Glossary of Selected Computer Terms

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INTRODUCTION

The information age, stimulated by the use of mainframes, minicomputers, and most importantly the microcomputer, has brought with it new vocabulary. However, as has occurred in any new technological age, the human mind does not take long to encode the new terminology and begin to use it appropriately.

Because the age of computers is still relatively new, and because new developments in computer technology are occurring daily, it is only fitting that a glossary of terms be included in the 1984 edition of the *Journal of the Academy of Rehabilitative Audiology (JARA).* This issue of *JARA* contains articles based on presentations at the Academy of Rehabilitative Audiology's 1984 Summer Institute for which the theme was "Application of Computer Technology to Habilitative/Rehabilitative Audiology".

The terms selected to appear in this glossary are by no means an exhaustive list of computer terminology. They represent, however, the most commonly used computer terms in current use.

Address:	Noun: a specific number associated with a specific location in memory. On a 64K computer, an address is represented by a number between 0 and 65535. Verb: to refer to a specific location in memory.
Addressing Mode:	Different ways of referring to locations in memory, including direct and indirect.
Algorithm:	A step-by-step recipe for solving a particular class of problem.
ASCII:	An acronym for the American Standard Code for Information Interchange. This code assigns a unique value from 0 to 127 to each of 128 numbers, letters,

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special characters, and control characters.

Assembler: A program which converts assembly language into machine language.

Assembly Language: A low-level language made up of mnemonics and symbols and similar in structure to machine language. Assembly languages are written for specific computers.

Asynchronous: Serial communication scheme self-timed from received/transmitted characters.

Bar Code Wand: Light source and photo cell in pen-like wand for scanning bar code labels.

Baud: A colloquial term designating the number of bits per second that can be transmitted in serial mode.

BASIC: Acronym for "Beginner's All-Purpose Symbolic Instruction Code." BASIC is a high-level language, similar in structure to FORTRAN but somewhat easier to learn. It was invented by Kemney and Kurtz at Dartmouth College in 1963 and has become the most popular language for small computers. BASIC exists in several dialects which differ in terms of the ability to index variables, handle fractions, and perform logical operations on string variables.

Batch Mode: A mode of computer use common in large computer centers in which users submit programs to be run on a first-in, first-out basis. The time required to complete a given program is called "turn-around" time and is largely determined by clerical activities.

Binary: The base 2 number system, using the digits, "0" and "1". Each digit in a binary number represents a power of two. A binary signal is represented by the presence or absence of something, such as an electrical voltage. At the lowest level, most digital computers use binary numbers.

Bisynchronous: Serial communication scheme timed from signals separate from received/transmitted characters.

Bit: A BINARY DIGIT SPECIFIED as "0" or "1". Bits can be grouped together to form larger values such as the byte (8 bits) or the nibble (4 bits).

Boolean Algebra: Developed by George Boole (1815-1864), a British logician, Boolean algebra concerns logical operations such as AND, OR, NOT, and NOR, as opposed to mathematical operations such as adding, subtracting,

multiplying, and dividing.

Bootstrap: A utility program that starts a computer running after it has been turned on. When this program is executed, the computer system is said to be "booted".

Buffer: Hardware device or software routine which holds something temporarily.

Bug: Colloquial term for an error. Hardware bugs are caused by physical or electrical malfunction or design error. Software bugs are logical or typograpical errors in programming.

Bus: A set of electrical connections in a computer which carry data from one place to another.

Byte: The basic unit of a computer's memory. A byte is usually eight bits. Each ASCII character can be represented in one byte. Small computers typically contain from 1024 to 65536 bytes of memory.

Call: Noun: an instruction which passes control to a subroutine. Verb: to leave a program or subroutine which is currently executing and to start another, usually with the intent to return to the original program or subroutine.

Character: Any graphic symbol which has meaning, including numbers, letters, punctuation marks and other symbols.

