

**System Requirements & Specifications**

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Public Library System

Table of Contents

[1. Introduction 4](#_Toc521001440)

[1.1 Purpose 4](#_Toc521001441)

[1.2 Product Scope 4](#_Toc521001442)

[1.3 Definitions, Acronyms, Abbreviations 5](#_Toc521001443)

[1.4 References 5](#_Toc521001444)

[1.5 Overview 5](#_Toc521001445)

[2. Overall Description 5](#_Toc521001446)

[2.1 Product Perspective 5](#_Toc521001447)

[2.2 Product Functions 6](#_Toc521001448)

[2.3 User Characteristics 9](#_Toc521001449)

[2.4 Constraints 9](#_Toc521001450)

[2.5 Assumptions 9](#_Toc521001451)

[3. Registration System Requirements 9](#_Toc521001452)

[4. Registration System Models 10](#_Toc521001453)

[5. Log in System Requirements 10](#_Toc521001454)

[6. Log in System Models 11](#_Toc521001455)

[7. Forgot Password System Requirements 11](#_Toc521001456)

[8. Forgot Password System Models 11](#_Toc521001457)

[9. Basic Search System Requirements 11](#_Toc521001458)

[10. Basic Search System Models 12](#_Toc521001459)

[11. Advanced Search System Requirements 12](#_Toc521001460)

[12. Advanced Search System Models 13](#_Toc521001461)

[13. Patron Search System Requirements 13](#_Toc521001462)

[14. Patron Search System Models 15](#_Toc521001463)

[15. Reservations System Requirements 15](#_Toc521001464)

[16. Reservations System Models 16](#_Toc521001465)

[17. Printing Funds System Requirements 16](#_Toc521001466)

[18. Printing Funds System Models 17](#_Toc521001467)

[19. Late Fee System Requirements 17](#_Toc521001468)

[20. Late Fee System Models 18](#_Toc521001469)

[21. Update Patron Records System Requirements 18](#_Toc521001470)

[22. Update Patron Records System Models 19](#_Toc521001471)

[23. Update Book Records System Requirements 19](#_Toc521001472)

[24. update Book Records System Models 21](#_Toc521001473)

[25. Log Out System Requirements 21](#_Toc521001474)

[26. Log Out System Models 21](#_Toc521001475)

[Appendix A 21](#_Toc521001476)

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The current library system has become outdated and underperforming.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, and administrators needed to maintain user and book records, lend media, and maintain the library catalogue. Vendor interaction will be limited and will not be considered in this release.

## Product Scope

Two separate web portals will be maintained one for patrons, and one for librarians, attendants, administrators. One URL will be used for log in. 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. Staff will have the option to switch between the patron portal and the staff portal.

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

## 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 and administrators.

## 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.

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## User Characteristics

There will be four different types of users, patrons, librarians, library attendants, and administrators. Patrons and staff members will have separate web portals, 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 obtained patrons will be able to create an online account and log in to the system. Once logged in patrons may search media, make reservations, log out of the system. On the first release patrons will not be able to pay late fees or add printing funds. This will be done by librarians and attendants, at least initially until a further release is developed.

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.

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. Registration System Requirements

|  |  |
| --- | --- |
| USE CASE | LOG IN |
| Description | Create online account for patrons. Staff accounts will be created by administrators only and are not part of the system requirements. 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. |
| 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 |

1. Registration System Models
2. Log in System Requirements

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| --- | --- |
| USE CASE | LOG IN |
| Description | Allow users into appropriate system module. Patrons will redirected to the patron module while staff will be redirected to the staff module. |
| Actors | Library patrons, librarians, assistants, administrators |
| 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  Username not case sensitive. |
| Basic Flow | 1. Go to log in page 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. |
| Alternate flows | Error message – ‘username or password incorrect’  Option 1 – Incorrect username/password - try again  Option 2 – Too many attempts account locked contact administrator |

1. Log in System Models
2. Forgot Password System Requirements
3. Forgot Password System Models
4. Basic Search System Requirements

