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MASTERING COMPUTERS

THIRD EDITION

GRAHAM WRIGHT

M
MACMILLAN
EDUCATION

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This third edition, like the first two, is dedicated to my wife, Jane, in gratitude for her continued support through thick and thin.

GRAHAM WRIGHT

PREFACE TO THE THIRD EDITION

The third edition of this book has two objectives; firstly, a general updating of material in a subject in which the pace of progress continues to accelerate, and secondly to accommodate significant changes of emphasis in both the practice and the teaching of the subject. In a dynamic society one might hope that these changes would occur at about the same time in both teaching and practice; in fact the long lead time in both publishing and producing syllabuses means that in both cases it is necessary to look ahead. In fact, the need for a general updating also coincides with a major and rare occurrence of forward planning in education, in the shape of a new 16+ examination structure, the GCSE which in form integrates the GCE and GCSE examination structures, and in content introduces the principle of graded teaching objectives and of a practical coursework contribution to a final examination mark.

Most Computer Studies syllabuses have contained such a coursework element for many years, and it has always been high on the list of reasons why students have chosen the subject. That element has nearly always consisted of writing computer programs, which is a fundamental part of the subject, but sometimes dominates it to the detriment of other aspects. In practical computing, however, writing your own programs is often an expensive and otherwise undesirable exercise, one that shows no sign of coming down in cost and growing in availability as has happened to computer equipment of all types and particularly to microcomputers. The specific guidelines for the GCSE examination now reflect such a change, away from writing computer programs and towards the evaluation and use of standard or 'packaged' software - which is going to pose a problem, since teaching programming is direct and popular, with a good supply of textbooks, while good application software is often hard to find out about and acquire.

The main difference, therefore, immediately perceivable from the contents list of this edition is a treatment of one general application area that follows the general treatment of computers and computing throughout the book, to emphasise this difference of approach. After much thought, I chose the travel trade as the application area, mainly because it is rela-

PREFACE

tively open to study – by looking in at travel agents, picking up holiday brochures, ‘browsing’ through the Prestel or Ceefax pages, and by looking at the documents which come the way of the very many people who travel abroad, for business or pleasure, each year. One, and perhaps the main, reason why this number is so high is the way that computer systems have contributed to keeping costs as low as they are, and it is therefore valuable to be able to identify a fruitful application of computers that does not have the overtones of restriction, whether of employment or of access. It is, finally, an area of direct and happy experience as a producer and consumer, which I hope to pass on to the reader and student.

GRAHAM WRIGHT

INTRODUCTION

The ascent of man into twentieth-century civilisation has been intricately bound up with the development of machines, from the five basic devices of the ancient Greeks – the lever, wheel, pulley, wedge and screw – to today's highly complex and interlinked technology. This development has not always occurred at a steady pace or with acceptable social consequences – the first Industrial Revolution, for instance, in the space of fifty years transformed Great Britain from an agricultural and village-based economy into an industrial town-based economy. And just over a hundred years ago a spate of inventions occurred of particular significance to our subject – the first telephone in 1876, the first typewriter in 1879, the first commercial electricity service in 1882. We are now in the prelude of the second Industrial Revolution, one which is likely to have the same large-scale and not always desirable consequences as the first. At the heart of this revolution is a spate of invention and innovation associated with the computer, or the electronic digital computer to give it its formal title.

And yet, when the first computers were developed forty years ago, there were influential and informed opinions (including, it is alleged, that of the founder of IBM, now the world's largest computer manufacturer by a very wide margin) that no more than a handful of these machines would ever be needed.

So what is it about the computer that makes it so different and so powerful? What makes it so versatile that it can become an integral part of the work of scientists, engineers, accountants and many other professional people and yet at the same time can enrich the leisure time of adults and children at home? Why is it that the computer, which has helped to take man to the Moon, is now being blamed as a threat to millions of jobs? This book sets out to answer such global questions. At the end of most chapters in the book the reader will also find a list of specimen questions which indicate the type of detailed questions asked of students in first-level public examinations in Computer Studies – GCSE, A level and National Diploma. This book is therefore intended to provide the answers both to questions of fact and interpretation that will enable the interested reader to start mastering the computer.