

Project Design Document

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This project is about a database host application which interfaces with a backend SQL database for library circulation desk application.

My project design decisions can be formed as follows:

1). Build an appropriate schema and import dataset.

I create a schema named “booklibrary” in Workbench. By using “table data import wizard”, I import appropriate columns from the given dataset into my schema.

2). About the graphical user interface

I use Java as application language. I choose Swing to implement my GUI.

This is my first project to use Swing to build a GUI interface.

3). About the book search function

By writing the MySQL search queries, the database controller could execute the appropriate and correct command to search books. The search book function could display the isbn, book title, book authors and availability. I find that writing correct MySQL command to fulfill requirements is very challenging. I use a lot of nested and join query command.

4). About the book loans

About the checking out books function, I need to check the book copies availability and the current loan books of the borrower. If all these requirements are met, I need to create a loan id for this checking out book function.

About the checking in book function, I could search the book information or the

borrower information. When I locate the required record, I could update the date in value and update the book available copies, which means the book is returned successfully.

5). About the borrower management

I write functions to make the system create new borrower records in the dataset.

Because one borrower's information contains 5 attributes, each of these attributes need to be checked before storing in the database. I write functions such as checking the length of ssn, checking the same ssn, checking the name of address patterns.

When a new borrower is created, the function also should generate a new card number for the borrower.

6). About the fines

I think this is the most difficult part in my library project.

As the requirement, I write functions to display all fines and overdue books for specified borrower. I also write a function to update the amount fine. If one borrower paid his fine, the fine table should delete his record.