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EAROM Electrically Alterable Read Only Memory. These are non-volatile memories, used to store static data and programs. It has a slow write time (2 microseconds) thus does not require special equipment for programming as distinct from EPROM (Erasable Programmable Read Only Memory) which is programmable using short wavelength ultra violet light and requires special programming equipment. EAROM can be programmed in circuit, e.g. in position. The whole of an EAROM, or just one part of its memory, may be reprogrammed. ◇ EPROM, PROM and ROM.

Earth the point taken to be an arbitrary zero in the scale of electrical potential. To physically connect an electric circuit to earth, or a device synonymous with earth, e.g. a cold water pipe. Synonymous with GROUND.

EBCDIC Extended Binary Coded Decimal Interchange Code. A standard code. See appendix for CODES.

Edge connector the plated or pure metal conductive connection points specially provided at a convenient edge of a printed circuit board (PCB). Soldered or plug connections to printed circuit boards are generally made from edge connectors.

Edit the process of reading and modifying data or programs.

Editor software designed to enable a user to enter and modify program coding and data for ASSEMBLY LANGUAGE source programs. Used in conjunction with a development system for microprocessor programming.

EDP Electronic Data Processing. The generic term for computing. Synonymous with ADP and DP.

EEROM Electrically Erasable Read Only Memory. Synonymous with EROM and PROM. See also EAROM.

EIA an abbreviation for the trade group Electronic Industries Association (of Great Britain).

Electrically Alterable Read Only Memory ◇ EAROM.

Electrically Erasable Read Only Memory ◇ EEROM.

Electricity the study, disciplines and activities associated with electric charges, such as electrons.

Electrode a device that attracts or emits electrical charge carriers. In a SEMICONDUCTOR the conduit for electrical current is an electrode and can be known as a collector, a drain or an emitter.

Electromagnetic field the environment, or magnetic field, set up when a device which can only be magnetised when an electric current is passed through it is energised. The magnetic field created in this way is volatile and will not exist when current is removed from the device.

Electron the natural unit of electric charge. Electrons exist independently and are constituents of an atom. Electrons moving in one direction within an electric field constitute an electric current.

Electron beam a highly concentrated emission of electrons from a single source. The particular use of the electron beam in SEMICONDUCTOR technology is in describing the microminiature circuits on silicon chips. It is also used for similar purposes in microscopes.

Electronic Data Processing ◊ EDP.

Electronic Industries Association ◊ EIA.

Electronics technology based on the properties, behaviour and control of electrons. A branch of electrical technology.

Electrostatic a printing technology that is based on electrostatic adhesion due to the attraction of two oppositely charged substances. Xerographic based photocopiers employ similar principles.

Embedding the process of introducing DOPANTS into a pure silicon crystal. ◊ DIFFUSION.

Emitter an n or p region in a SEMICONDUCTOR. ◊ BIPOLAR.

Emulate to imitate one system with another such that the imitating system accepts the same data, executes the same programs and achieves the same results as the imitated system. In practice this is very difficult to achieve and compromises have to be accepted.

Enable to program or forewarn the processor to accept an interrupt signal, or priority processing task.

Encapsulate to enclose or submerge an electrical device in an insulating material. The process takes place in a vacuum so that no air or gas remains within the encapsulated assembly. The process gives a much higher electrical and heat insulation to the device, to precise specifications.

Enclosure a suitable box, casing or cover for an electronic product.

End user the computer supplier's customer. The organisation which actually uses the computer to solve its problems, as distinct from all the organisations in the supply chain.

Energise to apply an electrical charge to an electrical device.
 ◇ EXCITE.

Enhance to add to or to improve. When applied to computers it generally means to add extra function or facilities to software or to improve the performance or capacity of the hardware.

Environment describes the ambient or required conditions for a computer system. Refers to temperature, humidity, air cleanliness and air pressure.

Epoxy resin an insulating plastic material, commonly used as an encapsulating material. ◇ ENCAPSULATE.

EPROM Erasable Programmable Read Only Memory. A non-volatile memory, or one whose contents are not lost when electrical power is removed. The contents of EPROM are programmed using an electro-optical programming device; part of a development system.

The programming technique employs a short wavelength ultra violet light with a very fast write cycle of 500 nano seconds.

The whole of an EPROM must be reprogrammed when making a change. Contrast to EAROM.

Erasable Programmable Read Only Memory ◇ EPROM.

Erasable Read Only Memory ◇ EROM.

EROM Erasable Read Only Memory. Synonymous with EAROM, EEROM, EPROM.

Error-Message identification of program errors in a listing following an attempt at assembly. The better compilers give comprehensive descriptions of the error thus helping the programmer to correct it quickly.

Excite to apply a voltage to an electrical device. ◇ ENERGISE.

Exclusive OR gate similar to the OR gate but producing an inverted signal. See appendix for LOGIC CIRCUITS.

Execute a function following on from a statement in the program where a command is performed on the ADDRESS indicated by

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the register, under program control. An imperative statement.

Execution Time the time necessary to carry out an instruction.

