

# GLOSSARY OF TERMS

Some commonly used terms from the world of computing, explained for CPC464 users.....

## Accumulator

A memory location within the microprocessor circuit at the heart of the microcomputer that stores data temporarily while it is being processed. Used extensively in machine code programming — BASIC users need never know it exists !.

## Acoustic coupler

Also known as an Acoustic Modem. An electronic attachment for a computer that connects a telephone handset to the computer and enables the latter to communicate over the normal voice telephone network. In this way, a computer can communicate with public information systems such as PRESTEL, other users of home computers etc., to exchange software, get data and information etc.

## Address

The number in an instruction that identifies the location of a 'cell' in a computer's memory. By means of its address, a particular memory location can be selected so that its contents can be found and 'read', in the case of RAM, both read and written back after alteration.

## Adventure game

A cult with some, and a bore to others. A text-based computer game in which the user playing is invited to participate in a series of pseudo random events based on trying to find a way around a maze or labyrinth.

## Algorithm

A grandiose name for a complicated formula or sum. A sequence of logical and arithmetical steps to perform a defined task in computing.

## Alphanumeric

The attribute that describes the difference between a letter or number and a graphics character.

## ALU

Arithmetic Logic Unit. The part of a microprocessor that carries out arithmetical and logical operations - not of direct concern except in machine code programming.

## AMSOFT

AMSTRAD's specialist computer support division, supplying software, peripherals, publications specifically to enhance the CPC464 and its many applications.

## A/D

### Analogue

A state where change between a start and finish point occurs gradually rather than by instantaneous steps. Computers are digital devices - most of the natural world is based on analogue principles, thus the computer has to perform an analogue to digital (A/D) conversion before it can process data from an analogue source.

### Animation

Cartoons are the best known form of animation - computer animation is based on the concept of moving graphics to simulate the idea of 'live' movement.

### Applications program

A program with a specific task rather than a general purpose software 'tool' such as an assembler, printer driver etc.

### Arcade Game

The type of moving action computer video game where: spacemen invade and are vanquished, insatiable monsters chase around a maze and gobble up the unwary, figures under the control of the user have to avoid all manner of unpleasant 'deaths'. Fun and generally good for the reflexes but of little educational benefit for the computer student.

### Architecture

The plan relationship of the **databus**, peripheral and CPU handling aspects of a microcomputer. Not a subject that will be concerning readers of this glossary -yet!

### Argument

An independent variable. eg. in the expression  $x+y=z$ , the terms  $x,y$  and  $z$ , are the arguments.

### Array

A matrix in which data is stored by addressing with the 'horizontal' and 'vertical' coordinates.

### Artificial intelligence AI

A structure in program techniques that enables the program to learn from its past experience.

### ASCII

American Standard Code for Information Interchange. A commonly used way of representing the numbers, letters and other symbols that can be entered from the computer's keyboard or invoked using a variety of other commands. The CPC464 codes are listed in Appendix III.

## Assembler

The practical method for programming in machine code, where the machine code instructions are invoked by mnemonics (letters that suggest the function being performed by the corresponding machine code routine).

## Bar code

Look on the bottom of an soap powder packet to see an example. A computer readable printed code that can be read by optical techniques such as scanning by a low power laser.

## Base

The prime numeric consideration of any mathematician. The basis of any system of number representation. The binary system has base 2; the decimal system has base 10, and the hexadecimal system has the base 16 - see Appendix II for a fuller explanation.

## BASIC

Beginners' All-purpose Symbolic Instruction Code. An interpretive programming language used in almost all home computers, BASIC was specifically designed to be easy to learn and simple to use since it allows for programs to be 'glued' together and tested at any point in their development, as opposed to compilers types where the complete program must be run before any aspect can be properly tested.

## Baud

A bit per second :the unit for measuring the rate at which digital data is transmitted in serial communication systems.

## BCD

Binary Coded Decimal. A coding system for decimal numbers in which each digit is represented by a group of four binary digits.

## Benchmark

A standard task that can be given to different computers to compare their speed, efficiency and accuracy eg. the square root of 99.999 squared.

