|  |
| --- |
| **CSC380: Software Engineering** |
| **Library System Application** |
| Homework 1: This document summarizes the customer requirement statement, system requirements with priorities, and user stories for the system requirements with size estimates for the library system application. Team members: Joshua Reiss Alex Lawrence |

**2/10/2018**

# Breakdown of Contributions

All team members contributed equally to this report and the code submitted for the library system application.

**Table of Contents**

[1.0 Breakdown of Contributions 1](#_Toc506160690)

[2.0 Glossary of Terms 3](#_Toc506160691)

[3.0 Customer Requirement Statement 4](#_Toc506160692)

[4.0 Library System Requirements 5](#_Toc506160693)

[Login Requirements 5](#_Toc506160694)

[Login GUI Requirements 5](#_Toc506160695)

[Login Software Requirements 5](#_Toc506160696)

[Forgot User ID Requirements 5](#_Toc506160697)

[Forgot User ID GUI Requirements 5](#_Toc506160698)

[Forgot User ID Software Requirements 6](#_Toc506160699)

[Reset Password Requirements 6](#_Toc506160700)

[Reset Password GUI Requirements 6](#_Toc506160701)

[Reset Password Software Requirements 6](#_Toc506160702)

[Registration Requirements 6](#_Toc506160703)

[Registration GUI Requirements 6](#_Toc506160704)

[Registration Software Requirements 7](#_Toc506160705)

[Main Interface Requirements 7](#_Toc506160706)

[Main Interface GUI Requirements 7](#_Toc506160707)

[Main Interface Software Requirements 7](#_Toc506160708)

[Profile Requirements 7](#_Toc506160709)

[Profile GUI Requirements 7](#_Toc506160710)

[Profile Software Requirements 8](#_Toc506160711)

[View Books Requirements 8](#_Toc506160712)

[View Books GUI Requirements 8](#_Toc506160713)

[View Books Software Requirements 8](#_Toc506160714)

[Check in/out Requirements 8](#_Toc506160715)

[Check in/out GUI Requirements 8](#_Toc506160716)

[Check in/out Software Requirements 8](#_Toc506160717)

[Work Log Requirements 8](#_Toc506160718)

[Work Log GUI Requirements 8](#_Toc506160719)

[Work Log Software Requirements 8](#_Toc506160720)

[Admin Page Requirements 8](#_Toc506160721)

[Admin Page GUI Requirements 8](#_Toc506160722)

[Admin Page Software Requirements 8](#_Toc506160723)

[Admin Search Page Requirements 8](#_Toc506160724)

[Admin Search Page GUI Requirements 8](#_Toc506160725)

[Admin Search Page Software Requirements 8](#_Toc506160726)

[Admin Add/Delete Page Requirements 8](#_Toc506160727)

[Admin Add/Delete Page GUI Requirements 8](#_Toc506160728)

[Admin Add/Delete Page Software Requirements 8](#_Toc506160729)

[Admin Set Fee/Wage Requirements 8](#_Toc506160730)

[Admin Set Fee/Wage GUI Requirements 8](#_Toc506160731)

[Admin Set Fee/Wage Software Requirements 8](#_Toc506160732)

[Events Requirements 8](#_Toc506160733)

[Events GUI Requirements 8](#_Toc506160734)

[Events Software Requirements 8](#_Toc506160735)

[Contact Us Requirements 8](#_Toc506160736)

[Contact Us GUI Requirements 8](#_Toc506160737)

[Contact Us Software Requirements 8](#_Toc506160738)

[5.0 User Stories System Requirements 13](#_Toc506160739)

# Glossary of Terms

|  |  |
| --- | --- |
| Administrator | A user which has privileges to customize, alter and update allfacets of the library system. |
| Stock File |  |
| Handler File |  |
| Account File |  |
| View Stock |  |
| Sign-in |  |
| Client Tab |  |
| Admin Tab |  |
| GUI |  |
| Database | A storage device used to store the library system data. |
| Login Screen |  |
| User Id |  |
| Password |  |
| Registration Screen |  |
|  |  |

# Customer Requirement Statement

Libraries went through a period where usage was profoundly low due to the advancements in technology. Patrons of libraries started using other means to obtain reading material. To combat the risk of libraries closing they started offering additional services. Most libraries offer free WI-FI, technology workshops, small business centers and 24/7 virtual access to e-Books, digital materials, career and job resources, and high school certification courses . These services have returned library usage to its previous levels.

