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DATABASE DESIGN

6360.001

PROJECT – 1

LIBRARY MANAGEMENT SYSTEM

Problem Statement:

Implementation of Library Management System That involves the creation of a database host Application which interfaces with a backend SQL database

Implementation:

Following classes were used for implementation

- **Add_Borrower.java** –>This will take all the details like SSN, FNAME, and LNAME to create new Borrowers in the system.

- **Book_CheckIn.java** –> This will contain all the details about how one can check in the Book by entering the details such as **BOOKLOANS**(Book_id, Card_No) and **BORROWER**(First_name,Last_Name)

- **Book_Loan.java** –> This will contain how one can Check_Out the Books also this class has handled many scenarios like

    1) Each BORROWER is permitted a maximum of 3 BOOK_LOANS
    2) If the number of BOOK_LOANS for a given book at a branch already equals the No_of_copies (i.e. There are no more book copies available at your library_branch), then the checkout should fail and return a useful error message

- **Book_Search.java** –> This class will contain the logic of how one can search for a book, given any combination of ISBN, title, and/ or Author(s)

- **Fine_Process.java** –> This class will contain all the Information regarding the fine process.

- **Fine_Refresh.java** –>This class will contain information like

  1) to check if there already exist an entry in the fine table
  2) If fine table already contain Loan Id if so update the table
  3) Otherwise Add an entry in the fines table
  4) To get all the Loan Id whose due date has been expired and fine has not been paid

- **Pay_Fine.java** –> This class will contain all the Information like

  1) Whether fine has been paid and updated for the specific Loan-Id
  2) Fine Payment has been Successful or not for the specific Loan Id.

- **SQLConnections.java** –> This Class will contain how Driver establishes Connection to the Mysql Database.

- **Update_CheckIn.java** –> This class as the name suggests will perform Update operation like

  1) To check if already exists an entry in the Fine Table.
  2) If there is fine tables Entry then update the fine amount if new fine is different from already existing table Fine.

- **Add_BorrowerForm.jsp->** This JSP file will contain the Front-End form Code that will take all the necessary Attributes and Calls the appropriate Java File-> **Add_Borrower.java** through 'ACTION' Attribute.

- **Book_CheckIn.jsp->** This JSP file will contain the Front-End form Code that will take all the necessary Attributes and Calls the appropriate Java File-> **Book_CheckIn.java** through 'ACTION' Attribute

- **Book_Loan.jsp->** This JSP file will contain the Front-End form Code that will take all the necessary Attributes and Calls the appropriate Java File-> **Book_Loan.java** through 'ACTION' Attribute.

- **Book_Search.jsp->** This JSP file will contain the Front-End form Code that will take all the necessary Attributes and Calls the appropriate Java File-> **Book_Search.java** through 'ACTION' Attribute.

- **FineForm.jsp->** This JSP file will contain the Front-End form Code that will take all the necessary Attributes and Calls the appropriate Java File-> **Fine_Process.java** through 'ACTION' Attribute.

- **FineResult.jsp, LoanResult.jsp, SearchResult.jsp ->** These JSP Files will Display the appropriate Results that they once perform as defined in the schemas

- **Default.html->**This is the HOME PAGE of the Library Management System That will display all the necessary links that one can access to Test the various Attributes like Book_CheckOut, Book_CheckIn etc. This Default.html file will be called automatically from the File Descriptor Web.xml File.

LIBRARY MANAGEMENT SYSTEM SCHEMAS THAT I HAVE USED IN THIS PROJECT:

NOTE: I have included the following Fields (Columns) in the Respective Tables and the Fields which are in **bold** are assumed to be **Primary Key** for that Table.

BOOKS

ISBN	TITLE	AUTHOR	COVER	PUBLISHER	PAGES

BOOK_AUTHORS

ISBN	AUTHOR_NAME	**AUTHOR_ID**

AUTHORS

ISBN	TITLE	AUTHOR	**AUTHOR_ID**

BOOK_COPIES

BOOK_ID	**BRANCH_ID**	NO_OF_COPIES

LIBRARY_BRANCH

BRANCH_ID	BRANCH_NAME	ADDRESS

BORROWER

CARD_NO	SSN	First_Name	Last_Name	ADDRESS	PHONE

BOOK_LOANS

Loan_Id	ISBN	Branch_Id	Card_No	Date-Out	Due_Date	Date_In

FINE

LOAN_ID	FINE_AMT	PAID

RESULT

Thus By applying the Enhanced Entity relationship modeling and relational database design concepts I was able to design Library management system database.