COBOL: COmmon Business-Oriented Language. A widely used, higher-level programming language for business. Generally used on large systems.

Code: Noun: the written form of a computer program. Verb: any method for representing something in terms of symbols. Computer languages represent algorithms with statements. ASCII represents characters with binary numbers.

Cold Start: The process of starting a computer which has just been turned on.

Compiler: A program that translates other programs for the poor, dumb computer. A compiler translates what you write (usually in one of the higher languages such as FORTRAN), and you are responsible for the logic. Compiled programs execute faster than interpreted programs.

Computer Center: (1) A service unit found in many colleges and school

systems which is often responsible for preventing purchase of small computers. (2) A facility housing a large computer. (3) A place where simple problems may be rendered impossibly complex.

Control (CTRL) Character: Characters in the ASCII character set which usually are not displayed, but which control various functions. For example, the RETURN control character is a signal that you have finished typing an input line and you wish the computer to act upon it.

CP/M: Control Program for Microprocessors, a single-user disk operating system. CP/M-80 - OS eight-bit micro computers; CP/M-86 - OS for sixteen-bit micro processors.

CPU: Central Processing Unit, electronic portion of a computer that does the actual data manipulation.

CRT: Acronym for "cathode-ray tube" (screen) or any device containing such a screen.

Cursor: A special symbol which tells where you are on a CRT screen.

Data (plural): Information of any type, numerical or non-numerical.

Digitizer: Device for converting XY coordinates of a drawing to corresponding computer-readable signals.

DIP: Acronym for "Dual In-Line Package", the most common package for an intergrated circuit. DIPs come in 14-, 16-, 18-, 20-, 24-, and 40 pin configurations.

Disassembler: A program which converts machine language into assembly language. The opposite of an assembler.

Display: Noun: any sort of output device for a computer, usually a CRT. Verb: to place information on such a device.

DOS: Disk Operating System, software for controlling data management in floppy or hard disk systems.

Dot-Matrix: Character formation using a dot pattern.

Double-Density: The ability of a disk drive unit to write twice as much data on a given area of a disk than a single-density drive unit can.

Double-Sided: A diskette on which data storage is possible on both sides.

EBCDIC: Extended Binary Coded Decimal Interchange Code,

character set used by many IBM computers.

EEROM, EAROM: Electrically Erasable or Electrically Alterable Read Only Memory, alterable ROM using electrical erase.

EPROM: Erasable Programmable Read Only Memory, alterable ROM using ultraviolet light to erase.

Execute: To perform the intention of a command, or instruction; to run a program.

Floppy Disk: Flexible mylar disk coated with magnetic film for data storage.

Format: Noun: the physical or logical form in which something appears. Verb: to specify that form.

FORTRAN: Acronym for "formula translation". FORTRAN is a high-level language optimized for mathematical problem-solving. It exists in several standardized "dialects", and has been heavily used in science and engineering. FORTRAN is a compiler-oriented language capable of solving problems at relatively high speed.

Full-Duplex: Two-way simultaneous communication.

Gigabyte: Roughly, one billion bytes. Precisely, 1,073,741,824 bytes.

Graphic: A distinct, recognizable shape or color.

Graphics: A capability of some CRTs by which original or uncommon shapes may be defined and displayed.

Half-Duplex: Two-way sequential communication.

Hard Disk: Rigid platter(s) coated with magnetic film used in desk memories to store data.

Hardware: Electrical, electronic, and mechanical computer components.

Heuristic: A method of problem-solving which employs empirical approximations ("rules of thumb") to get answers.

Hexadecimal: The base 16 number system. The digits 0 through 9 and the letters A through F represent values in this system. Each digit in a hexadecimal number represents a power of 16.

High-Order: The most important, or highest valued, element in a set of similar items. The high-order bit of a byte is the bit which has the largest place value.

Hz (Hertz): Cycles per second. Typical microprocessors operate at speeds between 1 and 4 MegaHz.