Executive a program designed to organise and run other programs.

Exercisers a basic development system. Usually a HEXADECIMAL keyboard and display, designed to handle one specific microprocessor.

Exorciser a widely used development system manufactured by one of the leading semiconductor manufacturers for use on his own proprietary products.

Expression an ALGORITHM or representation of mathematical terms.

Extended Binary Coded Decimal ◇ EBCDIC.

Extended precision the ability to add or subtract using a double WORD length and the CARRY instruction or facility. Thus when the results of a mathematical operation become larger than a single word length they can overflow into the adjacent memory word. See COMPLEMENTS for an illustration.

Extrapolate to forecast (or estimate) results based on previous data; the reverse of INTERPOLATE.

F

F \diamond FARADS.

Fabricate when applied to SEMICONDUCTORS the term refers to the process of creating an INTEGRATED CIRCUIT from a wafer of silicon.

Facilities Management a totally subcontracted computer operation in which the client supplies the computer and the premises and a subcontractor provides all the staff necessary to provide an in-house service. This approach is mainly used by some of the larger computer users with a very high data processing expense budget.

Farads (F) a measure of the capacitance present in a circuit or produced by individual components. \diamond CAPACITANCE.

Feasibility Study a formal survey to establish the economics, practicality or technical implications (or all three) of following a certain course of action. For example, installing, replacing or upgrading a computer. Another typical example covers the studies aimed at replacing conventional technology in a product or process with the newer, current technologies.

Feedback in a circuit which contains an energising device and other devices which consume a portion of that energy, the status of the devices may be monitored by feedback signals. The feedback, or data concerning the status of various devices in the circuit, enable the energising device to adjust its output to conform with the demands of the system.

Feedback systems can therefore be self-regulating. Servo systems are a name for a particularly sort of feedback system, where the output signal is determined by the input signal according to a formula in memory or preset mechanism.

Ferrite Core \diamond CORE.

FET Field Effect Transistor (see p. 54). A transistor controlled by voltage rather than current. The flow of current through a channel is controlled by the effect of an electric field resulting from the voltage applied to an area called the gate. Note that the use of gate in FET applies to an area of the semiconductor used to prohibit or enable the free flow of electrons, and is not to be confused with a logic gate.

Fetch getting the next instruction from memory.

Fibre optics the process of transmitting light images along fine filament fibres. The fibres, made from glass or perspex, have highly polished surfaces with a refractive index which allows very little of the transmitted light to escape, or attenuate.

Field in programming terms a logical block of storage, of any length recognisable by the computer, in which a particular part of data or program is held and decoded.

In an electrical or magnetic definition a field is that region where the interaction of bodies of particles exert their influence, giving rise to a electrical field or a magnetic field.

Field maintenance the industry dedicated to the servicing and repair of products once they are installed on a customer's premises. In the computer industry this service is normally carried out by the supplier's own maintenance staff called 'customer engineers', in fulfilment of a maintenance contract. However, independent field service operations are beginning to replace the suppliers' own services.

Field test the process of testing a product in a real life environment, as opposed to laboratory tests.

FIFO First In First Out. A method of storing data in a stack or table and retrieving first the first item stored. \diamond LIFO.

File data categorised as being of a certain type or having a specific relationship may be treated as a specific entity, or a file. The literal term refers to the computer-readable medium on which the data is to be stored, which can include card, tape, magnetic tape or disk or computer memory.

File maintenance the procedures involved in keeping files up to date with addition, deletions and amendments to data.

File name a unique acronym or grouping of characters which identifies a specific file to the system.

Filter an electrical device or circuit designed to transmit and accept signals only within predefined limits. Any signal falling outside these limits will be suppressed. Used as protection against SPIKES etc.

Firmware software instructions which have been permanently stored in ROM (Read Only Memory). The memory converts these instructions into machine language on demand by a program.

Fixed head disk a type of disk drive where the read/write head does not move across tracks. Instead there is a separate read/write head for each track.

Fixed point notation (arithmetic) operations involving a fixed position for the decimal point, which means that the program, rather than the hardware, has to keep track of the decimal point position.

Flag an information BIT (or bits) which informs of a specific condition within the central processing unit.

Flame proof an industrial enclosure or device which has to conform to very rigorous standards in order to operate in a dangerous or hostile environment, for example in mine shafts, is said to be flame-proofed. The standards are aimed to ensure that the device itself cannot trigger an explosion or fire, hence it has considerable safety packaging and insulation.

Flat pack a printed circuit board (PCB) assembly having the leads, wires or pins extending from the board in the same plane. Such a low profile package has its application where space is at a premium.

Flip-flop a circuit capable of assuming one of two stable states depending upon signals input to the circuit.

The term can also be applied to a bistable device which is capable of acting as a binary counter, or as a type of toggle to control logic gates. See appendix for LOGIC CIRCUITS.

Float when tri-states are used an output need not be held at either the '1' or '0' level; it can be in the third state, when the output is allowed to 'float'.

