Lab 1 – Book-Mark Product Description

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CS410 - Fall 2022
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Collaborative Outline
Version 1
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1 Introduction

Book clubs are social groups of readers who share a common interest in a title, series, or study. A survey of one thousand participants shows us that book clubs promote relaxation, calmness, concentration, improved quality of life, and a feeling of a shared community [12]. This same study shows us that members often read a book that they would not have picked themselves. Socialization is the heart of the book club as it promotes synchrony and team flow (Dana Foundation 2019) helping the club work through their story together. This brings a sense of accountability and dedication knowing that the other members are relying on each other to stay in pace. A common problem with book clubs is searching, starting, and sustaining them. Local book clubs are difficult to find and even more difficult to maintain, making the online option more appealing. Current solutions like Bookclubs.com offer ways to search for club’s base on titles and genres, however most of these groups have hundreds to thousands of members. This leaves the searching reader participating in a sea of people, possibly preventing any social connection to others. Current solutions like this make finding a close-knit group that shares the same interest difficult.

Starting a book club comes with its difficulties. Local clubs need a location, dedicated members, and someone to keep everyone interested in every meeting. Starting an online book club requires dedication, coordination, and consistency. Club creators need to find a website or platform to host their virtual meetings. Off the Shelf (2020) suggests using social media or online organization platforms such as Bookclubz or Book Movement which allow you to keep track of books for the club and send out email reminders but do not provide a solution for video and text communication. This introduces the next hardship, sustainment.
Successful book clubs need to keep members entertained and engaged. Lack of discussion prompts and topics drive member engagement (USAtoday 2022). This requires that the members are caught up with the club else and have topics planned for the next meeting. Local book clubs have the luxury of keeping members entertained with snacks and drinks. Online book clubs rely on member-initiated entertainment to keep interest within the club. The use of badges and streaks are used across several industries to maintain user engagement within their products. Applications such as Apple Fitness (Kankanhalli, Atreyi. 2015), Duolingo (Bilham, J. 2021), and Snapchat (Hristova, D., Dumit, J., Liebero, A., & Slunecko, T. 2020) offer streaks for continued usage and badges to show user achievements. This gives users ownership of their profile and promotes continued use to achieve the next streak and reward.

Book-Mark provides a platform that solves these issues while focusing on smaller groups. Searching, starting, and sustaining book clubs is done within Book-Mark’s mobile application. Book-Mark allows users to create a club and manage its members. The use of external API gives users the ability to communicate with voice, text, and video, all within the mobile application. Book-Mark is focused on allowing club members to be heard by catering to smaller club memberships to prevent readers from being lost in a sea of comments. Sustainment of clubs is complemented with the use of artificial intelligence that provides topics, conversation starters, chapter summarization and challenge questions to keep the members engaged and entertained. Badges and streaks are awarded to members who complete chapters, books, series, and correctly answer challenge questions giving them ownership of their personalized profile and the ability to visualize their accomplishments.
2 Product Description

Book-Mark is a mobile application that allows users to find and create clubs based on books and interests. Book-Mark focuses on small groups to give users a more personal experience with other members and helps with sustaining group activity using Artificial Intelligence. Book club members no longer need to piece together multiple platforms for organizing, communicating, and entertaining their club. With the use of external APIs for voice, video, and text messaging, users can communicate within one application. Artificial intelligence assists clubs with keeping members engaged and entertained by providing chapter summarizations, topic generation, and challenge questions. A.I. is also used to provide clubs with personalized book recommendations based on members and club history to help the club continue into their next literary adventure.

2.1 Key Product Features and Capabilities

- Mobile application for creating and searching book clubs for small groups.
- API integration for voice, video, and text messaging.
- Artificial intelligence implemented for processing electronic copies of books or text. Use of summarization and question generation from the text provides engagement for users.
- Club specific book recommendations based on user, club, and book profiles.
- Unifies the needed platform, communication, and engagement needs to create and sustain clubs.
- Gives users a single application to search, host, communicate, and engage with their book club. Maintains member engagement with the use of A.I. and provides club catered recommendations to promote growth and continues use of the book club.
2.2 Major Components (Hardware/Software)

The hardware required for Book-Mark is either a mobile phone or tablet running Android with internet access. A Windows, Mac, or Linux machine with access to the internet. Users will download Book-Mark from their device’s native application store and create an account. User account and history is saved into the Amazon AWS RDS database. The user has the option to create a new club. This collects user inputs for club name, book title, club description, member count, and the ability to upload a club photo from the user’s device. This club will be stored into the database where other users can search and join until the member total is filled. The second option is to search for existing clubs using searches based on title, genre, author, or recommendations based on club and user profiles using artificial intelligence.

