SAHYADRI
COLLEGE OF ENGINEERING & MANAGEMENT
An Autonomous Institution

WEB TECHNOLOGY & APPLICATIONS

A mini project report on:

“Library Management System”

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Project Report: Library Management System

Introduction

This project aims to develop a web-based Library Management System using a combination of HTML, CSS, JavaScript for frontend development, PHP for server-side scripting, and MySQL for database management. The system consists of several key components: index.php as the home page providing navigation and user interaction, borrow.php for borrowing books, return.php for returning books, books.php for displaying available books, and styles.css for styling across all pages.

Technologies Used

The frontend of the system utilizes HTML5 for structure, CSS3 for styling, and minimal JavaScript for interactivity. PHP is employed for server-side logic to handle database interactions and dynamic content generation. MySQL database is utilized via the XAMPP stack, providing a robust backend for storing and managing book information and user sessions.

Detailed Description of Components

index.php (Home Page)

The index.php serves as the gateway to the library system. It welcomes users, provides navigation links to other pages (books.php, borrow.php, return.php), and dynamically adjusts content based on user interactions or login status. It ensures a user-friendly interface with clear navigation and a visually appealing layout facilitated by styles.css.

borrow.php (Borrow Book Page)

borrow.php enables users to borrow books from the library. It includes a form where users can input the ID of the book they wish to borrow. PHP scripting validates the input, updates the database to mark the book as borrowed (status='borrowed'), and provides feedback to the user on the success or failure of the operation.

return.php (Return Book Page)

The return.php page allows users to return books they have borrowed. Similar to borrow.php, it features a form for entering the book ID to be returned. Upon submission, PHP logic verifies the ID, updates the database (status='available'), and informs the user about the completion status of the return process.

books.php (Display Books Page)

books.php lists all available books in the library. It retrieves book details from the database using PHP MySQLi queries and dynamically populates a table on the webpage. Users can search for specific books by title, author, publication year, or status (available or borrowed), enhancing usability and accessibility.

styles.css

styles.css defines the visual identity of the library system, ensuring a consistent and attractive user interface across all pages. It specifies fonts, colors, layout structures, and responsive design elements to optimize user experience and readability on different devices.

Conclusion

In conclusion, this Library Management System project successfully integrates frontend and backend technologies to create a functional and user-friendly application. It addresses key functionalities such as book borrowing, returning, and browsing through a structured interface. While the current implementation provides core features, future enhancements could include user authentication, more advanced search options, and administrative controls for managing book inventory and user accounts.

References

- W3Schools and Mozilla Developer Network (MDN) for HTML, CSS, JavaScript, and PHP documentation.
- MySQL Documentation for database management queries and practices.
- Stack Overflow and GitHub repositories for community insights and code snippets.

Codes:

- **Index.php**

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Library Home</title>
    <style>
        body {
            font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;
            margin: 0;
            padding: 0;
            background-image: url('library-background.jpg'); /* Replace
'library-background.jpg' with your image path */
            background-size: cover;
            background-position: center;
            height: 100vh;
            display: flex;
            justify-content: center;
            align-items: center;
            color: #fff; /* Set text color to white for better visibility */
            text-shadow: 1px 1px 2px rgba(0,0,0,0.8); /* Add subtle text
shadow for better contrast */
        }
        .container {
            text-align: center;
            background-color: rgba(0, 0, 0, 0.6); /* Semi-transparent
background for better readability */
            padding: 2rem;
            border-radius: 10px;
        }
        h1 {
            font-size: 3rem;
            margin-bottom: 1rem;
            text-transform: uppercase; /* Uppercase text for title */
        }
        .nav-links {
            margin-top: 2rem;
        }
        .nav-links a {
            display: inline-block;
            margin: 0 1rem;
            padding: 0.5rem 1rem;
            background-color: #333;
            color: #fff;
```

```
            text-decoration: none;
            border-radius: 5px;
            transition: background-color 0.3s ease; /* Smooth transition for
hover effect */
        }
        .nav-links a:hover {
            background-color: #555; /* Darker background color on hover */
        }
    </style>
</head>
<body>
    <div class="container">
        <h1>Welcome to Our Library</h1>
        <div class="nav-links">
            <a href="books.php">Browse Books</a>
            <a href="borrow.php">Borrow a Book</a>
            <a href="return.php">Return a Book</a>
        </div>
    </div>
</body>
</html>
```

- **Books.php**

