SOFTWARE REQUIREMENT SPECIFICATION

Library Management System

Prepared by:

Kaustubh Wade - 160410116050

Naisargi Kothari - 160410116051

Karansinh Matroja - 160410116055

Jeet Meghpara – 160410116056

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Sardar Vallabhbhai Institute of Technology

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1. Introduction

With the increase in the number of readers, better management of libraries system is required. The Library management system focuses on improving the management of libraries in a city or town. "What If you can check whether a book is available in the library through your phone?" or "what if instead of having different library cards for different libraries you can just have one ?" or "you can reserve a book or issue a book from your phone sitting at your home!". The Integrated Library Management system provides you the ease of issuing, renewing, or reserving a book from an library within your town through your phone. The Integrated Library Management system is developed on the android platform which basically focuses on issuing, renewing and reserving a book.

1.1 Purpose

The purpose of this document is to present a detailed description of the Library management System. It will explain the purpose of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. This document is intended for both the stakeholders and the developers of the system and will be proposed to institutional libraries.

The main purpose of this project is to maintain a easy circulation system between clients and the libraries, to issue books using single library card, also to search and reserve any book from different available libraries and to maintain details about the user (fine, address, phone number).Moreover, the user can check all these features from their home.

1.2 Scope

Manually updating the library system into an android based application so that the user can know the details of the books available and maximum limit on borrowing from their computer and also through their phones. The ILM System provides information's like details of the books, insertion of new books, deletion of lost books, limitation on issuing books, fine on keeping a book more than one month from the issued date. Also user can provide feedback for adding some new books to the library.

1.3 Definition, Acronyms, Abbreviation:

- User: A general login id assigned to most users
- Client: Intended users for the software
- JAVA: platform independence
- SQL: Structured query Language
- Data Flow Diagram (DFD): Shows data flow between entities.
- Interface: Something used to communicate across different mediums.

- ER: Entity Relationship
- IDE: Integrated Development Environment
- SRS: Software Requirement Specification
- Use Case: A broad level diagram of the project showing a basic overview.
- ISBN: International Standard Book Number

1.4 References
- Wikipedia (http://en.wikipedia.org/)

2. Overall Description

2.1 Product Perspective

The proposed Library Management System which is being developed by Innovative Library Management Solutions team is an on-line Library Management System. This System will provide a search functionality to facilitate the search of resources. This search will be based on various categories viz. book name or the ISBN. Also Advanced Search feature is provided in order to search various categories simultaneously. Further the library staff personnel can add/update/remove the resources and the resource users from the system.

2.2 Product Features

There are two different users who will be using this product:

- Librarian who will be acting as the administrator
- Student of the University who will be accessing the Library online.

The features that are available to the Librarian are:

- A librarian can issue a book to the student
- Can view the different categories of books available in the Library
- Can view the List of books available in each category
- Can take the book returned from students
- Add books and their information of the books to the database
- Edit the information of the existing books.
- Can check the report of the issued Books.
- Can access all the accounts of the students.

The features available to the Students are:

- Can view the different categories of books available in the Library
- Can view the List of books available in each category
- Can own an account in the library
- Can view the books issued to him
- Can put a request for a new book
- Can view the history of books issued to him previously
- Can search for a particular book

2.3 User Classes and Characteristics

There are various kinds of users for the product. Usually web products are visited by various users for different reasons. The users include:

- Students who will be using the above features by accessing the Library online.
- Librarian who will be acting as the controller and he will have all the privileges of an administrator.

2.4 Operating Environment

The product will be operating in any operating system the only requirement to use this online product would be the internet connection.

2.5 Design and Implementation Constraints

The product is developed using JAVA. The backend database for this SQL Server. The product is accomplished with login facility so that specific function is available to specific student.

2.6 User Documentation

The product will include user manual. The user manual will include product overview, complete configuration of the used software (such as SQL server), technical details, backup procedure and contact information which will include email address.

2.7 Assumptions and Dependencies

The assumptions are:-

- The coding should be error free
- The system should be user-friendly so that it is easy to use for the users
- The information of all users, books and libraries must be stored in a database that is accessible by the website
- The system should have more storage capacity and provide fast access to the database

- The system should provide search facility and support quick transactions
- The Library System is running 24 hours a day
- Users may access from any computer that has Internet browsing capabilities and an Internet connection
- Users must have their correct usernames and passwords to enter into their online accounts and do actions

The dependencies are:-
- The specific hardware and software due to which the product will be run
- On the basis of listing requirements and specification the project will be developed and run
- The end users (admin) should have proper understanding of the product
- The system should have the general report stored
- The information of all the users must be stored in a database that is accessible by the Library System
- Any update regarding the book from the library is to be recorded to the database and the data entered should be correct

3. External Interface Requirement

➢ User Interfaces

- GUI

Describes the graphical user interface if present. This section should include a set of screen dumps or mockups to illustrate user interface features.

