Database Foundations

4-2

Convert a Logical Model to a Relational Model
Road Map

- Oracle SQL Developer Data Modeler
- Converting a Logical Model to a Relational Model

You are here
Objectives

This lesson covers the following objectives:

• Describe how to convert a logical model to a relational model in Oracle SQL Developer Data Modeler

• List the steps to convert a logical model to a relational model
Data Modeling Approaches

- Top-Down Modeling
- Bottom-Up Modeling
- Target Modeling

Convert a Logical Model to a Relational Model
Engineering a Data Model

• Forward engineering
• Reverse engineering
Benefits of Creating a Relational Model

• A relational model:
  – Is closer to the implementation solution.
  – Facilitates discussion.
  – Forms the basis for the physical database design.

• The ideal model can be adapted to a relational database management system (RDBMS) model.
Overview of Relational Database

Table: MEMBERS

<table>
<thead>
<tr>
<th>MEMBER_ID</th>
<th>FIRST_NAME</th>
<th>LAST_NAME</th>
<th>STREET_ADDRESS</th>
<th>CITY</th>
<th>STATE</th>
<th>ZIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Jones</td>
<td>Smith</td>
<td>12 Oxford Street</td>
<td>Hudson</td>
<td>MA</td>
<td>01234</td>
</tr>
</tbody>
</table>

Table in the relational model

Row

Column

Primary Key

Table: MEMBERS

<table>
<thead>
<tr>
<th>MEMBER_ID</th>
<th>FIRST_NAME</th>
<th>LAST_NAME</th>
<th>STREET_ADDRESS</th>
<th>CITY</th>
<th>STATE</th>
<th>ZIP</th>
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<tbody>
<tr>
<td>MEMBER_ID</td>
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</table>

MEMBERS_PK (MEMBER_ID)
## Terminology Mapping

<table>
<thead>
<tr>
<th>ANALYSIS</th>
<th>DESIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logical Model</td>
<td>Relational Model</td>
</tr>
<tr>
<td>Entity</td>
<td>Table</td>
</tr>
<tr>
<td>Attribute</td>
<td>Column</td>
</tr>
<tr>
<td>Instance</td>
<td>Row</td>
</tr>
<tr>
<td>Primary UID</td>
<td>Primary Key</td>
</tr>
<tr>
<td>Secondary UID</td>
<td>Unique Constraint</td>
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<tr>
<td>Relationship</td>
<td>Foreign Key</td>
</tr>
<tr>
<td>Business Constraints</td>
<td>Check Constraints</td>
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</tbody>
</table>
Case Scenario: Building a Relational Model

Sean, is it possible to create a relational model from an existing logical model by using the Oracle SQL Developer Data Modeler tool?

Absolutely. Let me list the steps involved in forward engineering a logical model to a relational model by using the Oracle SQL Developer Data Modeler tool.
Case Scenario: Simplified Library Database ERD

**BOOK TRANSACTION**
- TRANSACTION_ID
- TRANSACTION_DATE
- TRANSACTION_TYPE
- BOOK_ID
- MEMBER_ID

**BOOK**
- BOOK_ID
- TITLE
- PUBLISHER_ID
- AUTHOR_ID

**AUTHOR**
- AUTHOR_ID
- AUTHOR_NAME

**PUBLISHER**
- PUBLISHER_ID
- PUBLISHER_NAME

**MEMBER**
- MEMBER_ID
- FIRST_NAME
- LAST_NAME
- STREET_ADDRESS
- CITY
- STATE
- ZIP

**Convert a Logical Model to a Relational Model**
Engineering a Relational Model
Reverse Engineering a Relational Model

Convert a Logical Model to a Relational Model
Summary

In this lesson, you should have learned how to:

• Describe how to convert a logical model to a relational model in Oracle SQL Developer Data Modeler

• List the steps to convert a logical model to a relational model