Input/Output (I/O): Software or hardware which exchanges data with the outside world.

Instruction: The smallest executable portion of a program. In machine language, instructions are represented with one, two, or three bytes; in higher-level languages, instructions may be many characters long.

Integrated Circuit: A tiny wafer of a glassy material (usually silicon) onto which has been etched an electronic circuit. Single ICs contain from ten to ten thousand discrete electronic components. ICs are usually housed in DIPs.

Interface: An exchange of information between one device and another, or the systems which make such an exchange possible. Typically, interface disciplines are either serial or parallel.

Interrupt: An event which causes the computer to pass control to a special interrupt-handling subroutine. When the interrupt has been taken care of, the computer resumes execution of the program. Interrupts are used to tell the computer that a particular device or peripheral wants attention.

Interpreter: A program that translates commands to another program. Most BASIC programs are interpreted. One program instruction is translated and then executed by the computer, before the next instruction is dealt with. Interpreted languages allow faster development of programs at a sacrifice of execution speed.

Kilobyte: 1024 bytes.

Language: A computer language is a code which can be used to tell a computer what to do. Computer languages differ from each other in syntax (structure), statements, speed, and other respects.

Line: A horizontal sequence of graphic symbols extending from one edge of a CRT screen to the other. Usually a line is a sequence of up to 254 characters, terminated by the control character "return". Also, a channel through which a computer communicates with another device.

Low-Order: The least important, or smallest valued, element in a set of similar items. The low-order bit in a byte is the bit with the smallest place value.

Machine Language: The lowest level computer language, usually binary in

	nature. Machine-language instructions consist of opcodes sometimes followed by various operands.
Mainframe:	Large multi-user non-microprocessor computer.
Mass Memory:	Large non-volatile memory, such as disk or tape.
Megabyte:	Mbyte, or M, 1024 Kbytes or 1,048,576 bytes.
Memory:	RAM and ROM memory (not mass memory).
Memory Address:	A memory address is a value which selects or identifies a single location in memory.
Memory Location:	The smallest subdivision of memory accessible to the computer. Each memory location has associated with it a unique address and a certain value (the contents of the location).
Memory Map:	The total set of memory locations which the microprocessor can address directly.
Microcomputer:	A computer system which is based upon a microprocessor.
Microprocessor:	An integrated circuit capable of accepting and executing machine language programs; the central processing unit (CPU) of a microcomputer.
Minicomputer:	Small multi-user non-microprocessor computer.
Mnemonic:	Any acronym (or any other symbol) used in the place of something more difficult to remember. In assembly language, each machine language opcode is given a three letter mnemonic (for example, the mnemonic JMP, meaning "jump to an address").
Mode:	A condition or set of conditions under which certain rules apply.
MODEM:	MODulator/DEModulator, device for converting serial RS232C signals to tones, and back again to RS232C signals.
Monitor:	(1) A closed-circuit television set. (2) A program which allows operation of a computer at a very low level (e.g., with the values and addresses of individual memory locations).
MS/DOS:	A popular operating system for sixteen-bit microcomputers that use either hard or floppy disk drives.
Multiplexer (MUX):	An electronic circuit which connects one of many data inputs to a single data output. The data input chosen for connection to the output is determined by the value of a small number of selector inputs.

Network: A structured system that allows two or more computers to communicate via a central clearing house.

Number Crunching: Any operation involving large amounts of numerical data or mathematical operations on those data.

Numeric Variable: A variable whose elements are limited to numbers (integers or integers and fractions). Numerics are treated as quantities and can be manipulated by program instructions which do mathematical operations (add, divide, subtract, multiply, etc.).

Nibble: Colloquial term for half of a byte (four bits).

Object Code: A computer program in the form of binary machine instructions.

Offline: A device, system, or process not under the direct control of a computer.

Online: A device, system, or process under the direct control of a computer.