```
<?php
// books.php
$servername = "localhost";
$username = "root";
$password = "";
$dbname = "library_db";

// Create connection
$conn = new mysqli($servername, $username, $password, $dbname);

// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}

$sql = "SELECT id, title, author, year, status FROM books";
$result = $conn->query($sql);
?>

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
```

```
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Library Books</title>
    <link rel="stylesheet" href="styles.css">
    <script src="https://code.jquery.com/jquery-3.6.0.min.js"></script>
    <style>
        body {
            font-family: Arial, sans-serif;
            background-color: #f4f4f4;
            margin: 0;
            padding: 0;
        }
        header, footer {
            background-color: #333;
            color: #fff;
            text-align: center;
            padding: 1rem 0;
        }
        main {
            padding: 2rem;
        }
        table {
            width: 100%;
            border-collapse: collapse;
            margin-bottom: 2rem;
        }
        table, th, td {
            border: 1px solid #ddd;
        }
        th, td {
            padding: 1rem;
            text-align: left;
        }
        th {
            background-color: #f2f2f2;
        }
        .search-box {
            margin-bottom: 2rem;
        }
        .search-box input {
            width: 100%;
            padding: 0.5rem;
            font-size: 1rem;
        }
    </style>
</head>
<body>
    <header>
        <h1>Library Books</h1>
```

```
        <nav>
            <ul>
                <li><a href="index.php">Home</a></li>
                <li><a href="books.php">Books</a></li>
                <li><a href="borrow.php">Borrow</a></li>
                <li><a href="return.php">Return</a></li>
            </ul>
        </nav>
    </header>
    <main>
        <div class="search-box">
            <input type="text" id="searchInput" placeholder="Search for
books...">
        </div>
        <table id="booksTable">
            <thead>
                <tr>
                    <th>Book ID</th>
                    <th>Title</th>
                    <th>Author</th>
                    <th>Year</th>
                    <th>Status</th>
                </tr>
            </thead>
            <tbody>
                <?php
                if ($result->num_rows > 0) {
                    while($row = $result->fetch_assoc()) {
                        echo "<tr>";
                        echo "<td>" . $row["id"] . "</td>";
                        echo "<td>" . $row["title"] . "</td>";
                        echo "<td>" . $row["author"] . "</td>";
                        echo "<td>" . $row["year"] . "</td>";
                        echo "<td>" . $row["status"] . "</td>";
                        echo "</tr>";
                    }
                } else {
                    echo "<tr><td colspan='4'>No books found</td></tr>";
                }
                ?>
            </tbody>
        </table>
    </main>
    <footer>
        <p>&copy; 2024 Library</p>
    </footer>
    <script>
        $(document).ready(function(){
```

```
            $("#searchInput").on("keyup", function() {
                var value = $(this).val().toLowerCase();
                $("#booksTable tbody tr").filter(function() {
                    $(this).toggle($(this).text().toLowerCase().indexOf(value)
> -1)
                });
            });
        });
    </script>
</body>
</html>

<?php
$conn->close();
?>
```

- **Borrow.php**

```
<?php
$servername = "localhost";
$username = "root";
$password = "";
$dbname = "library_db";

$conn = new mysqli($servername, $username, $password, $dbname);

$message = '';

if ($_SERVER['REQUEST_METHOD'] == 'POST') {
    $book_id = $_POST['book_id'];

    $sql = "UPDATE books SET status='borrowed' WHERE id='$book_id' AND
status='available'";

    if ($conn->query($sql) === TRUE) {
        $message = "Book borrowed successfully";
    } else {
        $message = "Error borrowing book: " . $conn->error;
    }
}
?>

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
```

```
    <title>Borrow Book</title>
    <link rel="stylesheet" href="styles.css">
    <style>
        body {
            font-family: Arial, sans-serif;
            background-color: #f4f4f4;
            margin: 0;
            padding: 0;
        }
        header {
            background-color: #333;
            color: #fff;
            text-align: center;
            padding: 1rem 0;
            margin-bottom: 20px;
        }
        nav ul {
            list-style-type: none;
            padding: 0;
            text-align: center;
            margin: 0;
        }
        nav ul li {
            display: inline;
            margin-right: 10px;
        }
        nav ul li a {
            text-decoration: none;
            color: #fff;
            background-color: #333;
            padding: 10px 20px;
            border-radius: 5px;
            transition: background-color 0.3s ease;
        }
        nav ul li a:hover {
            background-color: #555;
        }
        main {
            max-width: 600px;
            margin: 0 auto;
            padding: 20px;
            background-color: #fff;
            border-radius: 5px;
            box-shadow: 0 0 10px rgba(0,0,0,0.1);
        }
        h1, h2 {
            text-align: center;
            margin-bottom: 20px;
```