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| --- | --- |
| USE CASE | BASIC SEARCH |
| Description | Search for available media using several criteria. Basic search box is located at the top center of main patron 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. Staff must switch to patron portal. |
| 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. Basic Search System Models
2. Advanced Search System Requirements

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| --- | --- |
| 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. Staff must first switch to patron portal. |
| 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 |  |

1. Advanced Search System Models
2. Patron Search System Requirements

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| --- | --- |
| USE CASE | SEARCH PATRON RECORDS |
| Description | Staff will often need to lookup patron records to verify status of account. Staff will be able to see how much is owed in late fee’s, how much money remains in printing funds, home address to verify residency information is up to date, telephone in case patron needs to be contacted. The search by library card number row will be static and sit at the top. At checkout after scanning the card the number will be input into this search box. When using other criteria such as first name and last name the library card search can be left blank. Clicking on the operators will add a new search row. Clicking on a record will redirect to the full record page of the patron. Once here additional functions may be performed such as paying late fees, adding printing funds, or checking out books. |
| Actors | Librarian, attendant, administrator |
| Preconditions | Users must be staff members and be given special privileges to access data in the database. After log in staff members will be redirected to the Staff Portal. Once in the portal staff will have list of names ordered alphabetically showing 20 records per page. At the top of the list there will be search options. |
| Basic Flow | 1. Staff logs in and is redirected to Staff Portal 2. Staff selects search option from drop down (FirstName, LastName, Telephone number, Library Card Number, etc.) 3. Click on operator to add another search row if desired 4. Once patron record is found click on it to access patron record page 5. From patron record page staff can process payments, add funds or checkout media |
| Post-conditions |  |
| Alternate flows | Option 1- Library card is scanned   1. Static search box to lookup by library card is populated 2. Once patron record is found click on it to access patron record page 3. From patron record page staff can process payments, add funds or checkout media |

1. Patron Search System Models
2. Reservations System Requirements

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| USE CASE | MAKING RESERVATIONS |
| Description | After patron logs in and finds a book he or she may make a reservation for the book. First users will select the pickup location and then click on ‘make reservations’. If the reservation is not located at the pickup location it will be delivered from another system library. The reservation period of 7 days starts after the reserved media has been delivered to the pickup location. On the webpage for a specific book there will be a picture of the book and below the picture there will be basic information such as title, author, year and ISBN. A short description will also be included towards the bottom of the page. To the right there will be a button to make a reservation and select the pickup location. A notification is added under the notifications area. The notifications area can be accessed by clicking on the notifications icon(bell) at the top right of the page. The notification will include where to pick up the book, availability/delivery status, and time period left to pick up the reservation. The icon will also have a number indicating how many notifications exists. Notifications will also be added 2 days before the 7 day pick up period to remind users to pick up their reservations. Once a reservation has been made the librarian or attendant will receive a request to grab the reservation from the shelves and bring it to the front desk. Reservations will be kept at the front desk for up to 7 days. Reservations are only for books and exclude all other media. |
| Actors | Library patron |
| Preconditions | User must log in to the system and find the desired book |
| Basic Flow | 1. Click reserve 2. Select pick up location from pop up 3. Pop up will indicate if media is available for pickup today or a delivery wait period 4. Click OK 5. Media will be added to the patron’s reservations list |
| Post-conditions | Users will be receive a notification |
| Alternate flows |  |

