signal and vice versa. (C) 610.7-1995

McGraw-Hill DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS

Fourth Edition



Sybil P. Parker
EDITOR IN CHIEF

McGRAW-HILL BOOK COMPANY

New York
St. Louis
San Francisco

Auckland
Bogotá
Caracas
Colorado Springs
Hamburg
Lisbon
London
Madrid
Mexico
Milan
Montreal
New Delhi
Oklahoma City
Panama
Paris
San Juan
São Paulo
Singapore
Sydney
Tokyo
Toronto

Q
123
.M34
1989

On the cover: Pattern produced from white light by a computer-generated diffraction plate containing 529 square apertures arranged in a 23 × 23 array. (R. B. Hoover, Marshall Space Flight Center)

On the title pages: Aerial photograph of the Sinai Peninsula made by Gemini spacecraft. (NASA)

Included in this Dictionary are definitions which have been published previously in the following works: P. B. Jordain, *Condensed Computer Encyclopedia*, Copyright © 1969 by McGraw-Hill, Inc. All rights reserved. J. Markus, *Electronics and Nucleonics Dictionary*, 4th ed., Copyright © 1960, 1966, 1978 by McGraw-Hill, Inc. All rights reserved. J. Quick, *Artists' and Illustrators' Encyclopedia*, Copyright © 1969 by McGraw-Hill, Inc. All rights reserved. *Blakiston's Gould Medical Dictionary*, 3d ed., Copyright © 1956, 1972 by McGraw-Hill, Inc. All rights reserved. T. Baumeister and L. S. Marks, eds., *Standard Handbook for Mechanical Engineers*, 7th ed., Copyright © 1958, 1967 by McGraw-Hill, Inc. All rights reserved.

In addition, material has been drawn from the following references: R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *U.S. Air Force Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, 1st ed., National Aeronautics and Space Administration, 1965; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; *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; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, 1st ed., Department of Defense, 1967; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *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; *ADP Glossary*, Department of the Navy, NAVSO P-3097.

78-384328

McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, Fourth Edition

Copyright © 1989, 1984, 1978, 1976, 1974 by McGraw-Hill, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a data base or retrieval system, without the prior written permission of the publisher.

1 2 3 4 5 6 7 8 9 0 DOW/DOW 8 9 5 4 3 2 1 0 9 8

ISBN 0-07-045270-9

Library of Congress Cataloging-in-Publication Data

McGraw-Hill dictionary of scientific and technical terms.

1. Science—Dictionaries. 2. Technology—Dictionaries.
I. Parker, Sybil P.
Q123.M34 1989 503'/21 88-13490
ISBN 0-07-045270-9

For more information about other McGraw-Hill materials, call 1-800-2-MCGRAW in the United States. In other countries, call your nearest McGraw-Hill office.

Möbius resistor [ELEC] A nonreactive resistor made by placing strips of aluminum or other metallic tape on opposite sides of a length of dielectric ribbon, twisting the strip assembly half a turn, joining the ends of the metallic tape, then soldering leads to opposite surfaces of the resulting loop. { 'mər·bē·əs ri,zis·tər }

Möbius strip *See* Möbius band. { 'mər·bē·əs ,strip }

Möbius transformations [MATH] These are the most commonly used conformal mappings of the complex plane; their form is $f(z) = (az + b)/(cz + d)$ where the real numbers a, b, c, and d satisfy $ad - bc \neq 0$. Also known as linear fractional transformations. Also known as bilinear transformations; homographic transformations. { 'mər·bē·əs ,tranz·fər'mā·shənz }

Mobulidae [VERT ZOO] The devil rays, a family of batoids that are surface feeders and live mostly on plankton. { mə'byül·ə,dē }

mocaya oil [MATER] Oil from kernels of the Paraguayan palm (*Acrocomia sclerocarpa*), found in South America and the West Indies; used in manufacture of tinplate, soaps, candles, and margarine. { mə'kī·yə ,ȯil }

mock fog [METEOROL] A simulation of true fog by atmospheric refraction. { 'mäk ,fäg }

mock lead *See* sphalerite. { 'mäk 'led }

mock moon *See* paraselene. { 'mäk 'mün }

mock ore *See* sphalerite. { 'mäk 'ȯr }

mock silver [MET] 1. An aluminum alloy containing 5% copper and 10% tin, or 5% copper and 5% silver. 2. A white brass containing 55% zinc and 45% copper. { 'mäk 'sil·vər }

mock sun *See* paranthelion; parhelion. { 'mäk 'sən }

mock sun ring *See* parhelic circle. { 'mäk 'sən ,riŋ }

mockup [ENG] A model, often full-sized, of a piece of equipment, or installation, so devised as to expose its parts for study, training, or testing. { 'mäk,əp }

MOCVD *See* metal-organic chemical vapor deposition.

modacrylic [TEXT] Of a synthetic fiber, composed of less than 85% and more than 35% by weight of acrylonitrile units. { ,mäd·ə'kril·ik }

mode [COMMUN] Form of the information in a communication such as literal language, digital data, and video. [COMPUT SCI] One of several alternative conditions or methods of operation of a device. [ELECTROMAG] A form of propagation of guided waves that is characterized by a particular field pattern in a plane transverse to the direction of propagation. Also known as transmission mode. [PETR] The mineral composition of a rock, usually expressed as percentages of total weight or volume. [PHYS] A state of an oscillating system that corresponds to a particular field pattern and one of the possible resonant frequencies of the system. [STAT] The most frequently occurring member of a set of numbers. { mōd }

mode converter *See* mode transducer. { 'mōd kən,vərd·ər }

mode eddies [OCEANOGR] Densely packed, irregularly oval high- and low-pressure centers roughly 240 miles (400 kilometers) in diameter in which current intensities are typically tenfold greater than the local means. Also known as mesoscale eddies. { 'mōd ,ed·ēz }

mode filter [ELECTROMAG] A waveguide filter designed to separate waves of the same frequency but of different transmission modes. { 'mōd ,fil·tər }

mode jump [ELECTR] Change in mode of magnetron operation from one pulse to the next; each mode represents a different frequency and power level. { 'mōd ,jəmp }

model [COMPUT SCI] *See* macroskeleton. [SCI TECH] A mathematical or physical system, obeying certain specified conditions, whose behavior is used to understand a physical, biological, or social system to which it is analogous in some way. { 'mäd·əl }

model atmosphere [METEOROL] Any theoretical representation of the atmosphere, particularly of vertical temperature distribution. { 'mäd·əl 'at·mə,sfir }

