<Online Multilingual Bibliography Project>

Software Requirements Specification

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<Group I>

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Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

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1. Introduction

1.1 Purpose

The purpose of this SRS is to specify the various software requirements for an Online Bibliography Database for the Digital Humanities Group. The document focuses on the functional and non-functional attributes of the software, external interfaces, constraints and logical database requirements. This SRS is meant for the software developers as a reference while working on the project as well as the client as a verification of his or her requirements.

1.2 Scope

1. The Online Bibliography Database for the Digital Humanities group is an online system that allows access to the Indian Literature in the original languages as well as their available translations.
2. Since the database is multilingual, it will allow access to readers from different parts of India with minimal language constraints.
3. Currently, there are online bibliographies available, like jstor and MLA Bibliography but their database is limited to just foreign languages and hence much of the Indian literature is undiscovered.
4. The users can search for any material and the database will return results by matching keywords or tags. Also, when citations of a particular book are being displayed, there will be links for citations that are available for its other translations as well. It will also keep a track of most popular authors and books and personalized favorites and recommendations for a user.
5. As of now, only citations are available, but in the near future, full texts will also be available online for reading and downloading.

1.3 Definitions, Acronyms, and Abbreviations

1) MySQL: It's an open source database management system. SQL stands for Structured Query Language.
2) PHP: It's a widely used open source general purpose scripting languages that is especially suitable for web development and can be embedded into HTML.
3) HTML: HyperText Markup Language is a markup languages for designing web pages.
4) GUI: Graphical User Interface, the front end which interacts with the user of the application.

1.4 References

1) IEEE Software Engineering Standards Committee, “IEEE Std. 830-1998, IEEE Recommended Practice for Software Requirements Specifications”, October 20, 1998.

1.5 Overview

The SRS is divided into the following 2 sections:

- General Description: This section of the SRS describes the general factors that affect the product and its requirements. This section does not state specific requirements; it only makes those requirements easier to understand. It focuses on general functions and constraints of the product and the targeted users of this software.

- Specific Requirements: This section gives a detailed overview of the external interfaces required, clearly stating the functions as well as the limitations of the software. It also focuses on the non-functional attributes like GUI, security and speed of the product. It also includes a brief description of assumption and logical database requirements.

2. General Description

2.1 Product Perspective

The application is web based and uses PHP and an SQL server to make access and operate on the database. The client interacts with GUI which sends requests to web server. PHP interpreter interprets the PHP code, queries the database and returns the output. After this, the output is used to take further steps.

2.2. Product Functions

The product provides an online platform for the user to access text document citations, translations in different languages and view/download the literature available. The objective is to make the functions as fast and as convenient as possible. All users need to create an online account in order to download the available content, view his bookmarks/favorites, see his recommendations, his history and other features. Non-members will still have access to general and advanced search but not the customized features.

2.3 User Characteristics

Users can be classified into 3 types each having certain authorizations and access to different levels of database system.

1. **General Users:** This category consists of all users who can visit the online platform and read the data available.
2. **Members**: This category consists of the users who are registered and can download the data available and enjoy customized features.
3. **Administrator:** The administrator manages the data. He or she can make the necessary changes to keep the database consistent and secure. He or she has full authority over the database.

2.4 General Constraints

The general constraints of this application software include:

1. Fast Response Time: In near future hundreds of users may be accessing the portal at once and hence the response time of the system must be less in order to avoid any sort of crashes and faults.
2. User Friendly Interface: The GUI must be user friendly for the convenience of the users.
3. Security: Since an online portal is being designed, security is a major concern. System must be secure as any breach in security can cause misuse or loss of data.

