Software Requirement Specification

For

Library Management System

Prepared by:

19z215 Gunaal R

19z218   Johanna Smriti J

19z225   Keerthna M

19z237   Balasubramanian S

19z246   Sri Raja Vignesh.S

19z259   Vikneshwar

PSG College of Technology
23.08.2021

Table of Contents

Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The main objective of this document is to illustrate the requirements of the project Library Management system. The document gives the detailed description of the both functional and non-functional requirements proposed by the client.The purpose of this project is to provide a friendly environment to maintain the details of books and library members.The main purpose of this project is to maintain an easy circulation system using computers and to provide different reports. This project describes the hardware and software interface requirements using ER diagrams and UML diagrams.

1.2 Document Conventions

- Entire document should be justified.
- Convention for Main title
  - Font face: Times
  - Font style: Bold
  - Font Size: 18
- Convention for Sub title
  - Font face: Times
  - Font style: Bold
  - Font Size: 14
- Convention for body
  - Font face: Open Sans
  - Font Size: 11

1.4 Product Scope

Library Management System is basically updating the manual library system into an internet-based application so that the users can know the details of their accounts, availability of books and maximum limit for borrowing. The project is specifically designed for the use of librarians and library users. The product will work as a complete user interface for library management process and library usage from ordinary users. The Library Management System can be used by any department in the college. It is especially useful for any educational institute where modifications in the content can be done easily according to requirements.
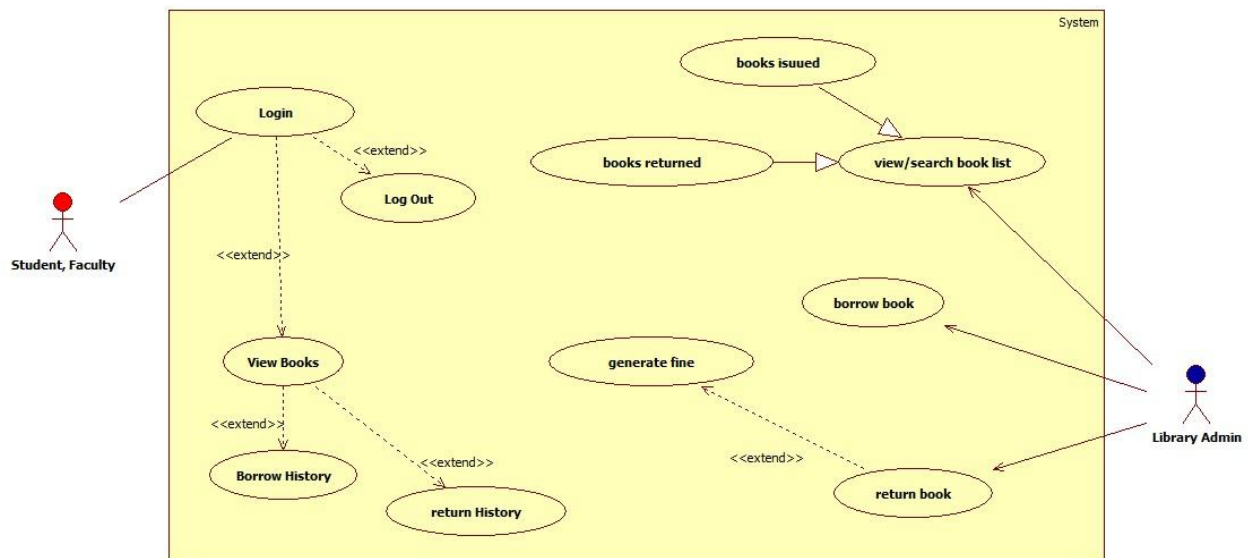
1.5 References

EEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998

# 2. Overall Description

2.1 Product Perspective

Use Case Diagram of the LIbrary Management System

This is a broad level diagram of the project showing a basic overview. The users can be either faculty or students.. This System will provide search functionality to facilitate the search of resources and allows the student to borrow a particular book, if the book is not present the student can request a new book to the library. The student can also renew the borrowed period time for the books and view the books borrowed earlier and check the status whether or not the book was returned. The student can also pay a fee if anything is due. Further the library staff can add/update the resources and the resource users from the system.