```
        }
        form {
            display: flex;
            flex-direction: column;
            align-items: center;
        }
        label {
            margin-bottom: 10px;
        }
        input[type="number"] {
            padding: 10px;
            width: 100%;
            margin-bottom: 20px;
            border: 1px solid #ccc;
            border-radius: 5px;
            box-sizing: border-box;
            font-size: 1rem;
        }
        button[type="submit"] {
            padding: 10px 20px;
            background-color: #333;
            color: #fff;
            border: none;
            border-radius: 5px;
            cursor: pointer;
            transition: background-color 0.3s ease;
        }
        button[type="submit"]:hover {
            background-color: #555;
        }
        .message {
            text-align: center;
            margin-top: 20px;
            padding: 10px;
            background-color: #f2f2f2;
            border-left: 4px solid #333;
        }
        .success {
            border-color: #4CAF50;
            color: #4CAF50;
        }
        .error {
            border-color: #f44336;
            color: #f44336;
        }
        footer {
            text-align: center;
            padding: 1rem 0;
```

```
            background-color: #333;
            color: #fff;
            position: fixed;
            bottom: 0;
            width: 100%;
        }
    </style>
</head>
<body>
    <header>
        <h1>Borrow a Book</h1>
        <nav>
            <ul>
                <li><a href="index.php">Home</a></li>
                <li><a href="books.php">Books</a></li>
                <li><a href="borrow.php">Borrow</a></li>
                <li><a href="return.php">Return</a></li>
            </ul>
        </nav>
    </header>
    <main>
        <h2>Borrow Book</h2>
        <form method="post" action="borrow.php">
            <label for="book_id">Enter Book ID:</label>
            <input type="number" id="book_id" name="book_id" required>
            <button type="submit">Borrow</button>
        </form>
        <?php if (!empty($message)): ?>
            <p class="message <?php echo ($message === 'Book borrowed
successfully') ? 'success' : 'error'; ?>"><?php echo $message; ?></p>
        <?php endif; ?>
    </main>
    <footer>
        <p>&copy; 2024 Library</p>
    </footer>
</body>
</html>

<?php
$conn->close();
?>
```

- **Return.php**

```php
<?php
$servername = "localhost";
$username = "root";
$password = "";
$dbname = "library_db";

$conn = new mysqli($servername, $username, $password, $dbname);

$message = '';

if ($_SERVER['REQUEST_METHOD'] == 'POST') {
    $book_id = $_POST['book_id'];

    $sql = "UPDATE books SET status='Available' WHERE id='$book_id' AND
status='Borrowed'";

    if ($conn->query($sql) === TRUE) {
        $message = "Book returned successfully";
    } else {
        $message = "Error returning book: " . $conn->error;
    }
}
?>

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Return Book</title>
    <link rel="stylesheet" href="styles.css">
    <style>
        body {
            font-family: Arial, sans-serif;
            background-color: #f4f4f4;
            margin: 0;
            padding: 0;
        }
        header {
            background-color: #333;
            color: #fff;
            text-align: center;
            padding: 1rem 0;
            margin-bottom: 20px;
        }
        nav ul {
```

```
            list-style-type: none;
            padding: 0;
            text-align: center;
            margin: 0;
        }
        nav ul li {
            display: inline;
            margin-right: 10px;
        }
        nav ul li a {
            text-decoration: none;
            color: #fff;
            background-color: #333;
            padding: 10px 20px;
            border-radius: 5px;
            transition: background-color 0.3s ease;
        }
        nav ul li a:hover {
            background-color: #555;
        }
        main {
            max-width: 600px;
            margin: 0 auto;
            padding: 20px;
            background-color: #fff;
            border-radius: 5px;
            box-shadow: 0 0 10px rgba(0,0,0,0.1);
        }
        h1, h2 {
            text-align: center;
            margin-bottom: 20px;
        }
        form {
            display: flex;
            flex-direction: column;
            align-items: center;
        }
        label {
            margin-bottom: 10px;
        }
        input[type="number"] {
            padding: 10px;
            width: 100%;
            margin-bottom: 20px;
            border: 1px solid #ccc;
            border-radius: 5px;
            box-sizing: border-box;
            font-size: 1rem;
```

