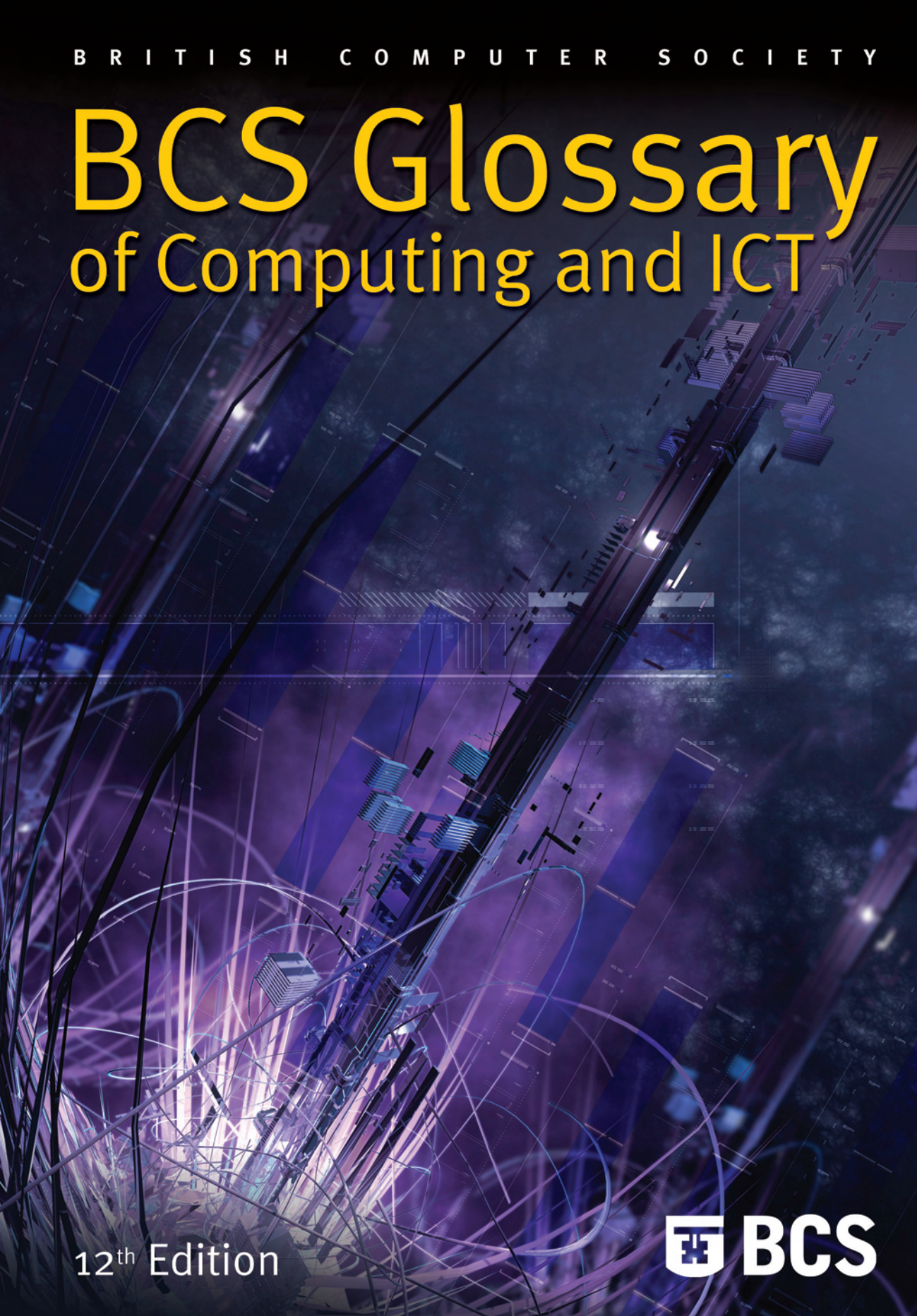
BRITISH COMPUTER SOCIETY

BCS Glossary of Computing and ICT



12th Edition

BCS

BCS Glossary of Computing and ICT

Twelfth Edition

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BCS Glossary of Computing and ICT

Twelfth Edition

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ISBN 978-1-906124-00-7

British Cataloguing in Publication Data.
A CIP catalogue record for this book is available at the British Library.

