

Library system documentation essay sample



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1. The Library System is a web-based application used to automate a library. It allows the librarian to maintain the information about books, magazines and CDs. It also allows the librarian to maintain the information about its users. It provides the facilities such as search for items, browse, checkout items, return items, make reservation, remove reservation etc. to its users. To borrow the items from the library, the users must register in the system. The search option allows the users to search for any item in the library. If the user finds that the required item is available in the library, he/she can checkout the item from the library. If the item is currently not available in the library, the user can make reservation for the item. When the item becomes available the respective user who made the reservation for that item first is notified. The reservation is canceled when the user checks out the item from the library or through an explicit cancellation procedure.

The system allows the librarian to easily create, update, and delete information about titles, borrowers, items and reservations in the system. The librarian is an employee of the library who interacts with the borrowers whose work is supported by the system. The Library System can run on popular web-browser platforms like Windows Explorer, Netscape Navigator etc. It can be easily extended with new functionality.

2. Vision Document

A vision document describes the higher level requirements of the system specifying the scope of the system. The vision document for the Library System might be It is a support system The library lends books, magazines and CDs to borrowers who are registered in the system 🍌 🍌 The Library System handles the purchases of new titles for the library Popular titles are

brought in multiple copies. Old books, magazines and CDs are removed when they are out of date or in poor condition ☞ The librarian is an employee of the library who interacts with the borrowers whose work is supported by the system ☞ A borrower can reserve a book, magazine or CD that is not currently available in the library so that when it is returned or purchased by the library, the borrower is notified ☞ The reservation is canceled when the borrower checks out the book, magazine or CD or through an explicit cancellation procedure ☞ The librarian can easily create, update, and delete information about titles, borrowers, items and reservations in the system ☞ The system can run on popular web-browser platforms like Windows Explorer, Netscape navigator etc. ☞ The system is easy to extend with new functionality.

3. Glossary

Key terms are denoted in italics within the use-case specifications. Item – A tangible copy of a Title. Title – The descriptive identifying information for a book or magazine. Includes attributes like name and description. Reservation – Whenever a borrower wishes to checkout an Item that is not available due to previous checkout by a different borrower a request can be made (a reservation) that locks the borrower in as the next person able to checkout the Item.

Actors Borrower – Interactive actor who uses the library to search for Titles, make reservations, checkout, and return Items. Librarian – Interactive actor responsible for maintenance of the inventory, acting on behalf of the borrowers, and general support of the library (non-automated as well).

Master Librarian – Interactive actor, themselves a Librarian, who is also

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responsible for maintaining the set of librarians for the system. Registered User – Any interactive user for whom the system maintains a system account. This includes borrowers, librarians, and master librarians. Capabilities include basic login, browsing and searching for Titles.

4. Supplementary Specification Document

4. 1 Objective

The purpose of this document is to define the requirements of the Library system. This document lists the requirements that are not readily captured in the use-cases of the use-case model. The supplementary specification and use-case model together capture a complete set of requirements of the system.

4. 2 Scope

This supplementary specification defines the non-functional requirements of the system such as reliability, performance, supportability, and security as well as functional requirements that are common across a number of use-cases.

4. 3 Reference

None

4. 4 Common Functionalities

- Multiple users must be able to perform their work concurrently
- If the reserved item has been purchased or available, the borrower must be notified

4. 5 Usability

The desktop user interface shall be Windows NT or Windows 2000 compliant

4. 6 Reliability

The system shall be 24 hours a day, 7 days a week and not more than 10% down time

4. 7 Performance

- • The system shall support up to 2000 simultaneous users against the central database of any given data The system must be able to complete 80% of all transactions within 5 minutes.

4. 8 Supportability

None

4. 9 Security

- • • The system must prevent borrowers from changing borrowers information, items information, titles information, and librarians information Only Librarian can modify borrowers information, items information, and titles information Only Master Librarian can modify librarians information

5. Use – Case Model

5. 1 Actors

Actor is something external to the system and interacts with the system.