To increase library usage there is a need for public awareness and a Library system application. The library system application should be a program that can be installed on any computer. To develop the system both a GUI and system section are necessary. To properly create the library system application requirements, design, code, and testing is required for both sections. The library system application must offer functionality for clients, employees, employers, and administrators of the library. The first screen for the library application needs to be a login screen. The login information entered must be verified in an account database. The login screen must provide an option for those users who have forgot their user id or password. When the forgot user id option is selected a new screen displays where the user's email address must be entered. When the retrieve option is selected the account database should be queried and the corresponding user id is displayed. This screen must also provide an option to return to the login screen. The login screen must have an option to register new users. When the register option is selected a registration screen must be displayed. This screen accepts all the new user information and after the submit option is selected, validation of the information is processed. The information required for every user is first name, last name, address, city, state, zip code, email address, phone number, user id, password, and password verified. The state information is entered by selecting from a drop down field. The phone number must be a numeric value or an error message is displayed. If the both passwords do not match an error message is displayed , the password fields are cleared, and the both passwords must be re-entered. The system must verify if the user id entered is available if not a message is displayed to select a new user id. After all user information is validated successfully the data is stored in the account database. The user is returned to the login screen after the registration process is complete. **The** user would then be able to enter his account information and the database would verify it and if the information was entered properly, the user is then brought to the Library System page, otherwise there will be a message displayed telling the user that the information didn't match the database. The Library system must provide access to view your profile, view the books, see current events, be able to contact us and log out for any given user. If the user is an employee they must also be able to have access to check in/out books and the work log. If the user is an employer they must also have access to the admin page. **The system must bring up a profile window if the user selects the profile button.** The system must provide the user with his or hers account information provided from the registration page. The system must display the users first name, last name, address, city, state, zip code, email address, phone number, user id, current status at the library, their library number, an option to delete their account and all of this will be visible to every user. **The system must bring up a view books window if the user selects the view books button**. The system must display all the books in the library, all the books availability, title, author, year, CRN, condition, expected due date if unavailable. There must be a search bar that filters by user input, and a search by genre bar that would accept user input on what genre that they wanted filtered and if they wanted all or any of the genres filtered. This window must be visible to all users. **The system must bring up a check in/out** **window if an employee or employer clicks on the check in/out button.** The Library system would accept user input for a valid CRN, Library number, if the book is being taken out or put back in, and if there has been damage to a returning book and how much has occurred. **The system must bring up a work log if an employee or employer clicks the work log button.** The system must display all the work that need to be done and is done. The system must also accept user input to allow employees to input when the work was started, who started the work, when the work was done, and who completed the work. **The system must bring up an Admin page if an employer clicks the Admin page button.**  The Library system must provide a search accounts option, a add/delete book option, and set constants option. **The system must bring up a Search accounts window if an employer clicks the Search account button.** The system must provide a search bar for user names and library numbers. The system must accept user information for an employer to enter a user name or library number. The system must filter the results into a list of people and their library number if searched by user name, and show the users profile if searched by library number. The system will allow an employer to add comments under any account, ban/delete an account, and change the status of an account. **The system must bring up an Add/delete page if an employer clicks the add/delete book button.** The system must provide an add/delete book option for the employer. This screen accepts all the new user information and after the submit option is selected, validation of the information is processed. The information required for adding a book is the book's title, author, year, and CRN, to delete a book, all that is required is a books CRN. **The system must bring up an Set fee/wage window if an employer clicks the set constants button.** This screen accepts all the new user information and displays current information and after the submit option is selected, validation of the information is processed. The information that can be edited is a damage fee, late fee, hourly pay, how long a book may be kept, maximum checkout size, and different types of damages. **The system must bring up an events window if the user selects the events button**. The system must display all upcoming events with date, title, and description. The system must display an add/edit option only visible to employees and employers. The add/edit option must allow employees and employers to add a new event or edit any current events posted. **The system must bring up a contact us window if the user selects the contact us button**. The system must display the creators email, phone number, and company name.

