

## Book Review: *Databases Volume I: Organizing, Designing and Implementing*

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The book entitled “**Databases**” has its first volume “**Organizing, designing and implementing**”, published by AES Publishing House. The team of authors is coordinated by Professor Ion Lungu and has a great scientific history in publishing many articles, books, scientific papers in conference proceedings in the field of Economic Informatics and in participating and coordinating research grants. There are seven members of the Economic Informatics and Cybernetics Department of AES, who all teach seminars and courses and have scientific results in databases domain. The book has the full support of the Database Team of the University.

The printed work has over 500 pages, 13 chapters, references and 5 annexes.

This book is academically written, being useful to scientific environment through a theoretical and fundamental approach of well-known concepts for traditional databases (relational and object oriented databases), and through introducing new notions of advanced databases (multimedia, mobile, geographical, distributed databases and data warehouses), and also to students, through its many case studies and specific examples for each type of database. Also, most of the chapters present the mathematical perspective of data models and many comparative tables, representative figures.

The most often encountered databases are well analyzed in this material, but also new trends in technologies are named, such as Cloud Computing and SOA (Service Oriented Architecture).

Each chapter has an abstract and key words written in Romanian and English and it ends with a summary and the bibliographical notes.

The first chapter is entitled “Data organization and conceptual aspects” and includes information about data organization, entity, attribute and value, etymologies and definition of notions such as “knowledge”, “information”, “data” and “metadata”. In the end of the chapter, the concept of “system” is clarified.

The second chapter is called “Data models” and has four essential parts: information modeling, data models, typology of data models and the role and limitations of data models.

The third chapter, “Organizing data into databases”, describes the way data is organized in data files and databases, how it is managed by Database Management Systems (DBMS), how it is used in database systems applications and how it is stored and processed through database machines.

Chapter 4, “Relational database”, describes the most important type of database. The chapters 6, 8, 9, 10, 11 and 12 deals with object-oriented databases, distributed databases, geographical databases, multimedia databases, mobile databases and multidimensional databases (data warehouses). The classical types of database on which all the other types are based, have two chapters each: one for defining the data model, the databases and the specific DBMS, and the other for describing the development of such databases. The traditional databases are relational database and object-oriented database. The authors considered that hierarchical and network databases are deprecated and they are not presented in this book, because no new DBMS was developed on these kinds of models, and also no advanced database has such a model as a base, in the last 20 years.

Chapter 5 presents the development of relational databases through the following stages: its development, system analyses, its design, how the data is loaded in the database, and ways of maintaining the relational database.

Chapter 6 and 7 are dedicated to object-oriented databases, in the following manner: chapter 6 presents



the object-oriented model, databases and DBMS, and chapter 7 presents the stages for object-oriented database development and an Oracle case study.

Chapter 8 is about distributed databases (data model, database, DBMS, and developing the database). The case study in this chapter is also developed in Oracle and it's about tracking the orders of a certain company and its clients.

Chapter 9 describes the geographical database through its model, the evolution, definition, and architecture of geographical database, geographical DBMS and development of GIS (Geographical Information System). The case study of this chapter is developed in Oracle Spatial for locating a chain of stores in a certain area.

Chapter 10 presents multimedia databases including data models, databases, DBMS and development of multimedia database systems. The chapter ends with a case study in Oracle and uses a PL/SQL for stored procedures.

Chapter 11 is about mobile database, its model and mobile DBMS. The development of multimedia database applications is theoretically presented through general aspects regarding mobile DBMS, modern technologies integrated into DBMS, mobile DBMS architecture and a case study in Oracle Lite. The example application connects to the Oracle Lite database, then creates a table (Persons), adds a record and then displays it.

Chapters 12 and 13 are about data warehouses and their development. In chapter 12 there are described the multidimensional model, the way data is organized in data warehouses, the architecture of data warehouses, types of data warehouses (based on functional areas, decisional processes, implemented model) and comparative aspects regarding databases and data warehouses.

Chapter 13 states the stages for the development of data warehouses and the case study in Oracle Warehouse Builder about a supply chain.

The book contains several annexes, naming: stereotypes for multidimensional models, a comparison between the concept of object-oriented methodologies, index of terms, list of tables and figures.

This dissertation contains numerous references to a large bibliography containing valuable and trustful sources. There are over 230 resources. The book is well recognized in libraries of universities, research institutes, companies or researchers in the database field.

**“Databases Volume I: Organizing, designing and implementing”** is a complete material for comprehending the domain of databases and a good starting point for developing database applications. Most of the examples are given in Oracle environment, which covers all the types of database analyzed in this dissertation, but in the theoretical part of the book, no DBMS producer is advantaged. By reading the book, one can realize that the main solutions were investigated and compared, without stressing on a particular approach of producers or researchers.

The DBMS are shortly presented at the end of the main chapters; because they are supposed to be presented in detail in volume II of the book.

This dissertation gives a new perspective of the database domain by describing the fundamentals of database theory together with the new concepts of advanced databases. They are all written in a scientific style, with many definitions, equations, classifications, that are always followed by easy examples with source codes.

This work will be followed by volume II of the book, entitled **“Databases Volume II: Database Management Systems”**, which will most likely be published by the end of 2012 by the AES Publishing House.

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