model basin [ENG] A large basin or tank of water where scale models of ships can be tested. Also known as model tank; towing tank. { 'mäd·əl 'bās·ən }

model-following problem [CONT SYS] The problem of determining a control that causes the response of a given system to be as close as possible to the response of a model system, given the same input. { 'mäd·əl 'fäl·ə·wiŋ ,präb·ləm }

mode-locked laser [OPTICS] A laser designed so that several modes of oscillation with closely spaced wavelengths, in which the laser would normally oscillate, are synchronized so that a pulse of light, lasting for as little as a picosecond, is generated. { 'mōd ,läkt 'lā·zər }

model reduction [CONT SYS] The process of discarding certain modes of motion while retaining others in the model used by an active control system, in order that the control system can compute control commands with sufficient rapidity. { 'mäd·əl ri'dək·shən }

model reference system [CONT SYS] An ideal system whose response is agreed to be optimum; computer simulation in which both the model system and the actual system are subjected to the same stimulus is carried out, and parameters of the actual system are adjusted to minimize the difference in the outputs of the model and the actual system. { 'mäd·əl 'ref·rəns ,sis·təm }

model symbol [COMPUT SCI] The standard usage of geometrical figures, such as squares, circles, or triangles, to help illustrate the various working parts of a model; each symbol must, nevertheless, be footnoted for complete clarification. { 'mäd·əl ,sim·bəl }

model tank *See* model basin. { 'mäd·əl ,taŋk }

model theory [MATH] The general qualitative study of the structure of a mathematical theory. { 'mäd·əl ,thē·ə·rē }

modem [ELECTR] A combination modulator and demodulator at each end of a telephone line to convert binary digital information to audio tone signals suitable for transmission over the line, and vice versa. Also known as dataset. Derived from modulator-demodulator. { 'mō,dem }

modem eliminator [COMPUT SCI] A device that is used to connect two computers in proximity and that mimics the action of two modems and a telephone line. { 'mō,dem ə'lim·ə,nād·ər }

mode number [ELECTR] 1. The number of complete cycles during which an electron of average speed is in the drift space of a reflex klystron. 2. The number of radians of phase in the microwave field of a magnetron divided by 2π as one goes once around the anode. { 'mōd ,nəm·bər }

mode of oscillation *See* mode of vibration. { 'mōd əv ,äs·ə'lā·shən }

mode of vibration [MECH] A characteristic manner in which a system which does not dissipate energy and whose motions are restricted by boundary conditions can oscillate, having a characteristic pattern of motion and one of a discrete set of frequencies. Also known as mode of oscillation. { 'mōd əv vī'brā·shən }

moder *See* coder. { 'mōd·ər }

moderate breeze [METEOROL] In the Beaufort wind scale, a wind whose speed is from 11 to 16 knots (13 to 18 miles per hour or 20 to 30 kilometers per hour). { 'mäd·ə·rət 'brēz }

moderate gale [METEOROL] In the Beaufort wind scale, a wind whose speed is from 28 to 33 knots (32 to 38 miles per hour or 52 to 61 kilometers per hour). { 'mäd·ə·rət 'gāl }

moderator [NUCLEO] The material used in a nuclear reactor to moderate or slow down neutrons from the high velocities at which they are created in the fission process. { 'mäd·ə,rād·ər }

modern algebra [MATH] The study of algebraic systems such as groups, rings, modules, and fields. { 'mäd·ərn 'al·jə·brə }

modern control [CONT SYS] A control system that takes account of the dynamics of the processes involved and the limitations on measuring them, with the aim of approaching the condition of optimal control. { 'mäd·ərn kən'trōl }

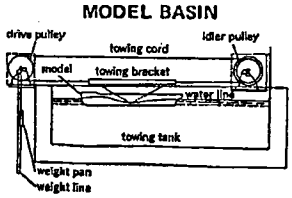
Mode S [NAV] An augmentation of the Air Traffic Control Radar Beacon System in which each aircraft is equipped with a transponder that replies when interrogated with a discrete identity code. Also known as ADSEL (in Britain); discrete address beacon system or DABS (in the United States). { 'mōd 'es }

mode shift [ELECTR] Change in mode of magnetron operation during a pulse. { 'mōd ,shift }

mode skip [ELECTR] Failure of a magnetron to fire on each successive pulse. { 'mōd ,skip }

mode switch [COMPUT SCI] A preset control which affects the normal response of various components of a mechanical desk calculator. [ELECTR] A microwave control device, often consisting of a waveguide section of special cross section, which is used to change the mode of microwave power transmission in the waveguide. { 'mōd ,swich }

MODEL BASIN



Model basin with model towed by falling weight.

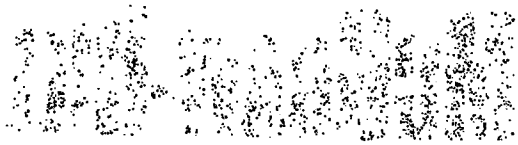
McGraw-Hill Dictionary of Scientific and Technical Terms

Fifth Edition

Sybil P. Parker
Editor in Chief

McGraw-Hill, Inc.
New York San Francisco Washington, D.C.
Auckland Bogotá Caracas Lisbon London Madrid Mexico City Milan
Montreal New Delhi San Juan Singapore Sydney Tokyo Toronto

On the cover: Photomicrograph of crystals of vitamin B_1.
(Dennis Kunkel, University of Hawaii)



Included in this Dictionary are definitions which have been published previously in the following works: P. B. Jordain, *Condensed Computer Encyclopedia*, Copyright © 1969 by McGraw-Hill, Inc. All rights reserved. J. Markus, *Electronics and Nucleonics Dictionary*, 4th ed., Copyright © 1960, 1966, 1978 by McGraw-Hill, Inc. All rights reserved. I. Quick, *Artists' and Illustrators' Encyclopedia*, Copyright © 1969 by McGraw-Hill, Inc. All rights reserved. *Blakiston's Gould Medical Dictionary*, 3d ed., Copyright © 1956, 1972 by McGraw-Hill, Inc. All rights reserved. T. Baumeister and L. S. Marks, eds., *Standard Handbook for Mechanical Engineers*, 7th ed., Copyright © 1958, 1967 by McGraw-Hill, Inc. All rights reserved.

In addition, material has been drawn from the following references: R. P. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *U.S. Air Force Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, 1st ed., National Aeronautics and Space Administration, 1965; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; *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; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, 1st ed., Department of Defense, 1967; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, 1968; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *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; *ADP Glossary*, Department of the Navy, NAVSO P-3097.

McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, Fifth Edition

Copyright © 1994, 1989, 1984, 1978, 1976, 1974 by McGraw-Hill, Inc. All rights reserved. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

67890 DOW/DOW 03 02 01 00

ISBN 0-07-042333-4

Library of Congress Cataloging-in-Publication Data

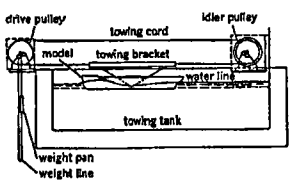
McGraw-Hill dictionary of scientific and technical terms /
Sybil P. Parker, editor in chief.—5th ed.
p. cm.
ISBN 0-07-042333-4
1. Science—Dictionaries. 2. Technology—Dictionaries.
I. Parker, Sybil P.
Q123.M34 1993
503—dc20 93-34772
CIP

INTERNATIONAL EDITION

Copyright © 1994. Exclusive rights by McGraw-Hill, Inc. for manufacture and export. This book cannot be re-exported from the country to which it is consigned by McGraw-Hill. The International Edition is not available in North America.

When ordering this title, use ISBN 0-07-113584-7.

mock silver [MET] 1. An aluminum alloy containing 5% copper and 10% tin, or 5% copper and 5% silver. 2. A white brass containing 55% zinc and 45% copper. { 'mäk 'sil·vər }
mock sun *See* paranthelion; parhelion. { 'mäk 'sən }
mock sun ring *See* parhelic circle. { 'mäk 'sən ˌriŋ }
mockup [ENG] A model, often full-sized, of a piece of equipment or installation, so devised as to expose its parts for study, training, or testing. { 'mäkˌəp }
MOCVD *See* metal-organic chemical vapor deposition.
modacrylic [TEXT] Of a synthetic fiber, composed of less than 85% and more than 35% by weight of acrylonitrile units. { ˌmäd·ə'kril·ik }
modal class [STAT] The class that contains more individuals than any other class in a statistical distribution. { 'mōd·əl ˌklas }
modal distortion *See* modal noise. { 'mōd·əl di'stȯr·shən }
modal noise [COMMUN] Interference of a multimode optical communications fiber with a laser light source when a speckle pattern in the light intensity in the fiber alters because of motion of the fiber or changes in the laser spectrum. Also known as modal distortion. { 'mōd·əl 'nȯiz }
modal number [GEN] 1. The typical chromosome number of a taxonomic group. 2. The typical chromosome number of a tumor cell population. { 'mōd·əl ˌnəm·bər }
mode [COMMUN] Form of the information in a communication such as literal language, digital data, and video. [COMPUT SCI] One of several alternative conditions or methods of operation of a device. [ELECTROMAG] A form of propagation of guided waves that is characterized by a particular field pattern in a plane transverse to the direction of propagation. Also known as transmission mode. [PETR] The mineral composition of a rock, usually expressed as percentages of total weight or volume. [PHYS] A state of an oscillating system that corresponds to a particular field pattern and one of the possible resonant frequencies of the system. [STAT] The most frequently occurring member of a set of numbers. { mōd }
mode converter *See* mode transducer. { 'mōd kən'vərd·ər }
mode eddies [OCEANOGR] Densely packed, irregularly oval high- and low-pressure centers roughly 240 miles (400 kilometers) in diameter in which current intensities are typically tenfold greater than the local means. Also known as mesoscale eddies. { 'mōd ˌed·ēz }
mode filter [ELECTROMAG] A waveguide filter designed to separate waves of the same frequency but of different transmission modes. { 'mōd ˌfil·tər }
mode jump [ELECTR] Change in mode of magnetron operation from one pulse to the next; each mode represents a different frequency and power level. { 'mōd ˌjəmp }
model [COMPUT SCI] *See* macroskeleton. [SCI TECH] A mathematical or physical system, obeying certain specified conditions, whose behavior is used to understand a physical, biological, or social system to which it is analogous in some way. { 'mäd·əl }
model atmosphere [METEOROL] Any theoretical representation of the atmosphere, particularly of vertical temperature distribution. { 'mäd·əl 'at·məˌsfir }
model-based expert system [COMPUT SCI] An expert system that is based on knowledge of the structure and function of the object for which the system is designed. { 'mäd·əl ˌbāst ik'spərt ˌsis·təm }
model basin [ENG] A large basin or tank of water where scale models of ships can be tested. Also known as model tank; towing tank. { 'mäd·əl ˌbās·ən }
model-following problem [CONT SYS] The problem of determining a control that causes the response of a given system to be as close as possible to the response of a model system, given the same input. { 'mäd·əl 'fäl·ō·wiŋ ˌprāb·ləm }
mode-locked laser [OPTICS] A laser designed so that several modes of oscillation with closely spaced wavelengths, in which the laser would normally oscillate, are synchronized so that a pulse of light, lasting for as little as a picosecond, is generated. { 'mōd ˌläkt 'lā·zər }
model reduction [CONT SYS] The process of discarding certain modes of motion while retaining others in the model used by an active control system, in order that the control system can compute control commands with sufficient rapidity. { 'mäd·əl ri'dək·shən }
model reference system [CONT SYS] An ideal system whose response is agreed to be optimum; computer simulation in which both the model system and the actual system are subjected to the same stimulus is carried out, and parameters of the actual system are adjusted to minimize the difference in the outputs of the model and the actual system. { 'mäd·əl 'ref·rəns ˌsis·təm }
model symbol [COMPUT SCI] The standard usage of geometrical figures, such as squares, circles, or triangles, to help illustrate the various working parts of a model; each symbol must, nevertheless, be footnoted for complete clarification. { 'mäd·əl ˌsim·bəl }
model tank *See* model basin. { 'mäd·əl ˌtaŋk }
model theory [MATH] The general qualitative study of the structure of a mathematical theory. { 'mäd·əl ˌthē·ə·rē }
modem [ELECTR] A combination modulator and demodulator at each end of a telephone line to convert binary digital information to audio tone signals suitable for transmission over the line, and vice versa. Also known as dataset. Derived from modulator-demodulator. { 'mōˌdem }
modem eliminator [COMPUT SCI] A device that is used to connect two computers in proximity and that mimics the action of two modems and a telephone line. { 'mōˌdem ə'lim·əˌnād·ər }
mode number [ELECTR] 1. The number of complete cycles during which an electron of average speed is in the drift space of a reflex klystron. 2. The number of radians of phase in the microwave field of a magnetron divided by 2π as one goes once around the anode. { 'mōd ˌnəm·bər }
mode of oscillation *See* mode of vibration. { 'mōd əv ˌäs·ə'lā·shən }
mode of vibration [MECH] A characteristic manner in which a system which does not dissipate energy and whose motions are restricted by boundary conditions can oscillate, having a characteristic pattern of motion and one of a discrete set of frequencies. Also known as mode of oscillation. { 'mōd əv vī'brā·shən }
moder [COMMUN] *See* coder. [GEOL] Humus consisting of plant material that is undergoing alteration from the living to the decayed state and is intermediate in acidity between mor and mull. { 'mōd·ər }
moderate breeze [METEOROL] In the Beaufort wind scale, a wind whose speed is from 11 to 16 knots (13 to 18 miles per hour or 20 to 30 kilometers per hour). { 'mäd·ə·rət 'brēz }
moderate gale [METEOROL] In the Beaufort wind scale, a wind whose speed is from 28 to 33 knots (32 to 38 miles per hour or 52 to 61 kilometers per hour). { 'mäd·ə·rət 'gāl }
moderator [NUCLEO] The material used in a nuclear reactor to moderate or slow down neutrons from the high velocities at which they are created in the fission process. { 'mäd·əˌrād·ər }
modern algebra [MATH] The study of algebraic systems such as groups, rings, modules, and fields. { 'mäd·ərn 'al·jə·brə }
modern control [CONT SYS] A control system that takes account of the dynamics of the processes involved and the limitations on measuring them, with the aim of approaching the condition of optimal control. { 'mäd·ərn kən'trōl }
Mode S [NAV] An augmentation of the Air Traffic Control Radar Beacon System in which each aircraft is equipped with a transponder that replies when interrogated with a discrete identity code. Also known as ADSEL (in Britain); discrete address beacon system or DABS (in the United States). { 'mōd 'es }
mode shift [ELECTR] Change in mode of magnetron operation during a pulse. { 'mōd ˌshift }
mode skip [ELECTR] Failure of a magnetron to fire on each successive pulse. { 'mōd ˌskip }
mode switch [COMPUT SCI] A preset control which affects the normal response of various components of a mechanical desk calculator. [ELECTR] A microwave control device, often consisting of a waveguide section of special cross section, which is used to change the mode of microwave power transmission in the waveguide. { 'mōd ˌswich }
mode transducer [ELECTR] Device for transforming an electromagnetic wave from one mode of propagation to another. Also known as mode converter; mode transformer. { 'mōd tranz'dü·sər }
mode transformer *See* mode transducer. { 'mōd tranz'fȯr·mər }
MODFET *See* high-electron-mobility transistor. { 'mädˌfet }
modification [ENG] A major or minor change in the design of an item, effected in order to correct a deficiency, to facilitate production, or to improve operational effectiveness. [MET]



