

**System Requirements & Specifications**

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Public Library System

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1. Introduction

## Purpose

The current library system has become outdated and underperforming. The web portal lacks sections for book suggestions and library events. Book searching has limited options and can be made more user-friendly. A new system that is more efficient and has added features will be developed. This document will describe the overall design of a public library system. Including detail information on book characteristics needed for searching, and functions allocated to librarians, library attendants, patrons, administrators and vendors needed to maintain user and book records, lend books and other resources, and maintain the library catalogue.

## Product Scope

Separate web portals will be maintained for patrons, librarian/attendants, administrators, and vendors/suppliers. Only one URL will be used. After login the appropriate user type will be determined based on the username and user will be redirected to the appropriate web portal for each user type or user type group. All user types will interact with the same database under varying levels of access.

Patrons will be able to:

* Create login account with Library Card
* Perform book and other media searches
* Make reservations
* Access online content
* Access library partner’s resources
* Pay late fines
* Add funds to prepay printing account
* Receive notifications when resources become available

Librarians and library attendants:

* Scan Library Cards to verify accounts
* Order books
* Receive payments

Administrators

* Reset passwords for librarians/attendants. Reset passwords for patrons only if automated system fails.
* Maintain database

Vendors and Suppliers will be able to:

* Receive purchase requests
* Update delivery status
* Send purchase estimates and bills.

## 

## Definitions, Acronyms, Abbreviations

|  |  |
| --- | --- |
| Term | Definition |
| Patron | Library card holder that makes use of library resources |
| Vendor | Sells books and other media as requested by librarian |
| Librarian | Manages patron’s accounts, maintains catalogue of media resources |
| Library Attendant | Facilitates book/media checkout, receives payment, issues library cards |
| Administrator | Makes changes to system, performs updates, adds features |
| PHP | Web Server language used to validate data, and interact with database |
| SQL | Language used to manipulate database |
| HTML | Scripting language used to create framework of webpages |

## References

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## Overview

This document describes the different entities needed in the library system. It will also describe the constraints and dependencies. Case studies will be used to illustrate the functional requirements of the system.

1. Overall Description

## Product Perspective

The Library System is intended to be used by the city’s public libraries. The system is to be used by five types of users, patrons, librarians/administrators, and vendors.

## 

## Product Functions

The functions of the system are as follows:

* Allow users to login
* Search books and other media with a variety of search options such as media, ISBN, title, year, author etc.
* User types will have varying levels of access and functions
* Patrons are able to make reservations online. Checkout must be done by librarian.

## User Characteristics

There will be five different types of users, patrons, librarians, library attendants, administrators, vendors. Each will have a separate web portal, with different functions and features.

Before being able to create an online account, patrons will need to obtain a library card from the library. Once this is obtain patrons will be able to create an online account and log in to the system. Once logged in patrons may search media, make reservations, preview media, access e-content, pay for late fees, add funds to printing account and log out of the system.

Librarians and library assistants must be employees and authorized by management to use the system. Once they have been authorized and an account has been created by an administrator they may log in to the system. Library attendants will be able to check out books, receive payments, search media, search patrons. Librarians will have all functions allotted to library attendants plus have the ability to edit or add book records, update patron records, and purchase books and other media.

Vendor should be able to receive purchase requests from librarians, update delivery

Status and send purchase estimates and bills.

Administrator have all functions that librarians have except that of checking out books, processing payments and ordering books. In addition, administrators may delete records from the database, add new staff members to the database, perform password resets for everyone only if needed, and perform general maintenance on the database.

## Constraints

The system will be entirely web based and there will be no need to install software on any individual computer.

## Assumptions

System will be compatible with all web browsers and can be used from a wide variety of devices.

