

THE FACTS ON FILE DICTIONARY OF MICROCOMPUTERS

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Facts On File, Inc.

460 Park Avenue South, New York, N.Y. 10016

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PREFACE

Microcomputers have brought computers firmly—although often unobtrusively—into all our lives, and the language of the microcomputer user is becoming increasingly a part of everyday language—‘chips with everything’ is a well-understood statement of fact in two ways. The computer industry generated many exciting new words and phrases for itself, and many of these have been adapted and given new meanings in a microcomputer context. But a number of the new concepts have needed completely new words and PROM-zapping, hex pad, hot chassis and mother board take their place beside the well-established bug, bootstrap and deadly embrace. Edge card means something quite different to a microcomputer user from a punched card with notches cut at the edge (the data processing computer version) while ‘inputting input by means of an input’ has a familiar (if somewhat pedestrian) ring to both. Meanwhile the dreaded intermittent error (‘A sporadic error which tends to occur before and after any attempt to establish its presence and cause’) continues to haunt engineers and users of almost any mechanical, hydraulic or electronic device.

This book does not seek to provide a preferred definition: its objective is to be a helpful comparison in any discussion of microcomputers, and therefore all words and meanings qualify for inclusion, whether they seem elegant or not. The only rules are that strict alphabetical order is followed (ignoring commas, hyphens, etc) and words are listed in natural English order: slow death appears under S, not D. (Reversed phrases are listed only when the natural order might be hard to find.) New words and new meanings emerge joyously in the microcomputer industry to give meaning to new concepts, and I shall welcome notification from readers of new uses for old words and new words for new ideas.

Haslemere, 1980

ANTHONY CHANDOR

ACKNOWLEDGEMENT

So many people and organizations have been helpful in suggesting and explaining words that it would be wrong to acknowledge the help of only a few, but it would also be wrong not to pay an especial tribute to the group known in the computing industry as Le Micro, and, with many thanks to its members, I am glad to pay such a tribute. I know, too, that the members of Le Micro will understand my wish to give particular thanks to the Director of Publications at Urwick Nexos Ltd.

NOTE

SPELLING

A programme of events is distinguished from a computer program, a disc is distinguished from a magnetic disk and analogue is distinguished from analog computer.

ALPHABETICAL ORDER

The entries are in strict alphabetical order, ignoring all punctuation and word breaks.

See references are denoted by an arrow: ↗

See also references are denoted by a double arrow: ⇨

A

abend To halt a computer run before it has reached a successful conclusion – to make an *abortive end*.

aberration An error condition, usually in the cathode ray tube of a *terminal*.

abnormal termination The ending of a computer *run*, *routine* or *program* because of a malfunction or error condition.

abort To abandon an activity in recognition of an error condition.

absolute address The physical location of storage assigned for data. The location is defined in *machine code*.

Also known as actual address, direct address, first-level address, machine address, one-level address, specific address.

absolute addressing The addressing of a physical location in storage by its *absolute address*.

absolute code *Program instructions* which have been written using *absolute addresses*. Instructions in absolute code are intelligible to a processor without the need for any intermediate processing.

Also known as actual code, basic code, direct code, one-level code and specific code.

absolute loader A *program* with the function of *loading* another program at a specified *address*.

A-bus The primary internal *bus* of a *microprocessor*.

acceleration time The time elapsing between the interpretation of a *read* or *write instruction* to a *peripheral unit* and the moment when transfer of data begins.

Also known as start time.

acceptance test A series of actions carried out to prove that a system (*hardware* and *software*) meets agreed criteria, e.g. that the processing of specified input produces expected results. ⇨ *commission*.

access To obtain data from a *storage device* or from a *peripheral unit*.

access arm The positioning device of the reading or writing mechanism of a *storage unit*.

access time The time taken from the moment of executing an *instruction* to call for data to the moment when the data has been

accordion

stored in the appropriate *location*. The data may be held in a *storage device* or obtained from a *peripheral unit*, and different devices require different access times. For example, *magnetic tape* has a longer access time than *magnetic disk*.

accordion A *printed circuit* connector contact. The spring has an accordion-like Z shape to allow great deflection without the risk of over-stressing.

accumulator A *storage location* in which *operations* are performed on numbers and where the results are stored. An accumulator can act as an *arithmetic and logic unit*, and is sometimes used to control or *modify* a quantity held in another storage location. Usually it will store one value, receive another value and then hold the result of operations carried out on the original number and the second number.

Also known as accumulator register.

accumulator register Synonymous with *accumulator*.

accuracy A measure of the size of an error or the quality of freedom from error. High accuracy implies a low degree of error, and may be contrasted with *precision*. For example, a calculation to five places of decimals may be more precise than a calculation to four places of decimals, but if the five-place calculation contains an error, it will be less accurate than a four-place calculation which is error-free.

acoustic coupler A device capable of transmitting and receiving *audio* tones which can be sent on telephone lines, allowing a *modem* to be linked to a telephone handset.

acoustic delay line A *delay line* based on the time of propagation of sound waves, so that a pattern of sound pulses is launched at one end of an acoustic medium such as quartz and picked up at the other end. This means that a *binary digit* can be represented by the presence or absence of a short high-frequency *packet*.

