

Software Requirements specification

Project scenario: Online Library Management System

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1 Introduction

- Borrowing books, returning books or viewing the available books at the Library of the local University is currently done manually where in the student has to go to the Library and check the available books
- Then the librarian checks the student id and allows the member to check out the book and the librarian then updates the member database and also the books database.
- This takes at least one to two hours if the member is available at the nearby place otherwise it may take more time.
- We have decided to investigate the use of an Online Library Management System. This system would be used by members who may be students or professors of that University to check the availability of the books and borrow the books, and by the librarian to update the databases.

1.1 Purpose

- The main objective of this document is to illustrate the requirements of the project **Online Library Management system**.

- The document defines and describes the operations, interfaces, performance, and quality assurance requirements of the Online Library System description.
- The document also describes the nonfunctional requirements such as the user interfaces.
- The document is developed after a number of consultations and considering the complete requirement specifications of the given Project.
- It also describes the design constraints that are to be considered when the system is to be designed, and other factors necessary to provide a complete and comprehensive description of the requirements for the software.
- The final product of the team will be meeting the requirements of this document

1.2 Scope

- The Software Requirements Specification captures all the requirements in a single document.
- The Online Library System is supposed to have the following features:
 - The system should provide login facility to the users.
 - The system provides the members with the option to check their account and/or change their options like password of the account whenever needed all through the day during the library hours.

- The system should allow seeing the status of the books/journals borrowed/reserved by him and the respective due dates and other relevant details.
- The system should allow searching for a particular book/journal and also list for books/journals.
- The system should allow to cancel the reservation made earlier for a particular book/journal.
- It should allow reserving a particular book/journal borrowed by others currently.
- The system allows the Librarian to create the books catalog, add/delete books and maintain the books catalog.
- The system should be able to send an automatic mail as soon as a reservation is made for a particular book, to the person who made the reservation. Then, a mail should be sent to people who are having the book currently, stating a reservation has been made on that book.

1.3 Definitions, Acronyms and Abbreviations

Abbreviation	Description
Administrator	Librarian who controls the operation of library, all the transactions in the library.
Transaction	Borrowing or reservation of a book.
View	List of all books in the library and all the details of it.

XSD	XML schema definition
SOA	Service oriented architecture
WSDL	Web service definition language
SOAP	Simple object access protocol
JSP	Java server pages
HTML	Hyper Text Markup Language
XML	Extensible Markup Language
J2EE	Java 2 Enterprise Edition
AJAX	Asynchronous Java script And XML
Users	Student, faculty, author and publisher

1.4 References

The following are the references for the document.

- Sample SRS for online library management system
- <http://www.scribd.com/doc/9914/srs-template>

2 Business rules

- Library management system will be accessible in Intranet for browsing and viewing purposes
- Library management system will be accessible only through HTTP mode.
- System participants access the application using standard internet browser
- In order to login to the application, user should be active and he/ she must have valid username and password
- Application will provide different access level and admin rights

3 Overall description

Product perspective

- The Online Library System is a package to be used by Libraries to improve the efficiency of Librarians and Users.
- The Online Library System to be developed benefits greatly the members and the Librarian of University.
- The system provides books catalog and information to members and helps them decide on the books to borrow from the library.
- The Librarian can keep the books catalog updated all the time so that the members (students and the professors) get the updated information all the time.



Figure 1: system overview

Product functions

- The Online Library System provides online real time information about the books available in the Library and the user information.
- The Product functions are more or less the same as described in the product perspective. The functions of the system include the system providing different type of services based on the type of users [Member/Librarian].
 - The member should be provided with the updated information about the books catalog.
 - Provisions for the members to borrow the books they want, if all the other required rules hold good.
 - The member is given a provision to check his account information and change the account information any time in the given valid period.
 - The members should be allowed to see the status of the books/journals borrowed/reserved by him and the respective due dates and other relevant details.
 - The members should be able to place requests for purchasing new books to the library, by giving details about the name of the book, name of the author, publisher.
 - The librarian is provided with interfaces to add/delete the books available in the book catalog

3.1 Design constraints

constraints	Description
Software technologies	
Application Server / Web Server	Web sphere application server (WAS)
Programming language	Java / J2EE
J2EE Services	Core java, Servlets, JSP, JDBC, JNDI, JAXB
SOA / Web services	SOAP, WSDL, XML, XSD, AJAX
Scripting	CSS, Javascript
database	DB2
IDE	RAD
Language constraints	
Language	English to be known

4 Functional Requirements

The functional requirements are explained as below:

4.1 Administrator login

- In login screen, the authorized administrator will login to the system using username and password.
- The authorized administrator has the following functions:
 - An authorized user can register the member. The process happens physically, where member fills in the register form manually and this would be keyed in to system by administrator to create membership.
 - System provides Inbox to the admin users to view all the requests. The process defined below
 - An “Active” member makes a request to the Admin.
 - The request will be in “pending”

- Admin can view all pending request and he/she can approve or reject the request
 - If the request is approved then notification will be sent to the requester and status will be marked to “Borrow” with end date
- Administrator can check the status of all the books whether the book has been issued/reserved. He can check all the details of the book.
 - Search facility is provided to administrator, he can Search for all the books based on the title, subject, author, publisher.
 - Administrator can add new books to the library based on the requests made by the users for the same with all the details of the new book.
 - Administrator can remove any book from the library.

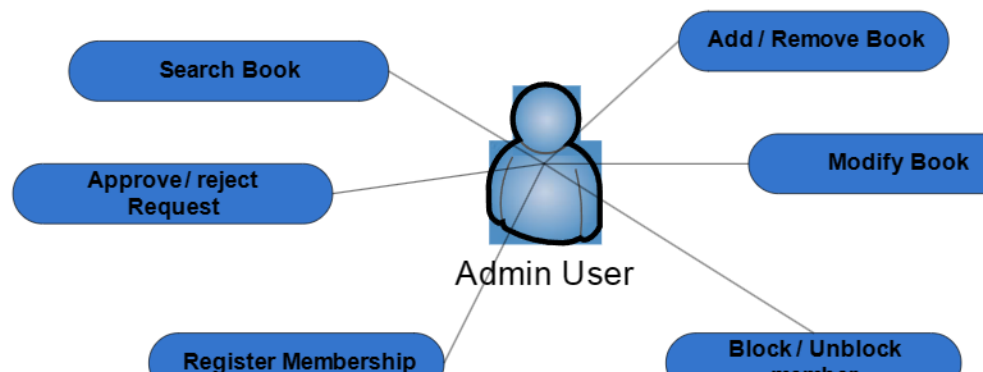


Figure 2: Admin Use case

4.2 User Login

- In login screen, the authorized users will login to the system using username and password.
- Users of the system include four categories:

- ✓ Student (Transaction and view)
- ✓ Faculty (Transaction and view)
- ✓ Author (view)
- ✓ Publisher (view)
- Users of the system have the following function.
 - System provides search engine to make user an easy task to search books. Query parameters are specified below
 - Book name
 - Subject
 - Author
 - Publisher
 - User can view the list book details. The fields are mentioned below
 - Book Id
 - Book Name
 - Author
 - Status (Reserved / Borrowed / Cancelled/ Available)
 - Due date
 - Reservation date
 - Borrowed User (In case if the status is “Borrowed”)
 - User can make a request to reserve the book. The request will be posted to administrator for approval.
 - System provides interface to the user to post request for the non-availability of the book. Admin will view the request through his inbox and he/she can reject or accept the request.
 - User can reserve book in case the book is borrowed by other members.
 - User should able to cancel the reservation.
 - System sends a notification after registering the book. The notification will be sent through Email

- In case of the due date, system keeps track and sends reminder at regular interval of time. A static value of 4 days will be set in system.