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Introduction

This *Glossary*, which contains over 3400 terms, provides not only a comprehensive definition of each term, but also sufficient additional material to enable the reader to understand the importance of the term, how to use it appropriately and its relation to other terms used in the same area of computing. To this end terms are gathered into parts, describing how computer systems are used, what they are made of, how they are developed and how computers work. The fifth part consists of appendices.

Who is the Glossary aimed at?

One of the principal aims of the *Glossary* is meeting the needs of students who follow courses leading to examinations at school and college level. The authors attempt to ensure that the *Glossary* reflects developments in the National Curriculum for England and Wales, GCSE, AS-Level and A-level specifications, the 14–19 Diploma in IT, Functional Skills in ICT, the Scottish Curriculum and the Northern Ireland system (as well as vocational and other courses at a variety of levels).

It is used as a definitive reference source, specified in examination syllabuses. The content has increasingly found wide acceptance in universities and colleges for foundation courses as well as in induction sessions and training courses. It is used in support of the European Computer Driving Licence (ECDL), within government departments and industry generally. The *Glossary* has also proved popular with home-based computer users.

How are the individual terms decided on?

The BCS Glossary Working Party members continuously monitor relevant new terms and changes in usage. These are added when it is felt that they have become sufficiently established and widespread.

The *Glossary* provides definitions that cover the use of terms in the context of large computer systems as well as the world of PCs. Although large computer systems may be outside the experience of users, they are likely to encounter consequences of the use of such systems. It should be noted that some terms are included that have a different meaning in a computing environment to that in use in other subjects.

What are the origins of the Glossary?

The *Glossary* was first published over 30 years ago and has developed from a tiny listing to its current content. In 1974, the British Computer Society was invited by the Regional Examining Boards for the Certificate of Secondary

Education to produce a standardised list of terms for use in computer studies courses, examination syllabuses and for their own reference. The Schools Committee of the BCS set up a Working Party with a remit to produce a 'one-off' document containing about 100 terms. At the time, there was only one A-level computing examination and a small number of examinations for 16 year olds. Schools involved in computer studies relied on batch processing, preparing and sending their punched cards to university computing centres. A very few had access to an online terminal connecting to the local authority computer. Microcomputers were virtually unknown in schools. At this time almost all sources of computing expertise were inventing their own vocabulary.

Teachers soon requested that the *Glossary* be made available for students. At the end of 1974 work began on the first 'public' edition. This edition appeared in 1977, containing approximately 430 terms of which 260 were defined. Given that the target audience was the 14–16-year-old pupil, it was decided that, as far as possible without compromising technical accuracy, simple English should be used in the explanation of the term – an objective still retained wherever possible.

The popularity of the first BCS *Glossary* resulted in several reprints and the demand for further editions. These latter included new terms that were appearing almost daily. This publication was required to keep pace with the rapid development of the technology and with the increasing use of computers in education. It has been the practice of the British Computer Society to update the *Glossary* approximately every three years.

The Working Party has a changing membership drawing on a wide range of expertise from the computing community.

Development

Early editions of the *Glossary* were lists of defined terms and hence resembled a dictionary. Over many editions the Working Party steered the *Glossary* to its present themed and structured layout.

ACKNOWLEDGEMENTS

The Working Party has appreciated the help it has received from members of the BCS Education and Training Expert Panel (formerly Schools Committee), for their comments and suggestions about material to include in this edition.

We would like to mention Simon Chalton of Bird & Bird and Les Fraser who contributed significantly to the Computer Security and Data Protection references in Section A16.

Finally, George Cumming has applied his 'Engineer's eyes' to the checking of the typescript. However, any mistakes that might have slipped through are ours.

The Working Party also welcomes offers from teachers willing to involve their students in a review of this edition and would like to express its thanks to those who have already commented, criticised and made helpful suggestions.

Please send comments by post to: The British Computer Society, First Floor, Block D, North Star House, North Star Avenue, Swindon, SN2 1FA.
By email: glossary@hq.bcs.org.uk
Internet: www.bcs.org.uk

Alternatively contact any member of the Working Party through the BCS.

DISCLAIMER

Neither the BCS nor contributors to the *Glossary* shall have any responsibility for loss suffered as a result of reliance on the *Glossary*, and readers should take their own legal advice on the application of the terms covered particularly in Section A16, which is intended as an aid to understanding computer security. The *Glossary* is not a definitive statement of the meaning of terms.