## Binary

(See Base) The number system with base 2, in which all numbers are made up from the two binary digits 0 and 1.

## Binary number

A number represented in binary notation. Signified in the CPC464 programming by the prefix `&X`, eg `&X0101` (decimal) 5.

## **Bit**

Shortform of **B**inary **digi**T. A binary digit is either one of the two digits, represented by 0 and 1, that are used in the binary number system.

## **Bit significant**

Where the information contained in a number is extracted by considering the state of each of the eight bits that make up the complete byte. The overall decimal value may have no meaning.

## **Booting or Bootstrapping**

Programs and operating systems don't load themselves, they are 'bootstrapped' by a small routine in ROM (usually), that initiates the loading processes at a specific location in memory.

## **Boolean algebra**

Is the statement of logical relationships where there can only be two answers: true or false. Usually signified as 0 or 1.

## **Buffer**

A transient or temporary storage area to hold information during transfers from one part of the system to another, for example from the cassette drive software to the computer's central processing unit (CPU) and main RAM. A buffer regulates the way data is passed between devices operating at different speeds, such as a modem or a printer.

## **Bug**

A problem on a scale ranging from an 'unexpected feature' based on some obscure aspect of the use of a program (eg if you press four keys at once, the screen changes colour), to a sequence that completely and irrevocably crashes a computer program and wipes the memory clean of all data.

## **Bus**

A group of connections either within the computer, or connecting it to the outside world that carries information on the state of the CPU, the RAM and other hardware features. The CPC464 bus is presented on the larger of the two circuit board connector strips, accessible through the holes in the rear of the case.

## **Byte**

A group of eight bits, which forms the smallest portion of memory that an **8-bit** CPU can recall from, or store in memory. See additional information Appendix II.

## **CAD**

Computer Aided Design. Usually an interaction of computing power and graphics to provide an electronic drawing board, although any calculation performed on a computer in pursuance of a 'design' comes under the heading of CAD.

## **CAE**

Computer Aided Education. Further nourishment for the buzzphrase of computing. The use of the computer to help with education, **CAI** (Computer Aided Instruction) and **CAL** (Computer Aided Learning) are two aspects of CAE.

## **Cartridge**

A specially packaged memory integrated circuit containing software which can be plugged directly into a socket specifically provided for the purpose on the computer. Cartridge software loads and runs more quickly and easily, but costs considerably more than software supplied on cassette.

## **Cassette**

Apart from the obvious recording tape variety, a generic term that encompasses a variety of 'packages' -including ROM software etc.

## **Character**

Any symbol that can be represented in a computer and displayed by it, including letters, numbers and graphics symbols. (See Appendix II)

## **Character cell**

The matrix of dots on a display screen used to represent a single character may be displayed by selective illumination of some of the dots. (See Appendix II)

## **Character set**

All the letters, numbers and symbols available on a computer or printer. The fact that a character exists on a computer does not imply it is accessible on any printer.

## **Character string**

A piece of variable, data comprising a sequence of characters that can be stored or manipulated as a single unit, e.g. a word or a collection of words.

## **Chip**

An misleading but popular reference to any form of monolithic electronic integrated circuit. The 'chip' is actually a small slice of specially processed silicon material, on which the circuit is fabricated.

## **Clock**

The reference timing system in the computer used to **synchronise** and schedule the operations of the computer. A real time clock is one that maintains the hour, date etc.

## **Code**

Apart from the more literal implications, frequently used by programmers as an abbreviation of 'machine code'.

## **Command**

A programming instruction.

## Compiler

A complex program that converts complete programs written in a high level interpretive languages like BASIC into a the direct instruction code of the microprocessor, thereby enabling operation at much greater speeds.

## Computer generations

Technological landmarks have delineated several distinct steps in computer technology, and the groupings within these various strata are known as the 'generations' of design technologies.

## Computer literacy

Another grandiose expression meaning understanding computers.

## CP/M

Digital Research's de facto standard for 8-bit computer disk operating systems.

