**Software Requirements Specification for Library Information Management System**

**1.Introduction**

**1.1 Purpose**

This is the Software Requirements Specification (SRS) for the LIMS(Library Information Management System). The purpose of this document is to convey information about the application's requirements, both functional and nonfunctional, to the reader.

This document provides :

(a) A description of the environment in which the application is expected to operate.

(b) A definition of the application's capabilities.

(c) A specification of the application's functional and nonfunctional requirements.

The document is intended to serve several groups of audiences:

• First, it is anticipated that the SRS will be used by the application designers. Designers will use the information recorded here as the basis for creating the application's design.

• Second, the client for the project, the library manager in our case, is expected to review this document. The SRS will serve to establish a basis for agreement between the client and development team about the functionality to be provided by the application.

• Third, the application maintainers will review the document to clarity their understanding of what the application does.

**1.2 Scope**

The purpose of this software development project is to create a new application called: LIMS SYSTEM. The client for this project wishes to enter the PC-based internet environment. The Library Management System will be PC-base with a internet, allowing library users to search for books,seminars and library staff members to manage the book inventory and user database.

The application will provide the following capabilities:

The application will be access via a internet on a PC at any place. Library staff will be able to manage library user accounts including remove, change, and add. Library staff will be able to manage the book inventory database including remove, change, and add. The application will generate reports for administrative purposes. The application will provide search function on books based on ISBN, subject, title, or author.

The project's client has determined that this application will provide the following benefits:

• Provide additional flexibility and convenience to the library users. • Provide better reliability and security of the library information.

• Provide a more productive environment for the library staff member.

• Reduce the cost of the library operations.

The availability of information at any time in any place.

**1.3 Definitions, Acronyms and Abbreviations**

**1.3.1 Audience Definitions**

The intended readers of this document are the developers of the site, testers, library owners and managers and coordinators. Any suggested changes on the requirements listed on this document should be included in the last version of it so it can be a reference to developing and validating teams.

**1.3.2 Abbriviations**

|  |  |
| --- | --- |
| Acronym | Meaning |
| WLMS | Web Library Management System |
| MS SQL | Microsoft Structured Query Language |
| ASP | Active Server Pages |
| ISBN | International Standard Book Number |
| DVD | Digital Video Disc |
| IEEE | Institute of Electrical and Electronics Engineers |

**1.4 References**

1.IEEE 830-1998 standard for writing SRS document

2.I. Sommerville, Software Engineering, 8 th ed. England: Addison-Wesley, 2007.

**1.5 Document overview**

Document defines the general functions of WLMS, operating environment and user constraints along with our assumptions.

It specifies functional and nonfunctional requirements; all of them are described to a level of detail sufficient for designers to design a system.

It illustrates interfaces and its possible scenarios along with some screenshots to make a general idea about the interfaces.

It specifies all stored information that we are concerned about for every entity in the website .

**2. General Description**

**2.1 Product Perspective**

LIMS SYSTEM is used for Library Manager, Librarian, and Library User. The system is self-contained. However, it is possible to exchange data with other system through external interface if required.

1.To develop book management system.

2.To design library information management system.

**2.2 Product Functions**

The high level summary of functions in DLSSYSTEM System is described in the following concept map. Detail functional requirements will be described in section 3.

|  |  |  |  |
| --- | --- | --- | --- |
| SNO | ACTIVITY | ACTORS | DESCRIPTION |
| 1 | Register | Non menber | Non member must fill up the registration form inorder to become members of the site. |
| 2 | Login | Corporate user,retail user,administrator | Upon gioving the username and password in the corresponding fields,the users are allowed to login. |
| 3 | Logout | Corporate user,administrator | Once the user clicks to logoutthe user will be logged out and the login status will be updated. |
| 4 | Search | Non member, Corporate  user,administrator | After the selection of the category,author list of books will be displayed. |
| 5 | Cancel request | Corporate  user,administrator | Placed order will be cancelled if the status is not sent after getting the reason for cancellation. |
| 6 | Email | administrator | Administrator can send verification code through emailto the user to verify the exact user. |