1. Use Cases

## Users and use cases

|  |  |
| --- | --- |
| USER TYPE | USE CASES |
| Patron | Create online account  Log in  Search books/other media  Make reservations  Add printing funds  Preview media  Access e-content  Pay late fees  Log out |
| Library Attendant | Log in  Search books/other media  Search patron records  Check out books  Receive/process payments  Log out |
| Librarian | Log in  Search books/other media  Search patron records  Check out books  Receive/process payments  Edit/add book records  Edit/add patron records  Purchase books  Log out |
| Administrator | Log in  Search books/other media  Search patron records  Edit/add book records  Edit/add patron records  Delete records  Maintain database  Reset passwords directly  Log out |
| Vendor | Receive purchase requests  Update delivery status  Send purchase estimates and bills. |

## Users and use case diagrams

A picture containing metalware

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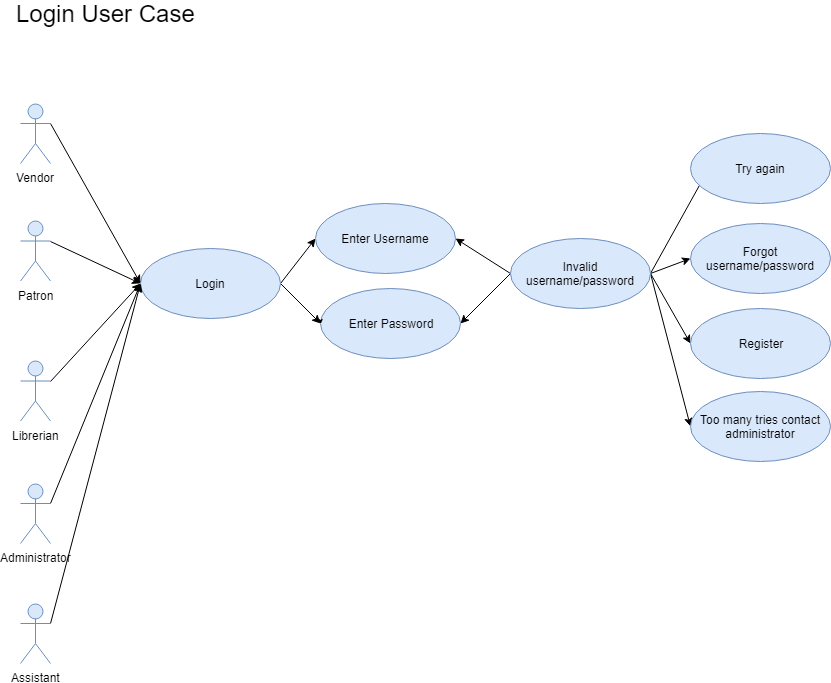
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## Log in

To obtain a library card patrons must present proof of identity and residency to librarian or library assistant in person at a library location. The required information to create an account will be first/last name, library card number, home address, telephone number, and e-mail address.

|  |  |
| --- | --- |
| USE CASE | LOG IN |
| Description | Allow Patron into appropriate system module |
| Actors | Library patrons, librarians, assistants, administrators, vendors |
| Preconditions | Librarians, assistants and administrators share same log in portal.  Patrons and vendors have separate log in portals  Patron must have a Library Card and be registered in the database  Librarians, assistants and administrators must be employed and authorized by management  Vendors must be under contract and be authorized by management |
| Basic Flow | 1. User goes to one of three Library websites 2. User types in user name and password 3. Information is validated 4. Appropriate Web portal opens |
| Post-conditions | Username and Password must match data in database for patron. Username not case sensitive. |
| Alternate flows | Error message – ‘username or password incorrect’  Option 1 – try again  Option 2 – Forgot Username/Password  Option 3 – register  Option 4 – Contact an administrator |



## Register - Patrons

|  |  |
| --- | --- |
| USE CASE | LOG IN |
| Description | Create online account for patrons |
| Actors | Library patron |
| Preconditions | Patrons must have a library card |
| Basic Flow | 1. User selects register option 2. Enter personal information, first/last name, library card number, home address, telephone number, email address 3. Click register 4. Data validated 5. Account activated 6. Redirect to login page |
| Post-conditions | Account is activated. Username and password are stored in the database. Appropriate level of access is given. After login patron will be directed to the patron portal. |
| Alternate flows | Select cancel – back to login page  Data cannot be validated – user must correct data input to meet requirements |

