**CS631008 Data Mgt Systems Design**

**Project Deliverable 3: Implementation and Testing**

**Team Members:**

Shiva Karthik Pinjarle Manmohan

Nithin Krishna Krishnappa

Tejas Belakavadi Kemparaju

**1. Description of Implementation and Problems Faced:**

Our team embarked on the development of a robust database system for the City Library, leveraging XAMPP server and MySQL, PHP database for implementation. Throughout the process, we meticulously translated the provided specifications and constraints into a logical database design, ensuring the integrity and efficiency of the system.

One of the primary challenges we encountered was managing the complex relationships between different entities within the library system, such as documents, publishers, branches, readers, reservations, and borrowings. Mapping these relationships accurately while adhering to the specified constraints required careful consideration and testing to ensure data consistency and reliability.

Additionally, implementing the user interface and authentication mechanisms posed challenges in terms of usability and security. Balancing the need for a seamless user experience with stringent authentication protocols to safeguard sensitive data required iterative refinement and thorough testing.

To address these challenges, we adopted an iterative development approach, breaking down the implementation process into manageable tasks and conducting rigorous testing at each stage. This iterative approach allowed us to identify and resolve issues promptly, ensuring the overall stability and usability of the system.

**2. User Guide:**

Our user guide is designed to provide comprehensive instructions for users interacting with the City Library system. Below are detailed instructions for readers and administrators:

* Install Xampp Server and connect to Apache Server and MySql .
* Clone the GitHub Repo using this link: <https://github.com/tejas100/DMSD-CS631>.
* Clone it into the Htdocs folder in Xampp Directory.
* Run <http://localhost/DMSD-CS631/>
* It will display our UI.

**For Readers:**

1. Searching Documents:

* To search for a document, navigate to the "Document Functions" menu.
* Choose the option to search by ID or title.
* Enter the relevant information as prompted and submit the search query.
* The system will display the search results, including document details such as Did, title, publisher ID, publication date, type, and ISBN.

2. Document Checkout:

* + In the "Copy Functions" menu, select the option and we can change the document checkout status.
  + Enter the Copy ID of the item you wish to borrow.

3. Document Return:

* Navigate to the "Copy Functions" menu and select the option and we can change the document return status.
  + Enter the Copy ID of the item you wish to return.
  + Confirm the return transaction to complete the process.
  + The system will update the document's status and may calculate any applicable fines if the return is overdue.

4. Document Reservation:

* + To check the status of the document, access the "Copy Function" menu and select the option and we can change the document return status.
  + Enter the Copy ID of the item you wish to reserve.

5. Computing Fine:

* + Select the option to compute fine from the "Reader Functions" menu.
  + Provide the necessary details, such as the Reader ID and it will display the Borrowings, fine, and Reservation
  + The system will calculate any fines associated with the reader along with the borrowed document based on the specified date.

6. Viewing Reserved Documents:

* + Access the "Reader Functions" menu and choose the option to view reserved documents.
  + Enter your reader ID to retrieve your reservation details.
  + The system will display a list of documents you have reserved, along with their reservation status and pickup information.

**For Administrators:**

1. Adding Document Copies:

* + Access the "Administrative Functions" menu and choose the option to add a document copy.
  + Provide the necessary details, such as document ID and branch information, to add a new copy to the system.

2. Managing Reader Information:

* + Select the option to add a new reader from the "Administrative Functions" menu.
  + Enter the required details, such as name, address, type, and contact information, to register a new reader in the system.

3. Retrieving Branch Details:

* + From the "Administrative Functions" menu, it will print branch information after making changes to new data.
  + The system will display a list of branches along with their names and locations.

4. Analyzing Borrowing Patterns:

* + Select the option to retrieve borrower information from the "Administrative Functions" menu.
  + Provide the necessary inputs, such as the number of top borrowers and branch number (if applicable), to generate the required report.

5. Retrieving Popular Books:

* + Choose the option to retrieve popular books from the "Administrative Functions" menu.
  + Enter the desired number of top books to retrieve the most borrowed titles from the library.

6. Analyzing Fine Payments:

* + Select the option to analyze fine payments from the "Administrative Functions" menu.
  + Provide the necessary inputs, such as start and end dates, to generate a report on fine payments for each branch during the specified period.

These instructions aim to guide users through the various functionalities of the City Library system, ensuring a smooth and efficient experience for both readers and administrators.

**3. SQL Commands for Table Creation:**

Use this link for SQL Commands for Table Creation: <https://github.com/tejas100/DMSD-CS631/blob/main/db/library.sql>

**4. SQL Commands for Table Population:**

Use this link for SQL Commands for Table Population: <https://github.com/tejas100/DMSD-CS631/blob/main/db/insertdata.sql>

**5. Source Code:**

The source code for our PHP application, including the frontend and backend components, is available in our GitHub repository. It includes files for authentication, user interfaces, database interactions, and functionalities specific to readers and administrators.  
Link to source code: <https://github.com/tejas100/DMSD-CS631>

**6. Printout of the Use of the Program:**

Attached is a printout demonstrating the use of the program, showcasing various functionalities such as document search, checkout, return, reservation, administrative tasks, and more. The printout includes screenshots and descriptions of each step to provide a comprehensive overview of the system's capabilities in action.



















