



Bilkent University

Department of Computer Engineering

CS 353

Database Management Systems

Term Project

Proposal Report

Bookhub

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1. Introduction

This document is a database management system proposal of the social cataloging platform for books, Bookhub. This document starts with a project description. In this section the application system and the general features of the social cataloging platform will be described. This section is composed of two subsections which explain why a database is going to be used as a part of the system and how a database system will be used in the project. After that, there is the requirements section where the functional, non-functional, and pseudo requirements of the project will be explained under three subtitles. In the functional requirements, the operations and activities that a system must be able to support for end-users will be explained. In the non-functional requirements, constraints on the operation of the system will be explained. In pseudo requirements, technical constraints will be explained. After the requirements section, the limitations of the system will be explained under the limitations title. Finally, the E/R diagram of the overall project will be presented.

2. Description

Bookhub is a web application that allows users to keep track of the books they have read. It will be used by three types of users: normal users, authors, librarians. Users will be able to search for books by their properties such as author, genre, and year. Users will be able to mark their progress on books, rate the books, share reviews (posts), and comment on the posts. Users will be able to create book lists as they wish, add friends who are also users of the system, like and comment on their friends' posts, and recommend books and book lists to their friends. Authors will be able to publish their new books on the system, read and reply to reviews about their books. Author replies will be indicated with a star symbol, and they will be prioritized. In this system, a book may be a part of a book series (e.g., A Song of Ice and Fire), may have various editions from different publishers, page counts, formats, and

languages. A book can have a translator(s), if necessary. Librarians will be able to create reading challenges that users can join, edit erroneous information about books upon request by users or authors.

2.1 Why Is a Database System Needed?

A social cataloging platform for books includes a lot of information regarding general users, authors, librarians, books and their attributes. For instance, a book has a title, genre, author(s), publication date, rate, comments collected from users, etc. Moreover, a book list has attributes such as creation date, related information about the books it contains, etc. For all of this information to be stored and retrieved when needed, a database system is required. Since the system may have lots of books, users, authors, etc., data inconsistency and redundancy are important problems and the database system helps deal with these issues.

2.2 How a Database System Will Be Used?

The database system will be used to store and take care of data (i.e., all related information about books, users, authors, librarians, etc). For instance, when a user adds a book to a book list, the related relationship table and entity tables will be updated in harmony to prevent data inconsistency. The database will be created in a way that any kind of user will be able to make updates (e.g, adding/deleting books, creating reading challenges) in the system by performing various queries. These requests will be allowed based on the permissions of the user making the request. For example, a user will not be able to edit other users' profiles.

3. Requirements

3.1 Functional Requirements

The database system of BookHub will consist of different entities and relationships, gathering together and reflecting the idea of a book reviewing platform. These are to be explained further in the following sections.

3.1.1 Users

Users are people around the web, book authors, and librarians, who can utilize the platform to enhance their experience of book reading.

- Users must be able to sign in with their emails or unique usernames, and their unique passwords.
- Users must be able to keep track of the books they read by marking their progress.
- Users must be able to search books by book name, author, genre, year, page count, publisher, languages, formats, and translators.
- Users must be able to post reviews about a particular book in which they will rate the book and attach a comment.
- Users must be able to like and comment to reviews that the other users posted.
- Users must be able to like comments of other users.
- Users must be able to add other users as friends.
- Users must be able to create book lists in which they add the books they would like to.
- Users must be able to recommend books and book lists to their friends.
- Users must be able to follow book lists of other users.
- Users must be able to see the reviews that their friends posted which show up in their feed.

- Users must be able to join reading challenges in which they should read some books that the librarians specify, in a given time interval.
- Users must be able to request an edit for erroneous information.

3.1.2 Authors

Authors are book authors, who can utilize the platform to act as a user and publish their newly written books.

- Authors must be able to publish their newly written books on the platform.
- Authors must be able to reply to the reviews that are posted on their books.
- Authors must be able to have access to all user functionalities since they are users too.