```
        }
        button[type="submit"] {
            padding: 10px 20px;
            background-color: #333;
            color: #fff;
            border: none;
            border-radius: 5px;
            cursor: pointer;
            transition: background-color 0.3s ease;
        }
        button[type="submit"]:hover {
            background-color: #555;
        }
        .message {
            text-align: center;
            margin-top: 20px;
            padding: 10px;
            background-color: #f2f2f2;
            border-left: 4px solid #333;
        }
        .success {
            border-color: #4CAF50;
            color: #4CAF50;
        }
        .error {
            border-color: #f44336;
            color: #f44336;
        }
        footer {
            text-align: center;
            padding: 1rem 0;
            background-color: #333;
            color: #fff;
            position: fixed;
            bottom: 0;
            width: 100%;
        }
    </style>
</head>
<body>
    <header>
        <h1>Return a Book</h1>
        <nav>
            <ul>
                <li><a href="index.php">Home</a></li>
                <li><a href="books.php">Books</a></li>
                <li><a href="borrow.php">Borrow</a></li>
                <li><a href="return.php">Return</a></li>
```

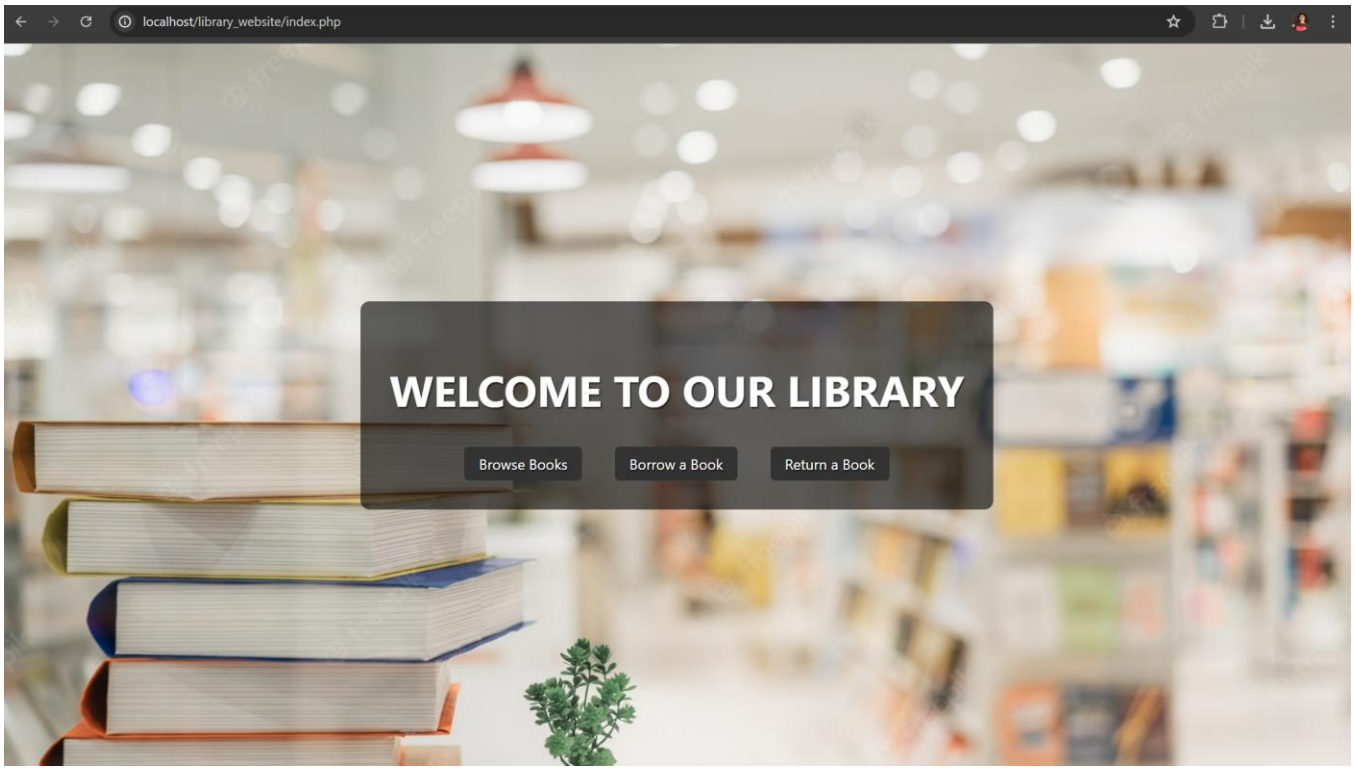
```
            </ul>
        </nav>
    </header>
    <main>
        <h2>Return Book</h2>
        <form method="post" action="return.php">
            <label for="book_id">Enter Book ID:</label>
            <input type="number" id="book_id" name="book_id" required>
            <button type="submit">Return</button>
        </form>
        <?php if (!empty($message)): ?>
            <p class="message <?php echo ($message === 'Book returned
successfully') ? 'success' : 'error'; ?>"><?php echo $message; ?></p>
        <?php endif; ?>
    </main>
    <footer>
        <p>&copy; 2024 Library</p>
    </footer>
</body>
</html>

