

Listed are abstracts from recent papers and books by IBM authors. Inquiries should be directed to the publications and publishers cited.

An authorization mechanism for a relational data-base system, P. R. Griffiths and B. W. Wade (RES, San Jose, CA), *ACM Transactions on Database Systems* 1, No. 3, 242-255 (September 1976). A multiuser data-base system must selectively permit users to share data, while retaining the ability to restrict data access. There must be a mechanism to provide protection and security, permitting information to be accessed only by properly authorized users. Further, when tables or restricted views of tables are created and destroyed dynamically, the granting, authentication, and revocation of authorization to use them must also be dynamic. Each of these issues and their solutions in the context of the relational data-base management system, System R, are discussed.

APL—an interactive approach, L. Gilman (SCD Harrison, NY) and A. J. Rose (Scientific Time Sharing Corp.), John Wiley and Sons, New York (1976), 378 pp. This is the revised second edition of an introductory text on APL. The authors have broadened coverage to include features now available in both the IBM (APLSV) and Scientific Time Sharing Corp. (APL*PLUS) implementations. Where appropriate, sections have been included on distinctive features of the IBM 5100 computer. The text, intended for self-study as well as for the classroom, is written in conversational style and contains many examples.

Abstracts

Exploratory analysis of access path length data for a data-base management system, D. P. Gaver (Naval Postgraduate School, Monterey, CA), S. S. Lavenberg (RES Yorktown Hts., NY), and T. G. Price, Jr. (RES San Jose, CA), *IBM Journal of Research and Development* 20, No. 5, 449-464 (September 1976). An exploratory approach is taken to analyze a vast quantity of data recorded during the running of the IMS (Information Management System) data-base system. The data analyzed is a sequence of access path lengths for a day-long period. The number of segments accessed by IMS when searching for a data base in order to retrieve a specified segment for a user is called an access path length. Part of the motivation for the analysis is to suggest reasonable stochastic models for the access path length sequence that can be conveniently utilized as input models for a simulation model of an IMS installation. The exploratory approach taken to the data involves the use of graphical displays and simple numerical summaries to reveal patterns in the data. Some simple ways are presented in which the structure of the data revealed by the analysis may be incorporated into an input model for a system simulation.

Formal languages and programming, R. Aguilar, Ed. (IBM Spain), North-Holland Publishing Company, Amsterdam, The Netherlands (1976), 129 pp. This book contains the proceedings of an international seminar held at the IBM Scientific Center in Madrid in 1975. The nine papers can be classified into three fields: Formal Languages, Interactive Programming, and Theory of Programming. Titles include: On a class of schematic languages, Inference for regular bilanguages, Extensible programming languages, Conversational languages and structured interactive programming, Some implications of shared variables, Une caracterisation des parties reconnaissables, Extensions et restrictions de grammaires algebriques, A survey of context-free grammar form, Sequential and parallel rewriting.

Symbolic execution and program testing, J. C. King (RES Yorktown Hts., NY), *Communications of the ACM* **19**, No. 7, 385-394 (July 1976). This paper describes the symbolic execution of programs. Instead of supplying the normal inputs to a program (e.g., numbers) one supplies symbols representing arbitrary values. The execution proceeds as in a normal execution except that values may be symbolic formulas over the input symbols. A particular system called EFFI-GY, which provides symbolic execution for program testing and debugging, is also described. It interpretively executes programs written in a simple PL/I-style programming language. A brief discussion of the relationship between symbolic execution and program proving is also included.

Reprints

Beginning with Volume 14, reprints of all articles appearing in the *IBM Systems Journal* are available at \$0.50 each from IBM Data Processing Division and General Systems Division Branch Offices. The order form number for each article is printed on the last page of the article, following the references or appendix. The following reprints are currently available.

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