

A Dictionary of
Computing

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Advanced Encryption Standard A replacement for the Data Encryption Standard (DES) cipher, selected in 2000 by the National Institute of Standards and Technology (NIST) after an open competition. AES supports key sizes of 128, 192 and 256 bits. The competition was won by the **Rijndael algorithm**, developed by Joan Daemen and Vincent Rijmen.

advanced fee fraud A form of fraud, often attempted by e-mail, in which the victim is invited to pay financial fees in the hope of sharing in a much greater reward. It is also known as **Nigerian fraud** or **419 fraud** (419 is the number of the statute forbidding this practice in Nigeria).

adware 1. Software that is free of charge to the user but makes money for its creator by displaying advertisements. Many web sites are adware. 2. Software that displays unwanted advertisements on the user's computer screen. Often concealed in downloaded web pages, it installs itself surreptitiously, either by exploiting security weaknesses or by tricking the user into giving consent, and is often difficult to remove. Adware is regarded as **malware* and may include an element of **spyware*.

AES *Abbrev. for* Advanced Encryption Standard.

affine mapping (affine transformation) A mapping from one coordinate system to another under which parallel lines remain parallel and ratios of collinear points are preserved. An affine mapping can be decomposed into linear transformations (rotation, scaling, and shear) and translation.

AFIPS American Federation of Information Processing Societies, founded in 1961 to provide a structure for professional societies with a primary interest in information processing to join together in order to advance the state of the art. AFIPS was dissolved in 1990. AFIPS is best remembered for its Spring and Fall Joint Computer Conferences at which many important technical developments in the field were first reported. Its role as the US representative in IFIP was taken over jointly by the **ACM* and the **IEEE Computer Society*.

AFL *Abbrev. for* abstract family of languages.

agenda mechanism A control scheme

often used in **knowledge-based systems*, **blackboard systems*, and **rule-based systems*, to order the sequence of action execution. While the system is running, inference processes may examine the agenda and manipulate it by the dynamic addition, removal, or reordering of items.

agent An autonomous system that receives information from its environment, processes it, and performs actions on that environment. Agents may have different degrees of intelligence or rationality, and may be implemented in software, hardware, or both.

Software agents operate in symbolic environments, and perceive and act upon strings of symbols; examples include personal assistant agents that enhance and customize facilities for computer users, and **data mining* agents that search for interesting patterns in large databases. In a **distributed system*, the agent for a **remote procedure call* is in a different computer from the caller; its environment is the network and the procedure body. A robot (*see ROBOTICS*) is an example of an agent that perceives its physical environment through sensors and acts through effectors.

AGP *See* ACCELERATED GRAPHICS PORT.

AGV *Abbrev. for* autonomous guided vehicle.

AI *Abbrev. for* artificial intelligence.

Aitken's Δ^2 process A method to convert any convergent sequence $\{x_n\}$ into a more rapidly convergent sequence $\{x'_n\}$. For linearly converging sequences the formula is:

$$x'_n = x_n - (x_{n+1} - x_n)^2 / (x_{n+2} - 2x_{n+1} + x_n)$$

AIX An IBM version of **UNIX*.

ALARP principle A principle that is associated with the design and development of safety systems, and captures the notion that the risk to individuals, society, and the environment should be As Low As Reasonably Possible. *See also* SAFETY-CRITICAL SYSTEM, SAFETY-RELATED SYSTEM.

aleph null *See* CARDINALITY.

alert box An on-screen panel that is displayed to give the user a warning or other message.

algebra 1. The investigation of mathematical properties of data, such as numbers, and of operations on data, such as the addition