Model basin with model towed by falling weight.

Que's® Computer User's Dictionary

Second Edition

Bryan Pfaffenberger, Ph.D.
School of Engineering and Applied Science
University of Virginia

Que® Corporation
Carmel, Indiana

Que's Computer User's Dictionary, Second Edition.

Copyright © 1991 by Que Corporation.

All rights reserved. Printed in the United States of America. No part of this book may be used or reproduced in any form or by any means, or stored in a database or retrieval system, without prior written permission of the publisher except in the case of brief quotations embodied in critical articles and reviews. Making copies of any part of this book for any purpose other than your own personal use is a violation of United States copyright laws. For information, address Que Corporation, 11711 North College Avenue, Carmel, In 46032.

Library of Congress Catalog Number: 90-64408

ISBN 0-88022-697-8

This book is sold *as is*, without warranty of any kind, either express or implied, respecting the contents of this book, including but not limited to implied warranties for the book's quality, performance, merchantability, or fitness for any particular purpose. Neither Que Corporation nor its dealers or distributors shall be liable to the purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by this book.

94 93 92 91 4 3 2 1

Interpretation of the printing code: the rightmost double-digit number is the year of the book's printing; the rightmost single-digit number, the number of the book's printing. For example, a printing code of 91-1 shows that the first printing of the book occurred in 1991.

Publisher: Lloyd J. Short

Associate Publisher: Karen A. Bluestein

Acquisitions Editor: Timothy M. Ryan

Product Development Manager: Mary Bednarek

Managing Editor: Paul Boger

Book Designer: Scott Cook

Screens in this book were reproduced with the program Collage Plus from Inner Media, Inc., Hollis, N.H.

Acknowledgments

The language of personal computing is changing as fast as the technology, and that's why Que is publishing a second edition of *Computer User's Dictionary*. In this edition, you find expanded coverage of memory management, Microsoft Windows, desktop publishing, and other exciting, new areas of personal computing hardware and applications.

In keeping with personal computing's close contact with users and Que's dedication to readers, we have responded to the many reader suggestions for new terms to include. I would like to thank all who wrote to us. Very special thanks are due to Thomas Oleszczuk, Ph.D., of the U.S. Merchant Marine Academy, who combed through the entire book, page by page, and wrote a detailed commentary; and Robert de Violini, Editor of the *Channel Islands PC Users' Group* newsletter, who also made many useful suggestions.

I would like to thank Lloyd Short once again for encouraging me to undertake this project—thanks, Lloyd, for your confidence in me. I also thank Charles Stewart, the project director, for guidance that was as intelligent as it was good-humored. Special praise is due to Que's world-class editorial team for their usual superb job: Cheryl Robinson, Jo Anna Arnott, Frances Huber, and Laura Wirthlin. This book's technical editor, Brian Underdahl, subjected all that follows to his impressive breadth and depth of knowledge of personal computing.

Que gave me the freedom to attempt a totally new kind of dictionary, a user's dictionary: it's a dictionary written from the personal computer user's viewpoint. Terms are included only if they're relevant to personal computer users—and they're defined with the user's needs in mind. Academic types and lexicographers may find this approach wrong-headed or even to pose a danger to Civilization for having obfuscated nice, tidy academic distinctions, but I am the proper target for their ire, not those who aided me so much as I pursued my goal. If computer users find this dictionary of value in defining the world of computing as they see it, I will be more than satisfied.

B-29

Case 1:05-cv-00725-SLR-LPS Document 240 Filed 11/28/2007 Page 31 of 36

should be used with caution. A model is only as good as its underlying assumptions. If these assumptions are incorrect, or if important information is missing from the model, it may not reflect the prototype's behavior accurately.

modem A device that converts the digital signals generated by the computer's serial port to the modulated, analog signals required for transmission over a telephone line and transforms incoming analog signals to their digital equivalents. In personal computing, people frequently use modems to exchange programs and data with other computers, and to access on-line information services such as the Dow Jones News/Retrieval Service.

