Software Requirements Specification

for

"Puthishala"

Version 1.0 approved

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The purpose of this document is to build an organized online library system integrated with an e-learning platform to provide a better service than the existing physical libraries in the country.

1.2 Document Conventions

Throughout the document the following convention is followed:

"Arial" font family in 11 font size with italic font style is followed. To emphasize on a word and for a title bold font style is used. For any web addresses, url with hyperlink is given. Bulleted list is used for listing out any functionalities. A glossary is provided at the end for users convenient in understanding of some of the technical words.

1.3 Intended Audience and Reading Suggestions

This document is intended for chief executive officer, project manager, development supervisor, software engineer and other officials who are part of development of this project. Currently, the product is at architectural design phase. This document gives an overview about the current state of the project and its aim as well as its future development.

1.4 Product Scope

The purpose of "Puthishala" online library system is to digitalize the idea of physical library system and to provide a convenient and easy-to-use application for readers all across the country. The system is a web based application where user and file database, UI/UX design, user credentials etc. are used. A user can access all our facilities throughout the country. Above all, we hope to provide a comfortable user experience along with the best services available.

1.5 References

- https://krazytech.com/projects
- https://openlibrary.org
- Roger S. Pressman (2010), *Software Engineering Practitioner's Approach, 7th Edition*

2. Overall Description

2.1 Product Perspective

The context of our product is to digitalize the concept of library system along with some additional features. Although there are existing products available, but this product is being introduced for the first time in this country. The product itself is a system with similar operational functions of a physical library and some unique functions of its own. The following diagram shows major components of the overall system:

2.2 Product Functions

Since the product is similar to the concept of a library, it can perform diverse functions. The major functions of the system are as follows:

- *Login: A user must log into the system using his/ her account in order to access the product facilities.*

- *The reading part consists of borrowing and buying books for registered users.*

- *Learning part is for users who are eager to learn various subjects using the e-learning platform.*

- *Discussion part mainly consists of group discussion among regular users on various topics.*

- *Users can also cultivate their creativity by sharing their thoughts and blogs with other users.*

2.3 User Classes and Characteristics

Although the product is usable for a large variety of users, the main targeted audiences are students, regular readers and users who intend to learn through e-learning platform. Statistically, most users are students and regular readers. Although, registered users can access almost all facilities and services offered by the system, most of the users tend to choose according to their interest.

2.4 Operating Environment

- *Client/server system*
- *Operating system: All operating systems that support web browsing.*
- *Database: MongoDB*
- *Languages: Django/PHP/JavaScript/HTML/CSS*

2.5 Design and Implementation Constraints

- *Lack of JavaScript and cookies – Most devices do not support client-side scripting and storage of cookies, which are now widely used in most Web sites to enhance user experience, facilitating the validation of data entered by the page visitor.*

- *Lack of control over memory usage. Javascript does not provide low-level control over when and how memory is allocated and freed, and it does not have a concept of a pointer. This means you'll need several times as much memory as you'd need in native application, and managing this will also take more time.*

- *Browser Support – Unfortunately, we don't all use the same browser. This means during development you'll need to ensure your app is supported across a variety of browsers.*

2.6 User Documentation

The users will be provided a user manual with this product. The manual will contain instructions on how to properly use the product as well as solution to common user issues. Video tutorials will be provided by the developers for this product. Different troubleshooting measures will be explained in detail in the user manual.

2.7 Assumptions and Dependencies

- *A major assumption is that the platform will get permission to use essential materials owned by different entities.*
- *It is assumed that the targeted users will use smart devices on daily basis to access our product facilities.*
- *User experience and availability of offered facilities also depend on the environment/ network state of the user.*
- *Relying on third party medium for clearing online payments is a major dependency and can affect the project.*

3. External Interface Requirements

3.1 User Interfaces

- ***Front-end software:*** *HTML, CSS, Javascript*
- ***Back-end software:*** *Django, PHP, Javascript, MongoDB*

