Information
Technology
Dictionary

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Information Technology Dictionary

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Preface

During the last 30 years, the development of technology to handle information has moved from simple manual collection, printing and postal services to a range of interconnected services and facilities based on cheap microelectronic components.

By the late 1970s, the term Information Technology (usually abbreviated to IT) was being used to refer to both the co-ordinated and individual aspects of modern electronic technology used for information handling.

IT incorporates computing, telecommunications, consumer electronics and broadcasting. Its applications are industrial, commercial, administrative, educational, medical, scientific, professional and domestic.

One brief definition is: The acquisition, production, transformation, storage and transmission of data by electronic means in vocal, pictorial, textual or numeric forms such as to facilitate the interaction between people and between people and machines. It also includes the applications and implications (social, economic and cultural) of these processes.

This dictionary of IT terms covers all the areas mentioned above but excludes the more complex terminology of computer science, telecommunications and electronics. Abbreviations and acronyms are listed at the beginning of each section. Many technical terms are cross-referenced and highlighted in the text by italic script. However a number of fundamental terms that are used frequently are listed below and users of this dictionary

are recommended to familiarize themselves with these terms as it will lead to an easier understanding of many other IT references:

application
bit
character
communication
computer
data
data processing
database
device
disk
field
file
hardware
information processing
language
magnetic disk
magnetic tape

memory
network
peripheral
printer
processor
program
programming
record
semiconductor
software
store
storage
system
telecommunications
terminal
word processing
workstation

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Abbreviations and Acronyms

A/D	Analogue to Digital
AC	Alternating Current
ACARD	Advisory Council for Applied Research and Development (UK)
ACE	Automatic Computing Engine
ACIA	Asynchronous Communications Interface Adapter
ACM	Association for Computing Machinery
ACU	Automatic Calling Unit
ADA	A programming language
ADC	Analogue to Digital Converter
ADCCP	Advanced Data Communication Control Procedure
ADP	Automatic Data Processing
AFIPS	American Federation of Information Processing Societies Inc.
AHPL	A Hardware Programming Language
AI	Artificial Intelligence
AIT	Advanced Information Technology
ALGOL	ALGOrithmic Language
ALICE	Applicative Languages Idealized Computing Engine
ALU	Arithmetic Logic Unit
AMA	Automatic Message Accounting

AMT	Advanced Manufacturing Technology
ANSI	American National Standards Institute
APL	A Programming Language
APT	Automatically Programmed Tools (language)
ARPANET	Advanced Research Projects Agency Network
ASCC	Automatic Sequence Controlled Calculator (1944)
ASCII	American Standard Code for Information Interchange
ASME	American Society of Mechanical Engineers
ATL	Automated Tape Library
ATM	Automatic Teller Machines

A Programming Language (APL) A scientific *programming language*, using a specially designed *character set*, with applications in advanced mathematical work.

abnormal termination A termination to a process brought about by the *operating system* when the process reaches a point from which it cannot continue.

abort To undergo or cause *abnormal termination*.

a.c. voltage The force that causes *alternating current* to flow through an electrical *conductor*.

acceptance testing This *testing* is normally under the control of the procurers of a system, and is designed to ensure that the system is suitable for operational use.

access time This is the time taken to retrieve information from a *storage location*. The information may be computer *program instructions* or data for a particular application.

acoustic coupler A type of *modem* that converts serial digital data into a sound signal that can be transmitted down telephone lines. Ideal for connecting portable terminals to *remote* computers, two tones are used to define the bits 0 and 1.

acoustic hood A box that covers a printer to deaden the noise it makes.

acronym Many aspects of *Information Technology* are described by acronyms that are words or groups of letters taken from the first letters of the item they describe, e.g. **BASIC** for Beginners' All-purpose Symbolic Instruction Code.

activity chart A chart used to describe the breakdown of the structure of a department by specifying what each person does. It provides the *systems analyst* with an indication of the man-hours involved in the throughput of work.

actuator The actuator of a *disk drive* is the mechanism that causes the *read/write heads* to be moved to the desired *track*.

ADA A *programming language* developed at the behest of the US Department of Defense for use in *embedded systems*, i.e. systems in which a computer is used for control purposes. A *real-time processing* language, it was named ADA in honour of Agusta Ada Lovelace who, as assistant to Charles Babbage, has some claim to be the world's first *programmer*.

adding machine The first true adding machine was invented in 1642 by Blaise Pascal. The numbers to be added were entered on dials and the result read from dial positions. Modern *calculators* are all electronic.

address The identification of a *store location.*

addressing machine Traditionally using metal stencils or embossed metal plates for a name and address, the addressing machine prints onto envelopes or adhesive labels. Modern systems are based on *microprocessor* technology where names and addresses are held on flexible *magnetic media* that can be amended easily. Speeds of printing can approach 9000 addresses per hour.

Advanced Data Communication Control Procedure (ADCCP) A bit-orienated *data link* control *protocol* developed by *ANSI* and similar to *SDLC* and *HDLC*.

Advanced Information Technology (AIT) The term used in the *Alvey programme* report to describe the work covered by the research programme.