Modem stands for MOdulator/DEModulator. The modulation is necessary because telephone lines were designed to handle the human voice, which warbles between 300 Hz and 3,000 Hz in ordinary telephone conversations (from a growl to a shriek). The speed at which a modem transmits data is measured in units called bits per second (technically not the same as bauds, although the terms are often used interchangeably). See *acoustic coupler*, *auto-dial/auto-answer modem*, *direct-connect modem*, *echoplex*, *external modem*, *full duplex*, *half duplex*, *Hayes command set*, *Hayes-compatible modem*, *internal modem*, and *Universal Asynchronous Receiver/Transmitter (UART)*.

Modified Frequency Modulation (MFM) A method of recording digital information on magnetic media such as tapes and disks by eliminating redundant or blank areas. Because the MFM data encoding scheme doubles the storage attained under the earlier frequency-modulation (FM) recording technique, MFM recording usually is referred to as double density.

MFM often is used erroneously to describe ordinary hard disk controllers, those conforming to the ST-506/ST-412 standard. MFM refers to the method used to pack data on the disk and is not synonymous with disk drive interface standards such as ST506, SCSI, or ESDI. See *data-encoding scheme*, *double density*, *interface standard*, and *Run-Length Limited (RLL)*.

Modula-2 A high-level programming language that extends Pascal so that the language can execute program modules independently.

Developed in 1980 by the European computer wizard Niklaus Wirth, the creator of Pascal, Modula-2 is an enhanced version of Pascal that supports the separate compilation of program modules and overcomes many other shortcomings of Pascal. A programmer working on a team can write and compile the module he or she has been assigned, testing the module extensively to make sure that it functions correctly.

Modula-2 is a logical extension of Pascal, a prominent feature of which is the setting aside of procedures and functions in program modules (which cannot, however, be compiled separately).

Although Modula-2 is increasingly popular as a teaching language at colleges and universities, professional software development is dominated by the C language. See *C*, *modular programming*, *Pascal*, and *structured programming*.

modular accounting package A collection of accounting programs—one for each of the chief accounting functions (general ledger, accounts payable, accounts receivable, payroll, and inventory, for example)—designed to work together, even though they are not integrated into one program.

Modular accounting programs are computerized versions of traditional accounting practices, in which a firm keeps several ledgers—one for accounts receivable, accounts payable, and a general ledger. You update the general ledger in batches at period intervals after carefully proofing the hard copy for errors. Modular packages generally are sold with several separate programs for each of these functions, and you must follow special procedures to make sure that all the transactions are correctly updated.

These programs have not found a large market in personal computing for two reasons: first, because people with professional accounting experience designed them,

Case 1:05-cv-00725-SLR-LPS Document 240 Filed 11/28/2007 Page 32 of 36

Merriam-Webster's Collegiate® Dictionary

ELEVENTH EDITION



Merriam-Webster, Incorporated
Springfield, Massachusetts, U.S.A.



A GENUINE MERRIAM-WEBSTER

The name *Webster* alone is no guarantee of excellence. It is used by a number of publishers and may serve mainly to mislead an unwary buyer.

Merriam-Webster™ is the name you should look for when you consider the purchase of dictionaries or other fine reference books. It carries the reputation of a company that has been publishing since 1831 and is your assurance of quality and authority.

Copyright © 2003 by Merriam-Webster, Incorporated

Library of Congress Cataloging in Publication Data

Merriam-Webster's collegiate dictionary.—Eleventh ed.
p. cm.
Includes index.
ISBN 0-87779-807-9 (Laminated unindexed : alk. paper). — ISBN 0-87779-808-7 (Jacketed hardcover unindexed : alk. paper). — ISBN 0-87779-809-5 (Jacketed hardcover with CD-ROM : alk. paper). — ISBN 0-87779-810-9 (Leatherlook with CD-ROM : alk. paper). — 0-87779-813-3 (Canadian). — 0-87779-814-1 (international).
1. English language—Dictionaries. I. Title: Collegiate dictionary. II. Merriam-Webster, Inc.
PE1628.M36 2003
423—dc21 2003003674
CIP

COLLEGIATE is a registered trademark of Merriam-Webster, Incorporated

All rights reserved. No part of this book covered by the copyrights hereon may be reproduced or copied in any form or by any means—graphic, electronic, or mechanical, including photocopying, taping, or information storage and retrieval systems—without written permission of the publisher.

Made in the United States of America

2TT:QWV03

ness). WAYWARD suggests strong-willed capriciousness and irregularity in behavior (a school for *wayward* youths). *syn* see in addition OPPOSITE

³contrary *same as* ²\ *adv* (15c) : CONTRARIWISE, CONTRARILY

contrary to *prep* (14c) : in conflict with : DESPITE (*contrary to* orders, he set out alone)

¹con·trast \kən-ˈtrast, ˈkän-ˌ\ *vb* [F *contraster*, fr. MF, to oppose, resist, alter. of *contrester*, fr. VL **contrastare*, fr. L *contra-* + *stare* to stand — more at STAND] *vt* (1646) : to set off in contrast : compare or appraise in respect to differences (~ European and American manners) — often used with *to* or *with* (~*ing* her with other women —Victoria Sackville-West) ~ *vi* : to form a contrast *syn* see COMPARE — **con·trast·able** \-ˈtras-tə-bəl, -ˌtras-\ *adj* — **con·trast·ing·ly** \-tiŋ-lē\ *adv*

²con·trast \ˈkän-ˌtrast\ *n* (1711) **1 a** : juxtaposition of dissimilar elements (as color, tone, or emotion) in a work of art **b** : degree of difference between the lightest and darkest parts of a picture **2 a** : the difference or degree of difference between things having similar or comparable natures (the ~ between the two forms of government) **b** : comparison of similar objects to set off their dissimilar qualities : the state of being so compared (the enforced simplicity in this diary . . . is in ~ to the intensity of his former life —*Times Lit. Supp.*) **3** : a person or thing that exhibits differences when compared with another

con·tras·tive \kən-ˈtras-tiv, ˈkän-ˌ\ *adj* (1841) : forming or consisting of a contrast — **con·tras·tive·ly** *adv*

con·trasty \ˈkän-ˌtras-tē\ *adj* (1891) : having or producing in photography great contrast between highlights and shadows (a ~ image)

con·tra·vene \ˌkän-trə-ˈvēn\ *vt* **-vened; -ven·ing** [MF or LL; MF *contrevenir*, fr. LL *contravenire*, fr. L *contra-* + *venire* to come — more at COME] (1567) **1** : to go or act contrary to : VIOLATE (~ a law) **2** : to oppose in argument : CONTRADICT (~ a proposition) *syn* see DENY — **con·tra·ven·er** *n*