3.2 Hardware Interfaces

- *Windows/ macOS/ Linux/ Android/ iOS*
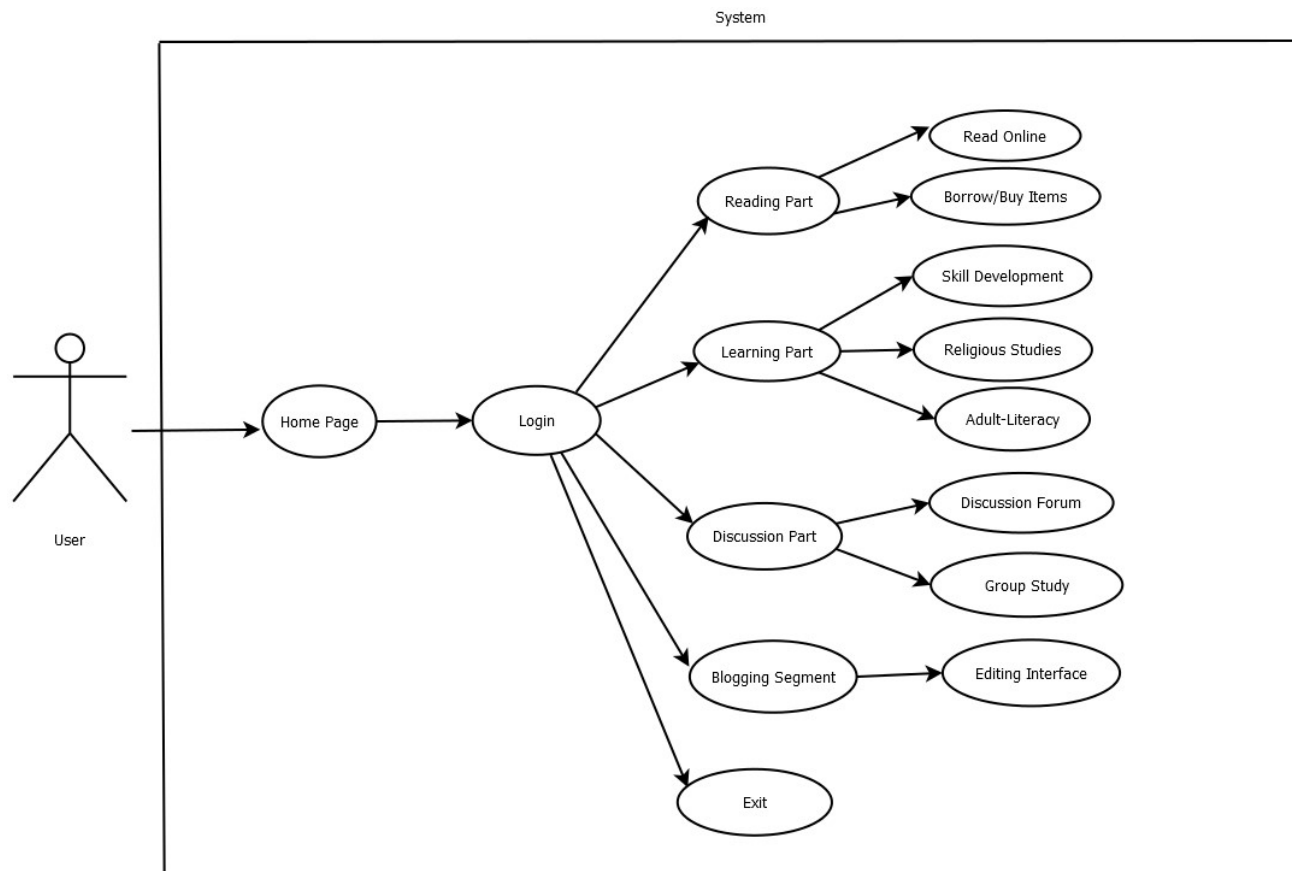- *Browser that supports Javascript, HTML*

3.3 Software Interfaces

Following are the software used for the "Puthishala" web application:

Software Used	Description
Visual Studio 2019	We used visual studio for developing the front-end and back-end of the project. This software is user-friendly and easy to debug.
Git	To collaborate and for version control we used Git as it is the most well-known and user-friendly.
MongoDB	To save user credentials and to keep records of books, journals we used MongoDB as our database system.

3.4 Communications Interfaces

Communication interface will be mainly web browser based. System will communicate with the users through the browsers and e-mails. **FTP** *and* **HTTPS** *communication standards are followed.* **TCP** *will be used for secured data transfer. In adult-literacy segment* **UDP** *(user datagram protocol) has been used for faster data communication.*

4. System Features

The user visits the website and begins browsing the inventory. A popup is shown to the visitor if they do not choose to register manually after a while of browsing. When the visitor has finished filling up the registration form and submitted it a mail will be sent to the user's email address for confirmation of email. After the visitor has become a registered user they will have access to the blogging section, comment section and various other features. If the user chooses to become a premium member then the system will request necessary credentials from the user and send request to the user's phone for payment after the credentials have been confirmed. Once the payment has been confirmed by the system the user will become a premium member of the site. Details of future payments from the user's account will be automatically sent to the user's registered phone number. The user will be made aware of notifications and alerts via the notification system. The system will send notification details to the user's account as well as the user's mail account.