## CPU

Central Processing Unit. The component at the heart of any computer system that interprets instructions to the computer and causes them to be obeyed, in a microcomputer, the CPU is the **microprocesor** device itself.

## Cursor

A movable marker, indicating where the next character is to appear on the screen.

## Cursor control keys

Keys that move the Cursor around the screen, and are frequently used to control the direction of action in arcade games, indicated by arrows printed on the top.

## Daisy-wheel printer

A printer that can produce high quality or 'typewriter quality' documents. Printed characters are created by the impact of letters against the ink or film ribbon.

## Database

An array of any type of data in a variety of computer addressable formats.

## Data Capture

The term which describes the collection of data from any outside sources that are linked in some way to a central computer.

## Debugging

The process of fixing the bugs in a program by a combination of 'suck it and see' and more scientific methods.

## **Decimal notation**

Also known as the Denary system, for numbers with base 10, using the digits 0 to 9, representing numbers of units, tens, hundreds, thousands and so on.

## **Diagnostic**

A message automatically produced by a computer to indicate and identify an error in a program.

## **Digital**

Describes the expression of a changing quantity in terms of discrete steps rather than by a continuous process. The opposite of analogue.

## **Digitiser**

A means of plotting analogue information into a computer. Commonly referred to in conjunction with graphics tablets.

## **Disk**

A flat, thin circular piece of plastic coated on one or both sides with a magnetic oxide surface and used as a medium for storing data. The disk is housed at all times in a square protective envelope or plastic box, with access for the reading head provided by a 'window' in the case. Also see Floppy disk and Winchester.

## **Disk drive**

The unit that records information on the magnetisable surface of a spinning disk and 'reads' (recovers) information recorded on it.

## **Documentation**

The manuals that are supplied with computers or software to explain how they are operated.

## **Download**

The transfer of information from one computer to another - the computer receiving the data is generally referred to as the machine downloading. The other end of the link is uploading.

## **DOS**

Disk Operating System. The software that controls all the operations of a disk drive - acts like the attendant in the 'car park' represented by the logical layout of the disk.

## **Dot matrix**

A rectangular grid of dots on which a character can be displayed by the selection of certain of the dots.

## Dumb terminal

A computer terminal that simply acts as a medium for input and output without any processing of the information passing through. Note that a mindless terminal is one where even the display drive electronics are absent, and that the screen display information is fed in as pure video..

## Editing

Correcting or making changes to data, a program or text.

## Editor

A program that is usually in the ROM of the computer that enables the editing process to be carried out.

## EPROM

Erasable Programmable Read only Memory. Similar to the PROM, except that the data contained in the chip can be erased using ultra-violet light and new programming recorded. An EEPROM is similar, except that it may be electrically erased.

## Expression

A simple or complex formula used within a program to perform a calculation on data - the expression will usually define the nature of the data it can handle.

## Fifth generation computers

Mainly large mainframe computers that are promised to arrive with the ability for self-programming using the developments of artificial intelligence.

## File

A collection of information, generally stored on cassette or disk, although RAM files are supported on some computers.

## Firmware

Software contained in ROM - a cross between pure software and pure hardware.

## Fixed-point number

A number represented, manipulated and stored with the decimal point in a fixed specified position.

## Floating-point number

A Real number, manipulated and stored with a decimal point permitted to settle in the required position. The method is particularly useful when dealing with large numbers.

## Floppy disk

A removable 5.25 or 8 inch diameter magnetic disk, that is used to store computer data. Housed inside a protective square envelope. Much greater data storage capacity than a cassette, much faster, more expensive.

## Flowchart

A diagrammatic representation of the progression of program steps and logical processes tracing the sequence of events during program execution.

## Forth

A high speed programming language, with speed and complexity falling between a High-level language and Machine code. Not a beginners language.

## Function key

A key on the keyboard that has been assigned a specific task -which may in addition to, or instead of the main purpose inscribed upon it. The CPC464 has a number of keys that may be defined as function keys, whereupon a single keystroke can issue up to 32 characters of text in the form of commonly used instructions, or instructions controlling peripheral equipment, such as modems or printers.

