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Book reviews

A Handbook of Integer Sequences, by N. J. A. Sloane, 1973; 206 pages. (*Academic Press Inc*, £4·70)

Do you know what the next term of the sequence 1, 3, 10, 35, 126 is? Do you care? If your answers are No and Yes respectively, then this is the book you need. The compiler has assembled over 2,000 sequences of positive integers into a 'field guide'—surely the first ever in mathematics—enabling a user who has a few terms of a sequence to establish whether it is in the literature and to obtain more terms. The sequences are given in dictionary order after fitting to a Procrustean bed which requires the first term to be 1 and the next term to exceed 1. An initial 1 is supplied if not naturally present, and any other 0's and 1's preceding the first greater term are suppressed. Thus purely binary sequences are omitted, except for a very few which appear as sequences of 1's and 2's; this is the only substantial omission from the compilation. Only infinite sequences are given, though a few sequences such as Mersenne primes are given the benefit of the doubt. Each entry gives enough terms to fill two lines of print, except where fewer have ever been computed, followed by a brief statement of the origin of the sequence and a reference to the original source in the literature. Of course, the compiler has not recomputed every entry; correctness is the responsibility of the original authors. A very few mistakes are known; the compiler plans to issue supplements with additions and corrections from time to time and welcomes notification of any errors found.

The compiler's policy has been to include every sequence that was found to have occurred in print, though this has led to some strange inclusions. Thus the sequence 1, 3, 2, 1, 7, 4, 1, 1, 8, 5, 2, 9, 8, ... is included for no other reason than that someone (possibly your reviewer) thought it would be an interesting problem for an undergraduate competition to see who would recognise the digits 3, 1, 4, 1, 5, 9, ... of π alternating with the digits 2, 7, 1, 8, 2, 8, ... of e. Again, if the natural numbers are included, why not the odd numbers? Or if the natural numbers with squares omitted are included, and the natural numbers after division by the largest square divisors, why not the square-free numbers? At this trivial level, it hardly matters. However, the sequence

$$1, 3, 7, 47, \ldots (a_{n+1} = a_n^2 - 2) ,$$

occurring in the theory of Mersenne numbers, is given, but not the sequence 1, 4, 14, 194, ... (same relation), which is more important in that theory. No doubt specialists in other areas will find similar demarcation puzzles. But these are extremely minor criticisms of a work which is literally unique and which deserves a place in every library as well as on many private shelves. The compiler is to be warmly congratulated on his industry in making this compilation, and the publishers on making it available to all at a modest price by the standards of today.

JOHN LEECH (Stirling)

Minicomputer Systems Structure, Implementation and Application, by C. Weitzman, 1974; 364 pages. (*Prentice-Hall International*, £8·30)

'Thousands of magazine articles have been published, and hundreds of seminars and conferences have been given concerning ... minicomputers.' Here is yet another book on the subject; its stated purpose is 'to give the system designer and/or user an overview of latest minicomputer hardware and software technology, tools, procedures, and approaches used in evaluating and designing minicomputer systems'.

The book takes a *tabula rasa* approach, explains binary arithmetic, addressing, assemblers, etc, so that the presentation is necessarily superficial. The range and emphasis is unusual, with 50 pages on minicomputer hardware, 70 pages on peripherals, 50 on software, 40 on systems, 60 on applications, and 20 on user problems. The technical chapters are state of the art, end 1973, and are somewhat unbalanced. Thus, there is an excellent review on minicomputer peripherals, but the subject of interfacing is never mentioned. These chapters suffer from an attempt to consider the minicomputer generically; the sheer variety of techniques used in different minicomputers makes such an approach difficult, and the presentation would have been greatly improved if one minicomputer had been used as a reference point.

It is the later chapters which are the more interesting, since these attempt to consider the minicomputer from a pragmatic point of view; for instance the selection considerations for off-the-shelf software are discussed under the headings: functional capability, vendor support, vendor reputability and documentation. Nevertheless, even here the depth is superficial, because the author finds it necessary to define terms like turnkey—a system which, on delivery, is immediately ready to start performing its intended task, once the electric power is turned on from a switch or key—that's not turnkey, that's a miracle. The chapter on minicomputer systems overview considers topics like: how to define performance requirements, system level tradeoffs, system evaluation and selection, and system cost and purchase. The applications chapter reviews uses of the minicomputer for word processing, intelligent terminals, data acquisition, process control, data communications and timesharing.

In total, the book is difficult to assess. One chapter, on peripherals, would be useful reading to anyone who has to choose between the blandishments of cassette tape and floppy discs; the remainder suffers from the problem that it is too superficial for any self respecting system designer, and yet has too much technical detail for his manager. On the whole, the book might be most useful as an undergraduate text for scientists or engineers who are being taught the value of the minicomputer within their own discipline.

I cannot resist one final quotation, with a reviewer's licence for context removal—'seldom do you find anyone complaining about his system ...'

I. M. BARRON (Redbourn)