**2.3 User Characteristics**

The three types of user for the DLSSYSTEM are:

• Library Manager

• Librarian

• Library User

The following table describe general users characteristics that will affect the functionality of the software product.

|  |  |  |  |
| --- | --- | --- | --- |
| Type of User | User Characteristic | User Technical Expertise | How the user characteristic and technical expertise affect LIMS SYSTEM functionality |
| Library Manager | Good understanding to library operation Responsible for library operation as a whole. Responsible for library staff managing | Average in technical proficiency Used text type terminal in the old DLSSYSTEM | User interface with less input steps. Easy to learn. |
| Librarian | Good understanding to library operation Responsible for library operation. | Average in technical proficiency Used text type terminal in the old DLSSYSTEM | User interface with less input steps. Easy to learn. |
| Library User | (Diverse user characteristic) Student and Faculty tends to find books in their specification and download material Will not have any formal training to use the system. | Student and Faculty has a lot of exposure to Windows type application | GUI interface may be easier to learn than text interface. Provide system help Provide appropriate error messages for invalid user inputs. |

**2.4 General Constraints**

This system is Web based, there will be a need to provide PC Server hardware connected to the internet.

DLS System can potentially have more than hundreds of users. It is unrealistic to provide training for everyone. Therefore, the system should be designed for easy to use, providing help instructions, and appropriate error messages for invalid user inputs. Security is important to library operation. Library user is allowed to use the DLSSYSTEM only for searching book records. User should never be able to break into the system and to perform any modification. Reliability is vital to library operation. The DLSSYSTEM should not have any unscheduled down time during library operation hours. Any down time in operation hours has significant impact to the operation and cause inconvenience to everyone in library.

**2.5 Assumptions and Dependencies**

The following is a list of assumptions and dependencies that would affect the software requirements if they turned out to be false: Users have basic understanding to PC and Windows and internet. There is a method to convert all book records and library user records from the existing system into the DLSSYSTEM.

**3. Specific Requirements**

This section contains the detailed requirements. In this section, the users of "Search Book Record" are refereed to librarians and patrons (library users). Users of other sections are only refereed to the librarian card holder (librarians and library managers.)

**3.1Functional Requirements**

**3.1.1Functional Requirement 1**

**3.1.1.1Introduction**

We should be able to login to the system through the application and change the password after login to the system.

**3.1.1.2 Input**

The user should provide the details i.e their login id and password.

**3.1.1.3Processing**

The user after providing the details he logged in to the application he can change the password by clicking the change password or forget password.

**3.1.1.4Output**

The output specifies or gives the homepage regarding the application.

**3.1.2Functional Requirement 2**

**3.1.2.1Introduction**

We can be able to see the status of the books and their respective duedates and other relevant details.

**3.1.2.2 Input**

We should specify bookname to reserve in the text box.

**3.1.2.3Processing**

The user after providing the details he logged in to the application he can change the password by clicking the change password or forget password.

**3.1.2.4Output**

The output specifies or gives the homepage regarding the application.

**3.1.3Functional Requirement 3**

**3.1.3.1Introduction**

We can be able to see the status of the books and their respective duedates and other relevant details.

**3.1.3.2 Input**

We should specify bookname to reserve in the text box.

**3.1.3.3Processing**

The user after providing the details he logged in to the application he can change the password by clicking the change password or forget password.

**3.1.3.4Output**

The output specifies or gives the homepage regarding the application.

**3.1.4Functional Requirement 4**

**3.1.4.1Introduction**

We can be able to see the status of the books and their respective duedates and other relevant details.

**3.1.4.2 Input**

We should specify bookname to reserve in the text box.

**3.1.4.3Processing**

The user after providing the details he logged in to the application he can change the password by clicking the change password or forget password.

**3.1.4.4Output**

The output specifies or gives the homepage regarding the application.

**3.1.5Functional Requirement 5**

**3.1.5.1Introduction**

We can be able to see the status of the books and their respective duedates and other relevant details.

**3.1.5.2 Input**

We should specify bookname to reserve in the text box.

