A Novel DB CASE Tool for Relational Databases

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The ability to correctly model and store data of interest is the basis for all the processes of extracting information from data collections. Even if various data representation models have been recently proposed (e.g., document-based model) for managing the increasing amount of highly heterogeneous data collections, relational databases are still the reference technology for data management in many domains.

Database-centered Computer-Aided Software Engineering (DB CASE) tools are software packages that facilitate the design phase of relational databases. Existing DB CASE tools differ in the supported design steps, the solutions provided to support each design step, and the conceptual model used to represent the data.

We propose designER, a novel DB CASE tool that assists the database design starting from the conceptual schema. designER is based on the *Entity Relationship (ER)* conceptual data model, a "de facto" conceptual data model standard for the design of relational databases. Using a simple and intuitive graphical formalism, the ER model describes the information of interest in terms of *entities* and *relationships*, i.e., classes of objects with an autonomous existence and their logical connections.

In designER, all the stages in the database design process are well supported with *error-checking* and *step-by-step aid* to observe the rules and constructs made available by the model. Based on a user-friendly graphical interface, designER guides the user in drawing a syntactically correct ER schema, restructuring the ER schema (if needed), translating the restructured schema into the logical model, specifying additional constraints on the logical schema and attribute data types, and finally generating the DDL SQL code for creating table structures.

This designER approach prevents the generation of incorrect data models, provides an opportunity to improve the knowledge concerning the design rules, and supports the users in self-assessing their competence on the ER model and the database design process based on this model. The result is an easy-to-use web application for different types of users, with particular relevance in the educational field.