

Structural Views in Object-Oriented Databases

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In the last period object-oriented databases are getting more and more publicity. They are expected to provide at least the functionality of relational database systems, because relational database management systems have been used for some time and users already got used to all the things that they provide.

Three level schema architecture consists of three schemata. These are: storage schema, conceptual schema and external schema. The research has given a lot of results towards bigger understanding of the conceptual and storage schemas for object-oriented database systems. Unfortunately external schema (in other word views) has not been studied as detailed as other schemata.

Views in the relational data model have proved themselves as a necessity in order to provide logical data independence. External schema can be changed by using views to meet individual needs of different users.

There are two kinds of view definitions: operational view definition and structural view definition. Operationally defined views are being defined as a result of a query. In this way we choose from the database a set of objects which satisfy a certain predicate. This is the kind of view definition, which is the base of the view definition system in relational database systems. There are some problems with it, especially with update of views and the propagation of the update into the base relations.

Structurally defined views are based on the model concepts of object-oriented data model. We define views by using inheritance (specialization and generalization). With help of these mechanisms we define the view to be derived from the base class as a subclass. In this way in the view we have the same objects (and eventually some new ones) but possibly with different attributes and behavior. Here derived class is interpreted as view class, only. Usually some derive operator is needed, which includes functionality of specialization and generalization. The functionality of generalization gives the possibility of information hiding, while specialization gives the possibility of adding some new information into the view.

In this paper the comparison is given between these two different kinds of view definitions and it will be shown that structurally defined views give the important contribution to semantic, functionality and usage of object-oriented database systems.