

Tracy Losh

GLOSSARY
OF
DATA PROCESSING
TECHNICAL TERMS

SEL SYSTEMS ENGINEERING LABORATORIES, INCORPORATED

P. O. BOX 9148 • FORT LAUDERDALE, FLA. 33310 • AREA CODE 305 587-2900

INTRODUCTION

The terms and expressions listed on the following pages were compiled from The Proposed American Standard Dictionary* of American Standard Association Terminology, and other reliable sources.

These terms are those whose individual meanings are different in the information processing field than from their meanings in the general technical vocabulary.

* Copyright 1964, Commerce Clearing House, Inc.

ABSOLUTE ADDRESS

(1) An address that is permanently assigned by the machine designer to a storage location. (2) A pattern of characters that identifies a unique storage location without further modification. Synonymous with machine address.

ABSOLUTE ERROR

The value of the error without regard to its algebraic sign.

ACCESS TIME

(1) The time interval between the instant at which data are called for from a storage device and the instant delivery is completed, i.e., the read time. (2) The time interval between the instant at which data are to be stored and the instant at which storage is completed, i.e. the write time.

ACCUMULATOR

A register in which the result of an arithmetic or logic operation is formed.

ACCURACY

The degree of freedom from error, that is, the degree of conformity to truth or to a rule. Accuracy is contrasted with precision, e.g., four-place numbers are less precise than six-place numbers, nevertheless a properly computed four-place number might be more accurate than an improperly computed six-place number.

ACQUISITION SYSTEM

The part of the system used for analog-to-digital conversion.

ADDRESS

(1) An identification, as represented by a name, label, or number, for a register, location in storage, or other data source or designation. (2) Loosely, any part of an instruction which specifies the location of an operand for the instruction.

ADDRESS, ONE-LEVEL

Same as direct address.

ADDRESS, ZERO-LEVEL

Same as immediate address.

ADDRESS FORMAT

The arrangement of the address parts of an instruction. The expression plus one is frequently used to indicate that one of the addresses specifies the location of the next instruction to be executed, e.g., one-plus-one, two-plus-one, three-plus-one, four-plus-one.

ADDRESS PART

A part of an instruction word that specifies the address of an operand.

ADDRESS REGISTER

A register that stores an address.

ADP.

Automatic data processing pertaining to automatic data processing equipment such as EAM and EDP equipment.

ALGOL.

Algorithmic oriented language. An international procedure-oriented language.

ALGORITHM

A prescribed set of well defined rules or processes for the solution of a problem in a finite number of steps, e.g., a full statement of an arithmetic procedure for evaluating a specific function to a stated precision. Contrasted with heuristic.

ALGORITHMIC LANGUAGE

A language designed for expressing algorithms.

ALPHABET

An ordered set of unique representations, called characters, e.g., the 26 letters of the alphabet, 0 and 1 and the complete American Standard Code for Information Interchange (ASCII).

ALPHANUMERIC

Pertaining to a character set that contains both letters and numerals, and usually other characters.

ANALOG COMPUTER

A computer that solves a problem by operating on continuous data representing variables to simulate the behavior of the variables and their relationships.

ANALYSIS

The methodical investigation of a problem, and the separation of the problem into smaller related units for further detailed study.

ANALYST

A person skilled in the definition of problems and the development of algorithms for their solution, especially algorithms which may be implemented on a computer.

AND

A logic operator having the property that if P is a statement, Q is a statement, R is a statement, . . . , then the AND of P, Q, R, . . . is true if all statements are true, false if any statement is false. P and Q are often represented by P.Q, PQ, P Q, PXQ.

ARGUMENT

An independent variable, e.g., in looking up a quantity in a table, the number, or any of the numbers, that identifies the location of the desired value.

ARITHMETIC SHIFT

(1) A shift that does not affect the sign position. (2) A shift that is equivalent to the multiplication of a number by a positive or negative integral power of the radix.

ARITHMETIC UNIT

The unit of a computing system that contains the circuits that perform arithmetic operations.

ASSEMBLE

To prepare a machine language program from a symbolic language program by substituting absolute operation codes and addresses for symbolic operation codes and addresses.

ASSEMBLER

A program that assembles.

ASYNCHRONOUS COMPUTER

A computer in which each event or the performance of each operation starts as a result of a signal generated by the completion of the previous event or operation, or by the availability of the parts of the computer required for the next event or operation.

AUTOMATIC CODING

The machine assisted preparation of machine language routines.

AUTOMATIC PROGRAMMING

Programming that uses a computer to perform some stages of the work involved in preparing a program.

AUXILIARY STORAGE

A storage that supplements another storage.

BASE ADDRESS

A given address from which an absolute address is derived by combination with a relative address.

BASIC TIMING PULSE

The highest frequency pulse available for commutating or decommutating of data.

BENCHMARK PROBLEM

A problem used to evaluate the performance of computers relative to each other.

BIDIRECTIONAL FLOW

In flowcharting, flow that can be extended over the same flowlines in either direction.

BINARY

(1) Pertaining to a characteristic or property involving a selection, choice or condition in which there are two possibilities. (2) Pertaining to the number representation system with a radix of two.

BINARY CODE

A code that makes use of exactly two distinct characters, usually 0 and 1.

BINARY CODED DECIMAL

Pertaining to a decimal notation in which the individual decimal digits are each represented by a binary code group, e.g., in the 8-4-2-1 coded decimal notation, the number twenty-three is represented as 0010 0011 whereas in binary notation, twenty-three is represented as 10111.

BINARY DIGIT

A character used to represent one of the integers smaller than the radix 2.

BINARY NUMBER

The binary representation of a number.

