

A Dictionary of
Computing

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protection of access to memory in order to achieve management of a very large virtual memory. Users operating on files move their entire file into memory in order to operate on it. The MULTICS system was implemented on specially commissioned hardware constructed by General Electric, and the entire project was later taken over by Honeywell Computer Systems.

multidimensional array An *array of *dimension greater than one.

multidimensional spreadsheet A *spreadsheet having more than two dimensions. The basic spreadsheet is a table of rows and columns, and so is regarded as two-dimensional. A third dimension can be pictured as a stack of tables, or pages of a workbook. Mathematically there is no difficulty in having as many dimensions as required, but the visual representation on a flat display screen becomes rather difficult after the third dimension.

multidrop line A single communication line that connects multiple stations – terminals or computers. Typically, one station will use *polling to coordinate access to the line and prevent collisions (multiple stations transmitting at once). A control protocol such as *SDLC is used. *See also* MULTIPOINT CONNECTION. *Compare* POINT-TO-POINT LINE.

multifunction device A device containing the functions of scanner, printer, copier, and fax in one unit. These devices cost less and occupy less space than the individual elements and are attractive to small businesses and home users.

multigrid methods A broad class of methods for the numerical solution of certain classes of *partial differential equations. In its simplest form, after a suitable *finite-difference replacement of the problem, a system of *linear algebraic equations is obtained, perhaps involving thousands of unknowns. These equations are solved iteratively by a process that involves the solution of smaller linear systems arising from a sequence of coarser meshes (*see* FINITE-DIFFERENCE METHOD). The method of successive over-relaxation has an important role in the solution of these subsystems. *See* ITERATIVE METHODS.

multilevel memory A memory system containing at least two memory subsystems

with different capacity and access-time attributes. *See* MEMORY HIERARCHY.

multilevel security A *security processing mode where users with differing security clearances have correspondingly limited access to a database holding objects of different classifications. Output material may carry *trusted *security labels.

multilinked Having a *link to several distinct data structures. For example, a *sparse matrix is frequently held so that each element belongs to two separate linear lists corresponding to a row list and a column list. A multilinked structure is sometimes called a **multiple chain**.

multimedia The combined use of digitized information representing text, sound, and still or video images, or the media so used. The term can refer to any interactive system and any data storage medium, but is widely applied to data stored on *CD-ROM or DVD and accessed by a personal computer: the dialogue with the user makes use of the various media in an integrated way. The PC must be equipped with a CD-ROM drive; it usually also has a *sound card and a pair of loudspeakers, since the audio capability of an ordinary PC is very limited. All but the cheapest modern PCs meet these requirements.

multimedia mail *See* ELECTRONIC MAIL.

multimode Describing or involving the form of electromagnetic signal that is carried by a waveguide with a cross section that is large compared with the wavelength of the electromagnetic wave. The wave can propagate in directions at an angle to the axis of the waveguide, undergoing a series of internal reflections along its length. This causes a gradual degradation of the signal. *See also* FIBER OPTICS, MONOMODE.

multimode counter *See* COUNTER.

multipart stationery *See* STATIONERY.

multiple-address machine A computer whose *instruction format specifies (for at least some instructions) more than one operand address.

multiple assignment A form of *assignment statement in which the same value is given to two or more variables. For example, in C,