con·tra·ven·tion \ˌkän-trə-ˈven(t)-shən\ *n* [MF, fr. LL *contravenire*] (1579) : the act of contravening : VIOLATION

contredanse *var of* CONTRA DANCE

con·tre·temps \ˈkän-trə-ˌtäⁿ, kōⁿ-trə-täⁿ\ *n, pl* **con·tre·temps** \-(ˌ)täⁿ(z)\ [F, fr. *contre-* counter- + *temps* time, fr. L *tempus*] (1769) **1** : an inopportune or embarrassing occurrence or situation **2** : DISPUTE, ARGUMENT

contrib *abbr* contribution; contributor

con·trib·ute \kən-ˈtri-byət, -ˌ(ˌ)byüt *also & esp before -ed or -ing* -ˈtri-bət; *chiefly Brit also* ˈkän-trə-ˌbyüt\ *vb* **-ut·ed; -ut·ing** [L *contributus*, pp. of *contribuere*, fr. *com-* + *tribuere* to grant — more at TRIBUTE] *vt* (1530) **1** : to give or supply in common with others (~ money to a cause) **2** : to supply (as an article) for a publication ~ *vi* **1 a** : to give a part to a common fund or store (~ to a fund-raising campaign) **b** : to play a significant part in bringing about an end or result (many players have *contributed* to the team's success) **2** : to submit articles to a publication — **con·trib·u·tor** \-byə-tər, -bə-, -byü-\ *n*

con·tri·bu·tion \ˌkän-trə-ˈbyü-shən\ *n* (14c) **1** : a payment (as a levy or tax) imposed by military, civil, or ecclesiastical authorities usu. for a special or extraordinary purpose **2** : the act of contributing; *also* : the thing contributed — **con·trib·u·tive** \kən-ˈtri-byə-tiv\ *adj* — **con·trib·u·tive·ly** *adv*

con·trib·u·to·ry \kən-ˈtri-byə-ˌtȯr-ē\ *adj* (15c) **1 a** : subject to a levy of supplies, money, or men **b** : contributing to a common fund or enterprise **2** : of, relating to, or forming a contribution

con·trite \ˈkän-ˌtrīt, kən-ˈ\ *adj* [ME *contrit*, fr. AF, fr. ML *contritus*, fr. L, pp. of *conterere* to grind, bruise, fr. *com-* + *terere* to rub — more at THROW] (14c) : feeling or showing sorrow and remorse for a sin or shortcoming (a ~ criminal) (a ~ apology) (~ sighs) — **con·trite·ly** *adv* — **con·trite·ness** *n*

con·tri·tion \kən-ˈtri-shən\ *n* (14c) : the state of being contrite : REPENTANCE *syn* see PENITENCE

con·triv·ance \kən-ˈtrī-vən(t)s\ *n* (ca. 1628) **1 a** : a thing contrived; *esp* : a mechanical device **b** : an artificial arrangement or development **2** : the act or faculty of contriving : the state of being contrived

con·trive \kən-ˈtrīv\ *vb* **con·trived; con·triv·ing** [ME *controven, contreven*, fr. AF *controver, contrever*, fr. ML *contropare* to compare, fr. L *com-* + VL **tropare* to compose, find — more at TROUBADOR] *vt* (14c) **1 a** : DEVISE, PLAN (~ ways of handling the situation) **b** : to form or create in an artistic or ingenious manner (*contrived* household utensils from stone) **2** : to bring about by stratagem or with difficulty : MANAGE (he *contrived* to win their support) ~ *vi* : to make schemes — **con·triv·er** *n*

contrived *adj* (15c) : ARTIFICIAL, LABORED (a ~ plot)

¹con·trol \kən-ˈtrōl\ *vb* **con·trolled; con·trol·ling** [ME *countrollen*, fr. AF *contrerouler*, fr. *contreroule* copy of an account, audit, fr. ML *contrarotulus*, fr. L *contra-* + ML *rotulus* roll — more at ROLL] *vt* (15c) **1 a** *archaic* : to check, test, or verify by evidence or experiments **b** : to incorporate suitable controls in (a *controlled* experiment) **2 a** : to exercise restraining or directing influence over : REGULATE **b** : to have power over : RULE **c** : to reduce the incidence or severity of esp. to innocuous levels (~ an insect population) (~ a disease) ~ *vi* : to incorporate controls in an experiment or study — used with *for* (*control* for socioeconomic differences) *syn* see CONDUCT — **con·trol·la·bil·i·ty** \-ˌtrō-lə-ˈbi-lə-tē\ *n* — **con·trol·la·ble** \-ˈtrō-lə-bəl\ *adj* — **con·trol·ment** \-ˈtrōl-mənt\ *n*

²control *n, often attrib* (1590) **1 a** : an act or instance of controlling; *also* : power or authority to guide or manage **b** : skill in the use of a tool, instrument, technique, or artistic medium **c** : the regulation of economic activity esp. by government directive — usu. used in pl. (price ~s) **d** : the ability of a baseball pitcher to control the location of a pitch within the strike zone **2** : RESTRAINT, RESERVE **3** : one that controls: as **a (1)** : an experiment in which the subjects are treated as in a parallel experiment except for omission of the procedure or agent under test and which is used as a standard of comparison in judging experimental effects — called also *control experiment* **(2)** : one (as an organism, culture, or group) that is part of a control **b** : a device or mechanism used to regulate or guide the operation of a machine, apparatus, or system **c** : an organization that directs a spaceflight (mission ~) **d** : a personality or spirit believed to actuate the utterances or performances of a spiritualist medium *syn* see POWER

control freak *n* (1977) : a person whose behavior indicates a powerful need to control people or circumstances in everyday matters

con·trolled \kən-ˈtrōld\ *adj* (1586) **1** : RESTRAINED **2** : law with regard to possession and use (~ drugs)

con·trol·ler \kən-ˈtrō-lər, ˈkän-ˌ\ *n* [ME *countreroller*, fr. *lur*, fr. *contreroule*] (15c) **1 a** : COMPTROLLER **1 b** : CO **c** : the chief accounting officer of a business enterprise tion (as a college) **2 a** : one that controls or has power o control (air traffic ~) **b** : CONTROL 3b — **con·trol·ler** *n*

controlling *adj* (1974) : inclined to control others' beh NEERING

controlling interest *n* (1867) : sufficient stock ownership tion to exert control over policy

