Database Design

3-4
Matrix Diagrams
Objectives

This lesson covers the following objectives:

• Identify relationships using a matrix diagram
• Draw an ERD from a matrix diagram
Purpose

• It is useful to know more than one way to discover relationships.

It may be simple enough to identify relationships given three entities.

But what about finding relationships when you have thirteen or more entities?
Purpose

• Using a matrix diagram, especially when you are dealing with many entities, is a good way to make sure that you haven’t missed any relationships.

It may be simple enough to identify relationships given three entities.

But what about finding relationships when you have thirteen or more entities?
Business Scenario

• "I work for a travel agency. I keep a record of the countries that our customers have visited and the landmarks they’ve seen in each country. It helps us customize tours for them."

• We can use the matrix diagram to uncover relationships.
Matrix Diagrams

- To avoid confusion, be consistent in writing to and reading from the matrix only in one direction.

<table>
<thead>
<tr>
<th></th>
<th>TRAVELER</th>
<th>COUNTRY</th>
<th>LANDMARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRAVELER</td>
<td></td>
<td>visit</td>
<td>have seen</td>
</tr>
<tr>
<td>COUNTRY</td>
<td>visited by</td>
<td></td>
<td>the location of</td>
</tr>
<tr>
<td>LANDMARK</td>
<td>seen by</td>
<td>located in</td>
<td></td>
</tr>
</tbody>
</table>

**correct:** COUNTRY visited by TRAVELER  
**correct:** LANDMARK seen by TRAVELER  

**incorrect:** TRAVELER visited by COUNTRY  
**incorrect:** TRAVELER seen by LANDMARK
Matrix Diagrams

• Relationships discovered via the matrix diagram are then drawn on the ERD.

• Matrix diagrams do not show optionality and cardinality.
Matrix Diagrams

- Each COUNTRY may be visited by one or more TRAVELERs.
- Each TRAVELER may visit one or more COUNTRY.
Terminology

Key terms used in this lesson included:

• Matrix diagram
Summary

In this lesson, you should have learned how to:

• Identify relationships using a matrix diagram
• Draw an ERD from a matrix diagram