<?php
$conn->close();
?>
```

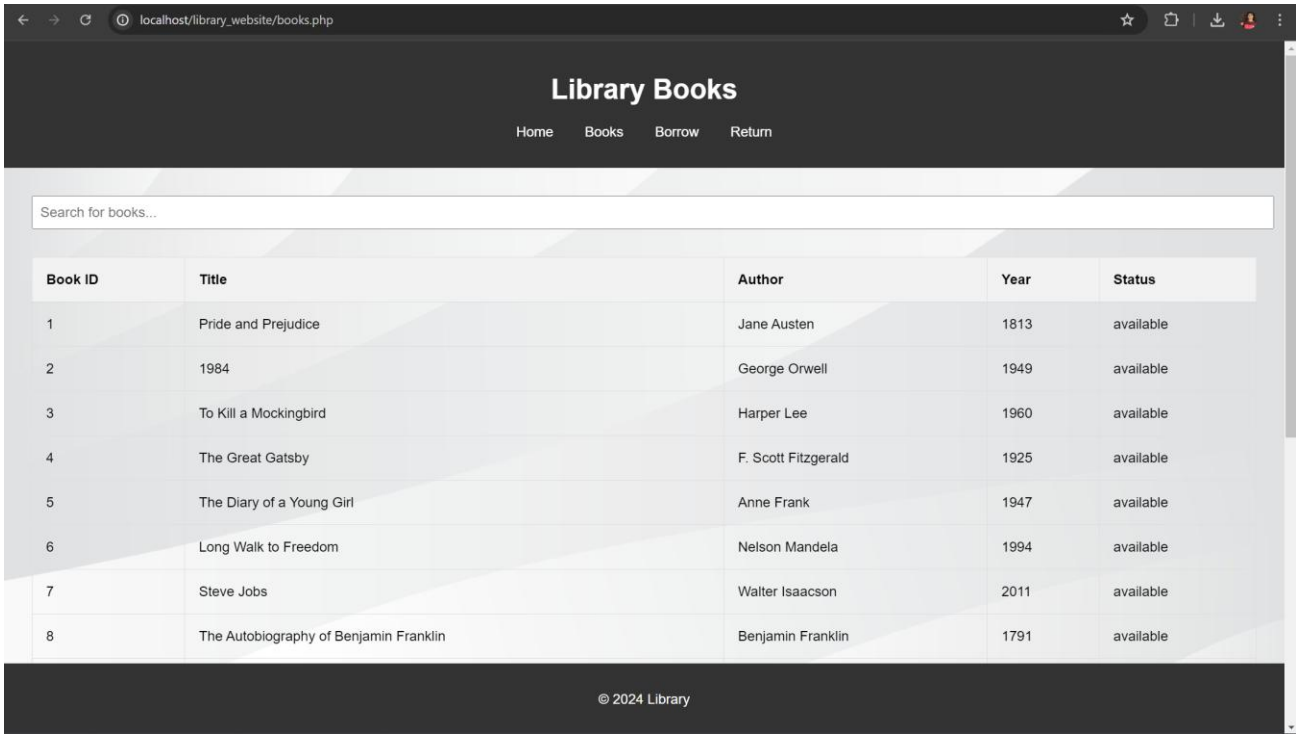
- **Styles.css**

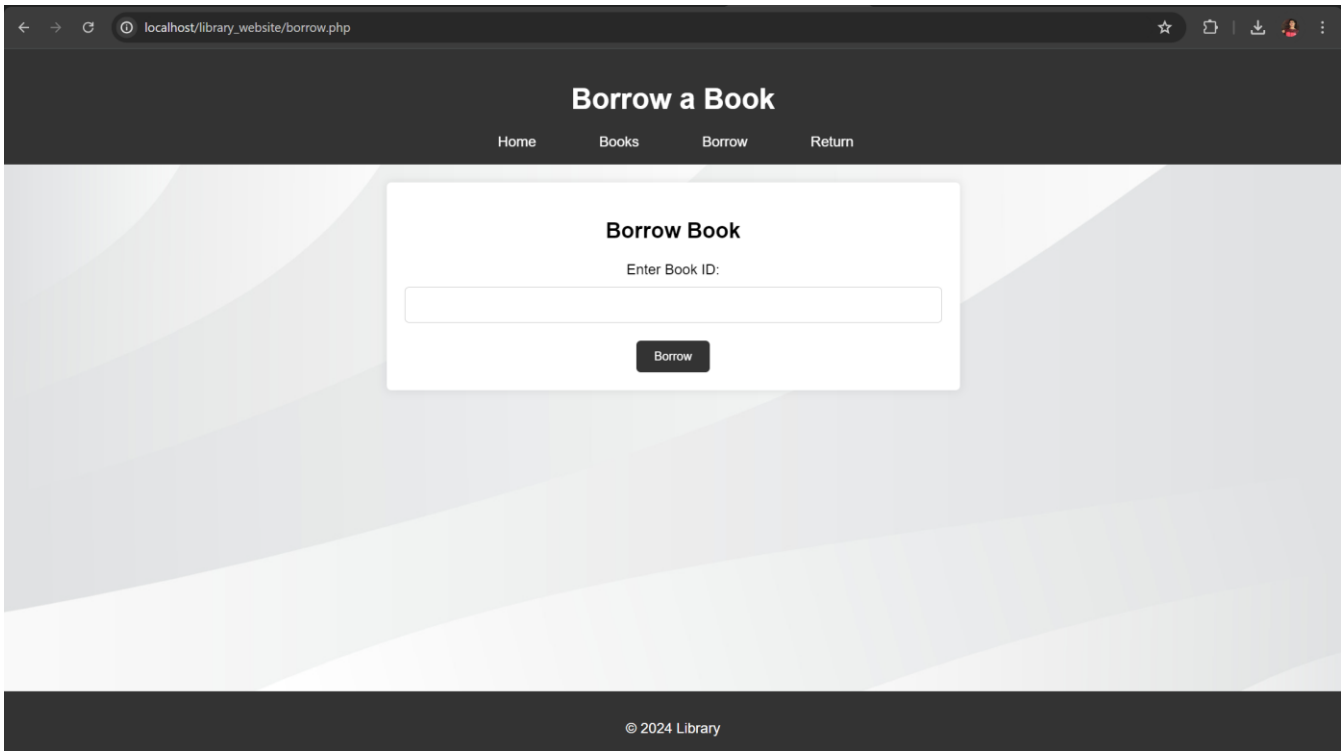
```
body {
    font-family: Arial, sans-serif;
    background-image: url('images/background.jpg');
    background-size: cover;
    background-attachment: fixed;
}