Floating point arithmetic the reverse of fixed point arithmetic. A hardware operation in which the computer calculates the decimal point position after completing calculations. It extends the limits of fixed WORD length operations and also reduces the programming tasks for calculation.

Floppy disk a combination of magnetic tape and disk technologies. It is a flexible oxide coated disk (in appearance similar to a 45 rpm record) used for memory storage. Capacities vary from around 250,000 characters, up to 1,000,000, i.e. double-density, double-sided: the 'flippy floppy'.

Flow chart a sequence of operations depicted by symbols and diagrams to indicate an executive program. Flow charts give a visual

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indication of the procedure necessary for each section of the program. Synonymous with 'flow diagrams'.

Flow diagram ⇨ FLOW CHART.

Foreground the partition of computer memory in which the highest priority tasks are executed, e.g. 'real-time' operations.
⇨ BACKGROUND.

Format the physical layout and appearance of a computer record, file, input field, report, etc.

FORTRAN an acronym for FORmula TRANslator, a widely used language for mathematic and technical programming. Does not have the flexibility of COBOL for commercial work, especially in report writing, i.e. producing print outs to the desired format.

Frequency the measure of the number of repeats of a pulse per unit of time. For example, the cycles per second of sine wave pulses (AC) is now expressed in Hertz. Hertz, like many other multiple measurements, can be expressed in kilo, mega, etc. values. Thus 1 KHz is 1000 cycles per second (cps).

Full duplex simultaneous transmission over a communications channel or series of wires, in both directions.

Function a predefined and specific task, for example, some keys on keyboards have one specific function. They are usually called function keys. A function key could access a ROM (Read Only Memory) which contained a standard item of information which formerly needed to be repetitively keyed in, such as part number or account number. In word processing applications a format description could be held in a ROM associated with a function key.

Fuse a failsafe device inserted into a circuit to fail when the current flowing in the circuit exceeds the desired rate.

Fusible link in one type of Programmable Read Only Memory (PROM) the BIT patterns are destructively formed by fusing links together. This technique uses a heavy current PROM 'blower'. Once blown this PROM is permanently programmed and cannot be erased or altered.

⇨ PROM.

G

G³ Gallium. An abbreviation for gadolinium gallium garnet. This is a form of garnet which can be grown as a crystal and used in the production of bubble memories. Specifically it is used as the non-magnetic substrate. ◊ BUBBLE MEMORY.

Gain the measure of a circuit to increase the magnitude of an input signal. For example in a description of power amplifiers gain is used to denote the ratio of output signal to input signal.

Gantt chart a type of bar chart, used to illustrate the progress of a project or relative values: ◊ BAR CHART.

Gate In a Junction Field Effect Transistor (JFET), the gate, or control gate is the mechanism used to control the width of the transistor's conducting channel. If the gate is closed the transistor acts as a switch in the off position, if the gate is opened, it acts as a switch in the on position.

Contrast this definition to the gate in a logic circuit, see below.

Gates these are effectively a discrete component version of the relay. They are circuits having two or more inputs and one output. They allow a signal to pass (or not) when certain predefined criteria are met. Varieties of gates are based upon the premise that in Boolean algebra (mathematical logic), a proposition is a statement that is either true or untrue, without ambiguity.

See appendix for LOGIC CIRCUITS.

General purpose a computing system that is not designed for a specific type of work but can be applied to a whole range of tasks is termed a general purpose data processing system.

Generator any mechanism that converts mechanical movement or energy into electrical energy.

Germanium (Ge) a material which, like Gallium and Silicon, is used as a substrate, in its crystal form, for semiconductor fabrication.

Giga a term implying a 'gigantic' value. In the United States and France this prefix denotes one thousand million, i.e. 1,000,000,000 or 10^9 . In Great Britain this prefix means one million million i.e. 1,000,000,000,000 or 10^{12} .

GIGO Garbage In Garbage Out. A computer slang term abbreviating the practical reminder that if a system receives bad, inaccurate or incomplete information the output will have similar deficiencies.

Glassy metal a term now being used to describe the wire being produced by rapid refrigeration of exotic alloys. It is anticipated that 'glassy metals' will be used as superconductors since the singular method used for manufacturing the material virtually eliminates its electrical resistance.

Glitch an expressive American term for bug or gremlin.

GO-TO a software term or programming instruction. To 'go-to' an address causes the next instruction to be fetched from that address.

Grain the crystals which constitute a metal or alloy tend to align themselves along their axis. The term grain is used synonymously with crystal. Grain size and alignment depends upon the method of finishing or heat treatment used to purify the metal or to reach the desired metallurgical and surface hardness specification. Grains can become enlarged by absorbing other grains under certain temperature conditions. ♢ GLASSY METAL, SILICON.

Graphics display a special video display unit used to display two or three dimensional images in outline form. Coloured graphics displays are now quite common. Typically used in the area of industrial design, Computer Aided Design (CAD), and Computer Aided Manufacturing (CAM).

Graticule one of the optical measuring scales used in connection with design and layout of integrated circuits.

Ground a term used in the United States as a synonym for the term used in Great Britain for electrical earth. ♢ EARTH.
