**University of Maryland Global Campus**

**Library Management System (LMS)**

**Project Design**

**CMSC 495 7380**

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**Version 1.6**

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**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **REVISION** | **DATE** | **DESCRIPTION** | **Author** |
| 1.0 | 4/4/2023 | Initial | Ben Ramos |
| 1.1 | 4/5/2023 | Addition of Pseudocode | Brandon Durham |
| 1.2 | 4/5/2023 | Document modification | Ben Ramos |
| 1.3 | 4/7/2023 | Inclusion of Event Scenarios | Ben Kus |
| 1.4 | 4/8/2023 | Modification of Pseudocode  Addition of Risk Mitigation | Brandon Durham  Ben Kus |
| 1.5 | 4/11/2023 | Risk Management | Brandon Durham |
| 1.6 | 4/11/2023 | Addition of scenario descriptions  Modification to pseudocode  Document modifications | Ben Kus  Brandon Durham  Ben Ramos |

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4. **Event Trace Scenario**

*Start-Up Scenario*

**Diagram, text

Description automatically generated**

Description: The system shall provide the administrator with a login screen

Precondition: The administrator met software/hardware requirements and has installed the application. The administrator has the application open.

Post-condition: The administrator is at the “Admin Menu.”

*Scenario 1*

**Diagram

Description automatically generated**

Description: The system shall provide an administrator-specific display to conduct admin role

Precondition: The administrator has successfully logged into the application

Post-condition: The administrator will have a number of menu options to conduct roles

*Scenario 2*

**Diagram

Description automatically generated**

Description: The system shall provide an administrator-specific display to check out books to include library borrower’s information during checkout

Precondition: The administrator has successfully logged into the application and is displaying the menu options

Post-condition: The administrator will have issued a book. The admin will have connected to the database and updates were made. The connection to the database will close and the admin menu will be displayed.

*Scenario 3*

**Diagram

Description automatically generated**

Description: The system shall allow the administrator to search for books based on title, author, etc.

Precondition: The administrator is at the “book search menu”.

Post-condition: The administrator will have entered the search criteria and a result will be displayed on “search results”. The menu will display current information related to the search result.

*Scenario 4*

**Graphical user interface, text, application

Description automatically generated**

Description: The system shall allow administrators to add and remove books

Precondition: The administrator is at the “Add/Remove book menu”.

Post-condition: If the administrator is adding a book, they will have input the required information and have updated the database. The menu will appear with the book information that was entered. If a book is removed, the administrator will search for the book and remove it. The database will be updated in each scenario to reflect the addition or removal.

*Shut Down Scenario*

**Diagram

Description automatically generated**

Description: The system shall provide the ability for admins to log out and end a session

Precondition: The application is open, and the administrator has logged in.

Post-condition: The application will have closed. The administrator will have either closed the application which will result in it signing out or they can sign out which will bring the administrator back to the login prompt.

*Error Handling Scenarios*

**Diagram

Description automatically generated**

Description: The system will identify when books are trying to be added that already exist or are being removed that don’t exist.

Precondition: The administrator has successfully logged into the application and is displaying the search menu options

Post-condition: The application will display an error that the book was previously added to the inventory and cannot be duplicated. If the book doesn’t exist an error will be displayed that the book does not exist.

1. **Class Design**

Below is the pseudocode with the various classes and subsystems.

Login\_Logout\_UI

main

start ()

Login()

Login\_info {User\_Name, Password}

(If both username and pswd match, allow logon

Else don’t allow logon and display error message)

displayOption()

LoginError ()

(Error Message for failed login)

Logout()

exit()

System\_UI

enterBook()

enterSearch()

enterBookToAdd()

enterBookToRemove()

Add\_Remove\_Book

*(If Add\_Remove button selected)*

connectToDatabase()

(Inserts addBook info to Database)

addtoDatabase()

Book {Title, Author, ISBN)

removeFromDatabase()

Remove\_Book {ISBN}

(Delete book from the database)

displayResults()

(Produces a summary message)

Search\_Book

*(If Search\_Book button selected)*

ConnectoDatabase()

(Query Database for entered info)

searchDatabase()

Book {Title, Author, ISBN)

displayResults()

Checkout\_Books

*(If Checkout\_Books button selected)*

ConnectoDatabase()

(Inserts books into a “checkout” database, insert borrowers info)

checkout()

Book {Title, Author, ISBN)

Person (Full Name, Address, Email}

DataBase

*(When requests are made or info is inserted/deleted)*

DisplayResults()

UnableToAddBook()

(Error message that book has been previously added)

UnableToRemoveBooks()

(Error message that book is unable to be removed)

1. **Risk Mitigation**

|  |  |
| --- | --- |
| **Identify risks** | **Risk mitigation** |
| Admin enters login password incorrectly | Admin will be displayed a warning message of possible locked account |
| Invalid inputs such as special characters, letter grades, negative scores or grades higher than one hundred. | System will verify 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 prior to deleting/saving over a record |