## Gate

Logical gates permit the passage of data when certain conditions are fulfilled. There are many different types (OR, AND, XOR etc). See the entry for Boolean algebra.

## Graphics

The part of the screen display of the computer that is not related to the display of 'characters' eg. drawing lines, circles, graphs etc. In conjunction with an appropriate printer, a paper print copy may also be obtained.

## Graphics character

A shape or pattern specially designed to be useful in creating images. The CPC464 has a complete set of these described in Appendix III.

## Graphics cursor

Similar to the text cursor, but addressing the graphics screen. An invisible concept on the CPC464 - but nevertheless an indispensable facility for locating drawn graphics. Not to be confused with graphics characters (Appendix II) which are still part of the 'character set', and printed at the text cursor.

## Graphics mode

Early microcomputers required to be specifically set to either handle characters or graphics. Modern personal computers are capable of mingling text and graphics simultaneously.

## Graphics tablet

A device that plots the co-ordinate points of a given picture or drawing for manipulation within the computer. A form of A/D.

## Handshaking

A sequence of electronic signals which initiates, checks and **synchronises** the exchange of data between a computer and a peripheral, or between two computers.

## Hard Copy

Paper printout of a program or other text - or of a graphics display. The transitory screen equivalent is known as 'soft copy'.

## Hardware

The electronic and mechanical parts of a computer system -anything that isn't software or firmware.

## Hexadecimal notation

Numbers based on 16. See Appendix II. Signified in the CPC464 by the prefix **&** or **&H**.

## High-level language

Languages which are written in 'near literal' form, where the actual language does most of the work of interpreting. Slower than machine code orientated programs, but far simpler to understand, like BASIC.

## IEEE-488

One of the standard Interfaces for connecting devices to a microcomputer. Similar to - but not wholly compatible with - the Centronics parallel interface in many respects.

## Information technology

Anything relating to the use of electronics in the processing of information and communications: wordprocessing, data communications, PRESTEL etc.

## Initialise

Switch on a system, or declare specific values for variables before beginning to execute the body of program - such as declaring them to be integers etc.

## Input

Anything that enters the computer memory from its keyboard, cassette unit, disk unit, serial interface or other input source.

## Instruction

A request/command to a computer to perform a particular operation, A collection or sequence of instructions form a program.

## Instruction set

The prime logical and mathematical processes carried out by the microprocessor. Every high level instruction (including assembler mnemonics) have to be capable of being distilled down to an instruction that is **recognised** by the computer CPU. A single high level command may invoke a large number of elements from the CPU's instruction set.

## Integer number

A number with no fractional part. ie. a number with no part to the right of the decimal point - as opposed to a real number which is the integer part plus the fractional part.

## Integrated circuit

A collection of electronic circuit components miniaturised and built onto a single piece of silicon. See also 'Chip'.

## Intelligent terminal

A terminal where as well as handling the requirements of the computer's input and output, local processing power is also available when the terminal is 'off line'.

## Interactive

Usually a reference to programs where the hardware computer prompts the user to provide various types of input - ranging from controlling the spaceship in an arcade game, to answering questions in educational programs. The action of the user has an effect in 'real time' on the behaviour of the program.

## Interface

The way in and out of a computer, both in electrical and human terms. The CPC464 interface is the keyboard (input), and the screen (output) - as well as the facility at the rear for the connection of user peripherals to the interface bus.

## Interpreter

A further extension of the analogy of computer instruction sets and language. The element of the system software that interprets the high level language to the level that can be understood by the CPU. eg. It converts BASIC code as entered via the keyboard into the computers own internal language..

## I/O

Input/Output.

## Iteration

One of the elements of computing. The computer performs all tasks by breaking them down into the simple tasks that can be handled by the CPU. To do this, the computer must go to and from between many simple elements until a given condition is fulfilled.

## Joystick

An input device that generally replaces the function of the cursor keys, and makes games playing faster and easier.

