PREFACE

Are you a programmer, systems analyst, network specialist, project leader, or any other type of information technology professional? Alternatively, are you a student aspiring for a career in information technology? Then you definitely need to know how database systems are designed and developed. You have to understand the fundamentals of database systems clearly.

As you know, in today's business environment, companies depend on their databases to provide crucial information essential for running their businesses. Gone are the days of file-oriented data systems. Now database systems form the centerpiece of the growing and maturing electronic commerce. Database and Web technologies have merged. Over the years, commercial database products have become sophisticated and robust.

In this transformed computing environment, knowledge of database systems can no longer be confined only to specialists such as data analysts and database administrators. All IT professionals need basic knowledge of database technology and its applications. This book comes to you as an essential guide on database design and development, covering all the necessary topics in proper measure, written especially for IT professionals—present and future.

THE SCENARIO

In every industry across the board, from retail chain stores to financial institutions, from manufacturing organizations to government departments, and from airline companies to utility businesses, database systems have become the norm for information storage and retrieval. Whether it is a Web-based application driving electronic commerce or an inventory control application managing just-in-time inventory or a data warehouse system supporting strategic decision making, you need an effective and successful technology to store and retrieve data. It is no

wonder that companies have adopted database technology without reservations. The modern relational database system, proven to be eminently suitable for data management, has become more and more pervasive.

Over the recent years, vendors of all leading database products have released more sophisticated and powerful software versions. Database management systems such as DB2, Informix, Oracle, SQL Server, and Sybase have all expanded with several useful features. Database management systems have become the centerpiece of e-business. Numerous books feature commercial database products.

THE ROLE OF IT

In this scenario, the information technology department of every organization has a primary responsibility. The department has to support and keep the database systems running. Without the database system, the day-to-day business of the organization will come to a grinding halt.

Therefore, all IT staff must understand the workings of database systems. It is not enough to have just a handful of specialists knowledgeable in database technology. All applications in the enterprise now work with databases. Every IT professional, therefore, must know the basics of the technology. Everyone must learn how database systems are designed and developed. Every IT professional must understand the fundamental principles.

WHAT THIS BOOK CAN DO FOR YOU

This book provides you with necessary information on the basics of database technology. It covers all the essential topics carefully with proper emphasis as required by each topic. If you are new to the fundamentals of database technology, this book is an essential pre-requisite before you determine the next steps toward specialization in the database field. If you are already familiar with the technology, this book is a suitable refresher to reinforce your grasp of the subject.

More specifically, here is a summary of what this book can do for you:

Specially designed for IT professionals

Specifically intended for IT professionals like you, this book builds on what you already know. The book takes into account the background, knowledge, and terminology of IT professionals; it presents the topics in a suitable direct style.

Comprehensive with just the necessary details

The book deals with every significant topic needed by IT professionals looking for the fundamentals. It encompasses database concepts, terminology, planning, implementation, and administration; the book also includes significant technology trends.

Suitably organized

The book follows an organization most apt and logical for IT professionals concentrating on the fundamentals. It is the type of organization these professionals is most familiar in their day-to-day work experience. Beginning with an overview of basic concepts, the book moves on to an overview of the database system development process, then to the important topic of data modeling, on to design, then to implementation, and concludes with ongoing maintenance and growth.

Feature highlights

Every chapter opens up with chapter objectives and concludes with a chapter summary. At the end of each chapter, you find a set of review questions and exercises. These features make the book eminently suitable for self-study or for use as a textbook in a college course.

Exposure to real-world situations

Throughout the book, each concept or technique is illustrated with real-world examples. An appendix is devoted to the review of leading commercial database management systems.

Preparation for database specialists

Although intended as a first course on the fundamentals, the book provides sufficient coverage of each topic so that you may easily proceed to the next phase of specialization for specific roles such as data modeler, database designer, data analyst, data administrator, or database administrator.

ACKNOWLEDGMENTS

The authors listed in the reference section at the end of the book greatly enhanced my understanding and appreciation for database technology. I am deeply indebted to the authors for their insights and observations; I wish to express my sincere thanks to them.

I must also record my appreciation for the several professional colleagues who had worked with me on various database projects during my 25-year consulting career. Also, thanks are due to the many students in my database classes over the years. Interactions with my students and colleagues have enabled me to shape this book according to the specific needs of IT professionals.

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