Actor may be a human being, device or some other software system. For

Library system, actors might be; • • Librarian Borrower

5. 2 Use – Case

A use-case represents sequence of actions performed by the system that yields an observable result of value for a particular actor. Use-case represents a functional requirement of a system. For Library system, we can find the following use-cases; • • • • • • • • • • Login Search Browse Check out item Return item Make reservation Cancel reservation Manage titles Manage items Manage borrowers Manage librarians

5. 3 Use – Case Diagram

Login

Registered User

Search

Browse

Check out item

Manage titles

Return item Borrower

Librarian

Manage items

Make reservation

Mange borrowers Cancel Reservation

Master Librarian

Manage librarians

5. 4 Use – Case Descriptions

5. 4. 1 Use-Case Specification: Login

5. 4. 1. 1 Description A registered user can log in and, upon verification, can initiate subsequent actions.

5. 4. 1. 2 Flow of Events 5. 4. 1. 2. 1 Basic Flow 1. Initiated when a registered user chooses to Login. 2. The system prompts for username and password. 3. The registered user enters a username and password and submits them. 4. The system authenticates the username and password combination. 5. The system authorizes the registered user according to the role(s) to which the registered user has been assigned. 6. The system displays the main page and awaits subsequent action. 5. 4. 1. 2. 2 • Alternative Flows

Invalid Username/Password 1. The system displays the Authentication Failed message. Locked 1. The system displays the . Authentication Service

Unavailable 1. The system displays a Service Unavailable message and does not permit any further attempts to login.

5. 4. 1. 3 Special Requirements 1. Up to three consecutive failed tries to login with invalid username/password combination until locking an account. 2. Minimum password length is 8 characters, and must include a combination of characters including at least one non-alphabetic character.

5. 4. 1. 4 Preconditions User has an account with the system

5. 4. 1. 5 Post-conditions 5. 4. 1. 5. 1

Primary Success Post-condition

The user is considered authenticated and is viewing the main page from which additional actions can be initiated.

5. 4. 1. 5. 2

Login Failure

If the Login fails as described in any of the alternatives above, an appropriate message is displayed and the user is not considered authenticated.

5. 4. 1. 6 Notes

1. So far we are not doing much with roles. 2. The “ appropriate message” above is vague; we need to come up with how we report this to the user. 3. We need to talk to security people about how reasonable it is to lock the user account after some number of failed attempts. If we keep that rule, we’ll need an Unlock Account use case.

5. 4. 2 Use-Case Specification: Browse

5. 4. 2. 1 Description A registered user can browse the contents of the library as a precursor to other actions.

5. 4. 3

Flow of Events

5. 4. 3. 1 Basic Flow 1. Initiated when a registered user chooses to browse Titles. 2. The system responds by displaying all of the Titles in the system, along with topical descriptions. 3. The registered user selects a Title for further information. 4. The system displays Title detail along with the Items and the available action on each Item.

5. 4. 3. 2 Alternative Flows ☞ No records 1. The system displays message indicating no Titles are in the system.

5. 4. 4

Special Requirements

1. The Titles will be sorted alphabetically by the name. 5. 4. 5 Preconditions
The user has been authenticated.

5. 4. 6

Post-conditions

5. 4. 6. 1 Primary Success Post-condition . The registered user is viewing a Title along with the related Items.

5. 4. 3 Use-Case Specification: Search

5. 4. 3. 1 Description A registered user can search the contents of the library as a precursor to other actions. 5. 4. 3. 2 Flow of Events 5. 4. 3. 2. 1 Basic Flow

1. Initiated when a registered user chooses to perform a search of Titles. 2. The system responds by providing the registered user a means to enter

search criteria. 3. The registered user enters search criteria and initiates the query. 4. The system determines results and displays the matching Titles, along with topical descriptions. 5. The registered user selects a Title for further information. 6. The system displays Title detail along with the Items and the available action on each Item. 5. 4. 3. 2. 2 ☰ Alternative Flows

No matches

1. The system displays message indicating no Titles in the system match this criteria. 5. 4. 3. 3 Special Requirements 1. The search only searches based on the name of the Item, not description or any other field. 2. The system shall use the percent sign as a wildcard (in keeping with standard SQL idioms). 3. The results will be sorted alphabetically by the name. 5. 4. 3. 4 Preconditions The user has been authenticated. 5. 4. 3. 5 Post-conditions 5. 4. 3. 5. 1

Primary Success Post-condition

The registered user is viewing a Title along with the related Items. 5. 4. 3. 6 Notes 1. We might want to combine this with the Search use case. The combined use case could be called Select Title and one of the original use cases could be the basic flow and the other would be the alternative.