1. Description

The user interface must be customizable by the administrator

2. Criticality

This issue is essential to the overall system. All the modules provided with the software must fit into this graphical user interface and accomplish to the standard defined.

3. Technical issues

In order to satisfy this requirement the design should be simple and all the different interfaces should follow a standard template. There will be the possibility of changing colors and images, plus switching between interfaces with the minimum impact for the users.

4. **Risks**

To reduce the circumstances under which this requirement might not able to be satisfied, all the designers must have been developed web sites previously and they must be aware of html restriction and cross browsers implementations before starting the designing. In order to reduce the probability of this occurrence the entire design team will be trained in basic html development and macromedia fireworks, this tool will be used instead of Photoshop.

5. **Dependencies with other requirements**

All user interfaces should be able to interact with the user management module and a part of the interface must be dedicated to the login/logout module

➢ Login Interface:-

In case the user is not yet registered, he can enter the details and register to create his account. Once his account is created he can 'Login' which asks the user to type his username and password. If the user entered either his username or password incorrectly then an error message appears.

➢ Search:-

The member or librarian can enter the type of book he is looking for and the title he is interested in, then he can search for the required book by entering the book name.

➢ Categories View:-

Categories view shows the categories of books available and provides ability to the librarian to add/edit or delete category from the list.

➢ Librarian's Control Panel:-

This control panel will allow librarian to add/remove users; add, edit, or remove a resource. And manage lending options.

4. System Features

4.1 Description and Priority

Proposed Database is intended to store, retrieve, update, and manipulate information related to university which include

- Books availability
- Staff information
- Student details
- My Account
- Calculation of fines

4.2 Stimulus / Response Sequences

The administrator can Login and Logout. When the administrator logs into the library system. The system will check for validity of login .If the Login and password are valid, the response to this action is the administrator will be able to modify, view, add, deleting and all other functions that can be performed on the database.

4.3 Functional Requirements

This section gives the list of Functional and non functional requirements which are applicable to the Library Management System.

5. Other Non-functional Requirements

5.1 Performance Requirement

The proposed system that we are going to develop will be used as the Chief performance system within the different campuses of the university which interacts with the university staff and students. Therefore, it is expected that the database would perform functionally all the requirements that are specified by the university.

- The performance of the system should be fast and accurate
- Library Management System shall handle expected and non-expected errors in ways that prevent loss in information and long downtime period. Thus it should have inbuilt error testing to identify invalid username/password
- The system should be able to handle large amount of data. Thus it should accommodate high number of books and users without any fault

5.2 Safety Requirement

The database may get crashed at any certain time due to virus or operating system failure. Therefore, it is required to take the database backup so that the database is not lost. Proper UPS/inverter facility should be there in case of power supply failure.

5.3 Security Requirement

- System will use secured database
- Normal users can just read information but they cannot edit or modify anything except their personal and some other information.
- System will have different types of users and every user has access constraints
- Proper user authentication should be provided
- No one should be able to hack users' password
- There should be separate accounts for admin and members such that no member can access the database and only admin has the rights to update the database.

5.4 Software Quality attributes

- There may be multiple admins creating the project, all of them will have the right to create changes to the system. But the members or other users cannot do changes
- The project should be open source
- The Quality of the database is maintained in such a way so that it can be very user friendly to all the users of the database
- The user be able to easily download and install the system

5.5 Business Rules

A business rule is anything that captures and implements business policies and practices. A rule can enforce business policy, make a decision, or infer new data from existing data. This includes the rules and regulations that the System users should abide by. This includes the cost of the project and the discount offers provided. The users should avoid illegal rules and protocols. Neither admin nor member should cross the rules and regulations.

6. Other Requirements

- **Data and Category Requirement**

There are different categories of users namely teaching staff, Librarian, Admin, students etc. Depending upon the category of user the access rights are decided. It means if the user is an administrator then he can be able to modify the data, delete, append etc. Similarly there will be different categories of books available. According to the categories of books their relevant data should be displayed. The categories and the data related to each category should be coded in

the particular format.

- ## Class Diagram

A class is an abstract, user-defined description of a type of data. It identifies the attributes of the data and the operations that can be performed on instances (i.e. objects) of the data. A class of data has a name, a set of attributes that describes its characteristics, and a set of operations that can be performed on the objects of that class. The classes' structure and their relationships to each other frozen in time represent the static model. In this project there are certain main classes which are related to other classes required for their working. There are different kinds of relationships between the classes as shown in the diagram like normal association, aggregation, and generalization. The relationships are depicted using a role name and multiplicities. Here 'Librarian', 'Member' and 'Books' are the most important classes which are related to other classes.