# Library System Requirements

This following list of requirements has been derived from the consumer's requirement statement for the library system. Each requirement contains "shall" to indicated it is required functionality to implemented the system. Each requirement has an identifier in the form of LS-x, as well as a priority weight from 1 to 5. A higher priority weight indicates the corresponding requirement is more essential to the success of the project, and more critical to fulfilling the customer’s needs.

| **Req Id** | **PW** | **Requirement Text** |
| --- | --- | --- |
| Login Requirements | | |
| Login GUI Requirements | | |
|  |  | The system login screen shall provide a registration option for new users. |
|  |  | The system login screen shall provide a login capability for all users to check the validity of user information entered. |
|  |  | The system login screen shall display the main library system interface after user information check returns success. |
| 1. T |  | The system login screen shall display an error message after user information check returns failure. |
|  |  | The system login screen shall provide a reset password option for all existing accounts. |
|  |  | The system login screen shall provide a forgot user id option for all existing accounts |
|  |  | The system login screen shall provide an exit option to close the library system. |
|  |  | The system login screen shall provide a cancel option to clear out the user id and password entries. |
| Login Software Requirements | | |
|  |  | Checks if username and password links to an existing account |
| Forgot User ID Requirements | | |
| Forgot User ID GUI Requirements | | |
|  |  | The system forgot user screen shall accept a user Library Number |
|  |  | The system forgot user screen shall return the corresponding User ID for the provided email. |
|  |  | The system forgot user screen shall provide the option for the user to retrieve their user id. |
|  |  | The system forgot user screen shall provide the option to return to the login screen. |
| Forgot User ID Software Requirements | | |
|  |  | Checks if the email and library number links to an account |
|  |  | If email and library number do link to an account then returns username |
| Reset Password Requirements | | |
| Reset Password GUI Requirements | | |
|  |  | The system reset password screen shall accept a user id. |
|  |  | The system reset password screen shall accept a users Library Number. |
|  |  | The system reset password screen shall accept a new password. |
|  |  | The system reset password screen shall require confirmation of the new password entered. |
|  |  | The system reset password screen shall provide a submit and return to login option. |
|  |  | The submit and return to login option stores the new password and returns to the login screen. |
| Reset Password Software Requirements | | |
|  |  | Checks if User id and library number are linked to the same account. |
|  |  | If User id and library number are linked to an account then the inputted password will be changed |
| Registration Requirements | | |
| Registration GUI Requirements | | |
|  |  | The system registration screen shall accept the user's first name. |
|  |  | The system registration screen shall accept the user's last name. |
|  |  | The system registration screen shall accept the user's address. |
|  |  | The system registration screen shall accept the user's city. |
|  |  | The system registration screen shall accept the user's state. |
|  |  | The system registration screen shall accept the user's zip code in integer format. |
|  |  | The system registration screen shall accept the user's email address. |
|  |  | The system registration screen shall accept the user's phone number in integer format. |
|  |  | The system registration screen shall accept the user's username. |
|  |  | The system registration screen shall accept the user's password. |
|  |  | The system registration screen shall require confirmation of the new password entered. |
|  |  | The system registration screen shall provide a submit and return to login option. |
|  |  | The submit and return to login option creates an account with the accepted user information and returns to the login screen. |
| Registration Software Requirements | | |
|  |  | Checks if password matches re-entered password and if username was created already as well |
| Main Interface Requirements | | |
| Main Interface GUI Requirements | | |
|  |  | The system main interface screen shall provide a profile option. |
|  |  | The system main interface screen shall provide a view books option. |
|  |  | The system main interface screen shall provide a check in/out option viewable by employees and employers. |
|  |  | The system main interface shall provide a work log option viewable by employees and employers. |