Club and user history are stored into the database with the use of Book-Mark. This data is collected and used by the implemented artificial intelligence to make recommendations for books and clubs for the users. Artificial intelligence is used to maintain engagement with club members. Chapter and book summarization are provided by A.I. if an electronic copy of the book is provided. Conversation starters and challenges are implemented with A.I. to give members a rewarding competition.

Club members earn badges and streaks with the continued interaction and completion of books. This system rewards readers as they work through their book with their club, giving members a way to show their accomplishments.
• Hardware
  o Windows, Mac or Linux computer with Internet access
  o Android mobile device with Internet access

• Development Tools
  o Visual Studio Code
  o Amazon RDS
  o Github
  o React Native
  o Spring
  o Angular
  o JSDoc 3
  o JavaDoc
  o Trello
  o MirrorFly
  o AWS Services
  o OpenAI

• Programming Languages
  o JavaScript
  o HTML/CSS
  o Java
3 Identification of Case Study

This product is being developed for readers seeking a social and engaging experience with others who share the same interest. This application is used for those seeking a book club without the difficulties that come with searching, starting, and sustaining one. With a single application these users have a one stop shop for sharing their interest with others while engagement is automated to keep the conversation going.

This application can also be used for educational institutions and students. Students can create a club for their study group. With the help of artificial intelligence, the automation of engagement through summarization and challenges will help students progress in their course.

4 Product Prototype Description

- Provide a top-level description of the CS 411W prototype as it relates to the end product from CS 410 (i.e., the goal).
- Are capabilities reduced or eliminated? Simulated – modeled?
- Include a Table of Comparison between RWP and Prototype in section 4.2

4.1 Prototype Architecture (Hardware/Software)

- Hardware
  - Computer with Internet access
- Development Tools
  - VSCode
  - MySQL
  - GitHub
  - React Native
  - Spring Boot
  - JSDoc 3
  - JavaDoc
  - Jest
  - JUnit 5
  - MirrorFly
  - TensorFlow.js
- Programming Languages
  - JavaScript
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- HTML/CSS
- Java
- SQL

Figure 1

*Product XYZ Major Functional Component Diagram*

<Note the format of labeling the figure: figure/table number should be bold followed by a line break with the title of figure/table in italics>

4.2 Prototype Features and Capabilities

- What does the prototype demonstrate?
- Why is that significant in showing how the problem is solved?
- How you have demonstrated success?
- How does the prototype address the CS 410 project risk mitigation?
- Describe the functional goals and objectives.

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<Note: leaving blank space for formatting is acceptable>
Table 1

Table of Comparison Between RWP and Prototype

<table>
<thead>
<tr>
<th>Feature</th>
<th>Prototype</th>
<th>Real World Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>a propulsion system</td>
<td>Rubber band</td>
<td>Belt</td>
</tr>
<tr>
<td>fixed position wheels</td>
<td>Same as RWP</td>
<td>Same as Prototype</td>
</tr>
<tr>
<td>variable position wheels</td>
<td>Same as RWP</td>
<td>Same as Prototype</td>
</tr>
<tr>
<td>cockpit</td>
<td>Simulated using PC-based display and Bluetooth</td>
<td>Operator will use</td>
</tr>
<tr>
<td>Exhaust distribution element</td>
<td>Simulated on PC-display</td>
<td>Real combustion</td>
</tr>
</tbody>
</table>

>Note: A figure/table should be embedded within a section. There should be text before and after a table/figure. A section should neither start nor end with a figure/table.>

4.3 Prototype Development Challenges

- Describe the expected challenges to be encountered while completing the prototype – e.g., knowledge missing, capability missing, supporting technology issues.
5 Glossary

**Android:** An open-source operating system often seen in tablets and phones.

**Application Programming Interface (API):** Functions and procedures used for creating applications that combine outside applications with what is being developed.

**AWS:** Amazon Web Services, or AWS, is a cloud computing platform from Amazon that provides customers with a wide array of cloud services.

**Amazon RDS (Relational Database Service):** Database service provided by Amazon Web Services (AWS).

**Artificial Intelligence (A.I):** Simulation of human intelligence by computer systems.

**Book Club (Club):** A social group of individuals who are reading or studying the same book.

**GitLab:** GitLab is 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.

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

**Java:** Java is 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.

**JavaScript:** JavaScript is a lightweight programming language used to build and manage dynamic and interactive web elements. It is considered both a client and server-side language.
MirrorFly: An in-app voice, video & chat SDK provider built for businesses to integrate a communication solution on Android, iOS and Web platforms.

OpenAI: Open source platform for implanting artificial intelligence.

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