**3.1.5.3Processing**

The user after providing the details he logged in to the application he can change the password by clicking the change password or forget password.

**3.1.5.4Output**

The output specifies or gives the homepage regarding the application.

**3.1.6Functional Requirement 6**

**3.1.6.1Introduction**

We can be able to see the status of the books and their respective duedates and other relevant details.

**3.1.6.2 Input**

We should specify bookname to reserve in the text box.

**3.1.6.3Processing**

The user after providing the details he logged in to the application he can change the password by clicking the change password or forget password.

**3.1.6.4Output**

The output specifies or gives the homepage regarding the application.

**3.1.7Functional Requirement 7**

**3.1.7.1Introduction**

We can be able to see the status of the books and their respective duedates and other relevant details.

**3.1.7.2 Input**

We should specify bookname to reserve in the text box.

**3.1.7.3Processing**

The user after providing the details he logged in to the application he can change the password by clicking the change password or forget password.

**3.1.7.4Output**

The output specifies or gives the homepage regarding the application.

**3.1.8Functional Requirement 8**

**3.1.8.1Introduction**

As soon as the reservation is made an email should be sent to the person about the details.

**3.1.8.2 Input**

After reserving the book we should send an email notification.

**3.1.8.3Processing**

The book that has reserved currently by the user has been borrowed by some other users.After the current user has been reserved they should receive an email notification.

**3.1.8.4Output**

The output will be the message that is successfully sent is to be displayed.

**3.1.1 User Interface**

The user interface requirements are concerned with the user interface and how information is presented to the user.

• **Usability**

Interfaces are a critical class of components within the DML that will provide the means by which users interact with the system. As such, all interfaces should provide easy access to help as well as clearly indicate the current state of the user’s transaction when the user isn’t idle. Transaction and error status MUST be displayed within each interface component. Cut and paste of text within interfaces and into and out of the interfaces MUST be supported.

**Administrative**

Administrative interfaces will assist Library Staff in building/maintaining collections and controlling access to them. Because of the complexity of the data model, Library Staff will need to be able to edit multiple records simultaneously and create links between them. Administrative MUST be able to have multiple records open for editing Administrator MUST be able to create links (references) between records without needing to type in record identifiers. Additionally data represented in the administrative interface may be in a differentstate than that stored in the repository. For example, after a record has been edited, but before it has be en “saved” into the repository two versions of the record exist. The interface should clearly indicate the state of the locally edited record relative to the version stored in the repository.

All editors MUST clearly indicate the state of the edited record (new,saved, and modified/not yet saved).

**3.2 External interface requirements**

Within a client/server system there are many different types ofinterfaces; they can be summarized under two main categories:

1.Subsystem interfaces and

2.Infrastructure interfaces.

Subsystem interfaces are those interfaces between subsystems in the new application, between the new application and existing internal applications, and between the new application and applications external to the Customer. These interfaces may be implemented on one platform or may cross technology boundaries. They are considered part of the functionality required in the new system.

**Infrastructure Interfaces**

Infrastructure interfaces are implemented by software that provides communication between any two pieces of hardware or software. These interfaces are typically implemented in a product architecture characterized by a layering of software components that hide implementation details at each level from the architectural layer above. Software components of the technology architecture are loosely coupled and communicate only through a well-defined set of interfaces.

**3.3 Performance requirements**

* + Any interface between a user and LMS should have a maximum response time of 5 seconds
* The response should be fast enough to avoid users’ response collisions
* The LMS should be available for use 24 hours per day, 365 days per year.
* The LMS should support 500 patrons and 1000 requests/min simultaneously

**3.4 Design Constraints**

1. The system shall be installed in a windows-NT network.

**3.5 Security Requirements**

1. The account management system shall only be used by managers or users with defined privileges.

2. The Patron information report shall be generated by users who have librarian account.

3.The book purchase report shall only be generated by managers or users with defined privileges.

