

# Object-Oriented Technology in Oracle

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**Abstract** Relational database with object-oriented technology is an extension of the traditional transaction processing database. Building the database model using object-oriented technology, you can reduce the cost of development of creating the application on the basis of meeting the requirements of the project databases. The paper focuses on mainstream database Oracle 8i, discussed the technical features of object-oriented and some applications of them.

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Oracle database is a very widely used relational database system. In Oracle 8i functionality of your database has been expanded. Like conventional data processing, Oracle is able to fully process and retrieve object data. All that can be used on regular database features also can be achieved at the Oracle object database, such as retrieving, storing, triggers, backup and recovery.

## 1.1 create an object

In Oracle, the object is an entity that contains the data type and the stored procedure or function; data type is an object property, a description of the stored procedure or function is an object method. Object Type the establishment of three kind of method :

( 1 ) implementation of user defined data type, can not Contains method, for not know object type specific form, is a not full object type the establishment of ;

( 2 ) in relationship database in the create embedded set of table, for combination of relationship type data type and - oriented Object data type ;

( 3 ) Create Object Table, implementation of completely - oriented object database design.

## **1.2 representation of object**

In Oracle database, the objects are stored in the data dictionary, so you can query the data dictionary to show relationships between objects. Method for each object type can have one or more members. Members of the object type of the method is dependent on the object type itself stored procedure or function, object members of type methods cannot be inserted, modified, or deleted information in a database table.

Oracle provides row and column objects in the database, the row object can be thought of as the establishment of nested tables in a relational database ; column object as it appears in a column of a table or other object properties. Object has an object identifier ( OID ), object identity is linked to the row object, used for relationships between objects at the same operation, it is a built-in feature. You can also create objects in object-oriented database views, through the object view can remain on the premise of data security through the data maintenance. Creating an object needs type declarations and type of the object type, and type declaration is a public interface used to manipulate the Type object. The type of the object type is private implementation of the type method that implements a method on an object.

## **1.3 create a method on an object**

In Oracle database, the method is a PL/SQL procedure or function, and the type of object stored at the same time, complete the package object type. But different from the stored procedure is executed, the method is activated by the associated type Object and methods have full access to the related object type. Members of the Construction Method, Method, Method of mapping ( MAP ) and sort methods ( Order ) is the main method of the object. Construction method of the object type is actually similar to the data in a relational database operations such as insert, delete. Member methods of object types is through a stored procedure or a function to handle the object type, which depends only on the object type itself. Clearly, the Member of the object type methods cannot complete insert, delete, modify database table operation.

Map and Order are Oracle secondary way, its essence is used to establish a method of comparison between two different objects, mapping method is used to sort the database object types, object type mapping method without input parameters, and returns a scalar data type; sort by receiving input parameters for the method to return the results. Type does not declare a method of mapping or sort objects able to accomplish only equality or inequality comparison operations.

## **2.1 create an object table and operate on the object data structure**

Creating object tables is different from relational data tables. Because the object maybe embedded in the table row. Oracle manipulate objects through a DML language, but the object concept is different.

Property when the object table contains an object reference, you must use the REF or VALUES functions to handle the application object, REF object identifier for a particular

object reference or pointer is returned, as well as when you are using the properties or methods of an object, use the dot operator to complete.

## **2.2 object view**

In the Oracle database, view from relational to object-oriented type of object depending on the view that Thoth refers to the containing row object. If the previous application is based on the relational database model system using object views can be in does not change the original data structure and the transition to object-oriented structure of the system data structures.

This project for very large databases, is a very good solution. In the objects view in the objects can also be defined rows and columns, only in the objects view in the objects and synthesis of column objects from a relational database, view objects are done directly on the server-side SQL query and, therefore, can reduce the query process and reduce network traffic. All the methods and similar described above, can refer to the related documentation.

## **3 applications and some existing problems**

After the introduction of object - relational features in Oracle-8i, PL/SQL can be able to more quickly and easily implement complex business logic. The main reason is that using object-relational features extended PL/SQL language in a natural way and enhances its functionality, and most important is that it implements the transformations between object and relationship ; in addition, the data flow encapsulated as an object instance can avoid repeated access to the database when passing, also can reduce the pressure on the network.

Judging from the development of object - oriented databases, there are 2 main directions : one is based on object - oriented technology and then introduce database , the

so-called " pure " object - oriented database ; the other is based on an existing relational database to include object - oriented features, the so-called object - relational databases.

The relationaldb model and object - oriented data model are, after all, two different models, given the reality of most commercial database is a relational database, whether it is " pure " object - oriented database, or object - relational database, temporarily cannot avoid the I transformations or compatibility issues between these two kinds of databases.

The object - oriented database model does not yet have perfect mathematical foundations like the relational database model and the language itself is also lack of formal basis.

How to apply the mature relational database technologies such as transaction control, integrity checking, data replication and so on to object - oriented databases is to be studied.

Oracle Spatial Database based on traditional relational database has some object - oriented extension, the so-called object - relational model, the core is to increase a new object datatype called sdo-geometry data type to store geometry entities. The examples of the application show that in the form of object - oriented spatial data stored in a relational database of more than a lot of meaningless coordinate has a great advantage, while expressing it in a compound object, are very effective for dealing with spatial relationships.

#### **4 conclusion**

Oracle uses object-oriented technology to meet the memorizing of large amount of data, distributed real-time control requirements, and the database can be easily modified and extended. However there is no uniform technical standards on object-oriented databases, existing object-oriented database technology is borrowed from the

programming language technology. In any case, object-oriented design is a direction of development.

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