

DATA BASE ABSTRACTION

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ABSTRACT

Real-world systems modelled by data bases are often quite complex. It is essential that the data base be structured in a way which supports a user's abstractions about the real-world system. The "relation" data type is introduced as a structuring primitive for relational data bases. The relation data type has similar abstraction properties to the "record" data type of PASCAL. A data base defined via relation data types is structured as a hierarchy of n-ary relations. It is shown that the consistency of this hierarchic structure can be preserved during update operations by two simple rules. A top-down methodology for data base design with relation data types is developed. This methodology minimizes the number of details with which a designer must contend at one time. In particular, the methodology allows the separation of decisions concerning abstract structure from decisions concerning key identification. The separation simplifies both types of decision making for the data base designer.

Key words and Phrases: data model, relational model, data base design, data abstractions, programming methodology.

This work was partially supported by the National Science Foundation under grant MCS75-09903.

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In accordance with ACM publication policy, only an abstract of this paper appears in the Conference proceedings, since the paper is being considered for publication elsewhere. Pre-prints of the paper were distributed to Conference participants.