|  |  | The system main interface shall provide an admin page option viewable by administrators. |
|  |  | The system main interface shall provide an event log option. |
|  |  | The system main interface shall provide a contact us option. |
|  |  | The system main interface shall be visible to all users. |
| Main Interface Software Requirements | | |
|  |  | Makes check in/out and work log tabs only visible/usable to the employees and employers |
|  |  | Admin page tab is only visible/usable to employers |
|  |  | Profile tab and bookshelf tab will be usable by all clients. |
|  |  | Allow other prompts to be viewed in the middle of this screen. |
| Profile Requirements | | |
| Profile GUI Requirements | | |
|  |  | The system the profile screen shall display a users First and Last Name. |
|  |  | The system the profile screen shall display a users address. |
|  |  | The system the profile screen shall display a users city, zip and state. |
|  |  | The system the profile screen shall display a users Phone Number. |
|  |  | The system the profile screen shall display a users email. |
|  |  | The system the profile screen shall display a users status. |
|  |  | The system the profile screen shall display a users Library Number. |
|  |  | The system the profile screen shall provide a delete account option. |
|  |  | The system the profile screen shall be visible to all users. |
| Profile Software Requirements | | |
|  |  | Allows client to edit their information and when confirmed then data will overwrite old data. |
|  |  | Depending on the client’s status, they may view more information about the account such as fees linked to the account. |
| View Books Requirements | | |
| View Books GUI Requirements | | |
|  |  | The system view books screen shall display all books in the Library. |
|  |  | The system view books screen shall display the books availability. |
|  |  | The system view books screen shall display the book's Title. |
|  |  | The system view books screen shall display the book's Author. |
|  |  | The system view books screen shall display the book's Year. |
|  |  | The system view books screen shall display the book's CRN. |
|  |  | The system view books screen shall display the book's Condition. |
|  |  | The system view books screen shall display the book's expected due date. |
|  |  | The system view books screen shall provide a search bar. |
|  |  | The system view books screen shall provide a search by genre bar. |
|  |  | The system view books screen shall provide a filter for all and any in the genre bar. |
|  |  | The system view books screen shall be visible to all users. |
| View Books Software Requirements | | |
|  |  | Manages if books are available |
|  |  | May sort books in different orders depending on priority deemed by user/client |
| Check in/out Requirements | | |
| Check in/out GUI Requirements | | |
|  |  | The system check in/out screen shall require the user to insert a CRN Number. |
|  |  | The system check in/out screen shall require the user to insert a users Library Number. |
|  |  | The system check in/out screen shall require the user to select if the book is being taken out or put in. |
|  |  | The system check in/out screen shall require the user to select if there is damage and how much to the returning book. |
|  |  | The system check in/out screen shall only be visible to employees and employers. |
| Check in/out Software Requirements | | |
|  |  | This page may only be accessible by employers/employees |
|  |  | Calculate the fees (if any) and add it to the clients profile when book is returned |
|  |  | Denies withdrawal of books if fees exist |
| Work Log Requirements | | |
| Work Log GUI Requirements | | |
|  |  | The system work log screen shall display all the work that needs to be done and if its completed. |
|  |  | The system work log screen shall display and allow employees to input when the work was started. |
|  |  | The system work log screen shall display and allow employees to input who started the work. |
|  |  | The system work log screen shall display and allow employees to input when the work was done. |
|  |  | The system work log screen shall display and allow employees to input who completed the work. |
|  |  | The system work log screen shall only be visible to employees and employers. |
| Work Log Software Requirements | | |
|  |  | Sorts log into two sections, completed and not complete |
|  |  | Completed is sorted by completion date while not complete is sorted by priority |
|  |  | Allow for the deletion completion log by employer only |
| Admin Page Requirements | | |
| Admin Page GUI Requirements | | |
|  |  | The system admin page screen shall provide a search accounts option. |
|  |  | The system admin page screen shall provide a add/delete book option. |
|  |  | The system admin page screen shall provide a set constants option. |