Operating System: A program that manages software files and hardware devices. Operating systems are usually written in assembly language.

OS: Operating System, computer's housekeeping software.

Parallel: Byte-by-byte communication over several wires.

Pascal: (1) A noted French Scientist. (2) The SI unit for pressure. (3) A high-level computer language, the syntax of which forces the programmer to structure code in a logical manner. This relatively new compiler-oriented language is very fast, but requires large amounts of money.

Peripheral: A device connected to the computer which is not part of the computer itself. Most peripherals are input and/or output devices.

Pinout: A description of the function of each pin on an IC, often presented in the form of a diagram.

Plotter: Device for plotting on paper in response to XY positioning signals from a computer.

Printed Circuit Board: A sheet of non-conductive material onto which a thin layer of metal has been applied. The metal is etched to leave conductive traces. Components can be attached to the board with molten solder, and can exchange

electronic signals via the etched traces. Printed circuit boards are often called "cards".

Printer: Device for printing alpha-numeric characters on paper.

Program: A structured sequence of instructions which describes a process.

Programmable Read-Only Memory (PROM): A PROM is a ROM whose contents can be electrically altered. Information in PROMs does not disappear when power is turned off. Some PROMs can be erased by ultraviolet light and reprogrammed. These are called EPROMs.

Random-Access Memory (RAM): The main memory of a computer, consisting of integrated circuits which make up this type of memory or the memory itself. The computer can store and recall values in particular locations in RAM, or alter and re-store them. Typically, the values in RAM are lost when the computer is turned off.

Read-Only Memory (ROM): This type of memory is used to hold programs or data which must be available to the computer when it is turned on. ROMs are filled with information when they are manufactured and cannot be changed. Information stored in ROMs is not lost when the computer is turned off.

Real-Time Clock: A peripheral which counts time in days, hours, minutes, seconds, and fractions of seconds.

Real-Time Process: A process which happens at rates independent of a computer or other device intended to operate on data produced by the process.

Return: To exit a subroutine and go back to the program which called it. Also, a control character which sends information to the computer.

RS232-C: A standardized system for serial data transmission. In its simplest implementation, this system requires only a three-conductor cable. In a full implementation additional "handshaking" lines are required. The standard supports transmission rates up to 20,000 band.

Run: To follow the sequence of instructions of a program,

and to effect the process outlined by the instructions.

Scroll: To make room at the bottom of a display by causing all of the text to move upward.

Serial: Bit-by-bit communication over two wires.

Simplex: One-way communication.

Software: Computer instructions.

Soft Switch: A two-position switch which can be operated by software (e.g., under program control).

Source Code: A program in the form of instruction names (e.g., assembly language) or in the form of high-level code (e.g., FORTRAN or BASIC).

Stack: A reserved area in memory which can be used to temporarily store information. A stack is referenced not by address, but in the order in which information was placed on it. The last datum "pushed" onto the stack will be the first one "popped" off the stack.

String Variable: A variable whose elements can be numbers, letters, or other symbols. Strings are treated as literal symbols and can be manipulated by program instructions which sort, concatenate, separate, or test equivalence.

Strobe: A momentary event which signals the occurrence of a specific event.

Subroutine: A separate and self-contained segment of a program which can be executed by a single call. Subroutines are used to perform the same sequence of instructions at many times in the execution of a program.

Syntax: The rules for structuring the statements of a given language.

Terminal: External computer data input/output device.

Text: Letters, numbers, or other characters. "Text" usually refers to large chunks of English.

Time-Sharing Mode: A mode of computer use common in large computer centers in which many users interact with the computer by means of terminals. The computer "shares time" with each user, giving the appearance of simultaneously serving each of them.

Unix: A relatively new operating system that uses C language, and that is constructed differently than most other common operating systems.

Warm-Start: The process of restarting a computer after the loss of

control by a program or the operating system. A warm-start does not involve turning the computer off.

Winchester: Sealed hard disk technology.

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