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DESCRIPTION RELATIONS INFORMATION BASE OF THE ITERATIVE NETWORKS

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I. INTRODUCTION

Information systems found wide application in the systems, which solve production, economic, technological and other tasks of the most different profile. The effectiveness of such systems depends on several factors: technical support, the structure of storage data, structure demands.

This work is dedicated to the problem of higher effectiveness of demands in DBMS (Data Base Management System), of supporting the relational model data.

Many created relations are formed for given many attributes.
$A=\{A_1,\dots,A_n\}$ - many attributes. Any element is described by the set of the values, taken by attribute.
$X(B), B\subseteq A$ - the Cartesian work of the elements, which enter into the set v and come out as subset a.
$\beta(X(B)), B\subseteq A$ - the collection of the subsets of set , which is represented as many possible relations, assigned on the attributes .

Since each attribute is used once in the relation, it is necessary to assign each attribute individually.
$M=\bigcup_{\forall B\subseteq A}\beta(X(B))$ - complete many relations, assigned on all subsets a. Any relation comes out as many corteges, which reflect the possible values of attributes. Type of such relations.

The arguments of each logical expression take the values from the assigned range of values of the selected type of argument. The totality of the arguments in question, predicates and logical operations is called logical expression. L - the set of logical expressions.

The following operations, called the operations of relational algebra, are determined on the sets of relations, attributes and logical expressions.
Projection .
Selection .
Cartesian work .
Association .
Difference .

As the arguments of the selected relational expression come out relations, logical expressions, many attributes. The totality of arguments, by which are assigned values from given many all relations of any logical expressions , , basic subsets of many attributes, actions of relational algebra in question”, comes out as relational expression.

Relational expression contains a set of elements.
B - the set of the elements of the described relational expression.
$K\subseteq B, K\subseteq M$ - many all relations, utilized in the expression. Foranyelementof the set .

$S \subseteq B, S \subseteq L$ - the set of any logical expressions, used in relational the expression in question.

$P \subseteq B, P \subseteq A$ - complete many attributes, utilized in relational the expression in question.

$O \subseteq B$ - complete many all relational operations, used in the expression.

$\Sigma \subseteq O, \Pi \subseteq O, D \subseteq O, U \subseteq O, R \subseteq O$ - many basic relational operations of any type represent (projection, selection, difference, association, Cartesian work). For relational the expressions in question are accurate the assertions:

$\Sigma \bigcap \Pi \bigcap D \bigcap U \bigcap R = \varnothing$,

$\Sigma \bigcup \Pi \bigcup D \bigcup U \bigcup R = O$.

$H = K \bigcup O$ - complete many arguments relational of the operations used.

$G \subseteq B^2$ - complete many connections of the expression being investigated.

$\theta = (B, G)$ - the relational expression, selected from the complete set of the relational expressions .

If we designate by index "universal set above the appropriate set", then - universal many attributes, , - the universal set of the elements of relational expression, . Then

$B_u = M \bigcup L \bigcup A_u \bigcup O_u$.

The assertion as a result is formed

$$\forall a \forall b[(a,b) \in G \rightarrow a \in B \wedge b \in B] \wedge \forall a \exists b[a \in B \rightarrow (a,b) \in G \vee (b,a) \in G].$$

The assertions are valid for the relational expressions:

$K \bigcap S \bigcap P \bigcap O = \varnothing$,

$K \bigcup S \bigcup P \bigcup O = B$.

The assertions are formed for the elements of any relational expression.

For the selections . For each selection there is a specific argument from given many relations or operations:

$$\forall a(a \in \Sigma \rightarrow [\exists b((a,b) \in G \wedge b \in H \wedge \forall c[(a,c) \in G \rightarrow (c = b \vee c \in S)])]).$$

For the projections . For each projection there is a specific argument from given many relations or operations, and all the remaining arguments belong to many attributes:

$$\forall a(a \in \Pi \rightarrow [\exists b((a,b) \in G \wedge b \in H \wedge \forall c[(a,c) \in G \rightarrow (c = b \vee c \in P)])]).$$

It is analogous for the Cartesian works D and the associations :

$$\forall a\left(a \in D \rightarrow \left[\exists b \exists c \left(\begin{bmatrix} (a,b) \in G \wedge b \in H \wedge \\ (a,c) \in G \wedge c \in H \wedge b \neq c \end{bmatrix} \wedge \overline{\exists d \begin{bmatrix} (a,d) \in G \wedge \\ d \neq b \wedge d \neq c \end{bmatrix}} \right) \right] \right).$$

$$\forall a\left(a \in U \rightarrow \left[\exists b \exists c \left(\begin{bmatrix} (a,b) \in G \wedge b \in H \wedge \\ (a,c) \in G \wedge c \in H \wedge b \neq c \end{bmatrix} \wedge \overline{\exists d \begin{bmatrix} (a,d) \in G \wedge \\ d \neq b \wedge d \neq c \end{bmatrix}} \right) \right] \right).$$

For the differences :

$$\forall a \left(a \in R \rightarrow \left[\exists b \exists c \left(\begin{bmatrix} (a,b) \in G \wedge b \in H \wedge \\ (a,c) \in G \wedge c \in H \wedge \\ b \neq c \wedge \left[(b,c) \in G \oplus (c,b) \in G \right] \end{bmatrix} \wedge \overline{\exists d \begin{bmatrix} (a,d) \in G \wedge \\ d \neq b \wedge d \neq c \end{bmatrix}} \right) \right] \right).$$

Each element relational of the expression in question is connected with any elements of this relational expression. During the disturbance of this principle the loss of correctness in this relational expression is possible. Each operation is the argument of only another operation.

In any operation, which is the argument of operation , there is no another operation , in which as argument it comes out the operation .

As a result, the formalization of the list definitions terms of production on the basis iterative networks is realized. The formal model of each relational expression is developed; the formal model corresponding equivalent conversion of the selected relational expression is created.

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