CS 6360 Database Design

Library Management System

Individual Project – Milestone 2

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Overview:

The Goal of the project is to design a library management system to display the available books and checking them out as borrowers. Each borrower can loan a maximum of 3 books and fines are calculated from 14 days after borrowing the book. After a successful check in the loan records are updated along with the fines if any.

Technologies used:

Backend: Java Spring-Boot using JPA(Hibernate) and MySQL Java connector

Frontend: ReactJS

Design:

The application satisfies the functional requirements as mentioned.

Firstly, we are normalizing the data from book.csv and borrowers.csv and making the required changes to create the data to dump in to four tables book, book_authors, authors, book_loans, borrower and fines using MySQL work bench.

Starting with boiler plate code generated from spring initializer for web application using Java Persistent API (JPA), added various APIs to satisfy the functional requirements. The application has 4 layers as a generic spring boot application, The Controller, Service, Repository and Model. Using JPA we are creating entity files to interact with MySQL database. The APIs exposed by the spring boot application are used by the react application to populate the required data on demand

Assumptions:

- It is assumed that quantity of each book is 1 and all the books are available initially
- It is also assumed that once the user check outs a book, he would like to get redirected to main page.
- Fine Amount would get updated every time home page load and when Fine button is clicked.
- A new Borrower cannot have same SSN as the ones already in borrower table.
- On Clicking Fine Paid button for a particular Borrower, we will consider that fines of all the loans for returned books are paid off. But the fines of books not returned as considered no paid.