Advanced Manufacturing Technology (AMT) See *CAD, CAM and CIM systems*.

Advanced Research Projects Agency Network (ARPANET) The collection of *host* computers plus network making up the first major *packet switching* network.

advanced text management This component of *electronic office* facilities includes proof reading, *hyphenation* and *language translation*.

aerial A device used for receiving or transmitting *electromagnetic radiation* at radio frequencies.

algorithm A prescribed set of well defined rules giving a sequence of operations for the solution of a problem.

algorithmic language (ALGOL) A *high level programming language* developed in Europe around 1958. ALGOL60 is a problem solving language designed for mathematical and scientific use. ALGOL68, designed in 1968, is a more powerful language for a variety of uses.

alignment choice Most *word processors* provide the choice of two different text alignments: *justified text* or *ragged text*.

alphanumeric An alphanumeric character is any of the 26 letters in the Roman alphabet or any of the decimal digits, zero to nine.

alternating current (AC) A flow of electricity that reaches maximum in one direction, decreases to zero then reverses itself and reaches a maximum in the opposite direction. The cycle is repeated continously. The number of cycles per second is equal to the *frequency*, e.g. 50Hz or 60Hz.

alternator A device that produces an alternating *voltage*.

Alvey programme This five year programme started in 1983 to mobilize the UK's technical strengths in *Advanced Information Technology*. It combines projects in four areas: *VLSI* microelectronics, *software engineering*, intelligent *knowledge based systems* and *human-machine interfaces*.

ambient temperature range The range of environmental temperatures, in the vicinity of a device, over which the device may be operated safely and within specifications. For forced air cooled devices, the ambient temperature is measured at the air intake.

American Federation of Information Processing Societies Inc. (AFIPS) Founded in 1961 to provide a structure for societies and associations interested in information processing to join together to advance the state of the art.

American National Standards Institute (ANSI) Founded in 1918 as an industry supported standards organization. It establishes US industrial standards and their correspondance to those set by *ISO*. ANSI determines hardware-related standards and some software standards.

American Society of Mechanical Engineers (ASME) The society responsible for the development of the ASME work study *flowchart* symbols used in systems investigation and analysis.

American Standard Code for Information Interchange (ASCII) A standard character encoding scheme introduced in 1963 and used widely on many machines. It is a 7 bit code with no *parity bit*, providing 128 different bit patterns.

amplifier A device that receives an input signal and gives as output a magnified version of the signal.

amplitude The strength of a *current* or *signal*.

amplitude modulation The *amplitude* of the carrier signal is varied. This form of *modulation* is not often directly used in computer communication.

analogue-digital converter (ADC) A device that can accept an *analogue signal* and produce an equivalent *digital signal*. Compare *DAC*.

analogue computer A computer that performs computations by manipulating continuous physical variables such as *voltage*.

analogue signal A smoothly varying value of *voltage* or *current*, i.e. a signal that varies continuously in *amplitude* and time. It often represents a physical quantity. Compare *digital signal*.

ancestral file system Grandfather, father, son files are the three most recent versions of a file that is periodically updated. These are retained for security purposes.

AND function This function combines statements such that the outcome is only true (1) if all statements are true (1); otherwise the outcome is false (0).

AND gate An electronic logic device that performs according to the *AND function*, i.e. all inputs must be (1) to produce an output of (1).

animation See *computer animation*.

annotation Explanation added to a program to assist the reader. It is frequently in the form of comments within the program text.

answering/recording machine A machine that 'answers' the telephone when a subscriber is out or busy. Modern versions are often included in a workstation where a *microprocessor* enables a single piece of equipment to provide automatic answering, call recording, telephone directory lists, *autodial* and loudspeaker facilities with local computer processing.

antennae See *aerial*.

Antiope videotex system A combined French *videotex* and *teletext* standard that came into operation during 1981.

append To add new information at the end of an existing document or file.

application The task or group of tasks for which the computer is being used.

application packages A set of specialized programs and associated *documentation* to carry out a particular application, e.g. payroll.

application software *Programs* or *modules* directed at some class of application.

applications terminal A combination of input and output devices configured into a unit to meet the requirements of a particular type of business activity and environment, e.g. *point of sale terminals*.

Applicative Languages Idealized Computing Engine (ALICE) A highly *parallel computer* under development at Imperial College. The first version is made of *transputers*.

archive Long term storage.

archived file A copy of a file held for safety outside the computing system.

argument A variable factor, the value of which sets the value of the function of which it is a part.

arithmetic and logic unit (ALU) The part of the *CPU* where arithmetic and logic operations are performed. Sometimes called the arithmetic unit.

arithmetic error A type of *run time error* that can be detected by the *operating system*, e.g. attempting to put information into the *array* location 11 when there is only a 10 *element* list.

arithmetic operator A type of *operator* that denotes one of the operations of arithmetic, e.g. +, -, * (multiplication), and / (divide).

array A set of *storage locations* referred to by a single identifier. Individual *elements* are referenced by combining one or more *subscripts* with the identifier name, e.g. STOCK(3,5). Also any element may be referenced with respect to the start *address* of the first element.