|  |  | The system admin page screen shall only be visible to employers. |
| Admin Page Software Requirements | | |
|  |  | Brings user to page that is decided by clicking on button |
| Admin Search Page Requirements | | |
| Admin Search Page GUI Requirements | | |
|  |  | The system admin search screen shall provide a search bar for users names and library numbers. |
|  |  | The system admin search screen shall display the list of people with their name and library number if searched by users names. |
|  |  | The system admin search screen shall display the users profile if searched by library number. |
|  |  | The system admin search screen shall provide the employer to add comments under the account. |
|  |  | The system admin search screen shall provide the employer ban/delete the account. |
|  |  | The system admin search screen shall provide the employer change the status of the account. |
|  |  | The system admin search screen shall only be visible to employers. |
| Admin Search Page Software Requirements | | |
|  |  |  |
| Admin Add/Delete Page Requirements | | |
| Admin Add/Delete Page GUI Requirements | | |
|  |  | The system admin add/delete screen shall provide an add/delete book option. |
|  |  | The system admin add/delete screen shall allow employers to input a book's Title. |
|  |  | The system admin add/delete screen shall allow employers to input a book's Author. |
|  |  | The system admin add/delete screen shall allow employers to input a book's Year. |
|  |  | The system admin add/delete screen shall allow employers to input a book's CRN Number. |
|  |  | The system admin add/delete screen shall allow employers to input a book’s CRN Number to delete a book. |
|  |  | The system shall only be visible to employers. |
| Admin Add/Delete Page Software Requirements | | |
|  |  | Allows employer to search all accounts by name or library number |
|  |  | Employer may add comments, fees, or authority level to the profile or delete/edit it |
| Admin Set Fee/Wage Requirements | | |
| Admin Set Fee/Wage GUI Requirements | | |
|  |  | The system Admin Fee/Wage screen shall allow employers to input a damage fee. |
|  |  | The system Admin Fee/Wage screen shall allow employers to input a late fee. |
|  |  | The system Admin Fee/Wage screen shall allow employers to input a hourly pay. |
|  |  | The system Admin Fee/Wage screen shall allow employers to input the time a book may be kept. |
|  |  | The system Admin Fee/Wage screen shall allow employers to input a checkout size |
|  |  | The system Admin Fee/Wage screen shall allow employers to input different types of damages fee. |
|  |  | The system Admin Fee/Wage screen shall only be visible to employers. |
| Admin Set Fee/Wage Software Requirements | | |
|  |  | May edit all constants within the program such as hourly pay or damage fees |
| Events Requirements | | |
| Events GUI Requirements | | |
|  |  | The system events screen shall display all upcoming events with a date, title, and description. |
|  |  | The system events screen shall have an add/edit option only visible to employees and employers. |
|  |  | The system events screen shall be visible to all users. |
|  |  | The systems events screen add/edit option shall allow employees and employers to add a new event or edit any current events posted. |
| Events Software Requirements | | |
|  |  | Sort events by the day/time the event will be hosted |
| Contact Us Requirements | | |
| Contact Us GUI Requirements | | |
|  |  | The system contact us screen shall display the creators email. |
|  |  | The system contact us screen shall display the creators phone number. |
|  |  | The system contact us screen shall display the creators company name. |
|  |  | The system contact us screen shall be visible to all users. |
| Contact Us Software Requirements | | |
|  |  | Print out information inputted by an admin |
| Coding Standards | | |
| Coding Software Requirements | | |
|  |  | The system code shall have a maximum code complexity of ten. |
|  |  | The system code shall have maximum of 120 characters per line. |
|  |  | The system code shall contain adequate comments that clearly demonstrate the function of the code |
|  |  | The system code shall contain concise comments. |
|  |  | The system code shall be written with indentation to convey program structure and increase the readability of the code. |
|  |  | The system code shall include comments whenever it is too difficult to understand without the comments. |
|  |  | The system code shall contain variable declarations that demonstrate the function of the variable which they store. |
|  |  | Peer reviews shall be conducted on all the system code. |
|  |  | High level design shall be completed for the system. |
|  |  | Detail level design shall be completed for the system. |

