

JOHN CARLO S. GUMAOD

Laboratory Activity 7:

The screenshot shows the SQL Server Enterprise Manager interface with the 'LibraryManagement' database selected. The 'Schemas' pane on the left shows the 'librarymanagement' schema. The 'Query' pane in the center contains the following SQL script:

```
1 CREATE TABLE Books_2NF (
2     BookID INT PRIMARY KEY,
3     Title VARCHAR(100),
4     Author VARCHAR(100),
5     Genre VARCHAR(50),
6     PublisherID INT,
7     FOREIGN KEY (PublisherID) REFERENCES Publishers_3NF(PublisherID)
8 );
9
10 INSERT INTO Books_2NF (BookID, Title, Author, Genre, PublisherID)
11 VALUES
12 (1, 'Book A', 'Author1', 'Fiction', 1),
13 (2, 'Book B', 'Author2', 'Non-Fiction', 1);
14
15 CREATE TABLE Publishers_3NF (
16     PublisherID INT PRIMARY KEY,
17     PublisherName VARCHAR(100),
18     PublisherAddress VARCHAR(100)
19 );
```

The 'Output' pane at the bottom shows the execution results of the script:

#	Time	Action	Message	Duration /
226	23:43:30	SELECT * FROM Publishers_3NF LIMIT 0, 1000	1 row(s) returned	0.000 sec
227	23:43:37	SELECT * FROM Books_2NF LIMIT 0, 1000	Error Code: 1146. Table 'librarymanagement.Books_3NF' doesn't exist	0.000 sec
228	23:44:11	SELECT B.BookID, B.Title, B.Author, B.Genre, P.PublisherName, P.PublisherAddress FROM Books_2NF B JOIN Publishers_3NF P ON B.PublisherID = P.PublisherID	2 row(s) returned	0.000 sec
229	23:47:49	SELECT * FROM Books_2NF LIMIT 0, 1000	2 row(s) returned	0.000 sec
230	23:47:55	SELECT * FROM Publishers_3NF LIMIT 0, 1000	1 row(s) returned	0.000 sec
231	23:48:05	SELECT B.BookID, B.Title, B.Author, B.Genre, P.PublisherName, P.PublisherAddress FROM Books_2NF B JOIN Publishers_3NF P ON B.PublisherID = P.PublisherID	2 row(s) returned	0.000 sec

The screenshot shows the SQL Server Enterprise Manager interface with the 'LibraryManagement' database selected. The 'Query' pane in the center contains the following SQL script:

```
17     PublisherName VARCHAR(100),
18     PublisherAddress VARCHAR(100)
19 );
20
21 INSERT INTO Publishers_3NF (PublisherID, PublisherName, PublisherAddress)
22 VALUES
23 (1, 'Publisher1', 'Address1');
24
25 SELECT * FROM Books_2NF;
```

The 'Result Grid' pane shows the results of the query:

BookID	Title	Author	Genre	PublisherID
1	Book A	Author1	Fiction	1
2	Book B	Author2	Non-Fiction	1

The 'Output' pane at the bottom shows the execution results of the script:

#	Time	Action	Message
227	23:43:37	SELECT * FROM Books_3NF LIMIT 0, 1000	Error Code: 1146. Table 'librarymanagement.Books_3NF' doesn't exist
228	23:44:11	SELECT B.BookID, B.Title, B.Author, B.Genre, P.PublisherName, P.PublisherAddress FROM Books_2NF B JOIN Publishers_3NF P ON B.PublisherID = P.PublisherID	2 row(s) returned
229	23:47:49	SELECT * FROM Books_2NF LIMIT 0, 1000	2 row(s) returned
230	23:47:55	SELECT * FROM Publishers_3NF LIMIT 0, 1000	1 row(s) returned
231	23:48:05	SELECT B.BookID, B.Title, B.Author, B.Genre, P.PublisherName, P.PublisherAddress FROM Books_2NF B JOIN Publishers_3NF P ON B.PublisherID = P.PublisherID	2 row(s) returned
232	23:49:25	SELECT * FROM Books_2NF LIMIT 0, 1000	2 row(s) returned

LibraryManagement x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

librarymanagement

Tables

books

members

transactions

Views

Stored Procedures

Functions

sakila

sys

world

books

members

transactions

Laboratory SQL*

Laboratory 6

Laboratory 7*

SQLAdditions

Automatic context help is disabled. Use help for the current caret position or

18 PublisherAddress VARCHAR(100)

19);