BIQUINARY

Pertaining to the number representation system in which each decimal digit N is represented by the digit pair AB, where $N=5A + B$, and where $A=0$ or 1 and $B=0, 1, 2, 3, \text{ or } 4$ e.g., decimal 7 is represented by biquinary 12. This system is sometimes called a mixed radix system having the radices 2 and 5.

BIT

A binary digit.

BASE

Same as radix.

BLOCK

A set of associated words or characters handled as a unit.

BLOCK DIAGRAM

A diagram of a system, instrument, computer or program in which selected portions are represented by annotated boxes and interconnecting lines.

BOOTSTRAP

A technique or device designed to bring itself into a desired state by means of its own action, e.g., a machine routine whose first few instructions are sufficient to bring the rest of itself into the computer from an input device.

BRANCH

(1) A set of instructions that are executed between two successive decision instructions. (2) to select a branch as in 1. (3) synonymous with jump.

BREAKPOINT

A point in a program specified by an instruction, instruction, instruction digit, or other condition, where the program may be interrupted by external intervention or by a monitor routine.

BUFFER

(1) A storage device used to compensate for a difference in rate of flow of data, or time of occurrence of events, when transmitting data from one device to another. (2) An isolating circuit used to avoid reaction of a driven circuit of any driving circuit.

BUS

One or more conductors used for transmitting signals or power from one or more sources to one or more destinations. Synonymous with trunk.

BYTE

A sequence of adjacent binary digits operated upon as a unit and usually shorter than a word.

-C-

CALL

To transfer control to a specified closed subroutine.

CALLING SEQUENCE

A specified arrangement of instructions and data necessary to set up and call a given subroutine.

CARD IMAGE

A one-to-one representation of the contents of a punched card, e.g., a matrix in which a 1 represents a punch and a 0 represents the absence of a punch.

CARRY

(1) A character or characters, produced in connection with an arithmetic operation on one digit place of two or more numerals in positional notation, and forwarded to another digit place for processing there. (2) The number represented by the character or characters in 1. (3) Most commonly, a character as defined in (1), that arises in adding when the sum of two or more digits equals or exceeds the radix of the number representation system. (4) Less commonly, a borrow. (5) To forward a carry. (6) The command directing that a carry be forwarded.

CASCADED CARRY

In parallel addition, a carry process in which the addition of two numerals results in a sum numeral and a carry numeral which are in turn added together, this process being repeated until no new carries are generated. Contrasted with high-speed carry.

CENTRAL PROCESSING UNIT

The unit of a computing system that contains the circuits controlling the interpretation and execution of instructions.

CHAD

The piece of material removed when forming a hole or notch in a storage medium such as paper tape or punched cards.

CHANNEL

(1) A path along which signals can be sent, e.g., data channel, output channel. (2) The portion of a storage medium that is accessible to a given reading station, e.g., track, band.

CHANNEL RATE

The frequency of incoming data words.

CHARACTER

An elementary mark or event that is used in combination with others to represent data. A character is often in the form of a graphic spacial arrangement of connected or adjacent strokes.

CHARACTER RECOGNITION

The identification of characters by automatic means.

CHECK BIT

A binary check digit.

CHECK CHARACTER

A character used for the purpose of performing a check.

CHECKPOINT

A location in a routine where a check is performed.

CIRCULATING REGISTER

A shift register in which data moved out of one end are reentered into the other end as in a closed loop.

CLEAR

(1) To place a storage device into a prescribed state, usually that denoting zero or blank. (2) To place a binary cell into the zero state.

CLOCK

(1) A device that generates periodic signals used for synchronization. (2) A device that measures and indicates time.

CLOCK-IN

The process of bringing something in by applying a query or initiating pulse.

CLOCK-OUT

The process of sending something out by applying a query or initiating pulse.

CLOSED SUBROUTINE

A subroutine that can be stored at one place and can be connected to the main routine by linkages.

COBOL

Common Business Oriented Language. A business data processing language.

CODE

(1) A set of rules that are used to convert data, e.g., the set of correspondences in the American standard code for information interchange. (2) The set of representations defined by the set of rules as in (1), e.g., a coded character set as in the above American standard code or the repertory of instructions for a particular computer. (3) Same as encode.

CODE, INSTRUCTION

Same as operation code.

CODE, REFLECTED BINARY

Same as gray code.

COLUMN

(1) A vertical arrangement of characters or other expressions. (2) Loosely, a digit place.

COLUMN BINARY

Pertaining to the binary representation of data on punched cards in which adjacent positions in a column correspond to adjacent bits of data, e.g., each column in a 12 row card may be used to represent 12 consecutive bits of a 36 bit word.

COMMAND

(1) Loosely, a control signal. (2) Loosely, an instruction in machine language. (3) Loosely, an operator.

COMPILE

To prepare a machine language program from a computer program written in another programming language by making use of the overall logic structure of the program, generating more than one machine instruction for each symbolic statement, or both, as well as performing the useful function of an assembler.

COMPILER

A program that compiles.

COMPUTER

(1) A device capable of solving problems by accepting data, performing prescribed operations on the data, and supplying the results of these operations. Various types of computers are calculators, digital computers, and analog computers. (2) In information processing, usually, an automatic stored program computer.

COMPUTER PROGRAM

A plan or routine for solving a problem on a computer. Contrasted with such terms as fiscal program, military program, and development program.

COMPUTER WORD

A sequence of bits or characters treated as a unit and capable of being stored in one computer. Synonymous with machine word.

CONDITIONAL JUMP

A jump that occurs if specified criteria are met.

CONNECTOR

In a flowchart, the means of representing the convergence of more than one flowline into one, or the divergence of one flowline into more than one. It may also represent a break in a single flowline for continuation in another area.

