**SOFTWARE REQUIREMENT SEPCIFICATION**

**E-LMS**

**Version 1.0**

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**28/08/2021**

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**Revision History**

| **Name** | **Date** | **Reason For Changes** | **Version** |
| --- | --- | --- | --- |
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# Introduction

## Purpose

The website is designed to manage every function of the library with ease. The website is expected to fulfill the needs of a Librarian and every member of the library.

## Document Conventions

The document is structured to convey information in increasing importance order and at some places different sections can be interrelated. Hence, we recommend readers to read through document as mentioned in the table of contents. Also, section 4, that contains the system features mentions the priority of each feature at the end of its description. There isn’t any priority you have to follow for each section, we recommend you not to skip any section but request you to pay extra attention onto the last three sections. The main section headings are in Times New Roman font with font size of 18. And the sub headings have Times New Roman as font too but with font size of 14. Finally, the contents of each section is in Arial with font size of 11.

## Intended Audience and Reading Suggestions

This document is intended to create a explained view for the users. And to give a very high-level outline of the software to the developers. We recommend you to read through the document in the same order it is made, and we request the readers, who are going to be the users of this product to pay attention section 2,3 & 4 to get a deeper understanding of our product. And as for the developers, except section 1 the remaining sections can be beneficiary to you.

The Headlines are written in bold Times New Roman. The main heading has font size of 18 and the font size decreases towards sub-sections. The description of each section is in normal Arial, it’s not bold and font size is 11. The same procedure is followed in table of contents too. The main heading in the first page is Arial Black with font size of 28, while the other contents are in Times New Roman.

## Product Scope

This website can be used in later future as well, in addition to managing a physical library the website can manage a virtual library comprising e-books. The website can be used by all groups of readers as it can issue both hard copy and soft copy of book as well.

## References

User Interface: User’s account home page ; *User’s profile*

Admin Interface: Admin’s account home page ; Admin’s profile

System requirements and non-functional: Other Nonfunctional Requirements

# Overall Description

## Product Perspective

This product is the first version that isn’t any follow up for any existing product family. The product has a backend that stores book log and member, payment details logs and the user interface acts as front end to retrieve the data stored and also provides necessary features for member and admin.

## Product Functions

The website functions to keep track of each copy in the library and the copies of e-book available in the virtual library. It can issue books, facilitate paying bills and due. The website also stores contact details of each member for the reference of the librarian. The members can read the e-books using the website.

## User Classes and Characteristics

It is expected that this website will be used by two types of user classes, which is the Member and Admin. Member class comprises greater magnitude with preliminary features which include searching, lending and payment. While the Admin class comes with precise managing features for the librarian that includes book stock, member details, payments, returns and due management. Both the class doesn’t require high technical expertise as the user interface is designed to be user-friendly and easy to use. This app considers both the user class as equally important, since this app is created to fulfill their needs.

## Operating Environment

This website can work with any existing browser in operating systems, which are Windows 10 and latest version of macOS.

## Design and Implementation Constraints

Payment feature can be a hinder in the development process, as it will be a challenge to process the authentication process in it. The chatbot too can be difficult too, as it requires a response mechanism that analysis the message before providing solution. And the feature to block users from taking screenshots of e-book or trying to download it maybe possess challenge to the developer.

## User Documentation

The website has a user guide attached to it, which explains all the features and also guides on how to use the website in the right way. This user guide is available even to the non-members and non-admins.

## Assumptions and Dependencies

The app depends on the information provided by the member like contact details and account details, this information is passed onto the admin for their use. This app has the feature to display the availability of any given book in the library, which depends on the data entered by the admin, which the member uses to get know about the stock details.

# External Interface Requirements

## User Interfaces

The user interface will be implemented using chrome on windows. The interface will be user friendly and such that no user will face difficulty in using the website. We will also try to attach a demo video of how to use the website thoroughly on the website so that it will help the users. There will be the library helpline numbers and email of the library in case they are still facing problems. There will be a forgot password option in case the user forgets their password. The interface will be very clear to understand and use.

Front-end: HTML/CSS

Backend: Flask/Python/JavaScript/PHP/SQL

## Hardware Interfaces

A laptop with good memory would be required. A browser which supports languages like HTML, CSS, JavaScript, flask would be required. Windows operating system would be required.

Intel core i5 2nd generation is used as a processor because it is fast than other processors an provide reliable and stable and we can run our pc for longtime. By using this processor, we can keep on developing our project without any worries.

