BOOKBYTE

Design Document

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HABIT-BUILDING READING APP ON ANDROID

Contents

1. Introduction

BookByte is an android application aimed at assisting its users in developing daily reading habits. The app is designed to divide reading material into small manageable chunks to motivate users to read every day. This functionality is possible through the application's use of text segmentation and chunked content delivery.

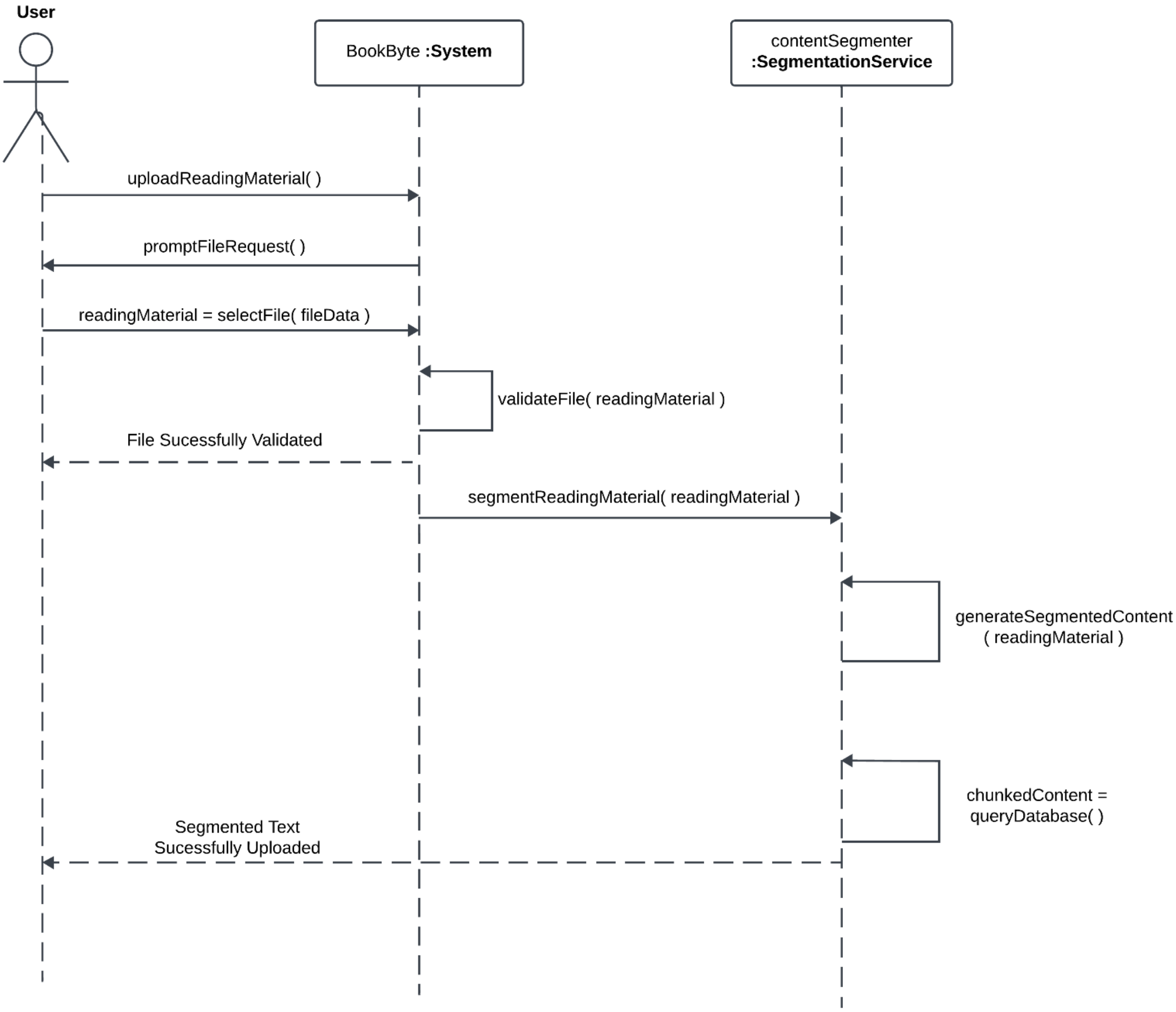
1. 2. Document Purpose

The purpose of this document is to develop a detailed blueprint of BookByte's internal functionality. This document will aid in the planning of this project by providing estimation for the time and effort required to build this system. It will outline the architecture and design of the system in detail and provide a clearer path for its development.

