

7. Acknowledgements

The author would like to thank Mr A. Prudom for supplying some of the static analysis programs, Mr D. Hedley for assisting with modifications to the FORTRAN interpreter and

Dr M. Woodward for helpful discussions. Finally he would like to thank the NAG organisation for making a copy of their numerical algorithms library available, and the SRC for a research grant.

References

- ACM (1975). *International Conf. on Reliable Software*, see papers therein, Los Angeles.
- BROWN, J. R. (1972). Practical applications of automated software tools, TRW report, TRW-ss-72-05, TRW Systems, One Space Park, Redondo Beach, California.
- FAIRLEY, R. E. (1975). An experimental program testing facility, *IEEE conference on software engineering*, Washington.
- FORD, B. and HAGUE, S. (1974). The organisation of numerical algorithms libraries, in *Software for numerical mathematics*, ed. D. Evans, Academic Press.
- FOSDICK, L. D. (1974). BRNANL, a FORTRAN program to identify basic blocks in FORTRAN programs, University of Colorado report cu-cs-040-74.
- HENNEL, M. A. and PRUDOM, A. (1976). A static analysis of the NAG Fortran library, Computational Science Dept., University of Liverpool technical report.
- HENNEL, M. A., WOODWARD, M. R. and HEDLEY, D. (1976). On program analysis, *Information Processing Letters*, Vol. 5, pp. 136-140.
- HENNEL, M. A. and YATES, D. (1978). The ALGOL 68 NAG library coordination support system, submitted for publication in *The Computer Journal*.
- SALE, A. H. J. (1971). The classification of Fortran statements, *The Computer Journal*, Vol. 14, No. 1, pp. 10-12.

Book reviews

On-line Data Bases, Infotech State of the Art Report, 1: Analysis and Bibliography, 2: Invited Papers. (Infotech, £110)

This is another report in the Infotech Series, in which a series of invited papers and other source material are printed. The convention is that the invited papers are printed in full in the second volume. An editor (in this case C. H. White) presents an analysis of the topic, using quotations drawn from these papers, in volume 1. Additional material from other Infotech sources is included in the analysis where it is relevant. The quotations used are printed in the order relevant to the editorial analysis, not necessarily the order in which the author originally wrote them. The editor decides the structure of his analysis, provides linking text and clarifying comment. The result is that volume 1 gives a logical presentation of the ideas contained in volume 2. For completeness the references given by authors of invited papers are listed both at the end of their papers and in volume 1. From the above it will be apparent that most of the material is printed twice, once in each volume. This approach does, however, give a considerable benefit as the edited analysis gives a broad view of the subject whilst the invited papers have, usually, a practical approach. The reader gets more out of the two books than he would by reading one of them twice!

The authors of the invited papers represent a wide cross-section of data base users and providers. As one might expect, their combined wisdom contains a great deal of commonsense and equally a great deal of valuable information. The editorial analysis of the papers covers aspects of online data base design from design philosophy through implementation, data base systems, performance, reliability and integrity to distributed data bases. The quotations used under each heading are apt and the editorial material helps to make volume 1 very readable. The bibliography is provided by Ian Palmer and contains mostly the references he gave in his own book (1975).

The invited papers contained in the second volume vary in the attention paid to detail from a brief statement of a users current position (Gurr, pp. 117-122) to consideration of the intervals between dumps (Davenport, pp. 65-92) via descriptions of data base systems implemented (e.g. Salter *et al.*, pp. 243-266).

These two books are worth careful study, particularly by someone contemplating the installation of an online data base system. They provide sufficient comment by users on their own experience to enable new installations to avoid some costly mistakes or omissions. Whilst not all of the risk can be removed, at least the ubiquitous wheel will not be re-invented.

R. E. SMALL (London)

Reference

- PALMER, I. M. (1975). *Data Base Systems: A Practical Reference*; CACI.

Computer Methods for Mathematical Computations, by G. Forsythe, M. Malcolm and C. Moler, 1977; 259 pages. (Prentice/Hall, £12.80)

As stated in the introduction, 'this book is concerned with solving mathematical problems using automatic digital computers. An important part of the book is a set of FORTRAN subroutines. In fact, the book might well be regarded as an extensive user's guide for the subroutines'.

The subroutines are well documented and compare favourably with available software. It would have been useful to have a few sample outputs. In most cases the mathematical results are stated without proof. This method of presentation will of necessity narrow the appeal of the text.

There are nine chapters, namely, Floating-point computation, Linear systems of equations, Interpolation, Numerical integration, Initial value problems in ordinary differential equations, Solution of non-linear equations, Optimisation, Least squares and the singular value decomposition, Random number generation and Monte Carlo methods. The bibliography and reference are excellent. The problems are well chosen and graded. It seems strange to find no reference to the eigenvalue problem, particularly in this text with its stated goal. The pitfalls of computation are well illustrated by means of examples. The style throughout is lucid, occasionally perhaps over-discursive. At £12.80 it represents reasonable value.

M. P. J. CURRAN (Galway)

Computer Operating Systems, by D. W. Barron; 1977; 135 pages. (Chapman and Hall, £2.95)

A readable paperback but a reprint of a six year old text. This is unimportant because the practice today and history necessary to understand the concepts remain the same.

Firstly a job supervisor is described and then multiprogramming. Processor allocation is explained with an excellent description of activities and semaphores. Store allocation is covered up to early virtual machine and paging mechanisms. The discussion of I/O and filing systems that follows is biased towards multiaccess rather than commercial systems. Finally linked computer systems, JCL and the operator interface are covered. Tailoring of systems at generation time, provision of hardware error diagnostics, real time data acquisition and transaction processing requirements such as airline reservation are omitted.

I recommend this as a first book on operating systems to computer science students or professional programmers.

M. EVANS (Cambridge)