How to use this Glossary

The only place you will find a full alphabetical list of all the terms covered in the *Glossary* is in the index at the back of the book. The *Glossary* is not a dictionary and the definitions are not arranged alphabetically, even within the sections. Knowing how to use the index is crucial to deriving the maximum value from the *Glossary*.

For example, looking up '*virus checking*' in the index leads you to page 169. 'Virus checking' is not one of the main definitions on this page, but you will find it under '*anti-virus software*'. Your eye should be led to it by the different appearance of the term you are searching for: ***virus checking***.

Anti-virus software

also known as: vaccine utility
including: anti-virus monitor, virus checking, disinfection, quarantine, computer hygiene
is used to detect and remove *viruses*, see page 168.

Anti-virus monitors are programs loaded permanently in memory continually monitoring the system for the tell-tale patterns indicating the presence of any of the thousands of viruses that have been identified. If any change is detected, the file is prevented from being run and a warning message is given. New data read into the computer is also screened for viruses and appropriate action taken.

Virus checking scans the files on a computer system to detect viruses.

Disinfection is the removal of viruses that have been detected.

Quarantine is the isolation of a file suspected of containing a virus. The file can then be investigated and the operation of the virus can be analysed.

Computer hygiene is the term used to describe the prevention and cure of problems caused by viruses.

An alternative way of finding the appropriate entry is to examine the lines immediately after the main entry: '*also known as*', '*including*'. These provide a list of terms covered in that definition.

The *Glossary* is divided into five parts as described in the Introduction. Each part is divided into sections defining terms on a particular topic and large sections are further subdivided. It is hoped that readers will take advantage of this structure to browse within sections; to assist in this, each section has a general introduction (see, for example, page 157 to page 158) providing additional information that puts the terms into context.

Within most definitions, you will find references to other terms (for example, '*virus*') in the first line of the definition. You may wish to read these in conjunction with the definition you are examining.

There are, of course, other ways of using this *Glossary*. Related terms occur together, and you may find it helpful to read through a complete section or subsection.

Part A
How computer systems are used

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This section contains terms that may be met by any computer user working with applications in any of the areas covered. Some sections in Part A are concerned with general issues and others with well-defined areas of computer use. Some sections contain terms that might have been placed in Part B or even in Part C or Part D, but they were kept with other related terms for completeness; this is particularly true of the sections covering the internet, sound and user interfaces, as they became more prominent aspects of computer use. Some terms have references to terms in Part B, Part C or Part D that will provide readers with pointers to other associated terms and concepts.

A1 General computing terms

When you approach computing for the first time you meet a range of terms that people involved in the industry take for granted. These terms are often vague generalisations and may mean different things to different people. They are also applied to a wide range of situations within computing and their precise meaning may vary between contexts.

Most jargon you meet when using a computer is related to the task you are doing. The **software** used to perform the task is called an **application**. Examples of applications include **word processing**, **computer art** and using a **database** program. However, there is some jargon that relates to running the computer itself, that is, how you control or operate a computer.

This section provides general definitions of some of the more common computing terms that are either used in a general context or apply across many areas of computing.

INFORMATION PROCESSING

Information processing
is the organisation, manipulation and distribution of information. As these activities are central to almost every use of computers, the term is in common use to mean almost the same as 'computing'. See also *data* and *information* page 325.

Information technology (IT)
including: ICT (information and communications technology)
is the application of technology to information processing. The current interest centres on computing, telecommunications and digital electronics. In the UK schools sector, the preferred term is ***ICT (information and communications technology)***.

Telecommunications
is a general term describing the communication of information over a distance. The method of communication is normally via a cable, either wire or *fibre optic* (see page 226) or electromagnetic radiation. See also *wireless communication*, page 225. Computer data uses the same network as telephone systems.

Computer
is a machine that processes data. It takes data, in digital form, which is processed automatically before being output in some way. It is programmable

so that the rules used to process the data can be changed. It is an automatic, programmable, digital data processor. These ideas are expanded in the introduction to Section B1, page 181. The definition excludes the *analog computer* (page 182).

Computer system
including: configuration
is the complete collection of components (hardware, software, peripherals, power supplies, communications links) making up a single computer installation. The particular choice of components is known as the ***configuration*** – different systems may or may not have the same configuration.

Computing
is the use of a computer to manipulate data or control a process. It is also an umbrella term used in higher education to cover the multitude of subjects relating to computers that can be studied.