Interactions between different components within the system will be illustrated using sequence diagramming. All technologies utilized in the development of this application will be discussed in this document. Wireframes are also included, to give a clear understanding of the UI/UX design this application is striving for.

2. System Sequence Diagrams

2.1. Upload Reading Material


User
BookByte :System
contentSegmenter :SegmentationService
uploadReadingMaterial( )
promptFileRequest( )
readingMaterial = selectFile(fileData)
validateFile(readingMaterial)
File Sucessfully Validated
segmentReadingMaterial(readingMaterial)
generateSegmentedContent (readingMaterial)
chunkedContent = queryDatabase( )
Segmented Text Sucessfully Uploaded

3. Technologies

3.1. Android Studios

Android Studio is the official Integrated Development Environment (IDE) for Android, equipped with a large set of tools designed to streamline the app development process.

- Since Android Studio is the official IDE for Android it was an easy choice. It includes all the tools needed to build a complex Android apps that look great and perform well.

- Android Studio offers a vast set of features and libraries such as its powerful debugger, and performance profilers, making the development process seamless.

- Having utilized the support from Google, Android Studio consistently receives new updates and features, always keeping up to date with the latest Android versions.

3.2. Kotlin

Kotlin is a modern programming language by Google that offers a concise syntax providing code that is easier to follow and maintain.

- I choose Kotlin over Java for its improved security and syntax. Having the syntax be more concise reduces that annoying boilerplate code, creating more reliable code.

- Google also recently announced Kotlin as an official language for Android development, guaranteeing long-term support with Android Studios.

3.3. Firebase Cloud Functions

Initially this application was to avoid using a database, however, it may actually require a technology like Firebase after all. Firebase Cloud Functions is an event-driven serverless framework that can automatically run backend code in response to triggers, making it a possible solution for this app's large amount of text segmentation.

- When users upload reading material, the Firebase Cloud Functions can be instantly triggered to begin segmenting text on the server. This real-time processing ensures major drops in wait times and massive performance improvements when uploading text.
- Cloud Functions can be used alongside other Firebase services, like Firebase Storage, giving the app the ability to process, and possibly store segmented texts, simplifying its current complexity.

4. System Architecture

Overview of System Architecture

BookByte is an Android application developed to improve the reading habits of its users. The system architecture of BookByte is designed to support core functionalities such as uploading and segmenting reading materials, adapting reading segments to user metrics, and maintaining user engagement through gamification and notifications.

The architecture uses a client-server model, where the Android app serves as the client interface for user interaction, and the server backend, hosted on a cloud platform, handles data processing and storage. This design ensures scalability while maintaining a great user experience.

Component Architecture

Client-Side (Android Application):

User Interface: A clean, intuitive UI for uploading reading materials, viewing segmented content, and customizing reading preferences.

Local Storage: Stores user preferences and recently viewed segments for quick access. Stores all reading material in users shared preference storage on Android.

Server-Side: (Firebase):

Segmentation functionality: Analyses and segments uploaded reading materials into manageable chunks using Firebase cloud function technology.

Adaptive Algorithm: Dynamically adjusts the reading segment's length based on user reading metrics.

Database: Stores user profiles, reading metrics, and segmented contents.