## K

A shortform of the metric measure prefix for 1000, 'kilo' - which in computing has come to be widely used to refer to a 'kilobyte' - which is actually 1024 (decimal) in view of the binary association of 2 raised to the power of 10. See Appendix II.

## Keyboard

The matrix of alphanumeric key switches, arranged to provide the means of typing commands and other information into the computer.

## Keyword

A word whose use in the computer program or language is reserved for a specific function or command..

## Least significant bit

In a binary number, (see Appendix II), the Least Significant Bit (LSB) is the bit at the extreme right hand end of the expression.

## Light Pen

Another alternative input method, using a pen or 'wand'.

## Line number

BASIC and some other languages use **programs** that are arranged in line number order.

## Lisp

The acronym formed from **LISt** Processor language. Another high level computer language.

## Logic

The electronic components that carry out the elementary logical operations and functions, from which every operation of a computer is ultimately built up.

## Logo

A simple to learn graphics'orientated high-level computer language frequently used in schools as an aid to teaching computing.

## Loop

A process in a program that is executed repeatedly by the computer until a certain condition is satisfied.

## Low-level language

Such as assembly language. A programming language in which each instruction corresponds to the computer's machine code instruction.

## **LSI**

Large Scale Integration. The development of integrated circuits, packing more functions onto ever smaller pieces of silicon.

## **Machine Code**

The programming language that is directly understood by a microprocessor, since all its commands are represented by patterns of binary digits.

## **Machine readable**

A medium of data or any other information that can be immediately input to a computer without additional work on keyboarding etc.

## **Man-machine interface**

A point of interaction between the computer and the operator: keyboard, screen, sound etc.

## **Matrix**

The arrangement of the dots that form the character cell on the screen, or on the print head of a 'dot matrix' printer. Also a term used in mathematics and computer science to encompass arrays.

## **Memory**

The computer's parking lot for information and data, neatly arranged in logical rows with each item individually accessible. Either known as RAM (random access memory) where information can be both stored and retrieved, or ROM, where the information may be read, but not re-written in another form. Disks and tape are example of 'bulk memory', although the term has evolved to mean the memory that is directly addressed by the CPU.

## **Memory map**

The layout of the memory, showing the various addresses, and the allocation of the memory to specific function, such as the screen, the tape operating system etc.

## **Menu**

A bill of fare of the different options that may be carried out by the program in the computer, left to the user to select.

## **Microprocessor**

An integrated circuit that sits at the heart of a microcomputer and executes the instructions that are presented to it by the BASIC interpreter, in order to control the various output devices and options.

## **Modem**

A Modulator **DE**Modulator that connects the computer's I/O to a telephone line or other serial data transmission medium -**including fibre** optics. Also see acoustic coupler.

## **Monitor**

The screen section of a computer terminal system, and also a term describing a machine language program that provides access to the fundamental machine language operation of the computer.

## **MSB**

The Most Significant Bit of a binary number: the bit at the left end of the expression.

## **Mouse**

An upside-down tracker or roller ball. Pushed around a table top by hand, a mouse is generally used to move a cursor around the screen. Originally designed to overcome the fear of keyboards and make software appear more 'user friendly'.

## **Network**

When two or more computers are linked together to exchange data and information - either by wiring, or via MODEMS.

## **Nibble**

Half a byte: a four bit binary expression. Each of the hexadecimal digits in the expression **&F6** represents 'one nibble'.

## **Noise**

The CPC464 sound facility includes a facility to inject a variable amount of random noise by using the **SOUND** command to create effects such as explosions.

## **Numeric keypad**

The area on the keyboard where number keys are grouped to facilitate entry of numeric data, and in the case of the CPC464, to provide the additional facility of user definable function keys.

## **OCR**

Optical Character Recognition. A means of reading printed or written characters with an optical reader and translating them directly into computer readable data.

## **Octal**

A number system to the base 8, where each digit (0-7) is constructed from three Bits.

## **Off line**

A computer peripheral - usually a display terminal or a printer - that is not actively connected to , or accessible by, the main processing unit.

## **On line**

The opposite of Off line.