CONSOLE

That part of a computer used for communication between the operator or service engineer and the computer.

CONTROL

In a digital computer, those parts that effect the retrieval of instructions in proper sequence, the interpretation of each instruction, and the application of the proper signals to the arithmetic unit and other parts in accordance with this interpretation.

CONTROL CHARACTER

A character whose occurrence in a particular context initiates, modifies, or stops a control operation, e.g., a character to control carriage return.

CONTROL PANEL

(1) A part of a computer console that contains manual controls. (2) Same as plugboard.

CONTROL UNIT

The unit of a computing system that contains the circuits that interpret and control the execution of instructions.

CONVERT

To change the representation of data from one form to another, e.g., to change numerical data from binary to decimal or from cards to tape.

CYCLE

(1) An interval of space or time in which one set of events or phenomena is completed. (2) Any set of operations that is repeated regularly in the same sequence. The operations may be subject to variations on each repetition.

-D-

DATA

Any representations such as characters or analog quantities to which meaning might be assigned.

DATA PROCESSING

Any operation or combination of operations on data.

DATA PROCESSOR

Any device capable of performing operations on data, e.g., a desk calculator, a tape recorder, an analog computer, or a digital computer.

DATA REDUCTION

The transformation of raw data into more useful form, e.g., smoothing to reduce noise.

DATA WORD

The group of bits used to describe a value of data at a particular instant.

DEBUG

To detect, locate and remove mistakes from a routine or malfunctions from a computer. Synonymous with troubleshoot.

DECIMAL

(1) Pertaining to a characteristic or property involving a selection, choice 02 condition in which there are ten possibilities. (2) Pertaining to the number representation system with a radix of ten.

DECK

A collection of punched cards.

DECODE

To apply a code so as to reverse some previous encoding.

DECODER

(1) A device that decodes. (2) A matrix of switching elements that selects one or more output channels according to the combination of input signals present.

DESTRUCTIVE READING

A reading process that destroys the data in the source.

DIAGNOSTIC

Pertaining to the detection and isolation of a malfunction or a mistake.

DIGIT

A character used to represent one of the integers smaller than the radix, e.g., in decimal notation, one of the characters 0 to 9.

DIGITAL

Pertaining to data in the form of digits.

DIGITAL COMPUTER

A computer that solves problems by operating on discrete data representing variables and by performing arithmetic and logic processes on these data.

DIGITIZE

To express data in a digital form.

DIRECT ADDRESS

An address that specifies the location of an operand. Synonymous with one level address.

DIRECT INSERT SUBROUTINE

Same as open subroutine.

DOUBLE PRECISION

Pertaining to the use of two computer words to represent a number.

DOWNTIME

The time interval during which a device is malfunctioning.

DUMMY

Pertaining to the characteristic of having the appearance of a specified thing but not having the capacity to function as such.

DUMP

(1) To copy the contents of all or part of a storage, usually from an internal storage into an external storage. (2) A process as in (1). (3) The data resulting from the process as in (1).

DUODECIMAL

(1) Pertaining to a characteristic or property involving a selection, choice or condition in which there are twelve possibilities. (2) Pertaining to the number representation system with a radix of twelve.

-E-

ECHO CHECK

A method of checking the accuracy of transmission of data in which the received data are returned to the sending end for comparison with the original data.

EDIT

To modify the form or format of data, e.g., to insert or delete characters such as page numbers or decimal points.

EDP

Electronic data processing. Pertaining to data processing equipment that is predominantly electronic, such as an electronic digital computer.

EFFECTIVE ADDRESS

The absolute address of the current operand.

ENCODE

To apply the rules of a code. Synonymous with code (3).

END-AROUND CARRY

A carry from the most significant digit place to the least significant digit place.

ERROR

Any deviation of a computed, observed, or measured quantity from the true, specified or theoretically correct value or condition.

ERROR-CORRECTING CODE

A code in which each acceptable expression conforms to specific rules of construction that also define one or more equivalent non-acceptable expressions, so that if certain errors occur in an acceptable expression the result will be one of its equivalents and thus the error can be corrected.

ERROR-DETECTING CODE

A code in which each expression conforms to specific rules of construction, so that if certain errors occur in an expression the resulting expression will not conform to the rules of construction and thus the presence of the errors is detected. Synonymous with self checking code.

ERROR RANGE

The difference between the highest and lowest error values.

EXCESS THREE CODE

A binary coded decimal representation in which the decimal numeral N is represented by the binary equivalent of N plus 3.

EXCLUSIVE OR

A logical operator which has the property that if P is a statement and Q is a statement, then P exclusive or Q is true if either but not both statements are true, false if both are true or both are false. P exclusive or Q is often represented by $P \oplus Q$.

EXECUTIVE ROUTINE

A routine designed to control the execution of other routines. Synonymous with supervisory routine.

EXTRACT INSTRUCTION

An instruction that requests the formation of a new expression from selected parts of given expressions.

-F-

FIELD

A specified area of a record used for a particular category of data, e.g., a group of card columns used to represent a wage rate or a set of bit locations in a computer word used to express the address of the operand.

FILE

A collection of related records treated as a unit. Thus, in inventory control, one line of an invoice forms an item, a complete invoice forms a record, and the complete set of such records forms a file.

FILE GAP

A gap used to indicate the end of a file.

FILTER

(1) A pattern of characters that is used to control the selection or elimination of portions of another pattern of characters. Synonymous with mask. (2) A device or program that separates data, signals, or material in accordance with specified criteria.

FIXED-CYCLE OPERATION

An operation that is completed in a specified number of regularly timed execution cycles.