4.1 User Registration

Description: *To be registered as a member, a user has to create an account by giving his/her credentials like name, e-mails and password. An **OTP** will be sent to user's mail account to verify his/her id. A new user will be considered as a general user and can be able to access the inventory, read books online, can join any discussion forum etc. To be able to enjoy all the facilities like audio book feature and borrowing books a user need to upgrade his/her account to premium user.*

4.2 Membership Upgradation to Premium Member

Description: *To upgrade from a general user to a premium user, a user need to add his/her payment option from any of the given such as: online banking, mobile banking etc. Then he/she needs to pay a certain amount of money to upgrade his/her membership and enjoy the limitless features of the product. A user must need to renew his/her membership after a certain period of time based on his/her preference.*

4.3 Payment Gateway

Description: *To make a purchase, (i.e: to upgrade membership or to buy a book or journal or to enroll in a paid course) a user needs to select his/her payment method. A user can select online banking or mobile banking according to his/her convenient.*

4.4 Registered Member Dashboard

Description: *Every registered member will have their own dashboard consisting of his/her personal information, membership status, purchasing history, enrolled courses or read books/journals, wishlist of books/journals to be read or bought. A user can edit his/her personal information.*

4.5 Writing Interface for Users to Blog

Description: *Registered users will have the facility to show-case their writing skills on their favorite topics. To facilitate that a dedicated writing interface will be provided for each user. The interface will include a text editor to make it easy for users to create a blog.*

4.6 Notification System

Description: *There will be a different segment for users to view notifications. There will also be a push notification on users phone to be notified of things happening. Notification may include on newest arrival of books/journals/courses, messages from discussion forum or any update on blog, any system notification on membership renewal or details editing may also include.*

5. Other Nonfunctional Requirements

5.1.1 Safety Requirements

Any kinds of intolerance amongst the users will be handled strictly. System algorithm will strictly search for any hate speech, bullying, threats amongst users to keep the platform clean and safe. Breaking of any of these will result in a life-time ban of a user account or law-enforcement may be introduced against the miscreant.

5.2 Security Requirements

Two factor authentication is required to change a user's account password to protect user's privacy and external threats. A secured payment gateway is also included to make the transactions safer for all types of users. A user's privacy is handled following the international standards for privacy policy.

5.3 Software Quality Attributes

- <u>**AVAILABILITY:**</u> *The application will be available to use according to the users want, pre-requisite for connecting to the application is to have a decent internet connection and a browser*
  .
- <u>**CORRECTNESS:**</u> *The system should respond properly according to user's request.*

- <u>**PORTABILITY:**</u> *The platform can be accessed from any smart devices that support web browsing regardless of operating system. User can visit the web application from anywhere in the world.*

- <u>**USABILITY:**</u> *The platform is very user-friendly. Since most of the population of our country is new to information technology, the application is built in such a way even a user who is completely new to information technology can adapt to it very easily.*

Appendix A: Glossary

FTP: *File Transfer Protocol, is a standard network protocol used for the transfer of computer files between a client and server on a computer network.*

HTTPS: *Hypertext Transfer Protocol Secure, is used for secure communication over a computer network, and is widely used on the Internet.*

TCP: *Transmission Control Protocol, is a standard that defines how to establish and maintain a network conversation through which application programs can exchange data.*

UDP: *User Datagram Protocol, is a communications protocol that is primarily used for establishing low-latency and loss-tolerating connections between applications on the internet.*

URL: *Uniform Resource Locator, is a reference to a web resource that specifies its location on a computer network and a mechanism for retrieving it.*

UI: *User Interface, is the point of human-computer interaction and communication in a device.*

UX: *User Experience, is a person's emotions and attitudes about using a particular product, system or service.*

Appendix B: Analysis Models

TBD

Appendix C: To Be Determined List

Followings are collection of a numbered list of the TBD (to be determined) references that remain in the SRS so they can be tracked to closure.

- *Performance Requirements*
- *Analysis Models*
- *Adding Top Level Requirements to references*