2.2 Product Functions

Entity Relationship Diagram of Library Management System
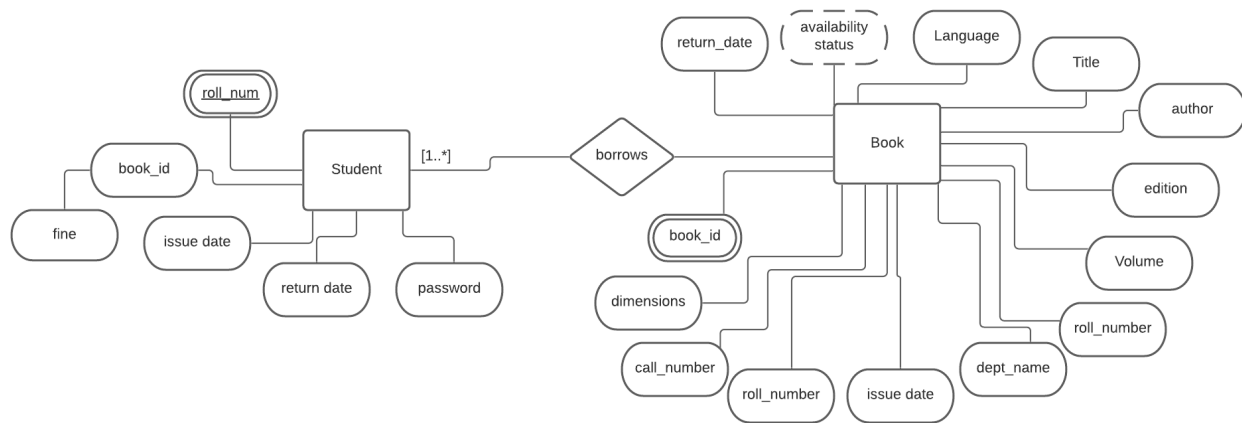
The Online Library System provides online real time information about the books available in the Library and the user information. The main purpose of this project is to reduce manual work. This software is capable of managing Book Issues, Returns, Calculating/Managing Fine, Generating various Reports for Record-Keeping according to end user requirements. The Librarian will act as the administrator to control members and manage books. The member's status of issue/return is maintained in the library database. The member's details can be fetched by the librarian from the database as and when required. The valid members are also allowed to view their account information.

2.3   User Classes and Characteristics

The system provides different types of services based on the type of users [Member/Librarian]. The Librarian will be acting as the controller and he will have all the privileges of an administrator. The member can be either a student or staff of the university who will be accessing the Library online.
The features that are available to the Librarian are:-
- 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 to the database
- Edit the information of existing books
- Can check the report of the existing books
- Can check the report of the issued books
- Can access all the accounts of the students

The features that are available to the Members 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

2.4   Operating Environment

The product will be operating in a windows environment. The Library Management System is a website and shall operate in all famous browsers, for a model we are taking Microsoft Internet Explorer,Google Chrome,and Mozilla Firefox.Also it will be compatible with IE 6.0. Most of the features will be compatible with the Mozilla Firefox & Opera 7.0 or higher version. The only requirement to use this online product would be the internet connection.

The hardware configuration includes Hard Disk: 40 GB, Monitor: 15" Color monitor, Keyboard: 122 keys. The basic input devices required are keyboard, mouse and output devices are monitor, printer etc.

2.5   Design and Implementation Constraints

Any update regarding the book from the library is to be recorded to have update and correct values, and any fine on members should be notified as soons as possible and should be correctly calculated.

2.6   User Documentation

The User documentation will include:
- Users will be able to download the User Manual from the website's help section.
- Video tutorials will be available for further guidance
- Help Button will available everywhere

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 Requirements

3.1 User Interfaces

The software provides good graphical interface for the user and the administrator can operate on the system, performing the required task such as create, update, viewing the details of the book

- It allows users to view quick reports like Book Issued/Returned in between particular times.
- It provides stock verification and search facility.
- it allows the library admin to quickly view, update, add and delete the records
- It allows the library admin to search and update the database.
- Any update regarding the book from the library is to be recorded to the database and the data entered should be correct

3.2 Hardware Interfaces

Processor: Pentium(R) Dual-core CPU
Hard Disk: 40GB
RAM: 256 MB or more

3.3 Software Interfaces

This is a web application.
Front-end framework: Flutter
Languages: Dart, python
Database : Firebase
THe application is compatible with any operating system with famous browsers, for a model we are taking Microsoft Internet Explorer,Google Chrome,and Mozilla Firefox.Also it will be compatible with IE 6.0. Most of the features will be compatible with the Mozilla Firefox & Opera 7.0 or higher version.

3.4 Communications Interfaces

This project can be compatible with all platforms. Connections to the system will be over TCP/IP connection, and the project supports all types of web browsers.

4.   System Features

The users of the system should be provided the surety that their account is secure. This is possible by providing:-

- User authentication and validation of members using their unique member ID .
- Proper monitoring by the administrator which includes updating account status, showing a popup if the member attempts to issue a number of books that exceed the limit provided by the library policy, assigning fine to members who skip the date of return.
- Proper accountability which includes not allowing a member to see another member's account. Only the administrator will see and manage all member accounts.

5.   Other Nonfunctional Requirements

5.1 Performance Requirements

- The performance of the system should be fast and accurate
- Library Management System shall handle expected and unexpected 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 amounts of data. Thus it should accommodate high number of books and users without any fault

5.2 Safety Requirements

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 Requirements

- 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.

6.   Other Requirements

6.1 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. All other users except the Librarian only have the rights to retrieve the information about the database. 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.

Glossary:

The following are the list of conventions and acronyms used in this document and the project as well:

- Administrator: A login id representing a user with user administration privileges to the software
- User: A general login id assigned to most users
- Client: Intended users for the software
- SQL: Structured Query Language; used to retrieve information from a database SQL
- Server: A server used to store data in an organized format
- Layer: Represents a section of the project
- User Interface Layer: The section of the assignment referring to what the user interacts with directly Application
- Logic Layer: The section of the assignment referring to the Web Server. This is where all computations are completed
- Data Storage Layer: The section of the assignment referring to where all data is recorded
- Use Case: A broad level diagram of the project showing a basic overview
- E-R diagram: It is a type of static structure diagram that describes the structure of a system by showing the system's cases, their attributes, and the relationships between the classes
- Interface: Something used to communicate across different mediums