A database-management system (DBMS) is a collection of interrelated data and a set of programs to access those data. The collection of data, usually referred to as the database, contains information relevant to an enterprise. The primary goal of a DBMS is to provide a way to store and retrieve database information that is both convenient and efficient.

Database systems are designed to manage large bodies of information. Management of data involves both defining structures for storage of information and providing mechanisms for the manipulation of information. In addition, the database system must ensure the safety of the information stored, despite system crashes or attempts at unauthorized access. If data are to be shared among several users, the system must avoid possible anomalous results.

Because information is so important in most organizations, computer scientists have developed a large body of concepts and techniques for managing data. These concepts and techniques form the focus of this book. This chapter briefly introduces the principles of database systems.

Bibliographical Notes

[Codd (1970)] is the landmark paper that introduced the relational model. Textbook coverage of database systems is provided by [O’Neil and O’Neil (2000)], [Ramakrishnan and Gehrke (2002)], [Date (2003)], [Kifer et al. (2005)], [Garcia-Molina et al. (2008)], and [Elmasri and Navathe (2016)], in addition to this textbook.

Textbook coverage of theoretical aspects of databases is provided by [Abiteboul et al. (1995)], while coverage of transaction processing is provided by [Bernstein and Newcomer (2009)] and [Gray and Reuter (1993)]. A book containing a collection of research papers on database management is offered by [Bailis et al. (2015)].

The home page of the ACM Special Interest Group on Management of Data (www.acm.org/sigmod) provides a wealth of information about database research. Database vendor web sites (see the Tools section above) provide details about their respective products.

Bibliography


Further Reading


