

Documentation Report

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Storage Method Selection in Library Management System

Introduction

This report outlines the storage method selection process implemented in the Library Management System (LMS). The program allows users to choose between two data storage mechanisms: MySQL database and CSV files. This flexibility supports different user environments and ensures efficient data handling.

Storage Method Selection Process

1. **User Prompt:** Upon starting the program, users are prompted to choose a storage method. The prompt displays the available options:
 - 's' for MySQL
 - 'f' for CSV
2. **Input Handling:** The program reads the user input and validates it. If the input is valid (either 's' or 'f'), the program proceeds to connect to the selected storage method. If the input is invalid, the program informs the user and prompts them to enter a valid choice.
3. **Connection Establishment:**
 - **MySQL:** If the user selects 's', the program initializes a connection to a MySQL database using the provided JDBC URL, username, and password. An instance of `SQL_Handler` is created to manage database operations.
 - **CSV:** If the user selects 'f', the program initializes a file handler for the CSV files, which includes `users.csv`, `books.csv`, and `loans.csv`. An instance of `File_Handler` is created to manage file operations.

Program Support for Storage Mechanisms

The LMS implements functionalities for both storage methods, ensuring consistent data management across different environments:

1. MySQL Database Support:

- **Data Manipulation:** The program allows adding, removing, and updating users and books in the MySQL database. All relevant CRUD operations are handled through SQL queries.
- **Query Execution:** The `SQL_Handler` class manages the execution of SQL queries for data retrieval and manipulation, ensuring data integrity and security.

2. CSV File Support:

- **Data Manipulation:** Similar to MySQL, the program supports adding, removing, and updating users and books in the CSV files. Each operation modifies the appropriate CSV file, ensuring that changes are persisted.
 - **File Handling:** The `File_Handler` class is responsible for reading from and writing to the CSV files, providing methods for loading and saving data efficiently. The system updates the files whenever changes are made.
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