Bagsic, Atheia Klaire

BSCpE-2A2

Laboratory Activity 5:

Laboratory Title: Normalization - First Normal Form (1NF)
Chapter No. and Topic: Chapter 3 - Database Design and Modeling
Discussions:
This activity demonstrates how to normalize a table to the First Normal Form (1NF).

Activity Description:
Given a sample non-normalized table, convert it to 1NF by ensuring that all columns contain atomic values.

Objectives:

- Understand how to apply 1NF to a database design.
- Convert a table into 1NF.

Materials:

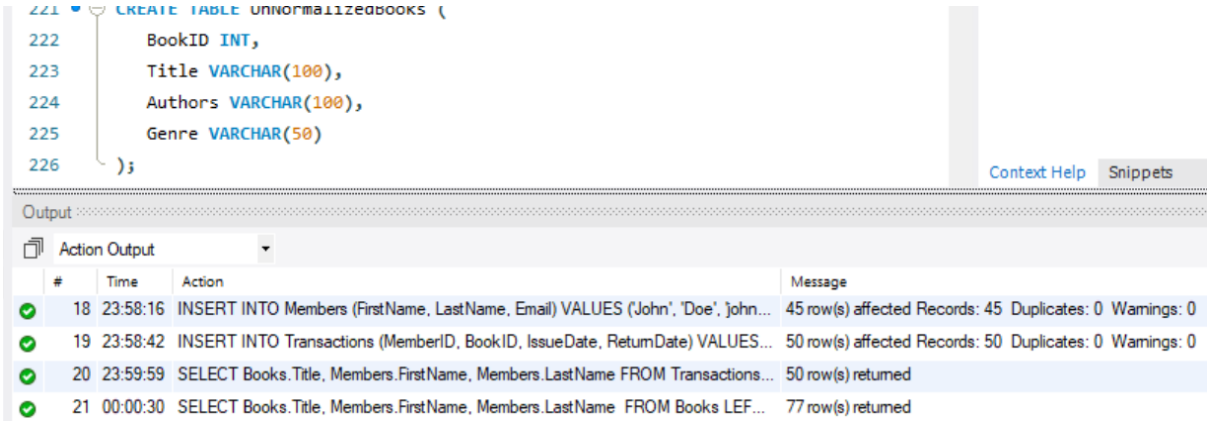
- SQL client

Procedure:

1. Start by creating a sample non-normalized table:

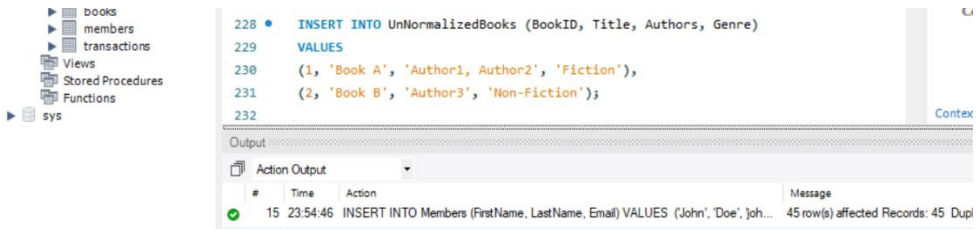
```
sql

Copy code

CREATE TABLE UnNormalizedBooks (

   BookID INT,

   Title VARCHAR(100),

   Authors VARCHAR(100),

   Genre VARCHAR(50)
```

```
);
```



1. Insert data into the table:

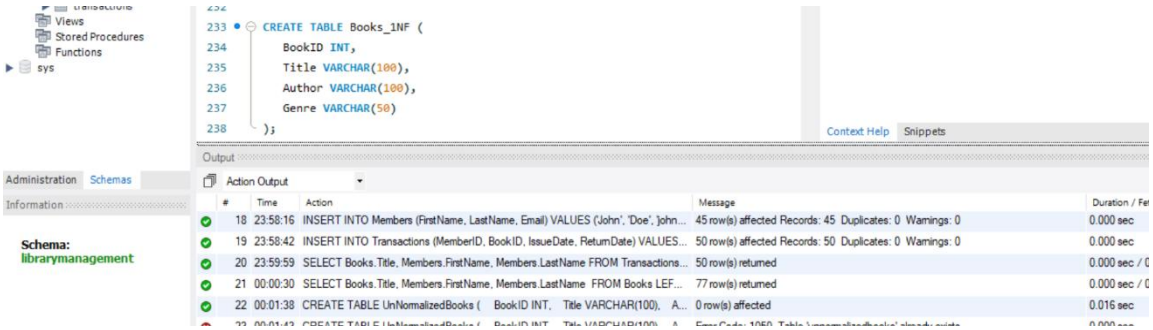
```
sql

Copy code

INSERT INTO UnNormalizedBooks (BookID, Title, Authors, Genre)

VALUES

(1, 'Book A', 'Author1, Author2', 'Fiction'),

(2, 'Book B', 'Author3', 'Non-Fiction');
```



1. Convert to 1NF by creating separate rows for multiple authors:

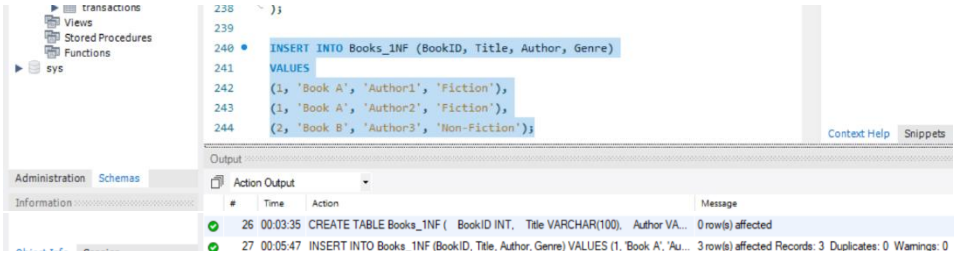
```
sql

Copy code

CREATE TABLE Books_1NF (

   BookID INT,

   Title VARCHAR(100),
```

```
    Author VARCHAR(100),
    Genre VARCHAR(50)
);
```

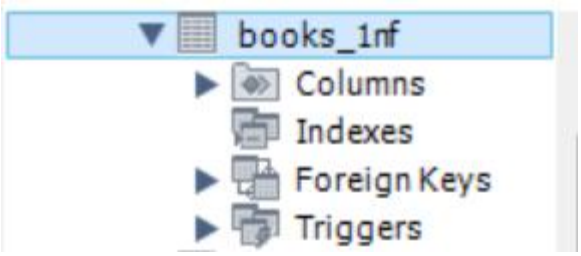


1. Insert normalized data:

```
sql

Copy code

INSERT INTO Books_1NF (BookID, Title, Author, Genre)

VALUES

(1, 'Book A', 'Author1', 'Fiction'),

(1, 'Book A', 'Author2', 'Fiction'),

(2, 'Book B', 'Author3', 'Non-Fiction');
```



Result:
The table is now in 1NF with atomic values for each column.



Additional Questions/Discussions:

How does 1NF improve data integrity?

-1NF ensures that each row is distinct and every column contains only atomic, indivisible values. This helps eliminate redundancy, reduce inconsistencies, and streamline database management and querying.

What are atomic values, and why are they important?

- Atomic values are those that cannot be broken down further. In 1NF, each author must have a separate row instead of combining multiple authors in a single column like "Author1, Author2." This is crucial as it facilitates accurate queries, indexing, and efficient data retrieval.

Conclusions:

This activity taught me to apply 1NF by ensuring atomic values, reducing redundancy, and improving data integrity for a more efficient database.