FIXED POINT

Pertaining to a number system in which the location of the point is fixed with respect to one end of the numerals, according to some convention.

FIXED STORAGE

A storage device that stores data not alterable by computer instructions, e.g., magnetic core storage with a lock-out feature, or punched paper tape. Synonymous with nonerasable storage, permanent storage.

FLAG

(1) Any of various types of indicators used for identification, e.g., a workmark. (2) A character that signals the occurrence of some condition, such as the end of a word. Synonymous with mark, sentinel, tag.

FLIP-FLOP

A circuit or device containing active elements, capable of assuming either one of two stable states at a given time. Synonymous with toggle (1).

FLOATING POINT

Pertaining to a number system in which the location of the point does not remain fixed with respect to one end of the numerals.

FLOWCHART

A graphical representation for the definition, analysis, or solution of a problem in which symbols are used to represent operations, data, flow, and equipment.

FLOWCHART SYMBOL

A symbol used to represent operations, data and equipment in problem description.

FLOWLINE

A line representing a connecting path between symbols on a flowchart.

FORMAT

The arrangement of data.

FORTRAN

Formula translation. Any of several specific procedure oriented programming languages.

FRAME RATE

The recycle frequency of the basic timing pulses.

-G-

GENERATE

To produce a program by selection of sub-sets from a set of skeletal coding under the control of parameters.

GENERAL PURPOSE COMPUTER

A computer that is designed to solve a wide class of problems.

GENERATOR

The controlling routine that performs the generate function, e.g., report generator, I/O generator.

GRAY CODE

A binary code in which sequential numbers are represented by binary expressions each of which differs from the preceding in one place only. Synonymous with reflected binary code.

-H-

HARDWARE

Physical equipment, e.g., mechanical, magnetic, electrical, or electronic devices. Contrast with software.

HEAD

A device that reads, records or erases data on a storage medium, e.g., a small electromagnet used to read, write or erase data on a magnetic drum or tape, or the set of perforating, reading or marking devices used for punching, reading or printing on paper tape.

HEURISTIC

Pertaining to exploratory methods of problem solving in which solutions are discovered by evaluation of the progress made toward the final result. Contrasted with algorithm.

HIGH-SPEED CARRY

Any technique in parallel addition for speeding up carry propagation, e.g., standing-on-nines carry. Contrasted with cascaded carry.

-I-

IDENTIFIER

A symbol whose purpose is to identify, indicate or name a body of data.

IMMEDIATE ADDRESS

Pertaining to an instruction in which an address part contains the value of an operand rather than its address. Synonymous with zero-level address.

INDEX

(1) An ordered reference list of the contents of a file or document, together with keys or reference notations for identification or location of those contents. (2) A symbol or a number used to identify a particular quantity in an array of similar quantities, e.g., the terms of an array represented by X(1), X(2) . . . X(100) have the indexes 1, 2, . . . 100 respectively. (3) Pertaining to an index register.

INDEX REGISTER

A register whose content is added to or subtracted from the operand address prior to or during the execution of an instruction. Synonymous with B box.

INDIRECT ADDRESS

An address that specifies a storage location whose content is either a direct address or another indirect address. Synonymous with multilevel address.

INITIALIZE

To set various counters, switches and addresses to zero or other starting values at the beginning of, or at prescribed points in a computer routine.

INPUT

(1) The data to be processed. (2) The state or sequence of states occurring on a specified input channel. (3) The device or collective set of devices used for bringing data into another device. (4) A channel for impressing a state on a device or logic element. (5) The process of transferring data from an external storage to an internal storage.

I/O

An abbreviation for input/output.

INSTRUCTION

A statement that specifies an operation and the values or locations of all operands. In this context, the term instruction is preferable to the terms command or order which are sometimes used synonymously. Command should be reserved for electronic signals, and order should be reserved for sequence interpolation, and related usage.

INSTRUCTION COUNTER

A counter which indicates the location of the next computer instruction to be interpreted.

INSTRUCTION CODE

Same as operation code.

INSTRUCTION REGISTER

A register that stores an instruction for execution.

INSTRUCTION REPERTORY

The set of operations that can be represented in a given operation code.

INTERFACE

A shared boundary.

INTERPRETER

(1) A program that translates and executes each source language expression before translating and executing the next one. (2) A device that prints on a punched card the data already punched in the card.

-J-

JUMP

Departure from the normal sequence of executing instructions in a computer. Synonymous with transfer and jump.

-K-

KEYPUNCH

A keyboard-operated device that punches holes in a card to represent data.

LANGUAGE

A set of representations, conventions, and rules used to convey information.

LANGUAGE, OBJECT

Same as target language

LATENCY

The time between the completion of the interpretation of an address and the start of the actual transfer from the addressed location.

LATERAL PARITY

A single bit written with each character on the computer tape. This bit indicates whether the total bit count in the character was odd or even. If it was odd, a bit is placed in the parity track that makes the total number of "yes" data in the character even.

LINE PRINTING

The printing of an entire line of characters at once.

LINEAR PROGRAMMING

The analysis or solution of problems in which the linear function of a number of variables is to be maximized or minimized when those variables are subject to a number of constraints in the form of linear inequalities.

LINKAGE

In programming, coding that connects two separately coded routines.

LOAD

To place data into internal storage.

LOAD-AND-GO

An operating technique in which there are no stops between the loading and execution phase of a program, and which may include assembling or compiling.

LOGIC DESIGN

The specification of the working relations between the parts of a system in terms of symbolic logic and without primary regard for its hardware implementation.

LOGIC DIAGRAM

A diagram that represents a logic design or its hardware implementation.

LOGIC ELEMENT

A device that performs a logic function.

