**University of Maryland Global Campus**

**Library Management System (LMS)**

**Project Analysis**

**CMSC 495 7380**

**12 April 2023**

**Version 1.9**

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**Revision History**

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| --- | --- | --- | --- |
| **REVISION** | **DATE** | **DESCRIPTION** | **Author** |
| 1.0 | 3/28/2023 | Initial | Ben Ramos |
| 1.1 | 3/28/2023 | Addition of Context Diagram | Ben Kus |
| 1.2 | 3/29/2023 | Addition of Subsystem Diagram | Ben Kus |
| 1.3 | 4/1/2023 | Addition of Subsystem Requirements Table | Brandon Durham |
| 1.4 | 4/1/2023 | Addition of Subsystem Descriptions | Ben Kus |
| 1.5 | 4/4/2023 | Rick Management | Brandon Durham |
| 1.6 | 4/4/2023 | Project Analysis Document Modifications | Ben Ramos |
| 1.7 | 4/10/2023 | Grammatical Document Modifications | Ben Ramos |
| 1.8 | 4/11/2023 | Modifications to Input Data and Sources | Brandon Durham |
| 1.9 | 4/12/2023 | Modification to Subsystems Diagram, Addition of Subsystems Description, Mod to Subsystems Table | Ben Ramos  Brandon Durham  Ben Kus |

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10. **Introduction**

A library management system is a project which aims in developing an application to maintain the book catalog of a library. The purpose of this is to provide administrators with the ability to conduct daily maintenance to its book catalog. It will provide an easy and administrator-friendly way to track books, add and remove users, as well as track overdue books and numerous other functions.

1. **Outside Systems**
   1. Library Administrators
2. **Input Data and Sources**
   1. User Information
      1. Name (First Name, Last Name)
      2. Current Address
      3. Email Address
   2. Book Information
      1. Title
      2. Author
      3. ISB number
   3. Administrator Login
      1. Username
      2. Login
   4. Misc. Data
      1. Check Out/In Date
3. **Output Data and Destinations**
   1. User Information
   2. Book Catalog
   3. Issued/Returned Books

All output data is displayed to the administrator on the monitor. All data will be saved to an internal database.

**Diagram

Description automatically generated**

*Fig. 1: Context Diagram*

1. **Data Processing**
   1. The application will take the information that is inputted by the library administrators. The information with be stored in a database where it can be retrieved from the administrator to track book inventory, check out statuses, as well as view users' information and those with books issued.
2. **Subsystems Data Diagram and Description**

**Diagram

Description automatically generated**



*Fig. 2: Subsystems Design*

**Subsystem Descriptions:**

1. Login/Logout UI: The initial page that the administrator will view access and sign out of the application.
2. System UI: This will act as the main page for the application and contain menus that the administrator can use to conduct other functions.
3. Checkout Book: This function will allow the administrator to issue a book to the library member. Will include the ability to enter the member’s information.
4. Search Book: UI that will allow the administrator to search the library inventory for books. This is attached to the internal database.
5. Add/Remove Book: This will serve as a function for the administrator to add and remove books to the database. This will update the library inventory to the current status.
6. Database: This will contain the books and member information and will have a query-able function that will produce an output database result.

1. **Subsystems Requirement Mapping**

|  |  |  |
| --- | --- | --- |
| **Requirement Number** | **Description** | **Subsystem** |
| 1 | The system shall provide the administrator with a login screen | Login/Logout UI |
| 2 | The system shall provide an administrator-specific display to conduct admin role | System UI |
| 3 | The system shall provide an administrator-specific display to check out books | Checkout Book, Database |
| 4 | The system shall allow the admins to include library borrower’s information during issuing books | Database |
| 5 | The system shall allow the administrator to search for books based on title, author, etc. | Search Book, Database |
| 6 | The system shall allow administrators to add and remove books | Add/Remove Book, Database |
| 7 | The system shall provide the ability for admins to log out and end a session | Login/Logout UI |

1. **Possible System Enhancements**
   1. Producing a capability to search by genre.
   2. Allowing for a sort method of each book input column
   3. Allowing for a library member (user) login function
   4. Allowing for a library member (user) search function
2. **Risks and Risk Mitigation**

|  |  |
| --- | --- |
| **Identify risks** | **Risk mitigation** |
| Admin enters login password incorrectly | Admin will be displayed a warning message of a possible locked account |
| Invalid inputs such as special characters, letter grades, negative scores, or grades higher than one hundred. | The system will verify the usage of invalid characters during data entry |
| Password complexity requirement | Require admins to meet password complexity requirements |
| Chance of data loss/modification by admin | Display a warning message before deleting/saving a record |