Data Architecture

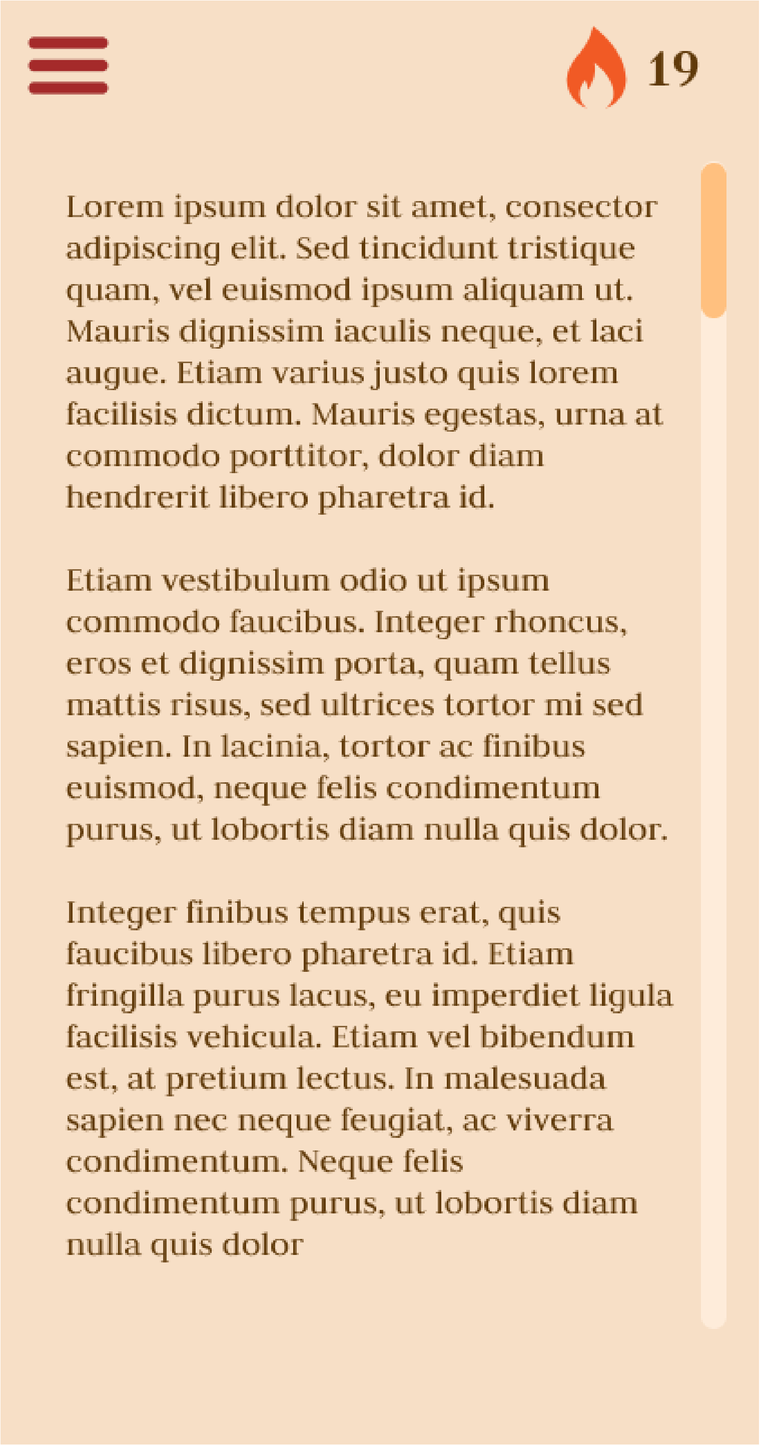
BookByte uses a modern data architecture to handle data efficiently, including user profiles, uploaded documents (PDF and EPUB formats), and reading metrics. The database is a NoSQL solution Firebase and is designed to support fast retrieval for updating the segmented reading material.

Integration with External Services

BookByte integrates with the Android Notification System to send daily reminders and reading prompts to its users. It also uses many external libraries to effectively manage and manipulate the various file formats the app supports. Later integrations could include cloud storage services for additional backup options and external analytics tools for in-depth user analysis.