## Register – Librarians/Assistants/Vendors

|  |  |
| --- | --- |
| USE CASE | LOG IN |
| Description | Create staff/vendor account for librarians, assistants and vendors |
| Actors | Librarians, assistants and vendors |
| Preconditions | Staff/vendors must be employee or under contract and be approved by management |
| Basic Flow | 1. User is hired or is contracted. 2. Management submits approval form 3. Administrator creates usernames and temporary password 4. Administrator gives appropriate access rights according to user type 5. User logs in with temporary password 6. User resets password 7. User logs in with permanent password 8. User is redirected to appropriate portal |
| Post-conditions | Staff/vendor account is activated. Username and password are stored in the database. Appropriate level of access is given. After login staff will be directed to the staff portal. |
| Alternate flows |  |

* 1. Basic Search

|  |  |
| --- | --- |
| USE CASE | BASIC SEARCH |
| Description | Search for available media using several criteria. Basic search box is located at the top center of main portal. Defaults to search all media. Basic search box defaults to search by keyword, but will search by ISBN if detected. Users have the ability to perform advanced searches by typing special keywords, a colon, and the search criteria. For example to search by title users must type this in the search box, title:Java a Complete Guide. Commas, separate search categories, e.g. title:Java a Complete Guide, year: 2015. Operators such as ‘and’, ‘or’ and ‘not’ may also be used, e.g. title: Java and Guide, year: 2015 or 2016. To Avoid ambiguity or if search criteria includes keywords quotations marks can be used, e.g. title: “Java” and “Guide”. |
| Actors | Library patron, librarian, attendant, administrator |
| Preconditions | User must log in to the system. |
| Basic Flow | 1. Select basic search box 2. Type in keyword or ISBN 3. Browse through results 4. Order results by ‘relevant’, ‘popular’ ‘date published’ ‘author’ ‘title’ 5. Filter out results by using filters: format (book, newspaper, magazine, journal etc.), author, year(select between what years), subject(history, science etc). |
| Post-conditions | User will receive a list of results that can be ordered. Options to filter out list will also be available. |
| Alternate flows | Use advanced search using special keywords: title, keyword, year, author, ISBN, format, subject |

* 1. Advanced Search

|  |  |
| --- | --- |
| USE CASE | ADVANCED SEARCH |
| Description | If a more detailed search is desired users can select the advanced search option below the basic search box. Clicking the advanced search box will redirect user to a new page that will include two rows with fields to control a search. Additional rows may be added to get an even more detailed search. The first field in a row will be a dropdown that will include all search categories: title, keyword, year, author, ISBN, format, subject and location. The second field will be a search box where the search criteria may be typed. At the end of the row a button with a minus sign will be used to remove the row. Below the search box there will be buttons to select operators, ‘and’, ‘or’, ‘not’. The operator buttons will also serve to add rows. For example, if a search for an author must include both ‘John’ and ‘Perry” users may select author from first dropdown field, type in John on the first search box, click on ‘and’ button to add new row. On the second row first field from the dropdown menu again select author. Type in ‘Perry” and click search. This search will find only books that with an author name that includes both John and Perry. |
| Actors | Library patron, librarian, attendant, administrator |
| Preconditions | User must log in to the system and click on the advanced search option |
| Basic Flow | 1. Select search category from dropdown menu 2. Type in search criteria 3. Use operator buttons (‘and’, ‘or’, ‘not’) to add more searching rows as needed 4. Click search 5. Order results by ‘relevant’, ‘popular’ ‘date published’ ‘author’ ‘title’ 6. Filter out results by using filters: format (book, newspaper, magazine, journal etc.), author, year(select between what years), subject(history, science etc). |
| Post-conditions | User will receive a list of results that can be ordered. Options to filter out list will also be available. |
| Alternate flows |  |