control surface *n* (1917) : a movable airfoil designed to titude of an aircraft

con·tro·ver·sial \ˌkän-trə-ˈvər-shəl, -ˈvər-sē-əl\ *adj* (1583) ing to, or arousing controversy (a ~ policy) (a ~ film) controversy : DISPUTATIOUS (a ~ temperament) — **con·ism** \-shə-ˌli-zəm, -sē-ə-ˌ\ *n* — **con·tro·ver·sial·ist** \-li **tro·ver·sial·ly** *adv*

con·tro·ver·sy \ˈkän-trə-ˌvər-sē, *Brit also* kən-ˈträ-vər-sē [ME *controversie*, fr. AF, fr. L *controversia*, fr. *controversus* lit., turned against, fr. *contro-* (akin to *contra-*) + *versus*, pp turn — more at WORTH] (14c) **1** : a discussion marked pression of opposing views : DISPUTE **2** : QUARREL, STR

con·tro·vert \ˈkän-trə-ˌvərt, ˌkän-trə-ˈ\ *vb* [*controversy*] dispute or oppose by reasoning (~ a point in a discussi engage in controversy — **con·tro·vert·er** \-ˌvər-tər, -ˈvə **tro·vert·ible** \-tə-bəl\ *adj*

con·tu·ma·cious \ˌkän-tü-ˈmā-shəs, -tyü-ˈ, -chə-ˈ\ *adj* (bornly disobedient : REBELLIOUS — **con·tu·ma·cious·l**

con·tu·ma·cy \kən-ˈtü-mə-sē, -ˈtyü-; ˈkän-tü-, -tyü-, -chə- *tumacie*, fr. AF, fr. L *contumacia*, fr. *contumac-*, *contum* (13c) : stubborn resistance to authority; *specif* : willful court

con·tu·me·li·ous \ˌkän-tü-ˈmē-lē-əs, -tyü-ˈ, -chə-ˈ\ *adj* (1 ly abusive and humiliating — **con·tu·me·li·ous·ly** *adv*

con·tume·ly \ˈkän-ˌtü-mə-lē, kən-, -ˈtyü-; ˈkän-tü-ˌmē-lē, *in "Hamlet"* ˈkän-(ˌ)tyüm-lē *or* ˈkän-chəm-\ *n, pl* **-lies** [M fr. MF, fr. L *contumelia*] (14c) : harsh language or trea from haughtiness and contempt; *also* : an instance of suc treatment

con·tu·sion \kən-ˈtü-zhən, -ˈtyü-\ *n* [ME *conteschown*, fr. *contusio*, fr. *contundere* to pound, bruise, fr. *com-* + *tun* akin to Goth *stautan* to strike, Skt *tudati* he pushes] (15c) sue usu. without laceration : BRUISE 1a — **con·tuse** \-ˈtü

co·nun·drum \kə-ˈnən-drəm\ *n* [origin unknown] (1645) whose answer is or involves a pun **2 a** : a question or pr only a conjectural answer **b** : an intricate and difficult p

con·ur·ba·tion \ˌkä-(ˌ)nər-ˈbā-shən\ *n* [*com-* + L *urb-*, *urb* : an aggregation or continuous network of urban commu

co·nus ar·te·ri·o·sus \ˈkō-nəs-ˌär-ˌtir-ē-ˈō-səs\ *n, pl* **co·ni** \-ˌnī-ˌär-ˌtir-ē-ˈō-ˌsī\ [NL, lit., arterial cone] (ca. 1860) **1** : longation of the right ventricle in mammals from which t arteries emerge — called also *conus* **2** : a prolongation of of amphibians and some fishes that has a spiral valve sepa blood going to the respiratory arteries from blood going and systemic arteries

conv *abbr* **1** convention; conventional **2** convertible **3**

con·va·lesce \ˌkän-və-ˈles\ *vi* **-lesced; -les·cing** [L *co com-* + *valescere* to grow strong, fr. *valēre* to be strong, be at WIELD] (15c) : to recover health and strength gradual ness or weakness — **con·va·les·cence** \-ˈle-sᵊn(t)s\ *n* — **cent** \-sᵊnt\ *adj or n*

con·vect \kən-ˈvekt\ *vb* [back-formation fr. *convection*] transfer heat by convection ~ *vt* : to circulate (as air) b — **con·vec·tive** \-ˈvek-tiv\ *adj*

con·vec·tion \kən-ˈvek-shən\ *n* [LL *convection-*, *convectio here* to bring together, fr. *com-* + *vehere* to carry — more 1623) **1** : the action or process of conveying **2 a** : th motion that occurs in a fluid at a nonuniform temperat the variation of its density and the action of gravity **b** : t heat by convection — compare CONDUCTION, RADIATI **vec·tion·al** \-shnəl, -shə-nᵊl\ *adj*

convection oven *n* (1973) : an oven having a fan that circ uniformly and continuously around food

con·vec·tor \-ˈvek-tər\ *n* (1907) : a heating unit in which contact with a heating device (as a radiator or a tube with ing circulates by convection

con·vene \kən-ˈvēn\ *vb* **con·vened; con·ven·ing** [ME, *nire*, fr. L, to assemble — more at CONVENIENT] *vi* (15c) gether in a body ~ *vt* **1** : to summon before a tribunal to assemble *syn* see SUMMON — **con·ven·er** *or* **con·** nər\ *n*

¹con·ve·nience \kən-ˈvē-nyən(t)s\ *n* (14c) **1** : fitness or performing an action or fulfilling a requirement **2 a** : an appliance, device, or service) conducive to comfort or *ly Brit* : TOILET **3** : a suitable or convenient time (at : freedom from discomfort : EASE

²convenience *adj* (1917) : designed for quick and easy pr use (~ foods)

convenience store *n* (1965) : a small often franchised open long hours

con·ve·nien·cy \-yən(t)-sē\ *n* (1601) *archaic* : CONVENIE

con·ve·nient \kən-ˈvēn-yənt\ *adj* [ME, fr. L *convenient-*, prp. of *convenire* to assemble, come together, be suitable, *nire* to come — more at COME] (14c) **1** *obs* : SUITABLE, : suited to personal comfort or to easy performance (me time) **b** : suited to a particular situation (a ~ excuse) accommodation or advantage (found it ~ to deal with b at the same time) **3** : being near at hand : CLOSE (a locat train station) — **con·ve·nient·ly** *adv*

