**High-Level Design Document**

**Overview**

The Library Management System is a web-based application designed to manage the operations of a library. The system allows users to issue and return books, as well as search for books based on author, title, and ISBN. The system also allows the librarian to add, delete, and update books.

**Architecture**

The Library Management System is designed using the Model-View-Controller (MVC) architecture pattern. The application uses JSP pages to render the views, servlets to handle the requests and responses, and a database to store the data.

**Modules**

The Library Management System consists of the following modules:

1. User Management Module

This module is responsible for managing users, including adding new users, updating user information, and deleting users.

2. Book Management Module

This module is responsible for managing books, including adding new books, updating book information, and deleting books.

3. Issuing and Returning Books Module

This module is responsible for handling the issuing and returning of books. It includes functionality to issue books to users, check the availability of books, and calculate fines for late returns.

Technologies Used

The following technologies are used in the development of the Library Management System:

Java 8

JSP and Servlets

JDBC

MySQL Database

**Class Diagram**



**Database Schema**

The following schema is used for the Library Management System database:

Table: users

| Column Name | Data Type | Description |
| --- | --- | --- |
| id | int | Primary key for the user |
| name | varchar(50) | Name of the user |
| email | varchar(50) | Email of the user |
| **password** | **varchar(50)** | **Password of the user** |

**Table: books**

| Column Name | Data Type | Description |
| --- | --- | --- |
| id | int | Primary key for the book |
| bookname | varchar(50) | Name of the book |
| author | varchar(50) | Name of the author |
| isbn | varchar(50) | ISBN of the book |
| publisher | varchar(50) | Name of the publisher |
| amount | int | Number of copies available |

**Table: issued\_books**

| Column Name | Data Type | Description |
| --- | --- | --- |
| id | int | Primary key for the issued book |
| user\_id | int | Foreign key for the user |
| book\_id | int | Foreign key for the book |
| issue\_date | date | Date on which the book was issued |
| return\_date | date | Date on which the book is expected to be returned |
| fine | int | Fine amount, if any, for late return |

**Conclusion**

The Library Management System is a web-based application designed to manage the operations of a library. The application uses JSP pages and servlets to render views and handle requests, and a MySQL database to store data. The system is designed using the MVC architecture pattern and consists of three modules: user management, book management, and issuing and returning books.