5. UI/UX Design using Wireframing

5.1. Reading Interface- Displaying Segmented Content



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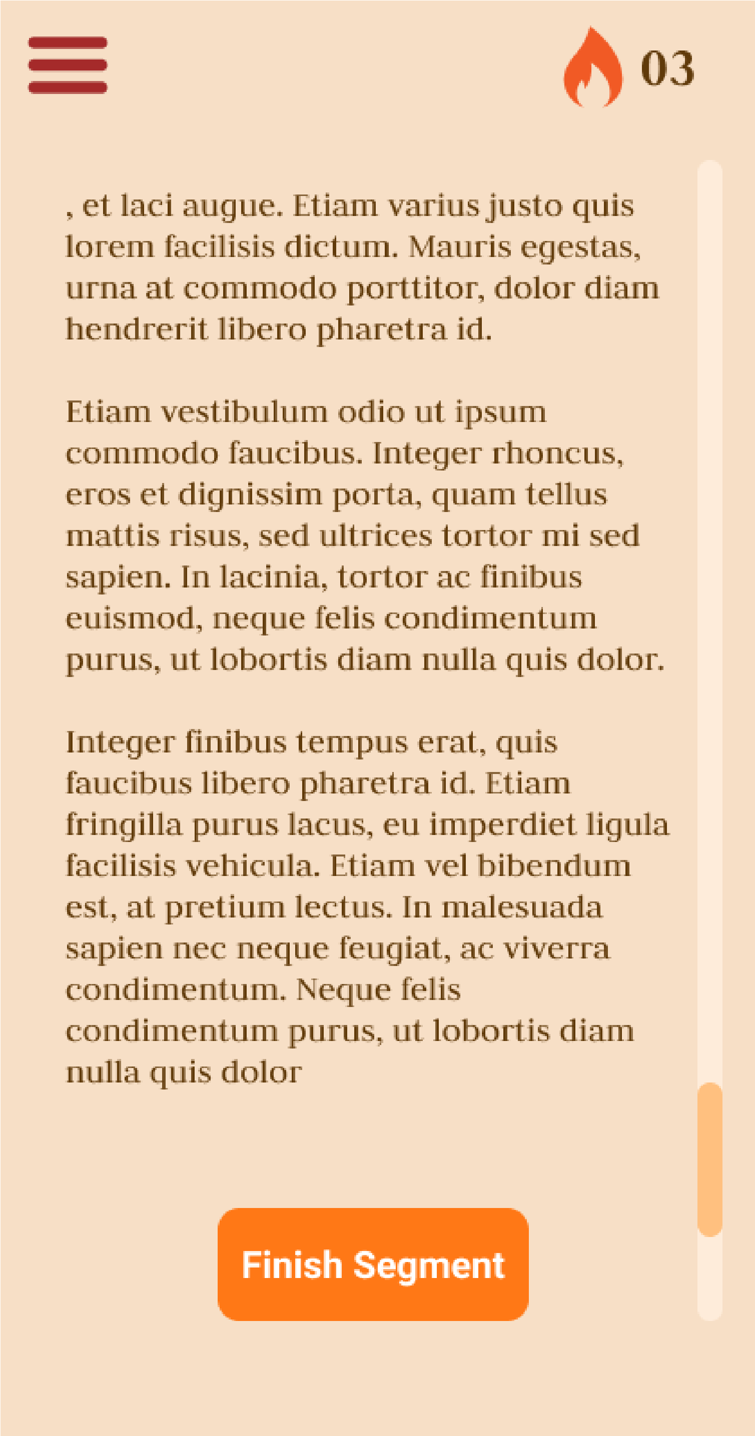
5.2. Segment Completion Interface



