

Suggested reading

Listed are synopses of recent books that should be of interest to the readers of the *IBM Systems Journal*. Inquiries should be directed to the publishers cited.

Computer Communications, Volume I, Principles, Wushow Chou, Ed., Prentice-Hall, Inc., Englewood Cliffs, NJ, 1983. 449 pp. (ISBN 0-13-165043-2). This collection of papers provides the reader with a review of the state of the art of communications facilities and their use in data networks. Following an overview of communications principles and network strategies, the papers cover such topics as network protocols, data link control, multiple access protocols, wideband transmission media, security and data encryption considerations, and network performance analysis. A chapter on satellite communications facilities is included which discusses the performance considerations of such networks and illustrates the principles presented through discussions of specific public and private implementations of satellite protocols.

Computer Network Architecture and Protocols, Anton Meijer and Paul Peeters, Computer Science Press, Inc., Rockville, MD, 1983. 396 pp. (ISBN 0-914894-41-2). After the presentation of an intuitive model of a computer network architecture, the authors describe the reference model of Open Systems Interconnection, Recommendation X.21, High-Level Data Link Control, the X.25 Packet Level protocol, and the EHQP4 protocol. The second part of the book is devoted to descriptions of various proprietary network architectures such as IBM's SNA, DEC's DECNET, UNIVAC's DCA, and Burroughs' Network Architecture. Public data network offerings such as the CCITT X-series recommendations are also included. For the reader who is seeking a well-written overview of network architectures and an understanding of the similarities and differences between various implementations, this text would be of great value. Much of the material presented was developed while the authors were instructors at IBM's European Systems Research Institute.

An Introduction to Database Systems, Volume II, C. J. Date, Addison-Wesley Publishing Company, Reading, MA, 1983. 383 pp. (ISBN 0-201-14474-3). Now that the present work is available as a sequel to the author's *An Introduction to Database Systems*, the earlier volume is known as Volume I, and the volume discussed here is Volume II. Among other ways in which the author characterizes Volume II is that its overall objective is to describe a somewhat miscellaneous collection of "further database topics." One might add that much of the material in Volume II is practical wisdom necessary to implement database systems and make them work. The unifying theme is, as it was in Volume I, data models. Although network and hierarchical

models are discussed in detail, there is relatively more emphasis on the relational model. The author has organized his presentation around the following eight topics:

1. Recovery, including transactions, and transaction, system, and media failures.
2. Integrity, including integrity, domain integrity, and relational integrity rules.
3. Concurrency, including locks, deadlocks, deadlock avoidance, and levels of isolation.
4. Security, including identification and authentication, authorization, and encryption.
5. Data models, including mostly various aspects of the relational model.
6. The extended relational model RM/T, including improvements and refinements of the original relational model.
7. Distributed databases, including distributed system structure, IMS, and CICS.
8. Database machines, including dedicated conventional and associative disk approaches.

Each chapter has a wealth of examples and ends with practical exercises that—together with the supplied answers—form further practical examples.

Managing the Data-Base Environment, James Martin, Prentice-Hall, Inc., Englewood Cliffs, NJ, 1983. 766 pp. (ISBN 0-13-550582-8). This, the most recent addition to the James Martin Books on Computer Systems and Telecommunications, is a practical guide—a handbook—for a data processing executive who is setting up or updating a company's data base system. The treatment goes far deeper than an executive overview. It falls just short of discussing how to do the detailed data base design. After the necessary introductory material on definitions, the necessity of data base systems, and the need for self-discipline and measures, the author discusses in detail the heart of the concept—data dictionaries. Data base management systems and accessing languages are discussed in detail with reference to data dictionaries. Using detailed but easy-to-follow examples, the author shows the reader how to implement the data base that he has guided through the design phase. In this book, the executive learns how to plan a data base system, by inference how to work creatively with specialists on the design and implementation, and how to stay on top of and manage the system after it has been installed. Necessary matters of security, privacy, and auditability are also presented. The author discusses the three main approaches to representing data structures: the hierarchical, network, and relational approaches.

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Tutorial on Software Maintenance, Girish Parikh and Nicholas Zvegintzov, IEEE Computer Society Press, 1109 Spring Street, Suite 300, Silver Spring, MD 20910, 1983. 357 pp. (ISBN 0-8186-0002-0). That software maintenance needs a sense of professionalism and mission seems to be the premise of this tutorial. Although software maintenance today means something more like change and evolution, the authors adhere to the old, original term. The first part of the tutorial consists of a series of papers on the current state of understanding of software maintenance, surveys of workers in the field, problems, principles, research, and academic curricula, placing them in historical perspective. The second part is devoted to methods and techniques in the present state of the art. The other parts deal with the evolution of software, the end of usefulness of items of software, and managing software maintenance. The body of the tutorial consists of papers by various authors. This fact would tend to give the whole work an uneven texture were it not for the fact that the overall authors, who function as editors, have provided a number of introductory pieces that give coherence by relating all the parts to each other and to the whole.