## **Operating system**

The attendant in the parking lot referred to under the entry for Memory. Software that allocates precedence and timing to the operations of the computer.

## output

Anything that comes from a computer as the result of some computational function.

## Operator

The part of arithmetical expression that causes one number to operate on another - ie.  $+$   $-$   $\div$  etc..

## Overwrite

Erase an area of memory by replacing its contents with new data.

## Paddle

An alternative name for a joystick. Also referred to as a 'games paddle'.

## Paperware

Another description. for the printed 'hardcopy' of computing. Occasionally computers launched before they have actually finished development are described as a 'paperware exercise'.

## Parallel interface

The CPC464 printer interface supports a parallel printer: which means that each data line from the bus is connected to a corresponding input on the printer. Data is transferred more quickly using a parallel interface than a serial interface since the serial interface must first format each byte, and frame it with **synchronisation** information.

## Pascal

A high-level structured programming language that must be compiled before it will execute - and therefore runs very quickly. Generally the next language that the keen BASIC student will pursue.

## PEEK

The BASIC function that looks directly into the computer's memory, and reports the value of the specified location.

## Peripheral

Printers, modems,. joysticks, disk drives - anything that plugs into the computer to expand its **capabilities**.

## Pixel

The smallest accessible area of the screen that can be controlled by the hardware.

## Plotter

A specific type of printer that draws 'longhand' using pens rather than an impact print head. Used for technical and graphical drawing output.

# POKE

The statement in BASIC that is used to place a value in a specified memory location  
- see chapter 8.

# Port

A specifically addressable point on the interface for input or output of data.

# Portability

Other than the literal use, means the ability for software to operate on different makes of computer - usually as a result of a compatible operating system, such as the Digital Research **CP/M**.

# Primer

A set of elementary instructions and guidelines to introduce the user to specific aspects of computing.

# Printer

Any hardcopy method for printing out text.

# Program

Spelt 'program' not 'programme' in computing. The combination of instructions that cause the computer to execute a task, and can be anything from a simple machine code 'routine' to a complete applications program, such as a wordprocessor.

# Programming language

The medium through which the program is written, being comprised of rigid rules on the use of words, numbers and the sequence in which they are implemented.

# PROM

Programmable Read Only Memory. An integrated memory circuit that once written with data, cannot be erased. (Also see EPROM)

# Prompt

A symbol or message displayed on the screen that invites the user to respond with an answer or further 'input', Basic uses a simple question mark ? when requiring input, or the word R e a d y when waiting for a command to be entered.

# PSU

Power Supply Unit. The means of converting the domestic mains electricity supply into the necessary voltages to operate the computer (and peripheral devices).

# QWERTY keyboard

The colloquial term to describe a keyboard with the conventional typewriter key layout.

## RAM

Random Access Memory. Memory that may be both read from, and written to, using the internal circuitry of the computer during the normal course of program execution.

## Random number

A number that is generated by the computer program that is neither repeatable, nor predictable.

## Raster

A system of 'writing' on the screen where the images are built from a number of horizontal scan lines. (Raster scan).

## Real number

A number that has both integer and fractional parts. ie. both sides of the decimal point are used. A variable may still be considered real, although when examined at some point in the program execution, it is only occupying an integer position..

## Real time

Events that occur before your eyes, as opposed to those which only become evident after the termination of the process that produced them.

## Recursion

The series of repeated steps (also sometimes imprecisely described as reciprocation) within a program or routine in which the result of each repeated cycle of events is related to the previous one.

## Refresh

To update information, either on the screen of a VDU, or in the memory. Need not be a destructive process, but merely reinforcing whatever was already present in memory or on the screen.

## Register

A transient memory location within the CPU that is used for temporary storage.

## Remark

A non-executing comment statement in a program that is installed to **REMI**nd the programmer what part of the program is doing, and possibly also to date and time stamp that particular 'edition'.

## Reserved word

A word which has particular significance to the computer program, and cannot be used other than in its previously defined context. For example, BASIC will not accept the word **NEW** as a variable -it is already 'reserved' for another purpose.