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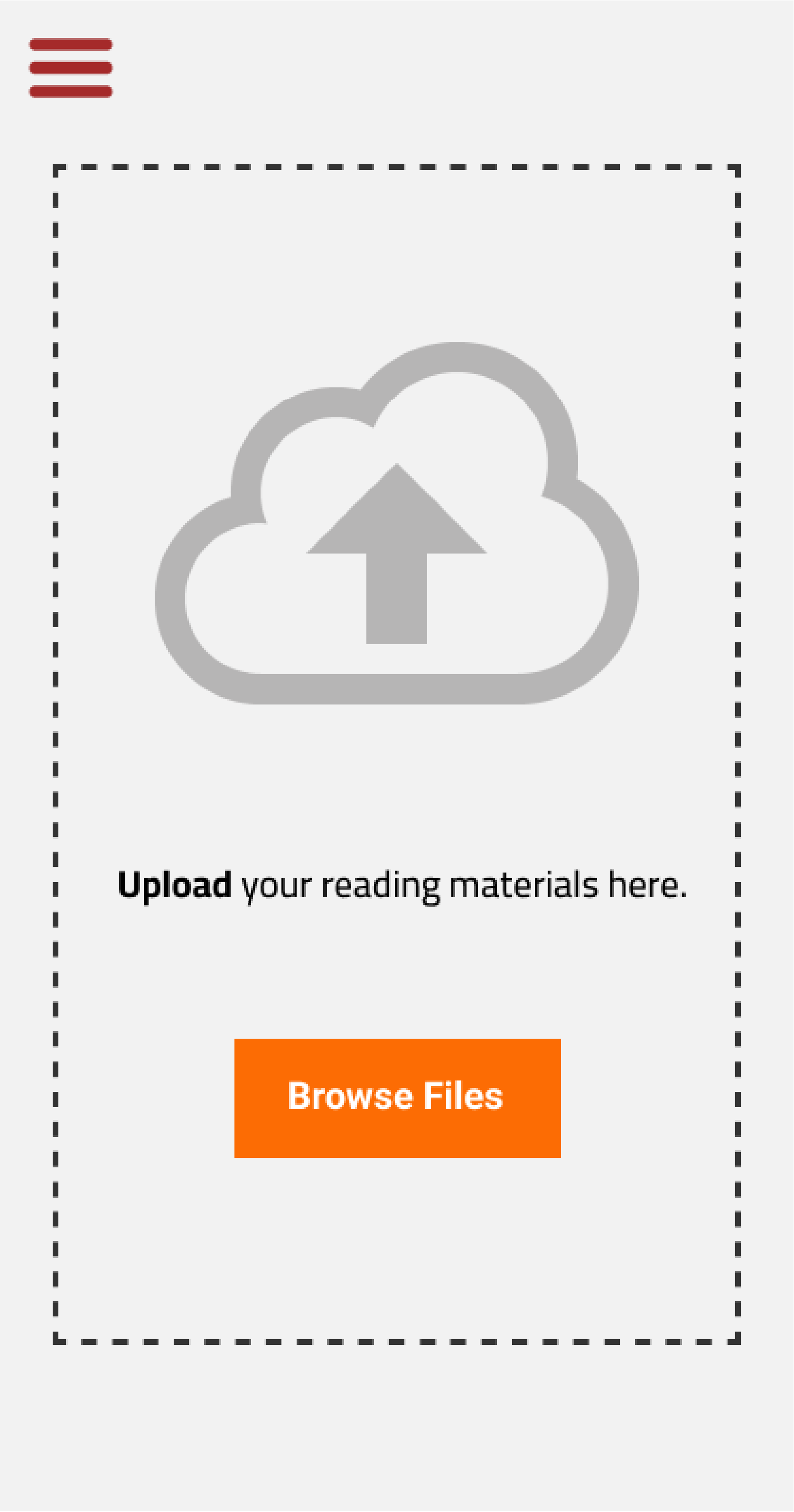