Also known as sonic delay line.

acoustic memory Synonymous with *acoustic store*.

acoustic store A *regenerative memory* using an *acoustic delay line*.

Also known as acoustic memory.

active element A circuit which receives energy from two or more sources. One of these sources of energy controls the energy flow of the other source(s).

activity 1. The act of using a *file* of information, either by altering it or referring to it. The activity level of a file is therefore an indication of the frequency of use. 2. The representation in *PERT*

and *critical path* analysis of a task or constraint. Time and/or resources are consumed and the activity is necessary in order to move from one *event*² to another.

actual address Synonymous with *absolute address*.

actual code Synonymous with *absolute code*.

actual instruction An *instruction* resulting from *modification* of a *basic instruction*.

Also known as effective instruction.

ADA A *high-level language* for *real time* processing problems; named after Lady Lovelace, Babbage's friend and recorder.

addend One of the *operands* used in carrying out the function of *addition*. The addend is a number which is added to another number called the *augend*, producing a result called the *sum*.

adder A device capable of performing the function of *addition* using digital signals. It receives three inputs (representing *addend*, *augend* and a *carry digit*) and will provide two outputs (representing the *sum* and a *carry digit*).

Also known as digital adder; it is sometimes more precisely known as a full adder, to distinguish it from *half-adder*. The term adder usually implies *three-input adder* and full adder.

adder-subtractor A device which acts as either an *adder* or a *subtractor*.

addition An arithmetic operation which produces the sum of two *operands* – the *addend* and *augend*.

additional character Synonymous with *special character*.

addition record A new *record* added to a *file* during *updating*, without causing the amendment or deletion of an existing record.

addition without carry Synonymous with *Exclusive-Or operation*.

⇔ *Boolean algebra, logic*.

address 1. An identification by a name, label or tag of a *register*, *storage location* or other source or destination of data. 2. Used as a verb, to indicate a location. 3. That part of an *instruction* which specifies the location of an *operand* involved in the instruction.

address computation An operation on the *address* part of a *program instruction*.

address, direct Synonymous with *absolute address*.

address format The construction of the *address* part of an *instruction*.

address, machine Synonymous with *absolute address*.

address mapping Conversion of data representing the physical

address modification

location of *records* and assigning records to *storage locations*, e.g. the translation of a *virtual address* to an *absolute address*.

address modification The process of changing the *address* part of an *instruction* in such a way that the instruction operates on a different *operand* each time the routine containing the instruction is performed. ⇨ *program modification*.

address part The part of an *instruction* which contains the *location* of an *operand*.

address register A *register* in which an *address* is stored.

add-subtract time The time required to perform one *addition* or *subtraction*, exclusive of the *read time* or *write time*.

add time The time required to perform one *addition*, exclusive of the *read time* or *write time*.

algebra, Boolean ⇨ *Boolean algebra*.

ALGOL A *high-level language* used for the presentation to a computer of numerical procedures in a standard form. The word is derived from Algorithmic Oriented Language. The language allows a concise expression of arithmetic and logic processes. ⇨ *ALGOL 68*.

ALGOL 68 A powerful *high-level language* designed for use in a number of application areas, and therefore of wider use than, for example, ALGOL 60, the 1960 version of ALGOL. The language ALGOL 68 is more powerful than ALGOL 60, but not an extension of it.

algorithm A series of instructions or procedural steps designed to result in the solution of a specific problem.

algorithmic Pertaining to a method of problem-solving by following a predetermined *algorithm*.

allocate ⇨ *storage allocation*.

alphabet 1. Any *character set*, the combinations of which are used to denote data, in accordance with various rules. 2. The character set used in the English language alphabet, often also including symbols such as @, \$, £, /.

alphabetic Pertaining to an *alphabet*. Contrasted with *numeric*.

alphabet code The representation of data as coded groups of *bits* to represent an *alphabet*². Contrasted with *numeric code*.

alphabetic string A *string* in which the *characters* are letters, or pertain to an agreed *alphabet* set. Contrasted with *numeric string*.

alphametric Synonymous with *alphanumeric*.

alphanumeric Pertaining to a *character set* in which the characters may represent either numerals or letters. Symbols such as @, \$,

£, /, may also be represented since these are often included in the term alphabet.

Also known as alphameric.

alteration switch Synonymous with *indicator*.

alternation Synonymous with *Or operation*. ⇔ *Boolean algebra*.

alternative denial Synonymous with *Not-And operation*. ⇔ *Boolean algebra*.