# User Stories System Requirements

| **Req Id** | **Points** | **Requirement Text** |
| --- | --- | --- |
| Login Requirements | | |
| Login GUI Requirements | | |
|  |  | As a user, I can view the login screen. |
|  |  | As a user, I can enter my account information. |
|  |  | As a user I can click on a register button if I do not have an account. |
| 1. T |  | As a user I can login in with the information I typed in. |
|  |  | As a user I can clear out the information I typed in. |
|  |  | As a user I can click on the forgot password button if I do not remember my password. |
|  |  | As a user I can exit the Application screen. |
| Forgot User ID Requirements | | |
| Forgot User ID GUI Requirements | | |
|  |  | As a user, I can view the Forgotten User Id screen. |
|  |  | As a user, I can enter my email and retrieve my user Id |
|  |  | As a user, I can return to the Login |
| Reset Password Requirements | | |
| Reset Password GUI Requirements | | |
|  |  | As a user, I can view the Reset Password screen. |
|  |  | As a user, I can enter my User Id, Library Number, a new password and re-enter that new password. |
|  |  | As a user I can submit my entered information and return to the login screen. |
| Registration Requirements | | |
| Registration GUI Requirements | | |
|  |  | As a user, I can view the Registration screen. |
|  |  | As a user, I can enter all of my information with a unique User Id and email. |
|  |  | As a user I can submit my information and return to the login screen. |
| **Main Interface GUI Requirements** | | |
|  |  | As a user, I can view the Library System screen. |
|  |  | As a user, I can click on the profile button, view books button, events button and contact us button. |
|  |  | As an employee, I can click on the check in/out button, and the work log button. |
|  |  | As an employer, I can click on the admin page button. |
| **Profile GUI Requirements** | | |
|  |  | As a user, I can view my account information and have the ability to delete my account. |
| **View Books GUI Requirements** | | |
|  |  | As an employee, I can view view books screen. |
|  |  | As a user, I can view all the books in the Library. |
|  |  | As a user I can view a books: availability, title, author, year, CRN, condition, expected due date a search bar, and a search by genre bar. |
| **Check in/out GUI Requirements** | | |
|  |  | As an employee I can enter a CRN of a book, a users Library Number. |
|  |  | As an employee, I can select if a book if being taken out or put back in. |
|  |  | As an employee, I can select if there is any damage and how much to the returning book. |
| **Work Log GUI Requirements** | | |
|  |  | As an employee, I can view the work log screen. |
|  |  | As an employee, I can view all the work that that needs to be done and if its completed. |
|  |  | As an employee, I can input who started the work. |
|  |  | As an employee, I can input when the work was done. |
|  |  | As an employee, I can input who completed the work. |
| Admin Page GUI Requirements | | |
|  |  | As an employer, I can view the admin page screen. |
|  |  | As an employer, I can select the add/delete book button, set constants button, or the search page button. |
| Admin Search Page GUI Requirements | | |
|  |  | As an employer, I can view the Admin search screen |
|  |  | As an employer, I can use a search bar for users names and library numbers. |
|  |  | As an employer, I can view the list of people with their name and library number if searched by users names. |
|  |  | As an employer, I can view the users profile if searched by library number. |
|  |  | As an employer, I can add comments under the account. |
|  |  | As an employer, I can ban/delete the account. |
|  |  | As an employer, I can change the status of the account. |
| Admin Add/Delete Page GUI Requirements | | |
|  |  | As an employer, I can view the Admin add/delete screen |
|  |  | As an employer, I can add/delete a book. |
|  |  | As an employer, I can input a book's Title. |
|  |  | As an employer, I can input a book's Author. |
|  |  | As an employer, I can input a book's Year. |
|  |  | As an employer, I can input a book's CRN Number. |
|  |  | As an employer, I can input a books CRN Number to delete a book. |
| Admin Set Fee/Wage GUI Requirements | | |
|  |  | As an employer, I can view the Admin set fee/wage screen |
|  |  | As an employer, I can input a damage fee. |
|  |  | As an employer, I can to input a late fee. |
|  |  | As an employer, I can input a hourly pay. |
|  |  | As an employer, I can input the time a book may be kept. |
|  |  | As an employer, I can input a checkout size |
|  |  | As an employer, I can input different types of damages fee. |
| Events GUI Requirements | | |
|  |  | As a user, I can view the events screen |
|  |  | As a user, I can view all upcoming events with a date, title, and description. |
|  |  | As an employee, I can view the add/edit option. |
|  |  | As an employee, I can use the add/edit option will allow me to add a new event or edit any current events posted. |
| Contact Us Requirements | | |
| Contact Us GUI Requirements | | |
|  |  | As a user, I can view the contact us screen |
|  |  | As a user, I can view the creators email, phone number, and company name. |