Authors

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Mr. Chen is a Distribution Industry Specialist; his area of interest is the supermarket industry with emphasis on benefit and financial evaluations, front-end productivity, and labor scheduling. He joined IBM in 1967 and worked as a systems engineer in several areas including operating systems conversion, and manufacturing and distrubition industry application program validation and development. He received his B.S. in electrical engineering from National Taiwan University, and his M.S. in electrical engineering from the University of Kansas. He is currently a Doctoral Candidate in the Department of Electrophysics of the Polytechnic Institute of New York.

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Mr. Crowder is a member of the Mathematical Sciences Department at the IBM Thomas J. Watson Research Center. He has been on the staff at IBM Research since 1968. His research interests are primarily in the areas of mathematical programming and optimization with emphasis on the computational aspects of problem-solving methods. He is a member of the Association for Computing Machinery, the ACM's Special Interest Group for Mathematical Programming, and the Mathematical Programming Society. He is on the Editorial Board of *Mathematical Programming* and is a member of the Committee on Algorithms of the Mathematical Programming Society. He received the B.S. in chemistry in 1968 from East Texas State University and the M.S. in operations research from New York University in 1973.

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Mr. Freitas joined PETROBRÁS in 1960, working with equipment in seismic crews. Since 1967, he has been working in seismic processing centers with several different machines. Mr. Freitas is presently system programmer responsible for the system, application programming support, standards, and systems measurements of the PETROBRAS Seismic Processing Center. He received a B.S. degree in economics from the FCPERJ, Rio de Janeiro, in 1970, and an M. Sc. degree in computer science from the Universidade Federal do Rio de Janeiro, Brazil, in 1976.

Ellis L. Johnson

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Dr. Johnson has been a Research Staff Member in the Mathematical Sciences Department of the IBM Research Division since joining IBM in 1968. His principal research interest is in discrete aspects of mathematical programming, where he has made advances in the theory as well as working on practical implementations of existing methodology. He is on the Editorial Board of *Mathematics of Operations Research* and *Mathematical Programming* and is a member of the Mathematical Programming Society. He received his B.S. in applied mathematics in 1960 from Georgia Institute of Technology and his M.A. in mathematics and Ph.D. in engineering science from the University of California, Berkeley, in 1962 and 1965, respectively. He is currently an Adjunct Professor with the Department of Combinatorics and Optimization at the University of Waterloo, Waterloo, Ontario, where he spent the year 1970–71 as a visiting professor.

T. Capers Jones

General Products Division, San Jose, California

Since 1972 Mr. Jones has worked on special projects exploring the technologies of programming and the cost-effectiveness of various programming methods. He joined IBM in 1967 as a programming writer at the Boulder programming center. Prior to joining IBM he worked as a programmer/analyst for Crane Corporation in Chicago and for the U.S. Public Health Service in Washington, D.C. He received a B.A. degree in English from the University of Florida in 1961.

Pierre J. Lavelle

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Dr. Lavelle has been a professor in the Universidade Federal do Rio de Janeiro since 1971, when he came to Brazil through a Technical Aid Program and elected to stay. Previously, he was assistant professor in computer science at Toulouse III University in France. Dr. Lavelle was a trainee at the Compagnie IBM France, Centre d'Études et Recherches, La Gaude, France in 1967. In 1968, he received a degree in computer science engineering from the École Nationale Supérieure d'Électronique, d'Informatique, d'Hydraulique de Toulouse, and was awarded a doctoral degree from Toulouse III University in 1970. Dr. Lavelle is a member of the IEEE and the Association Française pour la Cybernetique et Technique.

Gerald M. McCue, FAIA

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Architect of IBM's Santa Teresa Laboratory, Mr. McCue is a principal in the San Francisco architectural firm of MBT Associates, as well as chairman of the Department of Architecture at Harvard University and associate dean of the Harvard Graduate School of Design. From 1955 to 1976 he was a member of the faculty of the Department of Architecture at the University of California, Berkeley, and he served as chairman of the department from 1965 until 1970. Mr. McCue is a Fellow of the American Institute of Architects, and he holds the Edward C. Kemper Award for outstanding achievement in architecture. He received his M.A. degree in architecture in 1952 from the University of California at Berkeley, and he has an honorary M.A. degree from Harvard.