LOGIC SYMBOL

(1) A symbol used to represent a logic element graphically.
(2) A symbol used to represent a logic connective.

LOGIC INSTRUCTION

An instruction that executes an operation that is defined in symbolic logic, such as and, or, nor.

LOGIC SHIFT

Loosely, same as shift

LONGITUDINAL PARITY

A group of bits on the computer tape (IBM) at the end of each record. These bits indicate whether the total bit count per track for that record was odd or even. If it was odd, a bit is placed for that track at the longitudinal parity point that makes the total number of "yes" bits on the track for that record even.

LOOP

A sequence of instructions that is repeated until a terminal condition prevails.

-M-

MACHINE ADDRESS

Same as absolute address.

MACHINE CODE

An operation code that a specific machine is designed to recognize.

MACHINE INSTRUCTION

An instruction that the particular machine can recognize and execute.

MACHINE LANGUAGE

A language that is used directly by a given machine.

MACHINE WORD

Same as computer word.

MACRO INSTRUCTION

An instruction in a source language that is equivalent to a predetermined sequence of machine instructions.

MAGNETIC CORE

A configuration of magnetic material that is, or is intended to be, placed in a rigid spatial relationship to current-carrying conductors and whose magnetic properties are essential to its use. It may be used to concentrate an induced magnetic field as in a transformer, induction coil, or armature, to retain a magnetic polarization for the purpose of storing data, or for its non-linear properties as in a logic element. It may be made of such material as iron, iron oxide or ferrite and in such shapes as wires, tapes, toroids, or thin film.

MAGNETIC DELAY LINE

A delay line whose operation is based on the time of propagation of magnetic waves.

MAGNETIC DISC

A flat circular plate with a magnetic surface on which data can be stored by selective magnetization of portions of the flat surface.

MAGNETIC DRUM

A right circular cylinder with a magnetic surface on which data can be stored by selective magnetization of portions of the curved surface.

MAGNETIC STORAGE

A storage device that utilizes the magnetic properties of materials to store data, e. g., magnetic cores, tapes and films.

MAGNETIC TAPE

(1) A tape with a magnetic surface on which data can be stored by selective polarization of portions of the surface.
(2) A tape of magnetic material used as the constituent in some forms of magnetic cores.

MAGNETIC THIN FILM

A layer of magnetic material, usually less than one micron thick. Magnetic thin films may be used for logic or storage elements.

MAINTENANCE

Any activity intended to keep equipment or programs in satisfactory working condition, including tests, measurements, replacements, adjustments, and repairs.

MANUAL INPUT

(1) The entry of data by hand into a device at the time of processing. (2) The data entered as in 1.

MAP

To establish a correspondence between the elements of one set and the elements of another set.

MARGINAL CHECK

A preventive maintenance procedure in which certain operating conditions, such as supply voltage or frequency, are varied about their nominal values in order to detect and locate incipient defective parts.

MARK

Same as flag.

MASK

Same as filter (1).

MATHEMATIC MODEL

A mathematical representation that simulates the behavior of a process, device or concept.

MATRIX

(1) In mathematics, a two-dimensional rectangular array of quantities. Matrices are manipulated in accordance with the rules of matrix algebra. (2) In computers, a logic network in the form of an array of input-output leads with switching elements connected at some of their intersections. (3) By extension, an array of any number of dimensions.

MEMORY

Same as storage.

MERGE

To combine two or more files into one, usually in a specified sequence.

MESSAGE

An arbitrary amount of information whose beginning and end are defined.

MIXED RADIX NOTATION

A radix notation that uses more than one radix, e. g., biquinary notation.

MULTI-ADDRESS

Pertaining to an instruction that has more than one address part.

MULTILEVEL ADDRESS

Same as indirect address.

MULTIPLEX

To interleave or simultaneously transmit two or more messages on a single channel.

MULTIPROGRAMMING

The interleaved or simultaneous execution of two or more programs by a single computer.

-N-

NAND

A logical operator having the property that if P is a statement, Q is a statement, R is a statement, . . . , then the NAND of P, Q, R, . . . is true if at least one statement is false, false if all statements are true.

NEGATION

The not logic operation.

NO

The complement of "yes" bits. Used for clarity when referring to data bits or timing commands.

NO OP

An instruction that specifically instructs the computer to do nothing but proceed to the next instruction in sequence.

NON-DESTRUCTIVE READING

A reading process that does not destroy the data in the source.

NOR

A logic operator having the property that if P is a statement, Q is a statement, R is a statement, . . . , then the NOR of P, Q, R, . . . , is true if all statements are false, false if at least one statement is true.

NORMALIZE

To adjust the representation of a quantity so that it lies in a prescribed range. Synonymous with standardize = 3.

NOT

A logic operator having the property that if P is a statement, then the NOT of P is true if P is false, false if P is true.

NUMBER

(1) A mathematical entity inferring quantity or amount of units. (2) Loosely, a numeral.

NUMBER SYSTEM

A system for the representation of numbers, e. g., the decimal number system.

NUMERAL

A number representation.

NUMERICAL ANALYSIS

The study of methods of obtaining useful quantitative solutions to problems that have been expressed mathematically, including the study of the errors and bounds on errors in obtaining such solutions.

-O-

OBJECT LANGUAGE

Same as target language.

OBJECT PROGRAM

Same as target program.

OCTAL

(1) Pertaining to a characteristic or property involving a selection, choice or condition in which there are eight possibilities. (2) Pertaining to the number representation system with a radix of eight.

OFFLINE

Pertaining to peripheral equipment or devices not in direct communication with the central processing unit.

OFFLINE STORAGE

A storage device not under control of the central processing unit.

ONE-LEVEL ADDRESS

Same as direct address.