3.1.3 Librarians

Librarians are administrative stuff and also users, who can utilize the platform to create reading challenges and edit erroneous information in the platform.

- Librarians must be able to create reading challenges in which the users are responsible for reading specified books in a given interval.
- Librarians must be able to edit erroneous information about books upon request by users or authors.
- Librarians must be able to have access to all user functionalities since they are users too.

3.1.4 Books

Books are the books that are existent in the platform, which users can keep track of their progress and post reviews about them. Authors may publish their new books on the platform as well.

- Books must be able to be kept progress by the users.
- Books must be able to be searched by users by book name, author, genre, year, page count, publisher, languages, formats, and translators.
- Books must be able to be posted reviews about them by the users.
- Books must be able to be recommended between friends.
- Books must be able to be added into book lists by users.
- Books must be able to be edited by the librarians in case of existence of erroneous information.
- New books must be able to be published by the authors.

3.1.6 Posts

Posts are the reviews about books, posted by users, including a rate and comment. Posts are likeable and commentable by users, and replyable by authors.

- Posts must be able to be posted by the users under a particular book page.
- Posts must be able to be liked by other users.
- Posts must be able to be commented by other users.
- Posts must be able to be replied by authors.
- Posts of an user's must be able to show up on the feed of the users.

3.1.7 Comments

Comments are the ideas that the users spread under a particular post that a user posted about a particular book.

- Comments must be able to be liked by other users.

3.1.8 Book-Lists

Book lists are a collection of books created by the users.

- Book lists must be able to be recommended between friends.
- Book lists must be able to be followed by users.

3.1.9 Challenges

Challenges are book reading events that are created by the librarians.

- Challenges must be able to be joined by the users.

3.2 Non-Functional Requirements

3.2.1 User interface and human factors

- Any participant of the system who has used a social network platform before should be able to understand the functionalities of the system and use them easily.

3.2.2 Performance Characteristic

- The system should handle the requests in a very short amount of time. In usual situations, the response time of the system should be less than 5 seconds.

3.2.3 Authentication and security

- A user should be logged in to use the system. If a user has not any account, the user should create a new account and login to the system.

3.2.4 Privacy

- Personal data of the user should not be published with third-parties without the permission of the user.

3.2.5 Reliability

- The system failure should not occur. If the system failure occurs, there should not be any data loss. The recovery time of the system should be as small as possible.

3.2.6 Scalability

- The system should be scalable. The system should be able to handle huge amounts of users at the same time.

3.2.7 Maintainability

- The system should be easily modified with respect to the changes in the field.

3.2.8 Extensibility

- The system should support the addition of new features and new features should be added easily.