4. Database update data shall be committed to the database only after the managers have approved.

**3.6 Maintainability requirements**

 Changes (new patrons addition, password changes, database changes) must be verified once per day at least. The system should provide automatically notification to patrons by e-mail aboutitem’s overdue, reservation results, availability of reserved item and etc

**3.7 Reliability requirements**

1. The system shall be recovered within 10 minutes if it is down.

2. The system shall be recovered without intervention at user terminal if it is down.

3. The system shall show appropriate messages at terminal when system is down.

4. The system shall have 99% reliability during library operating hours.

5. Scheduled down time after library operating hours shall not be more than 1 hour per day.

6. The system shall generate error messages when the user attempts to enter invalid data.

**3.8 Availability requirements**

1. System must be able to extend to store and deliver new content media types.

2.System must be able to extend to support synchronization of content media based on shared work/item structure.

3.System MUST be able to extend to include music thesaurus in later versions.

4. System MUST be able to extend support to MMTT components built in later versions.

5. System MUST be able to extend to support data sharing between records.

6.System MUST be able to extend to support more sophisticated bookmaking including additional context (e.g.

size and configuration of viewer) and book marking of other record types.

**3.9 Database Requirements**

1. Users MUST be able to search for content using Work (title, composer name, subject heading, and key), Instantiation (performer names) and Container (title, publisher, editor, type, and format) attributes.

2. Library Staff MUST be able to search on record creation and update dates.

3. Simple free text search MUST be provided against like records representing containers that will be generated from the metadata stored in the data model.

4. Searches over names and titles MUST support matching where diacritical markings are ignored.

5. Users MUST always receive feedback on their search in the form of a result set that contains matching entries and/or information to further assist in the query.

**• Database structure**

All times are in the form YYYYMMDDHHMMSS Languages currently supported include:

English Every table contain four columns firsts one is a name of column and second column display data type and third column display constraint and last column description any column.

3.10 Documentation Requirements

**3.11 Safety Requirements**

The database may get crashed at any certain time due to virus or operatingsystem failure. Therefore, it is required to take the database backup.

We are going to develop a secured database for the university .There aredifferent categories of users namely teaching staff,administrator,library staff ,students etc.,Depending upon the category of user the access rights aredecided.It means if the user is an administrator then he can be able to modifythe data,delete,append etc.,All other users other than library staff only havethe rights to retrieve the information about database.

**3.12 Operational Requirements**

Medium to demonstrate the knowledge and skills of the students. From the traditional searching process for the books in the ***libraries***, the interactive usage of computers can be now addressed as part of the ***library*** ***system***. Background and Problem Statement In the aim of the universities to supply the necessary materials to their students, the idea of ***library*** management ***system*** is introduces. This involves the utilization for processing, accessing and retrieving the information that can effectively...

**3.13 Site Adaptation**

This website provides a computerized version of library management system which will benefit the students as well as the staff of the library. It makes entire process online where student can search books, staff can generate reports and do book transactions. It also has a facility for student login where student can login and can see status of books issued as well request for book or give some suggestions. It has a facility of teacher’s login where teachers can add lectures notes and also give necessary suggestion to library and also add info about workshops or events happening in our college or nearby college in the online notice board. There is a future scope of this facility that many more features such as online lectures video tutorials can be added by teachers as well as online assignments submission facility , a feature Of group chat where students can discuss various issues of engineering can be added to this project thus making it more interactive more user friendly and project which fulfills each users need in the best way possible

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Test Scenario | Test case | Precondition | Test step | Test data | Expected result | Actual result | Pass/fail |
| Book entry form | On the click of ADD button | Library mem is compulsory | First it checks membership. | Display details | click on add button | successful | pass |
| Book entry form | On the click of DELETE button | Library mem is compulsory | Displays the click on delete button | Display details | click on delete button | successful | pass |
| Book entry form | On the click of UPDATE button | Library mem is compulsory | click on update button | Display details | click on update button | successful | pass |
| Book entry form | On the click of SEARCH button | Library mem is compulsory | click on search button | Display details | click on search button | successful | pass |
| Book entry form | On the click of CLEAR button | Library mem is compulsory | click on clear button | Display details | click on clear button | successful | pass |