2.5 Assumptions and Dependencies

1.Server Side Dependencies
    1. Apache tomcat
    2. PHP Interpreter
    3. MySQL Server
2.Client Side Dependencies: Browser with HTML5 support

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

Uses interface will consist of the following:

- Basic General Search Box: You can search by entering any keywords and a list of results will be displayed having tags containing the keywords. When we click on any of the result, we will get citations of that particular book as well as its available translations and related books.
- Option for Advanced Search: This is an extremely specific search feature that filters the data attribute wise and displays results based on the search in a particular attribute.
- Login/Signup: The users will be given an option to login or signup and their accounts will be linked to their Gmail IDs. Once a member, the users will get personalized recommendations, option to mark certain books as favorites as well download a particular book.
- Trending: Based on the number of times a specific book has been opened, a list of top most popular books will be displayed on the side menu bar.

3.2 Functional Requirements

3.2.1 Basic Search

The very first page of the Online Bibliography Website will show a General Search Box where any search key is entered and results based on the search key are displayed. These results will be sorted by relevance, most recent or oldest first depending upon the choice of the user. However, the search string should be correct, without any spelling errors because our search algorithm will use string matching to calculate the score of each result. There is no feature as '*Did you mean?'*. Also, once you open a specific search result, the citations of the document will be displayed which includes the title, author, publication, accession number, year of release etc.

3.2.2 Filters

Alongside the basic search, there will be another link for advanced search. The advanced search returns results based on specific inputs.

- It allows you to search for values in a particular set of columns. For example, you can search for 'J.K. Rowling' in the authors' column to return all the books written by J.K. Rowling. The search can be extended to multiple columns as well. For example, you can search for 'J.K. Rowling' in the authors' column and 'Bloomsbury' in the publishers'

column to return all the books written by J.K. Rowling and published by Bloomsbury. These fields can be extended to Genre and Language as well.

- There will be an option for 'and/or/not' in the advanced search. 'And' will be used for reducing the scope of the search, 'Or' for increasing the scope of the search and 'Not' for excluding certain keys from the search.

Since this is the advanced search, the input should be very specific.

3.2.3 User Login

There will be 3 types of users- the general users, the registered users and the admin. The general users can use only the search feature of the database. In order to enjoy all the features, the users will have to register themselves on the website. All of their accounts will be linked and verified through their Gmail IDs. The admin will have all the rights and only he or she can modify the database like uploading new documents or modifying the information of the older ones. The general users will have access to basic search, advanced search and customized features like recommendations, favorites and trending. They will also be able to download text documents if available.

3.2.4 Multilingual Database

Since our aim is to allow open access to Indian literature, the database will not only include just English language but also Hindi, Malayalam, Sindhi and other North Eastern languages as well. So whenever we open any search result for a book, its other translations in different languages will also be shown.

3.2.5 Tags and Related Articles

Whenever we open a specific search result, there will be links to similar documents, perhaps based on the same topic, genre or writer. These links or tags will be shown by matching keywords related to a specific entry in the database.

3.2.6 Recommendations, Trending and Favorites

- Certain topics/genres/authors would be recommended to users based on their search history which will be stored as a log. These recommendations would be dynamic in nature and will not be stored anywhere. They will change according to the recent and frequent searches.
- Users will be able to add certain books and authors to their favorites list as well.
- There will be a column for most popular books and authors (trending) depending on the number of views received by those books and their authors.

3.4 Non-Functional Requirements

- **Performance**: Since the system is web based, the server/servers should be capable of handling large number of simultaneous requests(say 100).Thus the internet bandwidth should be as high as possible (200mbps recommended)to handle the large number of requests. It is recommended that the server hardware have at least 2GHz processing speed and 4GB RAM.

- **Reliability**: The system should be able to manage the data, add new data, etc. even after some years while adding even more data and users.

- **Security**: The operating system being used on the server should be of the latest version so that it is free of common vulnerabilities. The application should also have security features to protect it from basic vulnerabilities. The administrator shall also be carry out timely inspection of database to ensure safety.
- **Maintainability**: The database should be accessible to the administrators so as to carry out maintenance. The database should also be periodically backed up to prevent information loss due to system crashes.
- **Portability:** The platforms on which the system runs should be generic enough to allow substantial amount of portability.

3.7 Logical Database Requirements

- Since the database accepts input in languages other than English as well, all the data should be entered (text) properly.