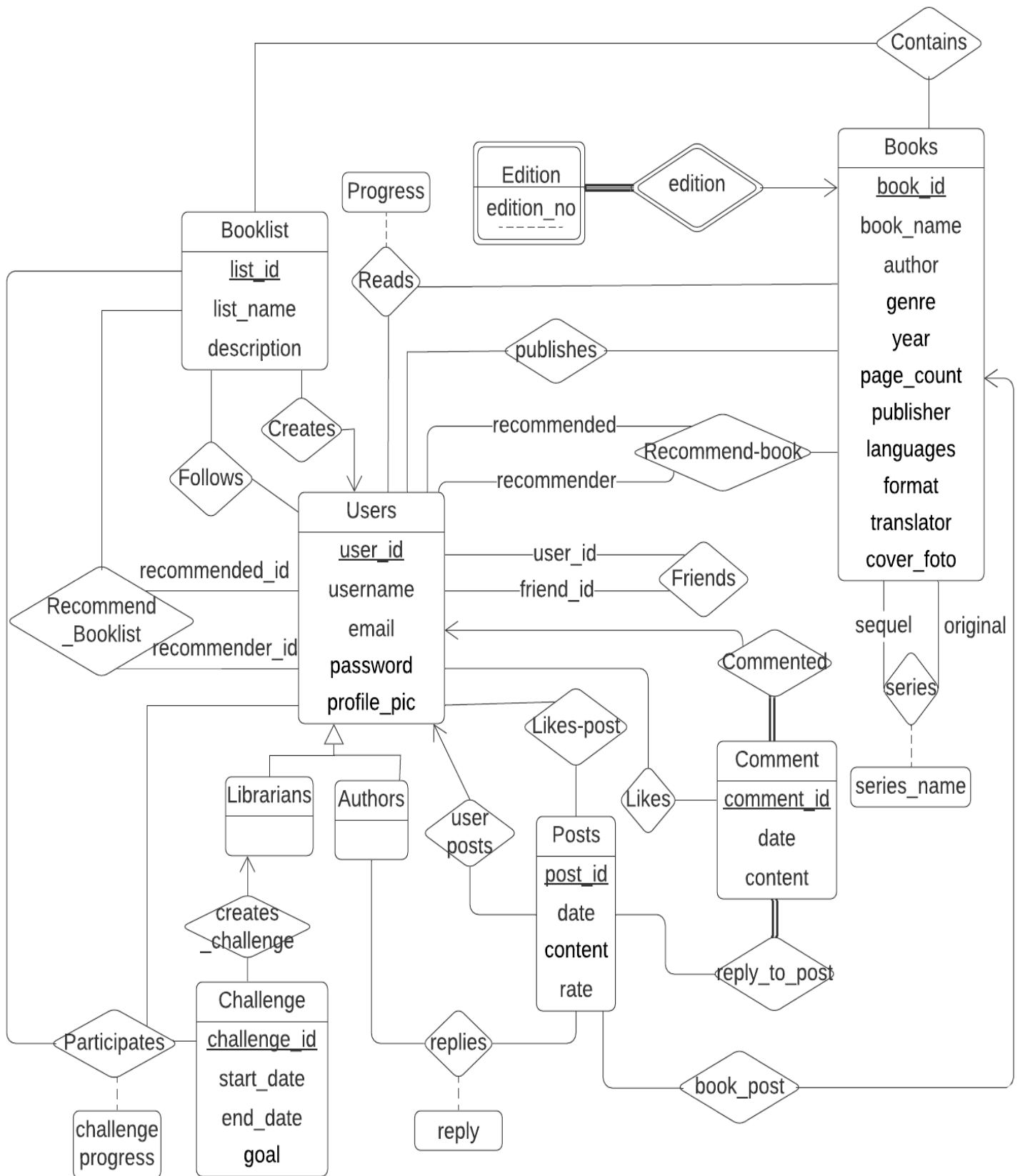
3.3 Pseudo requirements

- PostgreSQL must be used as the database management system.
- Backend must be implemented with Java programming language and Spring framework.
- Frontend must be implemented with HTML, CSS, JavaScript and React framework.

4. Limitations

- The system will support three different types of users which are librarians, authors, and normal users. Librarians and authors will be capable of every function that a normal user makes in the normal user mode. Only normal users, and authors will be able to register to the system. Librarian accounts will be created manually for librarians.
- Authors don't have to publish a book.
- At each post, there will be a special space for the author's reply.
- An author can reply to each post at most once.
- A user can create multiple book lists, and a list may contain books from different genres, authors, etc.
- A librarian cannot be an author.
- A book can be a part of a series.
- Users can recommend books or book lists to their friends only.
- A book list is automatically created for a user when the user participates in a challenge. This book list holds the books which are read during the challenge.
- A user can like a comment or a post.
- A user cannot comment on a comment.
- Two challenges with the same starting date, ending date and goal cannot be created.

5. E/R Diagram



6. Conclusion

In this proposal, the social cataloging platform for books, Bookhub, was introduced. In general, Bookhub will be a software system which enables users to track books they have read. The details of the project were explained in the project description section. Also at that section, why a database system is needed and how a database system is used were explained. After that, requirements which are a set of features that the system must have were explained in the requirements subsection. Then, limitations that the system will have were determined under the limitations section. Finally, the E/R diagram of the project which will be followed by us during the project was presented.