Embedded system
is the use of a computer system built into a machine of some sort, usually to provide a means of control. The computer system is generally small, often a single microprocessor with very limited functions. The user does not realise that instructions are being carried out by a computer but simply that there are controls to operate the machine. Examples are electronic washing machines, video recorders, burglar alarms and car engine management systems.

Media
also known as: storage media
is the collective name for the different types of storage materials (such as compact disk, solid state, memory card, hard disk and even paper) used to hold data or programs. They are used either within the computer system or connected to it. See *peripherals* (see page 5) and Section B3, page 193.

Multimedia
is the presentation of information by a computer system using graphics, animation, sound and text.

Facilities management
also known as: managed services
is the contracting of an organisation's day-to-day operations to an outside company. The facilities management company employs the staff and runs the operation. Where it is computer operations to be managed, the equipment will usually be sited in the organisation's own premises, although it may be owned or leased by the facilities management company. The contract for this kind of service will specify what the computer system must provide for the price. This is distinct from *outsourcing* (see page 5), where a well-defined task will be contracted out.

Outsourcing

is the purchase of services from outside contractors rather than employing staff to do the tasks. This use of contractors for a well-defined task is distinct from *facilities management* (see page 4) where day-to-day operations are involved. Traditionally large computer organisations have employed many staff such as *systems analysts* and *developers* (see Section A15 Computer personnel). It may be more economic to contract another organisation to provide these services and not have the expense and complication of direct employment of staff. With the use of networking, it is possible to outsource anywhere in the world.

Some of these tasks may be provided by a *computer bureau* (see below).

Computer bureau

including: data processor

is an organisation that offers a range of computing services for hire (for example, data preparation, payroll processing). Bureaux usually offer two types of service:

- They provide computing facilities for organisations that do not have any of their own.
- They also offer specialist services covering vital common operations (for example, payroll) to organisations that do not have the appropriate piece of applications software.

Compare this with *facilities management* and *outsourcing*.

Data processor is the name used in the *Data Protection Act (1998)* (see page 159), for a computer bureau.

PARTS OF THE COMPUTER SYSTEM

Hardware

is the physical part of a computer system – the processor(s), input and output devices, and storage. This is in contrast to the *software* (see page 6), which includes application packages, and the data in the storage.

Peripheral

also known as: device

including: input device, output device, Input/Output device (I/O device), storage device

is a piece of equipment (or hardware) that can be connected to the central processing unit. It is used to provide input, output and backing storage for the computer system. No particular peripheral is required by a computer but every computer must have some method of input and output (for example, a washing machine may simply have push buttons for input and *actuators*, page 142, for output). They are often referred to as follows:

Input device is a peripheral unit that can accept data, presented in the appropriate machine-readable form, decode it and transmit it as electrical pulses to the central processing unit.

Output device is a peripheral unit that translates signals from the computer into a human-readable form or into a form suitable for re-processing by the computer at a later stage.

Input/Output device (I/O device) is a peripheral unit that can be used both as an input device and as an output device. In some instances, 'Input/Output device' may be two separate devices housed in the same cabinet.

Storage device is a peripheral unit that allows the user to store data in an electronic form for a longer period of time and when the computer is switched off. The data can be read only by the computer and is not in human-readable form.

Software

including: applications program, application, applications package, generic software, productivity tool

consists of programs, routines and procedures (together with their associated documentation) that can be run on a computer system.

An ***applications program***, frequently abbreviated to ***application***, is software designed to carry out a task (such as keeping accounts, editing text) that would need to be carried out even if computers did not exist.

An ***applications package*** is a complete set of applications programs together with the associated documentation (see *user documentation*, page 73). Where the application is appropriate to many areas, it is usual to describe it as ***generic software*** or as a ***productivity tool***. For example, *word processing* (see page 19) can be used in personal correspondence, the production of business 'form letters', academic research, compilation of glossaries, writing books etc.

See also Section D1 Systems software, *program*, page 287 and Section C6.

Integrated package

also known as: integrated program

is a single piece of software that provides a user with basic information processing functions. It usually includes word processing, spreadsheets and small databases and may include additional facilities such as charts, a diary and communications. It is designed so that data can be simply moved between the various parts enabling complex tasks to be performed easily.

Tutorial

is a program that helps a user to learn about a new application. The tutorial will include a simple explanation of how to use the new system, diagrams and possibly examples the user can try whilst the tutorial program monitors the user's progress.

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ISBN 978-1-906124-00-7