¹con·vent \ˈkän-vənt, -ˌvent\ *n* [ME *covent*, fr. AF, fr. ML L, assembly, fr. *convenire*] (13c) : a local community or ho gious order or congregation; *esp* : an establishment of nu

fruit and are the source of valuable timber, aromatic oils, and resins; *esp* : a tree of the type genus (*Dipterocarpus*)

dip·tych \'dip-(,)tik\ *n* [LL *diptycha*, pl., fr. Gk, fr. neut. pl. of *diptychos* folded in two, fr. *di-* + *ptychē* fold] (1622) **1** : a 2-leaved hinged tablet folding together to protect writing on its waxed surfaces **2** : a picture or series of pictures (as an altarpiece) painted or carved on two hinged tablets **3** : a work made up of two matching parts


diptych 2

di·quat \'dī-,kwät\ *n* [*di-* + *quat*ernary] (1960) : a powerful herbicide and plant desiccant $C_{12}H_{12}Br_2N_2$ used esp. to control aquatic weeds and to desiccate aerial plant parts (as of potatoes) before harvesting

dir *abbr* **1** direction **2** director

dir·dum \'dir-dəm, 'dər-\ *n* [ME (northern dial.) *durdan, durdum* uproar, of Celt origin; akin to W *dwrdd* noise, clamor, MIr *dordán* humming, droning] (ca. 1693) *Scot* : BLAME

dire \'dī(-ə)r\ *adj* **dir·er; dir·est** [L *dirus;* akin to Gk *deinos* terrifying, Skt *dveṣṭi* he hates] (1565) **1 a** : exciting horror ⟨~ suffering⟩ **b** : DISMAL, OPPRESSIVE ⟨~ days⟩ **2** : warning of disaster ⟨a ~ forecast⟩ **3 a** : desperately urgent ⟨~ need⟩ **b** : EXTREME ⟨~ poverty⟩ — **dire·ly** *adv* — **dire·ness** *n*

¹di·rect \də-'rekt, dī-\ *vb* [ME, fr. AF *directer*, fr. L *directus* straight, fr. pp. of *dirigere* to direct — more at DRESS] *vt* (14c) **1 a** *obs* : to write (a letter) to a person **b** : to mark with the name and address of the intended recipient **c** : to impart orally **d** : to adapt in expression so as to have particular applicability ⟨a lawyer who ~s his appeals to intelligence⟩ **2 a** : to regulate the activities or course of **b** : to carry out the organizing, energizing, and supervising of ⟨~ a project⟩ **c** : to dominate and determine the course of **d** : to train and lead performances of ⟨~ a movie⟩ **3** : to cause to turn, move, or point undeviatingly or to follow a straight course ⟨X rays are ~*ed* through the body⟩ **4** : to point, extend, or project in a specified line or course ⟨~ the nozzle downward⟩ **5** : to request or enjoin with authority ⟨the judge ~*ed* the jury to acquit the defendant⟩ **6** : to show or point out the way for ⟨signs ~*ing* us to the entrance⟩ ~ *vi* **1** : to point out, prescribe, or determine a course or procedure **2** : to act as director *syn* see COMMAND, CONDUCT

²direct *adj* [ME, fr. L *directus*] (15c) **1** : having or being motion in the general planetary direction from west to east : not retrograde **2 a** : stemming immediately from a source ⟨~ result⟩ **b** : being or passing in a straight line of descent from parent to offspring : LINEAL ⟨~ ancestor⟩ **c** : having no compromising or impairing element ⟨a ~ insult⟩ **3 a** : proceeding from one point to another in time or space without deviation or interruption : STRAIGHT ⟨a ~ line⟩ **b** : proceeding by the shortest way ⟨the ~ route⟩ **4** : NATURAL, STRAIGHTFORWARD ⟨a ~ manner⟩ **5 a** : marked by absence of an intervening agency, instrumentality, or influence ⟨making ~ observations of nature⟩ **b** : effected by the action of the people or the electorate and not by representatives ⟨~ democracy⟩ **c** : consisting of or reproducing the exact words of a speaker or writer ⟨a ~ quotation⟩ **6** : characterized by close logical, causal, or consequential relationship ⟨~ evidence⟩ **7** : capable of dyeing without the aid of a mordant

³direct *adv* (14c) : in a direct way: as **a** : from point to point without deviation : by the shortest way ⟨flew ~ to Miami⟩ **b** : from the source without interruption or diversion ⟨the writer must take his material ~ from life —Douglas Stewart⟩ **c** : without an intervening agency or step ⟨buy ~ from the manufacturer⟩

direct action *n* (1912) : action that seeks to achieve an end directly and by the most immediately effective means (as boycott or strike)

direct broadcast satellite *n* (1975) : a television broadcasting system in which satellite transmissions are received by a dish antenna at the viewing location (as a home)

direct current *n* (1849) : an electric current flowing in one direction only and substantially constant in value — abbr. *DC*

direct deposit *n* (1974) : a method of payment in which money is transferred directly to the payee's account without the use of checks or cash

di·rect·ed \də-'rek-təd, dī-\ *adj* (1891) **1** : subject to supervision or regulation ⟨a ~ reading program for students⟩ **2** : having a positive or negative sense ⟨~ line segment⟩ — **di·rect·ed·ness** *n*

direct examination *n* (ca. 1859) : the first examination of a witness by the party calling the witness — compare CROSS-EXAMINATION

di·rec·tion \də-'rek-shən, dī-\ *n* (15c) **1** : guidance or supervision of action or conduct : MANAGEMENT **2** *archaic* : SUPERSCRIPTION **3 a** : an explicit instruction : ORDER **b** : assistance in pointing out the proper route — usu. used in pl. ⟨asked for ~s to the beach⟩ **4** : the line or course on which something is moving or is aimed to move or along which something is pointing or facing **5** *archaic* : DIRECTORATE **1 6 a** : a channel or direct course of thought or action **b** : TENDENCY, TREND **c** : a guiding, governing, or motivating purpose **7 a** : the art and technique of directing an orchestra, band, or a show (as for stage or screen) **b** : a word, phrase, or sign indicating the appropriate tempo, mood, or intensity of a passage or movement in music — **di·rec·tion·less** \-ləs\ *adj* — **di·rec·tion·less·ness** *n*

di·rec·tion·al \-shnəl, -shə-n°l\ *adj* (1842) **1** : of, relating to, or indicating direction in space: **a** : suitable for detecting the direction from which radio signals come or for sending out radio signals in one direction only ⟨a ~ antenna⟩ **b** : operating most effectively in a particular direction ⟨a ~ microphone⟩ **2** : relating to direction or guidance esp. of thought or effort — **di·rec·tion·al·i·ty** \-,rek-shə-'na-lə-tē\ *n*

direction angle *n* (1882) : an angle made by a given line with an axis of reference; *specif* : such an angle made by a straight line with the three axes of a rectangular Cartesian coordinate system — usu. used in pl.