9.16   Lab 8 - Author-Publisher

Reference

Section 9.6 page 129, Section 9.8 page 135.

Objective

1. Normalize the given data to 3NF. Show each step in the normalization process.
2. Indicate the number of rows in each table during each stage of the normalization process.
3. Create and populate database.
4. Enforce constraints to maintain referential integrity.
5. Create and use `INDEX` and `VIEW`.
6. After the normalization process, write a `JOIN` statement to bring the 3NF back to 1NF, confirming that the process is reversible.

Submission

Submit Logical and Physical ER diagrams; the Normalization Process, Database in 3NF.

Requirements

Normalize the data to 3NF, show each step. Create tables in 3NF, reverse engineer, save the ER diagram to a `.pdf` file, each entity should be related to at least one entity.

Abstract

A small city library wants to store its inventory of books. Data for publishers, authors, books and borrowers are maintained. The sample data represents record of people borrowing books from a library.

Rules:

Author and Publisher

An author writes at least one book.

A publisher publishes at least one book.

A book title is published by only one publisher.

A book can be associated with only one author, the primary author of the book

A book having more than one author can have only one authors name, the primary author.

The same book title cannot be published by more than one publisher

Book

BookID is the same for the each title.

BookID is different for each title by the same author.

Library

      The library maintains a copy number for each book of the same title.

      The same book title can be lent to more than one borrower.

      Copy number begins with 1 for a title.

      Copy number increments by 1 for each copy of the same title.

      The copy number is reset for each title.

      It is possible that all copies of a book are in the library.

      It is possible that no copy of a book has been borrowed.

      A person is a borrower even if he has not borrowed a book; he may borrow in future.

      If borrower returns all borrowed books, he is still considered a borrower.

      A borrower's historical data is not maintained.

Borrower

      A borrower can borrow more than one book.

      A borrower may return all books such that he does not have any books on loan.

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BookID, BookTitle, AuthorID, AuthorName, PublisherID, PublisherName,
 { InventoryID, BorrowerID, BorrowerName }

ALCHE, The Alchemist, COELHOP, Paulo Coelho, HARP, Harper,
 { 1, MORZ, Zev Moriv | 2, GATD, Dof Gatum | 3, TOSF, Gin Tosig }


ANNAK, Anna Karenina, TOLSTOL, Leo Tolstoy, ROSI, Rosiya Press,
 { 1, FELT, Taz Felor }


TFA, Things Fall Apart, ACHEBEC, Chinua Achebe, SELF, Self Press,
 { 1, FIJJ, Juv Fijoy | 2, GATD, Dof Gatum }


TKAMB, To Kill A Mockingbird, LEEH, Harper Lee, WILE, Wiley,
 { 1, LUHK, Kit Luhuh }


WNP, War and Peace, TOLSTOL, Leo Tolstoy, ROSI, Rosiya Press,
 { 1, LUHK, Kit Luhuh }
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