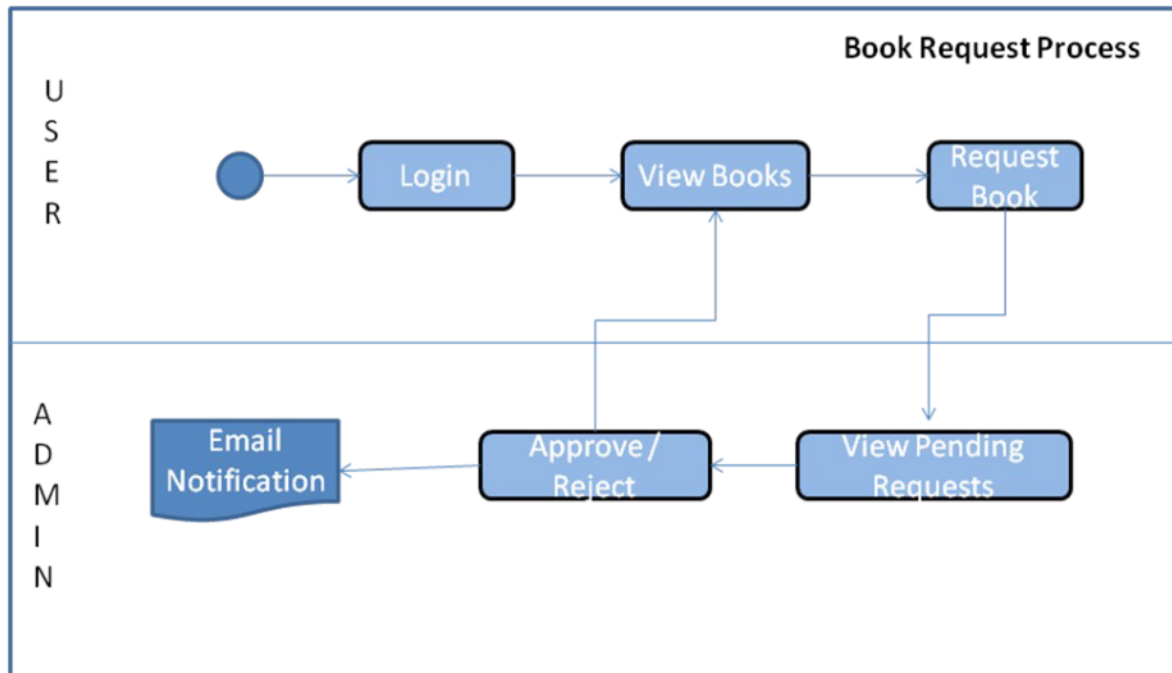


Figure 3: Book Request process



Figure 4: user use case

4.3 Book Status

To maintain status of the book, the system as predefined status to maintain the life cycle of the book. The status and the behavior is explained below

- Pending
 - The book status will be in “Pending”, once the member makes a request for the book
- Approved
 - The current status will be maintained once the Admin approves the member request.
 -
- Rejected / Canceled
 - The current status will be maintained in case Admin rejects the requested book
- Borrowed
 - The current status will be maintained, in case, if book is borrowed from other members.
 - Administrator should change the status to “Borrowed” from “Approved” status after member collects the book.
- Available
 - If the book is not occupied by any member then the status of the book will be in available status, so that member can reserve the book

- Not Available
 - If the book stock is not available then the status of the book will be “Non available”

4.4 Search Engine

Books can be searched based on the name, subject, status, author and publisher. A book listing is given with all the required columns along with details of the transaction made on that particular book for both user and administrator

5 Reports

System provides a standard report for the administrator to view the information. System provides a section “report” for the user to view and select the report

Book

- Book Id
- Book Name
- Author
- Status (Reserved / Borrowed / Cancelled/ Available)
- Due date
- Reservation date
- Borrowed User (In case if the status is “Borrowed”)

6 Database Storage

Database is the storage device, in which the application information will be stored in database. The information is normalized in the form of tables. The main entity of the storage are mentioned below

- Member/ Admin Information
- Book Information
- Book Transactions
- Audit Log

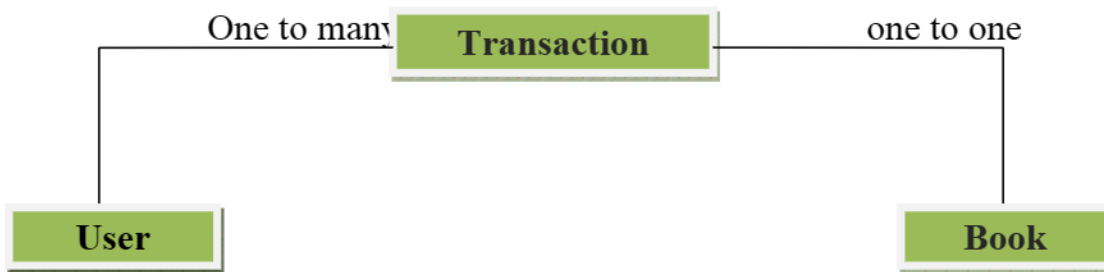


Figure 5: Entity Diagram

7 Non-Functional Requirements

7.1 Availability

24*7 availability is provided.

7.2 Security

All the information in the library database and the transaction is secured, authentication is provided to all the users , only authenticated users can use the system.

7.3 Performance

All the components are simple with all the features and services, thus there is no complication and complexity in the design which enhances the performance.

8 User documentation

- The product will include user manual.
- The user manual will include product overview, complete configuration of the used software, technical details, backup procedure and contact information which will include email address.

9 User Manual Requirements

User Manuals will be provided covering all the features of this product in DOC format