1. Reservations System Models
2. Printing Funds System Requirements

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| --- | --- |
| USE CASE | ADD PRINTING FUNDS |
| Description | Librarians, and attendants can add funds to patron’s accounts for printer usage. The price will be .10 cents per B/W page. Color printing is not available. Top amount allowed in the prepaid account will be 20 dollars. Users must use their library cards to print or make copies. After pages have been printed the charge will be deducted from the prepaid account. Staff can receive payment in the form of cash or by credit card. Credit card information may be saved with the patron’s consent to facilitate future addition of funds. |
| Actors | Librarians, and attendants |
| Preconditions | Patron record must exist, and staff must have rights to add funds. |
| Basic Flow | 1. Open patron record page 2. Input amount to be paid 3. Click add funds 4. Select cash on pop up window 5. Click Process Payment 6. Funds are added |
| Post-conditions | Entered amount will be charged to credit card. Prepaid account funds will increase by the same amount. |
| Alternate flows | Option 1- Saved Credit Card   1. Open patron record page 2. Input amount to be paid 3. Click add funds 4. Select Credit on pop up window 5. Select saved credit card 6. Click Process Payment 7. Funds are added   Option 2 – input credit card info manually   1. Open patron record page 2. Input amount to be paid 3. Click add funds 4. Select Credit on pop up window 5. Enter credit card information 6. Click Process Payment 7. Funds are added   Option 3 – Credit Card reader   1. Open patron record page 2. Input amount to be paid 3. Click add funds 4. Select Credit on pop up window 5. Insert Card into credit card reader 6. Click Process Payment 7. Funds are added |

1. Printing Funds System Models
2. Late Fee System Requirements

|  |  |
| --- | --- |
| USE CASE | SEARCH PATRON RECORDS |
| Description | Once in the patron record page staff will be able to receive payment for late fees. |
| Actors | Librarian, attendant, administrator |
| Preconditions | Patron record must exist. |
| Basic Flow | 1. Open patron record page 2. Input amount to be paid 3. Click pay fee 4. Select cash on pop up window 5. Click Process Payment 6. Amount due is updated |
| Post-conditions | If amount is not paid in full patron will not be able to use checkout, make reservations or print. |
| Alternate flows | Option 1- Saved Credit Card   1. Open patron record page 2. Input amount to be paid 3. Click pay fee 4. Select Credit on pop up window 5. Select saved credit card 6. Click Process Payment 7. Amount due is updated   Option 2 – input credit card info manually   1. Open patron record page 2. Input amount to be paid 3. Click pay fee 4. Select Credit on pop up window 5. Enter credit card information 6. Click Process Payment 7. Amount due is updated   Option 3 – Credit Card reader   1. Open patron record page 2. Input amount to be paid 3. Click pay fee 4. Select Credit on pop up window 5. Insert Card into credit card reader 6. Click Process Payment 7. Amount due is updated |

1. Late Fee System Models
2. Update Patron Records System Requirements

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| --- | --- |
| USE CASE | ADD/EDIT BOOK RECORDS |
| Description | Only librarians and administrators will have access to patron records. There will be two buttons near the bottom of the screen to apply changes, new record, and update. Clicking new Record will bring up a new blank record. Clicking update will apply changes made to the fields. |
| Actors | Librarian, administrator |
| Preconditions | Only librarians and administrators will be able to access patron records |
| Basic Flow | 1. Open patron record 2. Make changes to fields 3. Click update 4. Data is updated in the database |
| Post-conditions |  |
| Alternate Flows | Option 1 – new record   1. Open patron record 2. Click new record 3. New blank record page is opened 4. Fill out required information 5. Click update 6. Record is added to the database |

1. Update Patron Records System Models
2. Update Book Records System Requirements

|  |  |
| --- | --- |
| USE CASE | ADD/EDIT BOOK RECORDS |
| Description | Only librarians and administrators will have access to book records. There will be three buttons near the bottom of the screen to apply changes, new record, delete, and update. Clicking new Record will bring up a new blank record. Clicking delete will delete the record. Clicking update will apply changes made to the fields. |
| Actors | Librarian, administrator |
| Preconditions | Only librarians and administrators will be able to access book records |
| Basic Flow | 1. Open book record 2. Make changes to fields 3. Click update 4. Data is updated in the database |
| Post-conditions |  |
| Alternate Flows | Option 1 – delete record   1. Open book record 2. Click delete 3. Record is deleted from the database   Option 2 – new record   1. Open book record 2. Click new record 3. New blank record page is opened 4. Fill out required information 5. Click update 6. Record is added to the database |

1. update Book Records System Models
2. Log Out System Requirements
3. Log Out System Models

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