21 • INSERT INTO Publishers_3NF (PublisherID, PublisherName, PublisherAddress)

22 VALUES

23 (1, 'Publisher1', 'Address1');

24

25 • SELECT * FROM Books_2NF;

26 • SELECT * FROM Publishers_3NF;

Result Grid

Filter Rows:

Edit: Export/Import: Wrap Cell Contents:

PublisherID	PublisherName	PublisherAddress
1	Publisher 1	Address 1

Result Grid

Form Editor

Administration Schemas

Information

Schema: librarymanagement

Object Info Session

Query Completed

Publishers_3NF 16 x

Apply Revert Context Help Snippets

Output

Action Output

#	Time	Action	Message
228	23:44:11	SELECT B.BookID, B.Title, B.Author, B.Genre, P.PublisherName, P.PublisherAddress FROM Books_2NF B JO...	2 row(s) returned
229	23:47:49	SELECT * FROM Books_2NF LIMIT 0, 1000	2 row(s) returned
230	23:47:55	SELECT * FROM Publishers_3NF LIMIT 0, 1000	1 row(s) returned
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232	23:49:25	SELECT * FROM Books_2NF LIMIT 0, 1000	2 row(s) returned
233	23:49:47	SELECT * FROM Publishers_3NF LIMIT 0, 1000	1 row(s) returned

LibraryManagement x

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Laboratory SQL*

Laboratory 6

Laboratory 7*

SQLAdditions

Automatic context help is disabled. Use the to help for the current caret position or to go

24

25 • SELECT * FROM Books_2NF;

26 • SELECT * FROM Publishers_3NF;

27

28 • SELECT B.BookID, B.Title, B.Author, B.Genre, P.PublisherName, P.PublisherAddress

29 FROM Books_2NF B

30 JOIN Publishers_3NF P ON B.PublisherID = P.PublisherID;

31

32

Result Grid

Filter Rows:

Export: Wrap Cell Contents:

BookID	Title	Author	Genre	PublisherName	PublisherAddress
1	Book A	Author 1	Fiction	Publisher1	Address 1
2	Book B	Author 2	Non-Fiction	Publisher1	Address 1

Result Grid

Form Editor

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Schema: librarymanagement

Object Info Session

Query Completed

Result 17 x

Read Only Context Help Snippets

Output

Action Output

#	Time	Action	Message
229	23:47:49	SELECT * FROM Books_2NF LIMIT 0, 1000	2 row(s) returned
230	23:47:55	SELECT * FROM Publishers_3NF LIMIT 0, 1000	1 row(s) returned
231	23:48:05	SELECT B.BookID, B.Title, B.Author, B.Genre, P.PublisherName, P.PublisherAddress FROM Books_2NF B JO...	2 row(s) returned
232	23:49:25	SELECT * FROM Books_2NF LIMIT 0, 1000	2 row(s) returned
233	23:49:47	SELECT * FROM Publishers_3NF LIMIT 0, 1000	1 row(s) returned
234	23:50:07	SELECT B.BookID, B.Title, B.Author, B.Genre, P.PublisherName, P.PublisherAddress FROM Books_2NF B JO...	2 row(s) returned

Additional Questions/Discussions:

- What are transitive dependencies, and why should they be eliminated?
 - Instead of relying directly on the primary key, transitive dependencies happen when a non-key attribute depends on another non-key attribute. Third Normal Form (3NF) should do away with them in order to increase data integrity, decrease redundancy, and guarantee that each attribute alone depends on the primary key, which will make maintenance and updates more effective.
- How does 3NF improve data integrity?
 - Third Normal Form (3NF) ensures that all non-key attributes rely solely on the primary key, hence improving data integrity by removing transitive dependencies. By keeping related data in different tables, this saves redundancy, minimizes data anomalies, and preserves consistency, which improves the accuracy and efficiency of updates and deletions.

Conclusions:

- Since all non-key attributes rely solely on the primary key, Third Normal Form (3NF) guarantees that there are no transitive dependencies. 3NF enhances data integrity, decreases redundancy, and speeds up updates by dividing similar data into separate tables and connecting them via foreign keys. This produces a database design that is scalable, maintainable, and well-structured.