

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

An introduction to database systems, Third Edition, C. J. Date (GPD Santa Teresa, CA), Addison-Wesley Publishing Company, Inc., Reading, MA, 1981. 574 pp. (ISBN 0-201-14471-9). Data base has been broadly accepted in the data processing community from a conceptual point of view. However, as specific implementations have evolved, the need for a thorough understanding of each approach has arisen. This book is a major revision of prior editions. It presents the three most common data base implementations: Relational, Hierarchical, and Network. For each of these approaches the author discusses its features, architecture, data structure, and internal and external interfaces. In addition, the specific unique features and limitations of each implementation are reviewed. This book and the one which follows are in the Addison-Wesley Systems Programming Series.

Database security and integrity, E. B. Fernandez (DPD Hamden, CT), R. C. Summers and C. Wood (IBM Los Angeles Scientific Center), Addison-Wesley Publishing Company, Inc., Reading, MA, 1981. 320 pp. (ISBN 0-201-14467-0). As organizations automate their basic business processes, the need to provide protection for the data bases that support these processes becomes more acute. This book addresses the need to maintain the confidentiality of data to meet privacy requirements as well as to protect one of the most valuable resources of the organization—its data. Also discussed are those measures that may be taken to ensure that the integrity of data bases is protected and that they accurately reflect the condition of the enterprise.

Managing a programming project, Second Edition, Philip W. Metzger, Prentice-Hall, Inc., Englewood Cliffs, NJ, 1981. 244 pp. (ISBN 0-13-550772-3). This book is an updated version of a text that the author produced earlier. The author defines a framework called a development cycle to control a programming project. This method allows a project to be divided into modules. The modules provide an orderly progression through phases in development of the project from definition through installation and operation. Improved ways of programming, such as structured programming and top-down development, are included in the discussion.

The book is specifically aimed at managers of programming projects. Thus, the emphasis is on practical advice. It includes a case study and a second part that serves as a project plan outline.

Problem-solving principles for programmers: Applied logic, psychology, and grit, William E. Lewis (GPD Tucson, AZ), Hayden Book Company, Inc., Rochelle Park, NJ, 1980. 163 pp. (ISBN 0-8104-5138-7). This book presents a set of techniques for solving problems in computer programming as "prescriptions." The first four chapters concentrate on problem-solving beginning with an introduction to the basic building blocks and a discussion of psychological influences. Discussion of the techniques begins with general problem-solving situations and progresses to more complicated problems. The use of top-down programming is described. The last chapter is concerned with debugging and how the problem-solving techniques can be applied in this area.

Suggested reading

IBM Journal of Research and Development 25, No. 5 (September 1981). This special issue reviews some of the contributions of IBM scientists, engineers, and programmers in commemorating the twenty-fifth anniversary of publication of the *IBM Journal of Research and Development*. Individual papers are categorized within six chapters: System Architecture and Development, Software Technology, Component Development and Manufacturing Technology, Magnetic Recording Technology, Printing Technology, and IBM Scientific Contributions.

Although the issue documents noteworthy technical and scientific contributions made to the computer industry by IBM people, the papers are neither detailed historical reviews nor complete technical reviews. Furthermore, not all important IBM contributions are included. The papers were intended to emphasize significant accomplishments and innovations with the inclusion of important insights and assessments by the authors.

The papers in the first chapter describe the evolution of modern computer systems at IBM. Papers range over topics from early architecture through the System/360 and recent small systems to communications and real-time systems. Improvements in reliability, availability, and serviceability are also discussed.

The second chapter reviews work done in IBM that brought relatively primitive programming methods of the 1950s up to the elaborate methods in use today. The first two papers in this chapter discuss operating systems. They are followed by a related paper on memory management. The fourth paper treats aspects of data base technology. The next three papers describe programming languages, language processors, and formalism methods. The eighth paper is a discussion of computer performance modeling. The chapter concludes with a paper on computer modeling.

The third chapter includes papers on solid state memory and semiconductor logic technology indicating the progress made in basic electronic components. Electronic packaging and design automation, which are the subjects of two of the papers, supported the progress of component development. A discussion of the manufacturing methods used since 1957 for the increasingly sophisticated semiconductor components completes the chapter.

The chapter on magnetic recording has five papers. The first two review key developments in magnetic storage devices and the evolution of disk file technologies. Succeeding papers discuss tape systems, diskettes, and the manufacture of magnetic devices.

In the fifth chapter, the papers describe some of the work done in IBM on printer technology. Subjects of these papers include electric typewriters with an emphasis on the single element technology, word processing systems, electromechanical impact printers, and laser-electrophotographic printers and subsystems.

The last chapter contains papers on basic research that are examples of some areas in which IBM has made significant contributions. These areas include semiconductor research, electronic structure, phase transitions, and algebraic complexity theory.

The issue is available through IBM branch offices as Order Number G321-0119.