## Software Interfaces

| Operating system | Windows |
| --- | --- |
| Tools | HTML, CSS, SQL, Python |
| Database | Oracle |

## Communications Interfaces

This project supports all types of web browsers. Communication version will require the internet protocol and will support HTTPS. It will also use email communication. It will use FTP for whole system with local server.

# System Features

Library Management system main feature is to help the librarian and the members to keep track of the books. Some features that our project will include is as follows:

## Login page

### Description and Priority

This feature is used by admin and the members of the library to access their accounts which will help them to keep track of the books issued by them or if they have any pdf with them.

**Priority:** High

### Stimulus/Response Sequences

When the user opens our site, they will be redirected to our login if they have an account or sign-up page if they don’t have an account. They can even login using any other social media account like Facebook, Twitter or Instagram etc. if they want.

If the user already has an account, they can directly fill the email id or username and password to login into their account.

If they don’t have an account they can click on “Create an account” or “Sign-up” to create the account. Once redirected to the sign-up page they will have to fill some information like name, email id, password, contact number etc.

There is a separate section where the admin can login by clicking on “ADM” under login or can create an account by clicking on “ADM” under sign-up section.

### Functional Requirements

REQ-1: Login, sign-up and ADM heading should be visible side by side for easy understanding.

REQ-2: “Create an account” option should be made available on the login side.

## User’s account home page

### Description and Priority

User’s home page contains the list of the books issued by them with the due date and the soft copy of the books if they have any. They can even search for the book in the search section.

**Priority:** High

### Stimulus/Response Sequences

Once user has logged in or signed up then the first screen, they will see is the home page of the account. If they have any books issued then they can see the list of the books with the due date to return them. They will be able to see the soft copy of the books if they have any. They can also search for the books if it is available or not in the library by using the search bar available at the top. They can even see the account details under the profile section.

### Functional Requirements

REQ-1: Search bar at the top to search for the books

REQ-2: Calendar feature so that user can keep track of the time for which the book is available for them.

REQ-3: Profile icon on the top right section so that they can see their account.

## User’s profile

### Description and Priority

This feature shows all the details of the user. It also allows user to pay their dues if they have any under payment section.

**Priority:** High

### Stimulus/Response Sequences

This feature can be opened by the user by clicking on the “profile icon” on the top right section. There they can see their name, email id and contact number. They can also see a payment section which details all their dues along with the book names for which they will have to pay the amount. They can either pay to the librarian directly or make the payment online.

### Functional Requirements

REQ-1: Direct link to the details submitted during “sign-up” to the profile section.

REQ-2: Online payment methods.

REQ-3: Automatic bill generation.

## Chat bot

### Description and Priority

This feature is kind of like a helpline feature for the new user so that they navigate the site easily.

**Priority:** Low

### Stimulus/Response Sequences

This feature can be seen by clicking on the “chat icon” on the bottom right side of the webpage from the user’s account home page. This will be automatic chat system with certain replies.

### Functional Requirements

REQ-1: db. or C++/python/java coding for automatic responses.

REQ-2: “Chat icon” should be available.

## Admin’s account home page

### Description and Priority

This is for the admin to keep track of the books available in the library and the books that have been issued along with the users who has issued them.

**Priority:** High

### Stimulus/Response Sequences

Admin’s home page includes the search bar, profile icon on the top right side and the main portion of the page contains the list of the books available, list of the books issued by whom and the list of the people who have to return their books (the list is sorted according to the return date).

### Functional Requirements

REQ-1: “profile icon” on the top right side.

REQ-2: Automatic list generation connected directly to the db.

## Admin’s profile

### Description and Priority

This feature shows the admin’s detail like name, contact number, email id etc. This also contains a feature to block the account, payment section and issue a book by barcode or by book id. And also allows the admin to update the stock details of book in the website for member’s display.

**Priority:** High

### Stimulus/Response Sequences

This feature can be opened by the admin by clicking on the “profile icon” on the top right section. There they can see their name, email id and contact number.

They can also see issue a book section where they can directly issue a book by barcode or by book id. They will also have to enter the user id for the records.

There is a feature for blocking an account if the user has not paid their dues for a month.

There is a payment section where the admin can enter the details for a member if the user had paid the amount directly to the librarian.

### Functional Requirements

REQ-1: Direct link to the details submitted during “sign-up” to the profile section.

REQ-2: Blocking the account feature.

REQ-3: Issuing the book according to the barcode or by book id and user id.

