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Peripherals for Computer Systems

Alan Bradley

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Preface

Peripherals form a vital part of every computer system, and account for a large part of the hardware cost – usually over a half, and often much more. And yet, amongst the many books on all aspects of computer hardware and software, there are very few about peripherals. Most of the relevant information is hidden away in manufacturer's data sheets or in technical journals. These are valuable to the specialist, but for the average reader they are heavy going and not always easy to find. So in this book I try to cater for the non-specialist computer user and the student of computing, by bringing together as much as they will want to know about the peripheral devices they are likely to meet.

Computer users and students do not need to study the technology of peripherals in great detail. They will, however, find it interesting and useful to know what types of peripheral device are available, how they work, and what they do. In particular, this will help them to understand the capabilities and limitations of the computer system as a whole. The book aims to give its readers that level of knowledge, together with a little of the historical background and a simple account of the underlying technology.

The book is mainly about the standard peripherals used in general purpose computer systems – keyboard and screen, printer, tape, and the various kinds of disk. Some more specialised peripherals, such as scanners and point-of-sale terminals, are covered in less detail. The book does not cover communications devices. Neither does it deal with the transducers and actuators used by computers concerned with process control or with laboratory experiments. These are specialised subjects which have a literature of their own.

The typical syllabus for courses in computing or computers gives very little time to peripherals. This book is therefore not linked to any specific course syllabus. It aims instead to meet the general needs of students of computing and computer engineering, and also of computer users who seek a fuller understanding of their systems.

A few practical points. I have described peripheral devices in general terms, rather than by looking at specific products, so I have used trade names very sparsely. I hereby acknowledge all trade names which I have used, with or without specific recognition.

In principle, a book like this should use metric units throughout. Unfortunately the Peripherals trade, being firmly rooted in the USA and Japan, uses mainly imperial units with only a scattering of metric units thrown in. References to 12.7 millimetre magnetic tape, for example, would produce no more than a glazed stare from most computer people. I have therefore used those units which are common in the industry, with approximate conversions where these would be helpful.

There are several words whose use in the computer world is at odds with formal grammar. Thus 'data' is used both as plural and singular, and the same is becoming true of 'media'. In each case there are grounds for avoiding the true singular, as 'datum' and 'medium' have other meanings which could cause confusion. With less justification, where 'index' refers to a tabulated list, the plural is often taken as 'indexes'. In such cases the traditional forms can look pedantic, and I have not felt obliged to follow them. For the same reason I have felt no compunction in splitting infinitives, or in other grammatical sins, where this makes sentences read more naturally. Invariably, of course, 'input and output' is abbreviated to 'I/O'.

I have no wish to discriminate between the sexes, but to use 'he or she' throughout would be clumsy, and as yet the language does not offer a sensible alternative. (It would seem logical to use 'it', but I fear this might offend all my readers.) So I invite readers to extend masculine pronouns to cover both sexes. In the same way, to keep referring to the current year would be tedious; 'now', or the equivalent, means late 1989.

I am grateful to the following for providing photographs, and permission to use them (the copyright in each case is retained by the company concerned): Lauretta Hill and Nicola Verney of Next Technology Corporation Ltd, Ronald Field of Drexler Technology Corporation, Vic Drayton of Laser Magnetic Storage Incorporated, Peter Nice of Calcomp Ltd, Paul Mitchelson of Kings Town Photocodes Ltd, A.K.Berrie of Compugraphic (UK) Ltd, John Rodger and Jackie Brims of Ellinor Technology, Mark Richards of Siemens Ltd, Gordon Smith and Brian Raynos of Seagate Technology, Derek Cook of Gigatape Ltd and Lothar Duda of Gigatape GmbH, and Najeeb Khan of Roland UK Ltd.

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And finally I would like to give particular thanks to David Williams, who taught me (in the course of our work at ICL) much of what I know about modern computer peripherals, and who has answered many questions over the past few months as well as checking a draft for technical accuracy.

However the opinions expressed are my own, as are any errors that remain. I would like to be informed of such errors, via the publishers, so that they may be removed from any future edition.

Alan Bradley
February 1990.

Congleton,