header {
    background-color: #333;
    color: #fff;
    padding: 1rem;
    text-align: center;
}

nav ul {
    list-style-type: none;
    padding: 0;
}

nav ul li {
```

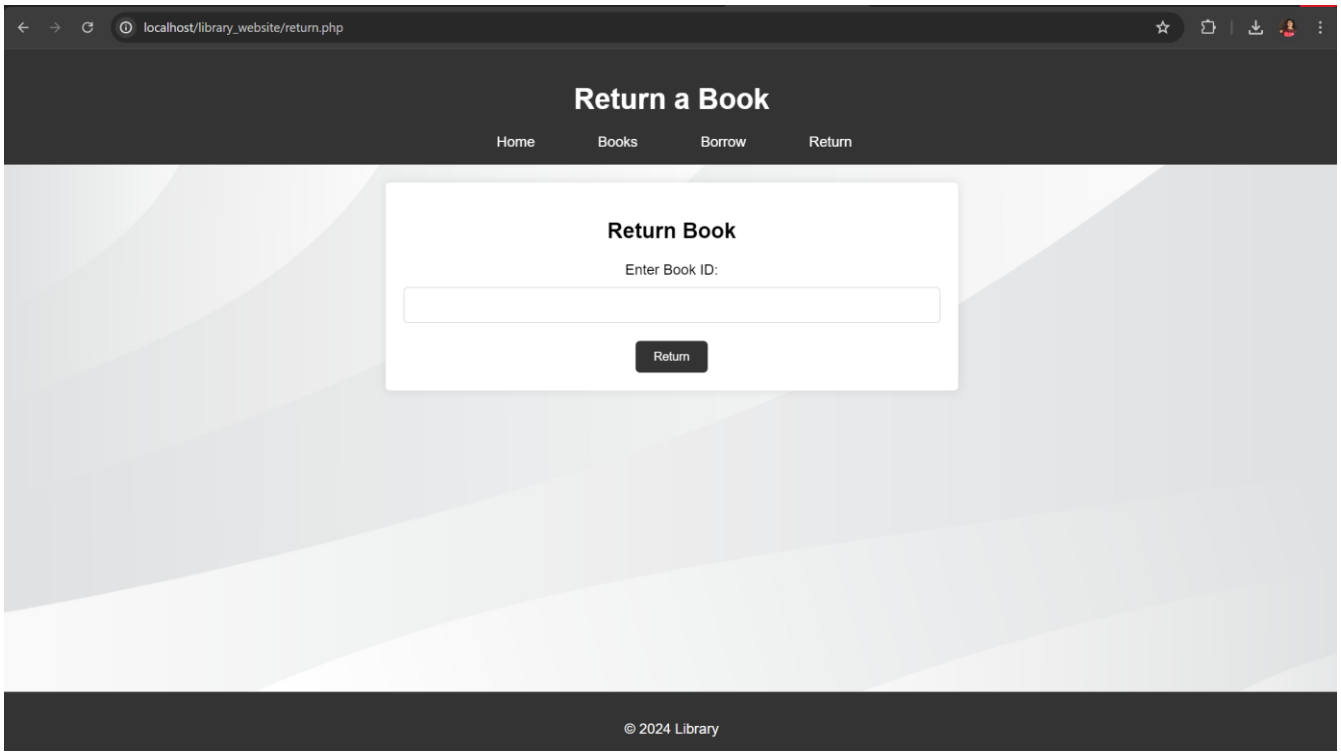
```
    display: inline;
    margin: 0 1rem;
}

nav ul li a {
    color: #fff;
    text-decoration: none;
}

main {
    padding: 2rem;
}

footer {
    background-color: #333;
    color: #fff;
    text-align: center;
    padding: 1rem;
    position: fixed;
    width: 100%;
    bottom: 0;
}
```

Output:


localhost/library_website/index.php
WELCOME TO OUR LIBRARY
Browse Books
Borrow a Book
Return a Book


localhost/library_website/books.php
Library Books
Home
Books
Borrow
Return
Search for books...
Book ID
Title
Author
Year
Status
1
Pride and Prejudice
Jane Austen
1813
available
2
1984
George Orwell
1949
available
3
To Kill a Mockingbird
Harper Lee
1960
available
4
The Great Gatsby
F. Scott Fitzgerald
1925
available
5
The Diary of a Young Girl
Anne Frank
1947
available
6
Long Walk to Freedom
Nelson Mandela
1994
available
7
Steve Jobs
Walter Isaacson
2011
available
8
The Autobiography of Benjamin Franklin
Benjamin Franklin
1791
available
© 2024 Library


localhost/library_website/borrow.php
Borrow a Book
Home
Books
Borrow
Return
Borrow Book
Enter Book ID:
Borrow
© 2024 Library


localhost/library_website/return.php
Return a Book
Home
Books
Borrow
Return
Return Book
Enter Book ID:
Return
© 2024 Library