Lab 1 – Book-Mark Product Description

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1 Introduction

Book clubs promote a host of good things for readers. They create a place of relaxation and calmness where readers can have an increased level of focus on the books they are reading. They create a shared community and a feeling of a common purpose. Members of book clubs were also 71% more likely to read more than they had before joining the book club. Overall, people that joined a book club found an improvement in their quality of life just by joining a book club ("Why join a reading group?").

The issue is that joining a book club can be difficult. Not everyone has easy access to a club and a lot of people do not have the time or ability to join a book club with physical meetings. On the surface, finding a virtual book club seems easy. There are a handful of sites that seem to cater to online book clubs such as Bookclubs.com, Goodreads, and more. The issue with these is that once you join these platforms and one of their book clubs, you realize they have a number of serious issues that make them barely useable.

First examine BookClubs.com. This is a platform that seems to have it all at first glance. However, once someone joins and tries to use it, they discover that book clubs have no cap on membership meaning clubs end up with hundreds to thousands of members. There is a single chat room to message with seemingly no moderation outside of the honor system. Meetings are scheduled over Zoom and are not interactive with minimal participation. That is all if you can find a group for the book you wish to read. This is with a month of attempted use within multiple clubs by the members of this team. Overall, this platform and the others on the market have a serious issue with finding groups and an even bigger problem sustaining those groups once the groups are created.
This is where Book-Mark comes in. It aims to solve all the problems with online book club platforms and do some cool things for the users that even physical book clubs do not have access to through the application of machine learning. Book-Mark creates one online platform for searching, starting, and sustaining book clubs uniquely tuned to supporting the interests of members without the headache of switching between multiple platforms during the experience and allowing each member to be heard.
2 Product Description

Book-Mark is a web and mobile application that gives users an all-in-one online platform for searching, starting, and sustaining book clubs uniquely tuned to their own interests. Book-Mark focuses on small groups to give users a more intimate experience with other book club members to foster a better experience. The application helps sustain groups through rewarding interactions and incentivization using machine learning.

2.1 Key Product Features and Capabilities

Book-Mark can be divided into three main ‘S’ phases based off where the user is in their book club experience: starting, searching, and sustaining. Starting corresponds to creating a book club, searching corresponds to users finding their book club, and sustaining corresponds to everything the application does to create a rewarding experience for users to incentivize them to stick with their groups and the application. These phases can be considered to by cyclical as each user will likely go through each phase multiple times with regular use of the Book-Mark application.

During the ‘starting’ phase, the user creates the book club. The creator of the club then has the option to pick the initial book, genre, or theme for the club. The club creator can invite friends or people met in previous clubs as well as pick the initial book or genre for the club. From here, the book club is added to the joinable book clubs where it will remain until there are enough members for the club to start.

During the ‘searching’ phase, the user tells the application what book, genre, author they are interested in. Using machine learning based off their input as well as previous book clubs, they will be matched with an open group. Once they join the group, the user will wait for the group to fill up, then begin reading.
The ‘sustaining’ phase is where a bulk of Book-Mark’s features come into play. Book-Mark book clubs will have customizable chat rooms that will cater to things like spoiler free conversations, specific chapter discussions, off-topic conversations, and more. To keep conversations within the bounds of Book-Mark’s user agreement and foster a community of support and inclusion, chat rooms will support user reports as well as have an automated system to flag suspicious chat messages. These flagged chat messages will then be reviewed by a person and a decision will be rendered on the action taken against the user in question. Book-Mark also makes use of artificial intelligence tools such as natural language processing to create tools for continued user interactions. Through these tools, chapter summaries will be generated to help stimulate discussion points within chat rooms. These chapter summaries will also be used to create unique challenge questions that more competitive users can opt-in to take to assess their understanding for rewards such as badges. Speaking of badges, users will be given badges and other rewards for things such as regular discussion in the chat rooms, completing books, and other forms of engagement with the application. Book-Mark will also provide users with integrated direct messaging, voice call, and video chat functionality. Finally, once book clubs are done with their current book, Book-Mark will recommend the club’s next book based off the different users within the club.