ONES COMPLEMENT

A radix-minus-one complement with the radix of two.

ONLINE

Pertaining to peripheral equipment or devices in direct communications with the central processing unit.

ONLINE STORAGE

A storage device under direct control of the central processing unit.

OPEN

A term usually used with AND gates indicating that a query pulse will be allowed to pass through the AND gate and will not be inhibited.

OPEN SUBROUTINE

A subroutine that must be relocated and inserted into the main routine at each place it is used. Synonymous with direct insert subroutine.

OPERAND

That which is operated upon. The operands are usually identified by the address parts of the instructions.

OPERATING SYSTEM

An organized collection of techniques and procedures for operating a computer.

OPERATION

(1) A defined action, namely, the act of obtaining a result from one or more operands in accordance with a rule that completely specifies the result for any permissible combination of operands. (2) The set of such acts specified by such a rule or the rule itself. (3) The act specified by a single computer instruction. (4) A program step undertaken or executed by a computer, e. g., addition, multiplication, extraction, comparison, shift, transfer. The operation is usually specified by the operation part of an instruction. (5) The event or specific action performed by a logic element.

OPERATION CODE

A code that represents specific operations. Synonymous with instruction code.

OPERATOR

(1) In the description of a process, that which indicates the action to be performed on operands. (2) A person who operates a machine.

OR

A logic operator having the property that if P is a statement, Q is a statement, R is a statement, . . . , then the OR of P, Q, R, . . . , is true if at least one is true, false if all are false. P or Q is often represented by $P + Q$, $P \cup Q$, $P \vee Q$.

OUTPUT

(1) That data that has been processed. (2) The state or sequence of states occurring on a specified output channel. (3) The device or collective set of devices used for taking data out of a device. (4) A channel for expressing a state on a device or logic element. (5) The process of transferring data from an internal storage to an external storage.

OVERFLOW

(1) That portion of the result of an operation that exceeds the capacity of the intended unit of storage. (2) Pertaining to the generation of overflow as in (1).

OVERLAY

The technique of repeatedly using the same blocks of internal storage during different stages of a problem. When one routine is no longer needed in storage, another routine can replace all or part of that storage.

PACK

To compress several items of data in a storage medium in such a way that the individual items can later be recovered.

PACKING DENSITY

The number of useful storage elements per unit of dimension, e. g., the number of bits per inch stored on a magnetic tape or drum track.

PARAMETER

A variable that is given a constant value for a specific purpose or process.

PARITY BIT

A binary digit appended to an array of bits to make the sum of all the bits always odd or always even.

PARITY CHECK

A check that tests whether the number of ones (or zeros) in an array of binary digits is odd or even. Synonymous with odd-even check.

PATCH

To modify a program by adding a section of coding.

POINT

In positional notation, the character or implied character that separates the integral part of a numerical expression from the fractional part, e. g., a decimal point, binary point.

POSITIONAL NOTATION

A number representation by means of an ordered set of digits, such that the value contributed by each digit depends on its position as well as on the digit value.

POSTMORTEM DUMP

A static dump used for debugging purposes that is performed at the end of a machine run.

PRECISION

The degree of discrimination with which a quantity is stated, e. g., a three digit numeral discriminates among 1000 possibilities.

PRESET

To establish an initial condition, such as the control values of a loop.

PROBLEM DESCRIPTION

A statement of a problem and possibly a description of the method of its solution, or the solution itself. The transformations of data and the relationship of procedures, data, constraints, and environments may also be included.

PROBLEM ORIENTED LANGUAGE

A programming language designed for the convenient expression of a given class of problems.

PROCEDURE

The course of action taken for the solution of a problem.

PROCEDURE ORIENTED LANGUAGE

A programming language designed for the convenient expression of procedures used in the solution of a wide class of problems.

PROGRAM

(1) A plan for solving a problem. (2) Loosely, a routine. (3) To devise a plan for solving a problem. (4) Loosely, to write a routine.

PROGRAM LIBRARY

A collection of available computer programs and routines.

PROGRAM, OBJECT

Same as target program.

PROGRAMMED CHECK

A check procedure designed by the programmer and implemented specifically as a part of his program. Contrasted with automatic check.

PROGRAMMING LANGUAGE

A language used to prepare computer programs.

PROTECTED LOCATIONS

Storage locations reserved for special purposes in which data cannot be stored without undergoing a screening procedure to establish suitability for storage therein.

PSEUDO-RANDOM NUMBER SEQUENCE

A sequence of numbers, determined by some defined arithmetic process, that is satisfactorily random for a given purpose, such as by satisfying one or more of the standard statistical tests for randomness. Such a sequence may approximate any one of several statistical distributions, such as uniform distribution, normal gaussian distribution.

PUNCHED CARD

(1) A card punched with a pattern of holes to represent data. (2) A card as in (1) before being punched.

PUNCHED TAPE

A tape on which a pattern of holes or cuts is used to represent data.

PUSHDOWN LIST

A list that is constructed and maintained so that the next item to be retrieved is the most recently stored item in the list, i. e., last in, first out.

PUSHUP LIST

A list that is constructed and maintained so that the next item to be retrieved and removed is the oldest item still in the list, i. e., first in, first out.

-0-

QUANTIZATION

The subdivision of the range of values of a variable into a finite number of non-overlapping subranges or intervals.

QUANTIZE

To subdivide the range of values of a variable into a finite number of non-overlapping subranges or intervals, each of which is represented by an assigned value within the subrange, e. g., to represent a person's age as a number of whole years.

QUERY

Sample, sense, strobe, initiate.