ALU ⇔ *arithmetic and logic unit*.

ambiguity error An error caused as a result of an incorrect selection when there are two possible readings of a digitized number.

amendment record Synonymous with *change record*.

amplifier A device which is capable of increasing the magnitude of an effect or action such as an electric wave or a light intensity. Various types of amplifier are used in computing systems, usually accepting an input signal in wave form and delivering a magnified signal. This magnification compensates for *attenuation* introduced by losses inevitable in energy transfer.

amplify To increase the amplitude of a signal. ⇔ *amplifier*.

analog Pertaining to a device which represents and measures numerical quantities by means of physical variables such as, for example, currents, voltages, mechanical gears. Thus, resistance in an *analog network* can be used to represent mechanical losses and in this way a variable can represent another variable with similar properties.

analog computer A *computer* which manipulates data by *analog* means. Contrasted with *digital computer*.

analog network A circuit in which physical variables are represented in such a way that mathematical relationships can be directly indicated by a continuous examination of measurable quantities. The network is usually electrical and serves as a model for a usually non-electrical system.

analog representation Representation of a variable by a physical quantity (such as voltage), the magnitude of which is directly proportional to the variable.

analog-to-digital conversion The conversion of *analog* signals to *digital* information by turning physical motion or an electrical voltage into digital factors.

And circuit Synonymous with *And element*.

And element A *logical element* operating with *binary digits* which provides one output signal from two input signals in accordance

And gate

with the following rules:

Input		Output
1	0	0
1	1	1
0	1	0
0	0	0

Also known as And circuit, And gate, coincidence circuit, coincidence element, coincidence gate.

And gate Synonymous with *And element*.

And operation A *logical operation*¹ applied to two *operands*. A result is produced depending on the *bit* patterns of the operands and according to the following rules for each *binary digit* position:

Operands		Result
p	q	r
1	0	0
1	1	1
0	1	0
0	0	0

Also known as conjunction, intersection, meet.

annotate To add explanatory text to *program instructions*. The annotations are often described as narrative.

ANSI American National Standards Institute. Various ANSI committees have developed standards for computing which have received world-wide acceptance.

anticoincidence element A *logical element* operating with *binary digits* which provides one output signal from two input signals in

accordance with the following rules:

Input		Output
1	0	1
1	1	0
0	1	1
0	0	0

anticoincidence operation Pertaining to a *logical operation*¹ applied to two *operands*. A result is produced depending on the *bit* patterns of the operands and according to the following rules for each *binary digit* position:

Operands		Result
p	q	r
1	0	1
1	1	0
0	1	1
0	0	0

APL A *high-level language* with a syntax and character set designed to make it particularly suitable for mathematical applications, especially those involving arrays. The name is derived from A Programming Language.

application The specific problem to the solution of which data processing techniques are applied. A distinction is often made between applications which are 'computational', i.e. requiring considerable computing capacity, and those which are 'data processing', i.e. requiring considerable data handling capacity.

applications package A *package*² designed for an *application*.

applications software *Programs* and *packages*² designed to satisfy *applications*. Contrasted with *systems software*.

architecture A term beloved of computer manufacturers and used by them to describe the interrelationships between the parts of a computer system.

arithmetic and logic unit (ALU) The *hardware* unit of a *central*

arithmetic check

processor which handles arithmetic and logical operations. ⇔
arithmetic unit.

arithmetic check The verification of an arithmetical process by means of a further arithmetical process, e.g. multiplying 22 by 6 and again by 3 to check the result of 18 multiplied by 22.

arithmetic instruction An *instruction* in which the *operator* part specifies an arithmetic operation such as addition, subtraction, multiplication, division, exponentiation. Arithmetic instructions are part of the *function code*, and are distinct from *logical instructions* such as compare, logic sum, logic multiply.

arithmetic operation An operation performed using an *arithmetic instruction*. ⇔ *logical operation.*

arithmetic register A *register* constructed to contain the *operands* and results of arithmetic functions on data. Usually part of the *arithmetic unit*.

arithmetic shift A movement of the digits of a number equivalent to a multiplication or division of the number. For example, if a number is stored in *decimal notation* a shift to the right of three places has the effect of dividing by 10^3 . Similarly, a shift to the left of two places has the effect of multiplying by 10^2 . With numbers stored in *binary notation*, a right shift of n places has the effect of dividing by 2^n and left shift of n places has the effect of multiplying by 2^n .

arithmetic unit The unit which performs arithmetic operations on *operands*. The unit may also be used to perform *arithmetic shifts*, *logical shifts* and other *logical operations* on data.

arm To allow an *interrupt* to occur in accordance with specified priorities. Contrasted with *disarm*.

array An orderly arrangement of items of data, so constructed that the relative position of an element of an array has a relevance to the operation to be performed on that element.

artificial intelligence The ability of any machine or routine to learn and improve its performance as a result of the repeated experience of a given set of problems.

ASCII Acronym for American Standard Code for Information Interchange. A standard code which assigns specific *bit patterns* to the signs, symbols, letters, numbers and operations of a specific set.

assemble To use an *assembler*.

assembler A *program* which turns a *symbolic language* program into a *machine language* program. The program first translates the