artificial intelligence (AI) A discipline concerned with the building of computer programs that perform tasks requiring intelligence when done by humans. Typical artificial intelligence tasks include: game playing, inference, learning, natural language understanding, plan formation, speech understanding, theorem proving, decision making and visual perception.

aspect ratio The ratio of the width of a *television* picture to the height. 4:3 has been adopted by the UK and many other countries.

assembler A program that takes as input a program written in *assembly language* and translates it into *machine code* or *relocatable code*.

assembly code A programmer will use a set of assembly codes when writing programs in an *assembly language*.

assembly language A *low level programming language* that is easier to use than *machine code*. It generally uses symbolic addresses that are translated into machine code by an *assembler*. One assembly language *instruction* becomes one machine code instruction.

assign Reserving a part of the computer system, e.g. a printer, for use by the program during its running.

assignment An operation that places a value in the *store location* corresponding to a given *variable*.

Association for Computing Machinery (ACM) A US organization founded in 1947: to advance the sciences and arts of information processing: to promote the free interchange of information among specialists and the public; and to maintain the integrity and competence of individuals engaged in the practices of the sciences and arts of information processing.

astable multivibrator See *multivibrator*.

asynchronous communications interface adapter (ACIA) An *integrated circuit* that can be used in *data communication* interfaces.

asynchronous mode An operational mode that requires a form of control timing in which a specific operation is initiated by the receipt of an indication (signal) that the preceding operation has been completed. See also *synchronous mode*.

asynchronous transmission (start-stop mode) A system of communication that uses start and stop codes to activate the receiver and synchronize the two devices during transmission only. Characters, words or blocks can be sent at irregular intervals.

Atlas The first computer to incorporate the many features now considered standard. The prototype was operating in 1961 and production models appeared in 1963.

attenuation The reduction in *amplitude* of a signal when it passes through a medium that dissipates its energy. It is usually measured in decibels.

attribute The property of an *entity* within files and databases. When a record provides information about an entity, a field will correspond to an attribute.

audio conference A meeting held in various locations, using voice communication (telephone) to connect the participants. It is also possible that *facsimile transmission* facilities will be provided.

audit trail A permanent record of every transaction taken by a computer system. It may typically include: User *login*, user *logout*, files accessed, type of *file access*, *file update* details and any special types of processing requested by the user.

authentication of messages The use of *electronic signature* techniques to ensure the message recipient can accurately verify the identity of the message sender.

author language A generic term for *programming languages* that allow users to create learning materials without any detailed programming knowledge.

authorization Providing permission to access computer systems.

authority list A list of terms (used as *keywords*) that can be used by people compiling text orientated databases and by those wishing to search those databases.

auto-repeat facility A feature of certain electronic keyboards in which a character is automatically repeated if the key is held down for a period of time.

auto start The facility to automatically load a specific program or *utility* when a computer is switched on, e.g. loading the BASIC *interpreter* into memory when a *microcomputer* is switched on.

auto-verify Providing automatic *verification* facilities on punch-verify equipment.

autocode An early programming language designed to remove some of the constraints of having to program in *machine code* or *assembler*.

autodial The device that enables the automatic dialling of a pre-recorded telephone number for connection to a computer.

automated office See *electronic office*.

automated tape library (ATL) A peripheral device in which a large number of cartridges or reels of magnetic tape are held in a storage area that can be accessed automatically, removing the need for operations staff to manually retrieve tapes required for processing.

automatic calling unit (ACU) A device that allows a computer or terminal to originate telephone calls over the public switched network. Computer networks that use ACUs usually function as *store and forward systems* for message switching.

automatic carriage return After setting left and right hand margins, a word processing operator has no need to use the carriage return key.

Automatic Computing Engine (ACE) Completed in 1950 at the National Physical Laboratory.

automatic data capture Automatically collecting data for a particular computer process, e.g. temperature in a chemical process, meter readings in a *wired society*.

automatic data processing (ADP) See *data processing*.

automatic message accounting (AMA) Refers to the procedures for collecting information about telephone calls to provide subscriber bills. AMA usually refers to systems that record all details about

each individual call which are then collated for bill processing. Centralized AMA takes all the information about calls as they occur and uses the computer processing to link 'time on' and 'time off' details for calculating a charge.

automatic repeat See *auto-repeat facility.*

Automatic Sequence Controlled Calculator (1944) (ASCC) See Harvard Mark 1.

automatic telephone exchange A telephone exchange where electromechanical relays and switches replace the manual connection of calls by operators. New developments include computer controlled exchanges with no moving parts (see *digital exchange*).

automatic teller machines (ATM) Equipment, usually placed in shops and other public places, to facilitate an automatic debit from the buyer's account and corresponding credit to the seller's account by the banking network.

automatically programmed tools (APT) A language developed for the *numerical control* of machine tools.

automaton A device that mechanically processes an input instruction with the aim of deciding whether the instruction is valid or not; thereby producing an appropriate output response. Inputs and outputs can be instructions, signals or movements.

auxiliary storage device See *backing store.*