Laurel Slate

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Miss Slate joined IBM's New York Education Center in 1960. Since 1964, she has participated in the design and development of IBM's original Mathematical Programming System MPS/360 at the White Plains development center. She has remained active in the development and support of the improved successor systems. Miss Slate received the M.S. in mathematics from the University of Michigan in 1955.

Kurt Spielberg

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Dr. Spielberg was a Professor of Physics at the City College of New York before joining IBM's Mathematics and Applications Department to work on a global weather forecasting project in 1960. He has been a staff member, a consultant, and a manager (in management science) at Scientific Centers of IBM until 1974. Since 1974, he has been with Scientific Marketing. His interests have included research and development in physics, approximation of functions, machine analysis, linear and integer programming, plant location and distribution planning, scheduling, econometric planning, and marketing support for MPSX/370 and APL. Dr. Spielberg received th Ph.D. in physics from the University of Vienna in 1954.

Abstracts

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

Computer storage systems and technology, R. Matick (RES Yorktown Hts., NY), John Wiley & Sons, New York, NY (1977). This book describes and examines available storage devices, their technologies and architectures. Each type of device is examined for its speed of access, required size, relative cost, necessary organization, and other crucial advantages and disadvantages. Memory topics such as file structuring, virtual memory systems, and hardware restrictions are also considered. Typical application examples are given to show how each type of memory can best be implemented. This book is written for the computer professional.

Data organization, B. M. Durding (University of Guelph, Ontario, Canada), C. A. Becker (University of Oregon, Eugene), and J. D. Gould (RES Yorktown Hts., NY), *Human Factors* **19,** No. 1, 1–14 (1977). This paper discusses three investigations on how people organize data. The structures used were hierarchy, network, lists, and tables. The results are then discussed relative to the use of computer-based information retrieval systems.

Distributed data base, where are you? K. Ziegler, Jr. (DPD Gaithersburg, MD), *Information Processing 77*, B. Gilchrist, Editor, **7,** 113–114, IFIP, North-Holland Publishing Company (1977). This tutorial is intended for the DP executive who wishes to better understand the implications of data dispersion. The discussion of dispersion relates to currently used terms and is intended to give the reader a base for evaluating his informational requirements. Discussed are four approaches to distributed processing as they relate to the attributes of performance and availability.

Foral LP—Making pointed queries with a light pen, M. E. Senko (RES Yorktown Hts., NY), *Information Processing 77*, B. Gilchrist, Editor, **7,** 635–640, IFIP, North-Holland Publishing Company (1977). Existing programming systems tend to use display terminals as powerful typewriters. FORAL LP (Foral with light pen) employs the capabilities of displays to a somewhat greater extent. It is a two-dimensional data base language that uniquely capitalizes on light-pen interaction.

Improving the access time for random access files, P. Clapson (IBM United Kingdom, DCS Support Centre, Feltham), *Communications of the ACM* **20,** No. 3, 127–135 (1977). This paper describes a key transformation method for access to random access files that improves performance. Smoothing the key-to-address transformation and adding shadow buckets to an open chaining file decrease the clustering in a key set.

On alternate routing in circuit-switched data networks, H. Rudin (RES Zurich), *Information Processing 77*, B. Gilchrist, Editor, **7,** 321–326, IFIP, North-Holland Publishing Company (1977). This paper explores a routing algorithm technique more suited to a data environment than the technique used in voice networks. The approach is patterned after recent work for packet-switched networks. The notion of "supervised" routing is introduced.

The following book, not by an IBM author, is listed for its pertinent content.

The IBM 5100 Portable Computer—A comprehensive guide for users and programmers, H. Katzan, Jr. (Pratt Institute), Van Nostrand Reinhold Company, New York, NY (1977). This book encompasses a grounding in both the BASIC and APL languages as applied to usage with the 5100 Computer System. Numerous examples are used to clarify the language, programming techniques, and 5100 operations. The structure of the 5100 Portable Computer and its auxiliary components is given early in the book. Advanced topics such as data communications and 5100 usage as a remote terminal or a distributed processor are covered in the last section of the book. This book may be used as a reference manual or introductory guide.