Chapter V

Transformation of XML Schema to Object Relational Database

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ABSTRACT

XML (eXtensible Markup Language) is fast emerging as the dominant standard for describing data and interchanging data between various systems and databases on the Internet. It offers the XML schema definition language as formalism for defining the syntax and structure of XML documents, providing rich facilities for defining and constraining the content of XML documents. Nevertheless, to enable efficient business application development in large-scale e-commerce environments, XML needs to have databases to keep all the data. Hence, it will inevitably be necessary to use methods to describe the XML schema in the Object-
Relational Database (ORDB) formats. In this chapter, we present the way to transform the XML encoded format, which can be treated as a logical model, to the ORDB format. The chapter first discusses the modeling of XML and why we need the transformation. Then, a number of transformation steps from the XML schema to the Object-Relational Logical model and XML to ORDB are presented. Three perspectives regarding this conceptual relationship (aggregation, association and inheritance) and their transformations are mainly discussed.

INTRODUCTION

The eXtensible Markup Language (XML) is increasingly finding acceptance as a standard for storing and exchanging structured and semi-structured information (Conrad, Scheffner & Freytag, 2000). XML has emerged, and is gradually being accepted, as the standard for describing data and for interchanging data between various systems and databases on the Internet (Bray, Paoli & Sperberg-McQueen, 1998). The XML community has developed a number of schema languages for representing business vocabularies. The Document Type Definition (DTD) is the original XML schema language included in the XML 1.0 specification. However, many individuals have recognized the limitations of this DTD standard for supporting data interchange in global e-business applications. The new XML schema extends the capabilities for validating documents and exchanging information with other non-XML system components.

With the wide acceptance of the Object-Oriented conceptual models, more and more systems are initially modeled and being expressed with OO notation. This situation suggests the necessity to integrate the OO conceptual models and XML. The goal of this work is to present a coherent way to transform the XML schema into ORDB (Object-Relational Databases) using Oracle 9i features models (refer to Figure 1).

The emphasis of this chapter is only on the transformation of aggregation, association and inheritance relationships from XML schema to ORDB, in order to help people conveniently and automatically generate Oracle database. This transformation is important so that all tables created using XML schema can be transformed to the object-relational databases using Oracle format and features. This research consists of two parts. First is the transformation from XML schema into Object-Relational Logical model. Second is the transformation...