

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

The role of microelectronics in data processing, L. M. Terman (RES Yorktown Heights, NY), *Scientific American* **237**, No. 3, 163-177 (1977). Microelectronics and data processing are inextricably linked; most current data processing hardware is made from microelectronics devices, and advances in microelectronics have significantly affected the price/performance of computers. This trend is a key factor in the architecture of modern computer systems, allowing among other things the development of distributed processing through microprocessors. Dr. Terman discusses the application of microelectronics to various elements of the computer such as memory and logic circuits.

The data processing security game, R. S. Becker (GSD Boca Raton, FL), Pergamon Press, Elmsford, NY (1977). This book explores data processing security in five areas of concern—physical aspects, magnetic media control, terminal systems, data set control, and disaster recovery. The "how to" approach, including checklists and a sample "data processing insurance policy," makes this book a practical reference guide. The author understands that 100 percent security is not attainable and offers alternatives for developing a defensive threshold. The main emphasis of the book is on the physical and administrative procedures involved in security.

Architecture of the IBM System/370, R. P. Case (DPPG White Plains, NY) and A. Padeys (DPPG Poughkeepsie, NY), *Communications of the ACM* **21**, No. 1, 73-96 (1978). This paper discusses the reasons, objectives and design considerations for the architectural extensions that distinguish System/370 from System/360. It covers virtual storage, program control, data-manipulation instructions, timing facilities, multiprocessing, debugging and monitoring, error handling, and input/output operations.

EXPRESS: A data extraction, processing and restructuring system, N. C. Shu, B. C. Housel, R. W. Taylor, S. P. Ghosh, and V. Y. Lum (RES San Jose, CA), *ACM Transactions of Database Systems* **2**, No. 2, 134-174 (1977). This paper describes the design and implementation of EXPRESS, an experimental prototype data translation system that can access a wide variety of data and restructure it for new uses. The system was designed with two prime factors in mind: (1) efficiency and performance, and (2) the design of a user-friendly system. Applications for EXPRESS could be database conversion or the extraction from a centralized database of a subset of data to be viewed in a different context.

A very high-level programming language for data processing applications, M. Hammer, W. G. Howe, V. J. Kruskal, and I. Wladawsky (RES Yorktown Heights, NY), *Communications of the ACM* **20**, No. 11, 832-840 (1977). This paper describes Business Definition Language (BDL), a language intended to ease the burden of business application development. There are three subcomponents: one for defining business forms, one for describing business organization, and one for writing calculations. The language is designed specifically for the business environment, and can be used as a programming language or as the "intermediate language" of an automatic programming system. An implementation is currently underway that uses BDL to tailor predefined application systems by means of a questionnaire.

Abstracts

Software engineering, H. D. Mills (FSD Gaithersburg, MD), *Science* **195**, No. 4283, 1199-1205 (1977). Historically, computer software has developed in an informal, somewhat pragmatic manner. The growth in computer hardware size and complexity has resulted in similar growth in software complexity. This complexity and the inability of informal software practices to cope with it has led to the rediscovery of software as a form of mathematics. This paper discusses the emerging idea of software engineering and reviews recent software discoveries such as sequential processes, process synchronization and abstract machines.

Probability, statistics, and queueing theory with computer science applications, A. O. Allen (SSI Los Angeles, CA), Academic Press, Inc., New York, NY (1978). Intended as a text reference and teaching aid in applied probability and statistics for students using computers in any field of study, this book will be especially helpful to computer science majors and useful also to data processing professionals. Examples are given from the computer science field, and APL programs for the computer solution of queueing theory models are provided.

Erratum

In *IBM Systems Journal* Volume 17, No. 1 (1978), the Reprint Order Numbers for the last six titles in the Reprints section, beginning on page 97, were incorrectly given. Correct Order Numbers for those titles are as follows:

<i>Author</i>	<i>Title</i>	<i>Reprint Order No.</i>
	On lines of code and programming productivity (Forum)	No number
G. M. McCue	IBM's Santa Teresa Laboratory—Architectural design for program development	G321-5061
S. L. de Freitas and P. J. Lavelle	A method for the time analysis of programs	G321-5062
T. C. Jones	Measuring programming quality and productivity	G321-5063
L. Slate and K. Spielberg	The extended control language of MPSX/370 and possible applications	G321-5064
R. Chen, H. Crowder, and E. L. Johnson	Solving the installation scheduling problem using mixed integer linear programming	G321-5065