## **Resolution**

The ability to determine where one element of the display ends, and the next one begins. Also loosely applied to the ability of a computer to perform arithmetical manipulations on large numbers.

## **Reverse Polish notation**

(RPN) A method of describing arithmetical operations favoured by some calculator manufacturers, where the operators (+, -, ×, /) are placed behind the values to which they apply.

## **RF Modulator**

The means by which the video signals from the computer are encoded and 'transmitted' to the aerial input of a standard TV set.

## **ROM**

Read Only Memory. Generally with reference to semiconductor memory systems: once written, neither erasable, nor re-writable.

## **Routine**

A part of the program that performs a 'routine' task. A 'sub' program that resides either within a main program, or may exist as a separate module for incorporation into a variety of applications programs. eg A program to derive a 12 hour display from the system's clock may be considered as a routine.

## **RS232C**

A specific standard for serial data communications interfaces. Devices at both ends of the data link using an RS232 interface require to be 'configured' to the particular conditions of the RS232 data standard used. Compare this with the Centronix parallel interface where the interconnection is a rigid standard.

## **Screen Editor**

A text or program editor where the cursor may be taken to any part of the screen display in order to alter the characters appearing there.

## **Scrolling**

The term describing the way in which the screen display 'rolls up' when the display fills up to the bottom, and needs to make space for the next line of entry or output to appear.

## **Separator**

A separator performs the same function as a delimiter: ie. marking the boundary between reserved words and other elements of the program or data..

## **Serial interface**

Although this term nearly always refers to an RS232 interface, other serial standards exist for the sequential transmission of computer data.

## **Simulation**

A technique for emulation of real life interactive processes using the computer, such as flight simulation, driving simulation etc.

## **Soft key**

See UDK (user defined key).

## **Software**

Programs.

## **Software engineering**

A grandiose expression meaning computer programming, implying a structured and considered approach, as opposed to arbitrary techniques.

## **Sound generator**

The part of a computer (it may be either hardware or software) that creates the sound and noise.

## **Speech recognition**

The conversion of the spoken word into machine readable instructions.

## **Speech synthesis**

Generation of simulated speech using a combination of hardware and software.

## **Spreadsheet**

A program that allows rows and columns of numbers to be entered and arithmetically manipulated. Changing one entry causes all the associated calculations to be rerun, and produces an updated result.

## **Sprite**

A screen character that moves freely around the display, generated by specific hardware or software that allows it to appear and disappear apparently at random.

## **Stack**

An area of memory allocated for 'stacking' information, but where only the last entry on the stack can be recalled.

## **Statement**

An instruction, or sequence of instructions, in a computer program.

## Stream

The route used for the output from the computer. eg the screen, the printer, or the cassette.

## String

A type of data comprising an assortment of characters that may not be treated as a numeric variable. It may be purely numeric, but it is not treated as such unless specifically converted to a corresponding numeric variable by the appropriate command.

## Structured programming

A logical and premeditated programming technique that results in programs that flow from 'top to bottom', with clearly described steps.

## Subroutine

See routine.

## Syntax error

When the rules of the program are broken by the incorrect use of keywords and variables, BASIC will prompt the user with this message. See Appendix VIII.

## Terminal

A keyboard input device, with either a VDU screen or teletype typewriter output system.

## Truncated

A number or string that has been shortened by removal of leading or trailing characters. Where intentional the process may involve rounding the value. Where unintentional, the extra characters are simply discarded to enable the number or string to fit the available space.

## Truth table

The results of a logical operation are either 'true' or 'false'. The computer interprets these as being either 1 or 0, and the truth table lists the possible results of a logical operation (IF A AND B THEN C) accordingly.

## UDK

User defined keys. The CPC464 has up to 32 keys which may be redefined to perform a variety of tasks, including strings of up to 32 characters.

## Unsigned number

A number with no prefix to signify whether its value is positive or negative.

## Utility

Any complete program used to perform a common operation, such as sorting data or copying files.

## Variable

An item included in a computer program that can be identified by name, but whose actual value may be made to vary during the execution of a program.