2.2 Major Components (Hardware/Software)

Book-Mark is an application for desktop or iOS/Android smart phones. All users are required to have a stable internet connection and an up-to-date web browser. Desktop users must have a keyboard, mouse, and monitor as well as Windows 10+ or current Linux distro or MacOS. Smart phone users must have recent versions of Android or iOS.
Figure 1

*Book-Mark Major Functional Components Diagram*

Seen in Figure 1, users interact with Book-Mark through a user interface displayed on the screen of their device. Users create an account by using either third-party Open Authorization (OAuth) such as Google or manually entering their personal information. Application data is stored in an Amazon Relational Database Service (AWS RDS) which stores information on user profiles, book clubs, chat rooms, messages, moderation logs, banned users, and book profiles. MirrorFly API integration is used for all chat, text, and video call features within the application. Amazon Comprehend and other AWS machine learning services will be utilized to build book profiles such as chapter summaries and challenge questions.
3 Identification of Case Study

Book-Mark is geared toward book club seekers, book club members, and administrators. Each role is critical to the application’s success and each role is very distinct from the others. Book club seekers are those seeking a club to join, book club members are users currently in a book club on Book-Mark, and administrators are Book-Mark staff to enforce the user agreement.

Book club seekers are readers looking for a virtual book club to join. These can be readers that cannot or do not want to join a physical book club because of time constraints within their personal lives or a lack of in-person clubs within their area. These are users looking to add a social component to their reading experience. These could be readers looking to start their own book club or to join an already existing club. This group of users could also be looking for new books or genres to start reading based off other club members’ recommendations or the recommendation of the application itself.

Book club members are users that have already joined a Book-Mark book club. These users are searching for a rewarding online book club experience with a high degree of engagement. This engagement comes from other users through in-app voice, video, and text chat platforms. Central to this experience are the custom chat rooms which include conversation driving features like challenge questions and chapter summaries.

The final user category identified is the administrator role. This user is a Book-Mark employee set to enforce the service-level agreement. They have the final say on flagged messages and user reports. This role will ultimately decide if users are acting in bad faith and need to be banned from the platform, the report or flag was inappropriate resulting in no action, or some in-between level of action such as a temporary account hold.
4  Product Prototype Description

4.1  Prototype Architecture (Hardware/Software)

4.2  Prototype Features and Capabilities

4.3  Prototype Development Challenges
5 Glossary

**Amazon Comprehend:** A natural-language processing (NLP) service that uses machine learning to uncover valuable insights and connections in text.

**Amazon Web Services (AWS):** A cloud computing platform from Amazon that provides customers with a wide array of cloud services.

**Cascading Style Sheets (CSS):** A new feature being added to HTML that gives both Web site developers and users more control over how pages are displayed.

**GitLab:** A DevOps platform where software development and IT operations teams collaborate in one place. It aims to increase work efficiency and accelerate product delivery with better security.

**Hyper Text Markup Language (HTML):** The primary language standard used to organize and format web pages and other documents on the World Wide Web.

**Integrated Development Environment (IDE):** A software application that provides comprehensive facilities to computer programmers for software development.

**Java:** A general purpose, high-level programming language first released by Sun Microsystems in 1995. It is designed to have as few implementation dependencies as possible, is free to use, and can run on all platforms. It is concurrent, class-based, and object-oriented.

**JavaDoc:** A documentation generator created by Sun Microsystems for the Java language for generating API documentation in HTML format from Java source code.

**JavaScript:** A lightweight programming language used to build and manage dynamic and interactive web elements. It is considered both a client and server-side language.

**Jest:** A JavaScript testing framework built on top of Jasmine and maintained by Meta.

**JSDoc 3:** An API documentation generator for JavaScript.
JUnit 5: A unit-testing framework in the Java ecosystem.

MirrorFly: An in-app voice, video & chat SDK provider built for businesses to integrate a communication solution on Android, iOS and Web platforms.

Natural Language Processing (NLP): An interdisciplinary subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language, in particular how to program computers to process and analyze large amounts of natural language data.

Natural Language Question Generator: An AWS Marketplace service that uses Natural Language Understanding and Processing to generate relevant questions from paragraphs.

React Native: An open-source UI software used to develop applications for Android, Android TV, iOS, macOS, tvOS, Web, Windows and UWP.

Service-Level Agreement (SLA): A commitment between a service provider and a customer. Particular aspects of the service – quality, availability, responsibilities – are agreed between the service provider and the service user.

Spring Boot: An open-source Java-based framework used to create a micro-service.

Structured Query Language (SQL): A standardized query language for requesting information from a database. It is an abbreviation for structured query language and is pronounced as separate letters, although some users pronounce it see-kwell.

Toad: Short for Tools for Oracle Application Development, TOAD is a set of and assists developers in deploying Oracle-based applications and Web services on the Windows platform.
6 References


