Database Foundations

2-6
Relationships and Foreign Keys
Relationships and Foreign Keys

Roadmap

- What Is a Table?
- Relational Databases
- Conceptual Data Modeling
- Data Modeling Terminology
- Unique Identifiers and Primary Keys
- Relationships and Foreign Keys
Objectives

This lesson covers the following objective:

• Define and recognize examples of relationships and corresponding foreign keys
Relationships

• Relationships represents an association between two or more entities. These lines are either solid or dashed.

• These lines terminate in either a "single toe" or a "crow's foot."

• The name of the relationship, from either perspective, is printed near the starting point of the relationship line.

• Examples:
  – EMPLOYEES have JOBS.
  – JOBS are held by EMPLOYEES.
Relationship Examples

![Diagram showing relationship between DEPARTMENT and EMPLOYEE]

- **Crow's Foot**
  - **Mandatory**
  - **Optional**

- **Single Toe**
  - **contains**
  - **assigned to**
Foreign Key

• A foreign key (FK) is a column or a combination of columns in one table that refers to a primary key in the same table or another table.

• Relationships in a conceptual data model are mapped to foreign keys in a database table.
Foreign Key Examples

<table>
<thead>
<tr>
<th>EMPLOYEE_ID</th>
<th>FIRST_NAME</th>
<th>LAST_NAME</th>
<th>DEPARTMENT_ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Steven</td>
<td>King</td>
<td>90</td>
</tr>
<tr>
<td>101</td>
<td>Neena</td>
<td>Kochhar</td>
<td>90</td>
</tr>
<tr>
<td>102</td>
<td>Lex</td>
<td>De Haan</td>
<td>90</td>
</tr>
<tr>
<td>103</td>
<td>Jennifer</td>
<td>Whalen</td>
<td>10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DEPARTMENT_ID</th>
<th>DEPARTMENT_NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Administration</td>
</tr>
<tr>
<td>20</td>
<td>Marketing</td>
</tr>
<tr>
<td>50</td>
<td>Shipping</td>
</tr>
</tbody>
</table>

Foreign Key refers to Primary Key
Summary

In this lesson, you should have learned how to define and recognize examples of relationships and corresponding foreign keys.