Database Foundations

2-5

Unique Identifiers and Primary Keys
Objectives

This lesson covers the following objectives:

• Identify unique identifiers
• Identify the corresponding primary keys
Conceptual Data Model UID

- A UID is an attribute of an entity that is unique across all instances of the entity.
- It has a non-NULL value for each instance of the entity for the lifetime of the instance.
- Its value never changes over the lifetime of the instance.
- A UID is diagrammed with a number sign (#).
Unique Identifier: Example

**ITEM**
- # Item ID
- * Item Name
- * Price

**SONG**
- # Song ID
- * Song Name
- o Composer
Primary Key

• A primary key (PK) is a column or set of columns that uniquely identifies each row in a table.

• It cannot contain null values.

• A PK is either an existing table column or a column that is specifically generated by the database according to a defined sequence.

• It must contain a unique value for each row of data.
### Primary Key: Example

#### EMPLOYEES

<table>
<thead>
<tr>
<th>EMPLOYEE_ID</th>
<th>FIRST_NAME</th>
<th>LAST_NAME</th>
<th>......</th>
<th>DEPARTMENT_ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Steven</td>
<td>King</td>
<td>......</td>
<td>90</td>
</tr>
<tr>
<td>101</td>
<td>Neena</td>
<td>Kochhar</td>
<td>......</td>
<td>90</td>
</tr>
<tr>
<td>201</td>
<td>Rick</td>
<td>Bel</td>
<td>......</td>
<td>90</td>
</tr>
<tr>
<td>205</td>
<td>Shelly</td>
<td>Higgins</td>
<td>......</td>
<td>10</td>
</tr>
<tr>
<td>300</td>
<td>Bill</td>
<td>Steveward</td>
<td>......</td>
<td>110</td>
</tr>
</tbody>
</table>

*Single-Column PK*
Case Scenario: Identifying Unique Identifiers

BOOK
Book_ID
Title

AUTHOR
Author_ID
Author_Name

MEMBER
Member_ID
First_Name
Last_Name
Street_Address
City
State
Zip

PUBLISHER
Publisher_ID
Publisher_Name

BOOK TRANSACTIONS
Transaction_ID
Transaction_Date
Transaction_Type
Case Scenario: Identifying Unique Identifiers

- **BOOK**
  - # Book_ID
  - * Title

- **AUTHOR**
  - # Author_ID
  - * Author_Name

- **MEMBER**
  - # Member_ID
  - * First_Name
  - o Last_Name
  - o Street_Address
  - o City
  - o State
  - o Zip

- **BOOK TRANSACTIONS**
  - # Transaction_ID
  - * Transaction_Date
  - o Transaction_Type

- **PUBLISHER**
  - # Publisher_ID
  - * Publisher_Name
Composite UID and Primary Key

• A composite UID is a combination of attributes.
• A composite primary key is any key that consists of two or more columns.

Example:
If a product is uniquely identified by its model number and revision code, the combination of the model number and revision code is a compound primary key.
Composite Primary Key: Example

<table>
<thead>
<tr>
<th>BANK_NO</th>
<th>ACCT_NO</th>
<th>BALANCE</th>
<th>DATE_OPENED</th>
</tr>
</thead>
<tbody>
<tr>
<td>104</td>
<td>71432</td>
<td>12,000</td>
<td>29-OCT-90</td>
</tr>
<tr>
<td>104</td>
<td>34578</td>
<td>18,000</td>
<td>12-SEP-85</td>
</tr>
<tr>
<td>105</td>
<td>78967</td>
<td>20,000</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>96545</td>
<td>60,000</td>
<td>04-AUG-91</td>
</tr>
<tr>
<td>105</td>
<td>72345</td>
<td>10,000</td>
<td>03-JAN-99</td>
</tr>
</tbody>
</table>

These fields are combined to form a compound PK.
Summary

In this lesson, you should have learned how to:

• Identify UIDs
• Identify the corresponding primary keys