Schema Evolution through Changes to ER Diagrams

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摘要
Abstract

In order to meet the requirements of new database applications while, at the same time, continue to support existing applications, database systems need to be able to cope with changing database schemas and maintain consistency between instances created under different schemas.

This paper presents an approach to schema evolution through changes to the Entity-Relationship (ER) schema of a database. In order to facilitate changes to the ER schema, we enhanced the basic constructs of ER diagrams with constructs that specify versions of entity and relationship types, and relationships between attributes in different versions. This approach has the advantage of being graphic-oriented and closer to the designer's perception of data rather than to the logical database schema which describes how data are stored in the database. The under-lying database structure is re-organized, if necessary, to accommodate new data without changes affecting existing objects. In this way and through the construction of views, modifications of existing programs are avoided while all objects in the database are accessible to all application programs, both new and old.