-R-

RADIX

A quantity whose successive integral powers are the implicit multipliers of the sequence of integers that represent a number. If the radix is five, then 1432 is 1 times 5 to the third power, plus 4 times 5 to the second power, plus 3 times 5 to the first power, plus 2 times 5 to the zero power, which is equivalent to 242 in the decimal representation system. Synonymous with base.

RADIX COMPLEMENT

A numeral in radix notation that can be derived from another by subtracting each digit from the radix minus one and then adding one to the least significant digit of the difference, executing all carries required, e. g., tens complement in decimal notation or twos complement in binary notation. Synonymous with true complement.

RADIX-MINUS-ONE COMPLEMENT

A numeral in radix notation that can be derived from another by subtracting each digit from one less than the radix, e. g., nines complement in decimal notation, ones complement in binary notation.

RANDOM ACCESS

(1) Pertaining to the process of obtaining data from, or placing data into, storage where the time required for such access is independent of the location of the data most recently obtained or placed in storage. (2) Pertaining to a storage device in which the access time is effectively independent of the location of the data.

RANGE

(1) The set of values that a quantity or function may assume. (2) The difference between the highest and lowest value that a quantity or function may assume.

READ

To acquire data from a source.

READ-AROUND RATIO

The number of times a specific spot, digit or location in electrostatic storage may be consulted before spillover of electrons will cause a loss of data stored in surrounding spots. The surrounding data must be restored before the deterioration can cause any loss of data.

READ-IN

The process of bringing data into a unit; clock-in.

READ-OUT

The process of sending out data from a unit; clock-out.

REAL-TIME

(1) Pertaining to the actual time during which a physical process transpires. (2) Pertaining to the performance of a computation during the actual time that the related physical process transpires in order that results of the computations can be used in guiding the physical process.

RECORD

A collection of related items of data, treated as a unit.

RECORD GAP

A gap used to indicate the end of a record.

REFLECTED BINARY CODE

Same as gray code.

REGISTER

A device capable of storing a specified amount of data, such as one word.

RELATIVE ADDRESS

The number that specifies the difference between the absolute address and the base address.

RELATIVE CODING

Coding that uses machine instructions with relative addresses.

RELOCATE

In programming, to move a routine from one portion of internal storage to another and to automatically adjust the necessary address references so that the routine, in its new location, can be executed.

RESET

(1) To restore a storage device to a prescribed initial state, not necessarily that denoting zero. (2) To place a binary cell into the zero state.

RESOLVER

A device whose input is a vector quantity and whose outputs are components of the vector.

ROUND-OFF

To delete the least significant digit or digits of a numeral and to adjust the part retained in accordance with some rule.

ROUTINE

A set of instructions arranged in proper sequence to cause a computer to perform a desired task.

ROUTINE, SUPERVISORY

Same as executive routine.

ROUTINE, UTILITY

Same as service routine.

ROW BINARY

Pertaining to the binary representation of data on punched cards in which adjacent positions in a row correspond to adjacent bits of data. Each row in an 80 row card may be used to represent 80 consecutive bits of two 40 bit words.

RUN

A single, continuous performance of a computer.

SAMPLING

Obtaining a value of a variable at regular or intermittent intervals.

SCALE

To change a quantity by a factor in order to bring its range within prescribed limits.

SCALE FACTOR

A number used as a multiplier, so chosen that it will cause a set of quantities to fall within a given range of values. To scale the values 856, 432, -95, and -182 between -1 and +1, a scale factor of 1/1000 would be suitable.

SCAN

To examine sequentially part by part.

SEARCH

To examine a set of items for those that have a desired property.

SELECTIVE DUMP

A dump of a selected area of internal storage.

SELF ADAPTING

Pertaining to the ability of a system to change its performance characteristics in response to its environment.

SELF CHECKING CODE

Same as error-detecting code.

SELF ORGANIZING

Pertaining to the ability of a system to arrange its internal structure.

SEQUENTIAL CONTROL

A mode of computer operation in which instructions are executed consecutively unless otherwise specified by a jump.

SERIAL

(1) Pertaining to the time-sequencing of two or more processes. (2) Pertaining to the time-sequencing of two or more similar or identical processes, using the same facilities for the successive processes. (3) Pertaining to the time-sequential processing of the individual parts of a whole, such as the bits of a character, the characters of a word, using the same facilities for successive parts.

SERIAL ACCESS

Pertaining to the process of obtaining data from, or placing data into, storage when there is a sequential relation governing the access time to successive storage locations.

SERVICE ROUTINE

A routine in general support of the operation of a computer, e. g., an input-output diagnostic, tracing or monitoring routine. Synonymous with utility routine.

SET

(1) A collection. (2) To place a storage device into a specified state, usually other than that denoting zero or blank. (3) To place a binary cell into the one state.

SHIFT

A movement of data to the right or left.

SIGN DIGIT

The digit in the sign position.

SIGN POSITION

The position at which the sign of a number is located.

SIGNIFICANT DIGIT

A digit that contributes to the precision of an accurate numeral. The number of significant digits is counted beginning with the digit contributing the most value, called the most significant digit, and ending with the one contributing the least value, called the least significant digit.

SIMULATE

To represent the functioning of one system by another, e. g., to represent one computer by another, to represent a physical system by the execution of a computer program, to represent a biological system by a mathematical model.

SIMULATOR

A device or computer program that performs simulation.

SINGLE STEP

Pertaining to a method of operating a computer in which each step is performed in response to a single manual operation.

SKELETAL CODING

Sets of instructions in which some addresses and other parts remain undetermined. These addresses and other missing parts are usually determined by routines that are designed to modify them in accordance with given parameters.

SKIP

To ignore one or more instructions in a sequence of instructions.

SNAPSHOT DUMP

A selective dynamic dump performed at various points in a machine run.

