SQL Programming Project

CS-6360 Database Design

by

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1. Statement

This SQL programming project involves the creation of a database host application that interfaces with a backend SQL database implementing a Library Management System. Users of the system are understood to be librarians.

2. Goals and Non-Goals

The project aims at

- Providing a mechanism to interact with backend SQL that stores details of Library Management system.

The project does not aim at

- Providing high level Graphical User Interface.

3. Functional Description

The System supports four main features that is needed by the Librarian. The home page displays all the functionality. The system has over 25000 books and 1000 existing customers.

3.1 Borrow a book

The librarian can search for a book, given any combination of ISBN, title, or author(s). Upon checking with the database, the system displays a list of books that matches the search criteria. Librarian should type the ISBN of the interested book and proceed to type in his card id. The user is allowed to borrow if and only if the book is not borrowed by anyone and if she hasn't exceeded her maximum limit of 3 books.

- In case of successful borrow, a relevant message is displayed with due date to return the book.
- In case of failure, a relevant message is displayed, and user can act accordingly.

3.2 Checkin a borrowed book

The librarian can search for a book, given any combination of ISBN, title, or author(s) to check in upon prompted by borrower. Upon checking with database, the system displays a list of books that matches the search criteria. Librarian should type the loan id of book wished to be returned. A successful message is displayed with also information related to fine in case of late returns.

3.3 Create new Borrower

The librarian can create a new borrower provided all details like First name, last name, SSN and address is provided. A card id is automatically assigned to the new borrower in case one does not already exists. If an SSN is already assigned to a card id, an error message is displayed.

3.4 Overdue fine Management

The librarian can see the list of borrowers who are due to pay their fine by just clicking a single button. She can update the table if any user paid their due amount, by providing the loan id associated with the fine amount. The list displays fine a borrower owes to the library i.e. if a borrower is late to return 2 books, the list shows sum of fines for both books.

The fine is calculated at the rate of $0.25 * number of late days.

4. Tools and Technology

4.1 Python – Frontend development
4.2 Django – Web programming framework
4.3 Bootstrap – Enhance front end looks
4.4 MySql – Database used
4.5 PyCharm – UI used to do all the coding

5. System Design