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Book reviews

Computer Logic Design, by M. Morris Mano, 1972; 450 pages. (Prentice-Hall Inc., £7·50)

The writer of a book on digital computers and logic has a problem mainly in deciding what to leave out. If a ruthless suppression is not adopted the resultant book may resemble one volume of the *Encyclopedia Britannica*. It may be a very useful book, but it will not help students to grasp the subject or to enjoy it.

The book under review is firmly aimed at showing the logic design of straightforward computer components. It does not attempt to cover any central processor operations in terms of their relation to software. Equally, it does not spend a long time dealing with the synthesis of logical networks. Its treatment of analysis in this area is satisfactory for the main purpose.

The high point of the treatment is the design of a register/arithmetic and logic unit. This is well done and makes extensive use of a register transfer language. Unfortunately this language has been made too simple and too loose, and users of formal languages will find contradictions and deficiencies when used for tutorial purposes. By and large, however, there could well be an argument for keeping such a language simple in a text which is intended for university teaching.

Summing up, the book is a good one and it is halfway between a book on logic design and one on computer design. It should be helpful to final year students in British universities and post graduate students.

F. G. HEATH (Edinburgh)

Logic and Logic Design, by B. Girling and H. G. Moring, 1973; 328 pages. (Intertext Publishing Ltd., £5·80)

The dust-jacket claims that this is the first text to cover in depth the exact (!) requirements for a computer science degree. I am reminded of the comment by I. D. Hill that since the phrase 'No! No! A thousand times No!' contains an even number of negatives, it ought surely to mean 'Yes!'

The overall plan of the book is reasonable. I felt however that the first chapter, on 'Basic number systems', would have been better omitted. It is very dull stuff—a mere collection of recipes for radix

conversion, and mostly superfluous for Britons reared on drams, gills and pints. It quite fails to convey the difference between the abstract concept of number and its representation, and the idea that the choice of a representation depends both upon its properties and upon what you want to do. I was astonished to read on page 4 that the octal notation is used extensively in computer programming, because computer instructions as well as numerical values can be memorised in octal more easily than in binary.

Very properly, the authors disclaim any concern with the detailed electronic design of components, but they throw off enough casual remarks to make a non-physicist feel uneasy from time to time. On the subject of circuit simplification, I did not see any mention of the sharing of components between separate functions to produce a multi-output network that is cheaper than the separate circuits. Similarly, there is no discussion of the reduction and coding of internal states in sequential circuits. This would have been both relevant here and an opportunity to establish a lead into a subsequent course on automata.

In places the book is careless. In Chapter 3, on page 56, we find that 'It can be shown that' a Boolean function is defined, in effect, by its truth table, whereas in Chapter 4 on page 64, 'In Chapter 3, it was shown that . . .'. On page 196 we are told that $a + x = 1$ has solutions $x = a$ or $x = 1$ and that $a + x = 0$ has no solutions at all. The first should be $x = \bar{a}$, probably faulty proof-reading, but the second is indeed wrong: the condition for the existence of a solution is $a = 0$ and then we have the solution $x = 0$.

However, these are criticisms of detail and could easily be remedied. The major defects are more fundamental. The book is filled with illustrations yet fails to put over what it is that is being illustrated. I do not believe that a student using this book would obtain a real feel for the subject, but at best a superficial competence in going through the motions of design. It seems unduly expensive and cannot be recommended as a course text.

C. M. REEVES (Leeds)

Short notice

An Introduction to Job Control Language, by Ronald J. DeMasi and Francis J. Longo; 1972; 360 pages. (Auerbach Publishers Inc., £3·20) This is a programmed text for JCL for IBM Systems/360 and 370.