SOFTWARE

(1) The collection of programs and routines associated with a computer, e. g., compilers and library routines. (2) All the documents associated with a computer, e. g., manuals circuit diagrams. Contrasted with hardware.

SORT

To arrange data or things in an ordered sequence by applying specific rules.

SORTER

A person, device or computer routine that sorts.

SOURCE LANGUAGE

A language that is an input to a given translation process.

SOURCE PROGRAM

A program written in a source language.

SPECIAL CHARACTER

In a character set, a character that is neither a numeral nor a letter, e. g., /*=.

SPECIAL PURPOSE COMPUTER

A computer that is designed to solve a restricted class of problems.

SPROCKET

The rate at which digital characters occur. If there is more than one character in a digital word, the sprocket rate is the rate at which the characters occur. If there is only one character in a digital word the sprocket rate, channel rate, clock rate, are all synonymous.

STATEMENT

In computer programming, a meaningful expression or generalized instruction in a source language.

STATIC DUMP

A dump that is performed at a particular point in time with respect to a machine run, frequently at the end of a run.

STEP

(1) One operation in a computer routine. (2) To cause a computer to execute one operation.

STORAGE

(1) Pertaining to a device into which data can be entered and from which it can be retrieved at a later time. (2) Loosely, any device that can store data.

STORAGE ALLOCATION

The assignment of blocks of data to specified blocks of storage.

STORAGE CAPACITY

The amount of data that can be contained in a storage device.

STORAGE CELL

An elementary unit of storage, e. g., a binary cell, or a decimal cell.

STORAGE DEVICE

A device into which data can be inserted, in which it can be retained, and from which it can be retrieved.

STORAGE, NON-ERASABLE

Same as fixed storage.

STORAGE, WORKING

Same as temporary storage.

STORE

(1) To enter data into a storage device. (2) To retain data in a storage device. (3) A storage device.

STORED PROGRAM COMPUTER

A digital computer that, under control of internally stored instructions, can synthesize, alter and store instructions as though they were data and can subsequently execute these new instructions.

STRAIGHT-LINE CODING

Coding in which loops are avoided by the repetition of parts of the coding when required.

SUB-BASIC TIMING PULSE

One of the lowest frequency pulses available for commutating or decommutating the data.

SUBROUTINE

A routine that can be part of another routine.

SUPERVISORY ROUTINE

Same as executive routine.

SYMBOL

A representation of something by reason of relationship, association, or convention.

SYMBOLIC ADDRESS

An address expressed in symbols convenient to the programmer.

SYMBOLIC CODING

Coding which uses machine instructions with symbolic addresses.

SYMBOLIC LOGIC

The discipline that treats formal logic by means of a formalized artificial language or symbolic calculus whose purpose is to avoid the ambiguities and logical inadequacies of natural languages. Advantages of the symbolic method are greater exactness of formulation and power to deal with more complex material.

SYNCHRONOUS COMPUTER

A computer in which each event or the performance of each operation starts as a result of a signal generated by a clock.

SYSTEM

An organized collection of parts united by regulated interaction.

-T-

TABLE

A collection of data, each item being uniquely identified either by some label or by its relative position.

TABLE LOOK-UP

A procedure for obtaining the function value corresponding to an argument from a table of function values.

TAG

Same as flag.

TAPE DRIVE

A device that moves tape past a head. Synonymous with tape transport.

TAPE TRANSPORT

Same as tape drive.

TAPE UNIT

A device containing a tape drive, together with reading and writing heads and associated controls. Synonymous with tape station.

TARGET LANGUAGE

A language that is an output from a given translation process. Synonymous with object language.

TARGET PROGRAM

A program written in a target language. Synonymous with object program.

TEMPORARY STORAGE

In programming, storage locations reserved for intermediate results. Synonymous with working storage.

TENS COMPLEMENT

A radix complement with the radix of ten.

THIN FILM

Loosely magnetic thin film.

TIME SHARE

To interleave the use of a device for two or more purposes.

TRACING ROUTINE

A routine that provides a historical record of specified events in the execution of a program.

TRACK

The portion of a moving storage medium, such as a drum, tape, disk, that is accessible to a given reading station.

TRANSFER

Same as jump.

TRANSLATE

To convert from one language to another.

TRANSLITERATE

To convert the characters of one alphabet to the corresponding characters of another.

TRAP

An unprogrammed conditional jump to a known location, automatically activated by hardware, with the location from which the jump occurred recorded.

TROUBLESHOOT

Same as debug.

TRUE COMPLEMENT

Same as radix complement.

TRUNCATE

To terminate a computational process in accordance with some rule, e. g., to end the evaluation of a power series at a specified term.

TWOS COMPLEMENT

A radix complement with the radix equal to two.

-U-

UNDERFLOW

Pertaining to the condition that arises when a machine computation yields a result that is smaller than the smallest non-zero quantity that the intended unit of storage is capable of storing.

UNPACK

To separate various sections of packed data.

UTILITY ROUTINE

Same as service routine.

-V-

VARIABLE

A quantity that can assume any of a given set of values.

VARIABLE POINT

Pertaining to a number system in which the location of the point is indicated by a special character at that location.

VOLATILE STORAGE

A storage device in which stored data are lost when the applied power is removed, e. g., an acoustic delay line.

-W-

WORD LENGTH

The number of bits or other characters in a word.

WORD, MACHINE

Same as computer word.

WORKING STORAGE

Same as temporary storage.

WRITE

To deliver data to a medium such as storage.

-Y-

YES

The opposite of NO; a one bit. A logical term that may have several meanings, depending upon its use.

-Z-

ZERO SUPPRESSION

The elimination of non-significant zeros in a number.