

PRESENTING OF RELATIONAL OPERATIONS BY MEANS OF RELATIONAL DOMAINS CALCULUS FOR NON NORMALIZED RELATIONS

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The aim of the paper is to present extended relational algebra operations by means of relational calculus of domain for non normalized relations.

To achieve this goal it is necessary to use a second-order predicate calculus, to submit expressions of relational calculus of domains for non normalized relations, equivalent to:

- special relational operations;
- operations of change the state of relations;
- operations on relations schemes.

Equivalent expressions are called relational calculus of domains for non normalized relations and the extended relational algebra, which give the same result if the arguments there are of the same relations.

The process of submitting normalized relations is the object of the research.

The subject of the research is: the methods and tools for submissions of non normalized relations using the relational domains calculus.

The novelty of the paper is the fact that the relational domains calculus for non normalized relations were developed, that helped to formalize the methods of representing and processing the data in data warehouses based on non normalized relations and establish the principles of logical modeling the composite objects.

The practical value of the work: the mathematical software has become a basis for creating software for submission and processing of data on composite objects by non normalized relations in data warehouses, and for storage, searching the data in data warehouses with non normalized relations.

The contribution of the authors: all the results are obtained by the authors personally.

Conclusions. Using the second-order predicate calculus, relational domains calculus expressions are given for non normalized relations, equivalent to the operations of the extended relational algebra (to the special relational operations, the operations of the change in the state of relations, the operations on relations schemes). The examples of using the expressions of relational domain calculus for non normalized relations are given. The expressions, built here, allow us to formalize the notation the methods of processing the non normalized relations in databases and data warehouses.

This calculation makes it possible to use, for example, marketing data directly in the course of support of making administrative decisions, and to do the search in data warehouses more time-efficiently.

Keywords – nested relations, relational calculus of domains, relational operations, relational algebra.