5. 4. 4 Use-Case Specification: Make Reservation

5. 4. 4. 1 Description This use-case starts when the user wants to make a reservation for an item 5. 4. 4. 2 Flow of Events 5. 4. 4. 2. 1 Basic flow 1. The system prompts the borrower to enter the item information for which he wants reservation 2. The borrower submits the item information 3. The

system marks the item as reserved and associates the borrower with the reservation

5. 4. 4. 2. 2 Alternative Flow None

5. 4. 4. 3 Special requirements None

5. 4. 4. 4 Pre-conditions The borrower is viewing a particular title with an item that is not currently available

5. 4. 4. 5 Post-conditions The item is marked as reserved and the reservation is saved in the database

5. 4. 4. 6 Notes

1. So far there is no nice way to figure out what a borrower has reserved.

5. 4. 5 Use-Case Specification: Remove Reservation

5. 4. 5. 1 Description The borrower can remove an existing reservation for an item.

5. 4. 5. 2 Flow of events

5. 4. 5. 2. 1 Basic Flow

1. The system prompts the borrower for the item information for which the reservation is removed

2. The borrower enters the item information and submits

3. System marks the item as no longer reserved

5. 4. 5. 2. 2 Alternative Flows

None

5. 4. 5. 3 Special requirements None

5. 4. 5. 4 Pre-conditions The borrower is viewing a particular Title with an Item that is reserved by the borrower.

5. 4. 5. 5 Post-conditions The previously reserved Item is no longer reserved.

5. 4. 6

Use-Case Specification: Check out Item the borrower to enter search criteria

3. The borrower specifies the search criteria and submits

4. The system locates matching titles and displays them to the borrower

5. The borrower selects titles to check out

6. The system displays the details of titles as well as whether or not there is an available item to be checked out

7. The borrower confirms the check out

8. the system checks out the item

9. Steps

1-8 can be repeated as often as needed by the borrower 10. The borrower completes the check out 11. The system notifies the Librarian that the borrower has concluded the check out item session and displays instructions for the borrower to collect the items 5. 4. 6. 2. 2 Alternative Flows

None 5. 4. 6. 3 Special requirements 5. 4. 6. 4 Pre-conditions The borrower is viewing a particular Title with an Item that is currently available. 5. 4. 6. 5 Post-conditions The Item is demarked as checked out to the borrower.

5. 4. 7

Use-Case Specification: Return Item

5. 4. 7. 1 Description This use-case starts when the borrower wishes to return an item 5. 4. 7. 2 Flow of Events 5. 4. 7. 2. 1 Basic Flow

1. The system prompts the borrower to enter the item information he wants to return 2. The borrower enters the item information and submits 3. The system marks the item as available 5. 4. 7. 2. 2 Alternative Flows None 5. 4. 7. 3 Special requirements None 5. 4. 7. 4 Pre-conditions The borrower is viewing a particular Title with an Item that is checked out by the borrower. 5. 4. 7. 5 Post-conditions The Item is demarked as available. 5. 4. 7. 6 Notes A reasonable future enhancement would be to notify anyone with a reservation on the Item.

5. 5 Activity Diagram

Login

Browse

Select title Display status

Check out item Notify librarian Make reservation Save reservation Issue item

Take item

Login

Browse

Select title Display status

Check out item Notify librarian Make reservation Save reservation Issue item

Take item

6. Design Model

Class Diagram

Borrower name : String id : Integer address : String * canBorrow() 1

canSearch() getId() setId() getName() setName() 1 Borrows * Loan

creationDate : Date

Many *

Reservation creationDate : Date reservationNumber getStatus()

getCreationDate() setCreationDate() getReservationNumber() *