REQ-4: Payment details to be shown when the user id is entered.

## Search bar

### Description and Priority

Search bar is same for admin and user. This feature shows all the books available and help them to search a particular book from a huge pile of books.

**Priority:** High

### Stimulus/Response Sequences

Search bar will be available at the top of the account page. They can search by the book name or the book number. Once the results are shown they can click on the book icon to see more details about the book like if the book is available in the library for issue or not. If not then they can even buy the soft copy for certain period of time by paying a small amount.

### Functional Requirements

REQ-1: db. for books is the necessity for a library management system.

# Other Nonfunctional Requirements

## Performance Requirements

* Customer details should be confidential and not be leaked.
* 24x7 e-books availability
* Good condition of books and good quality of e books
* The performance will depend upon hardware and software components and memory and other details of devices.
* Payment system will be fully secure through POS system.
* The system must be interactive, and the delays involved must be less.

## Safety Requirements

Vendors should choose their database partner carefully. The software is completely environmentally friendly and does not cause any safety violations. The book list will have a flexible font that can be zoomed so as to not over constrain the eyes.

## Security Requirements

* The confidential data of the customers will be safe with library admin and system and not be disclosed.
* The whole system is secured. Only admin can access the data.
* This system will use secured POS system.
* This system will use HTTPS because this protocol this is more secure.
* There is a need for a proper and encrypted login authentication for the librarian and admin as employee and user sensitive information as well as inventory should be protected from hacking.

## Software Quality Attributes

* Availability: The system is up and running 24x7 and server is not down for more than a few minutes to avoid inconvenience of the customers.
* Correctness: The bill generated by the application must be accurate and the orders placed should exactly be the same which the user has selected.
* Maintainability: Software can be easily repaired if a fault occurs.
* Usability: Interface of the software must be easy to use.
* Maintenance: The site should avoid being crashed.
* Flexibility: If need arises in the future, software can be modified to change the requirements.
* Reliability: No matter how many orders are placed, system must give the correct results.
* Reusability: Current version can be used in the future versions with more functionality added.
* Testability: All the requirements are fulfilled, response time is low, and all functions are working perfectly

## Business Rules

* Customers can place order from the list of available books and whether they want to issue the book or use an e book and can update order and pay the bill.
* Once the bill is paid, the book will be issued in the user’s name which can be checked in their account section.
* The customer will neither be able to download the e book nor take screenshots of it.
* Once the time is up, the e book will be unavailable to the user. In case the customer has issued a book and don’t return it, they will have to pay the fine.
* Admin has access to perform add, delete, update operations on the database for books m, inventory, employees and no other person can modify the data in the db.

# Other Requirements

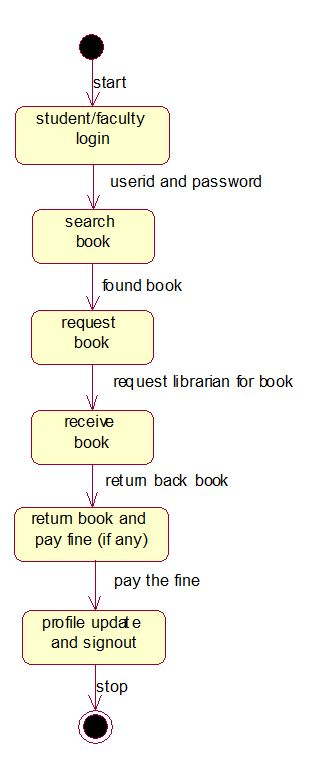
Security systems need database storage just like many other applications. However, the special requirements of the security market mean that vendors must choose their database partner carefully. The application should always be kept up to date. There should not be any abuse of power.

**Appendix A: Glossary**

* ER – Entity Relationship
* POS- POS system is a computerized network that consists of the main computer linked with several checkout terminals and supported by different hardware features starting from barcode scanners and ending with card payment terminals. As businesses have different profiles, they need various point of sale systems as well.
* db. – database
* HTTP- Hypertext Transfer Protocol Secure

**Appendix B: Analysis Models**

**State Diagram**

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Source : Google

**Appendix C: To Be Determined List**

* Monthly borrowing report is yet to be determined by the client and may need further meetings for elaboration.
* Adding POS features to the application is yet to be determined as well.
* The use of HTTPS requires most discussion.
* Prioritizing inventory stocking feature (restock the books that are most ordered often) is yet to be determined by the client and may need further meetings for elaboration.