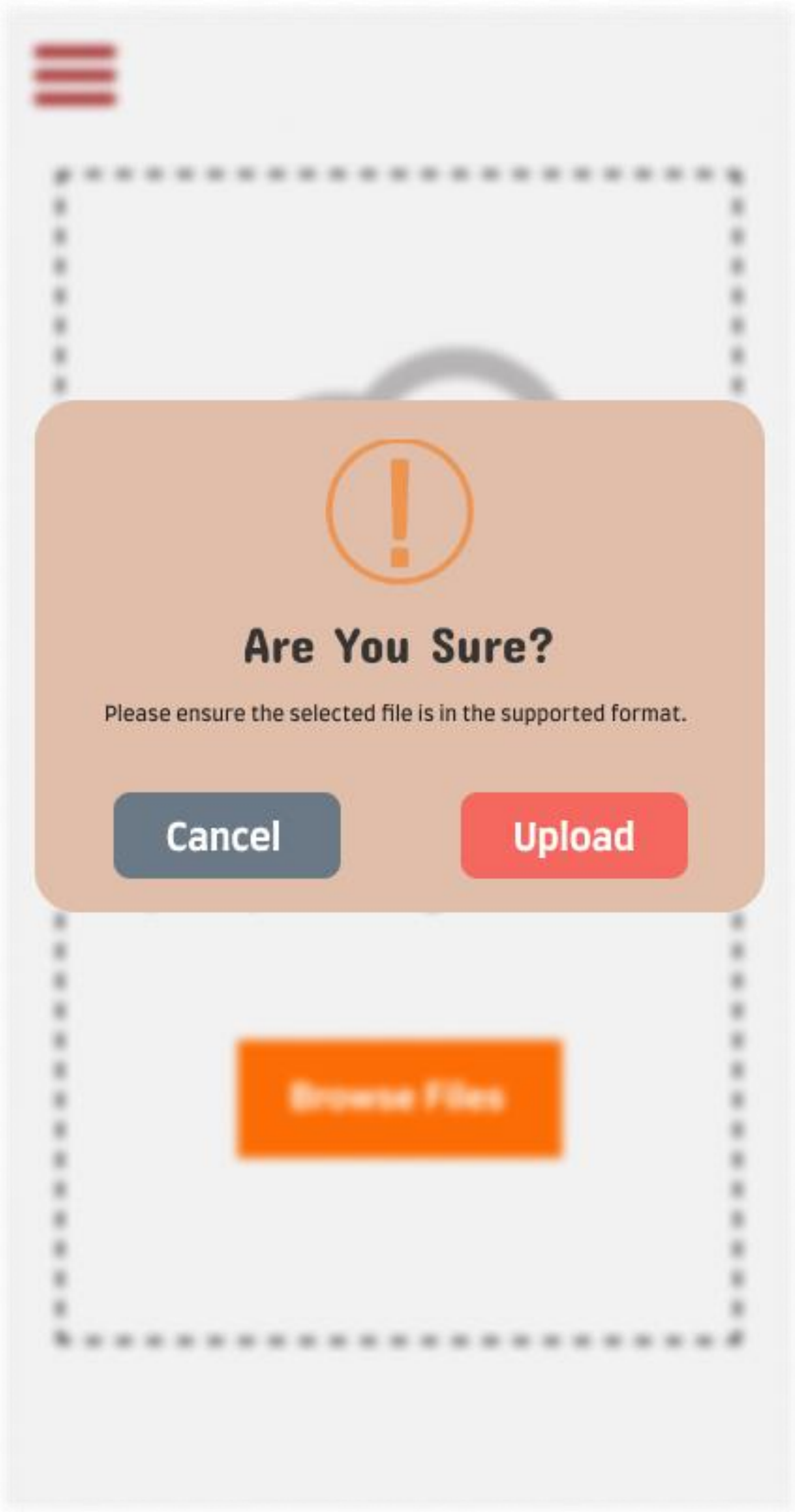
5.3. Uploading Content Interface



Upload your reading materials here.

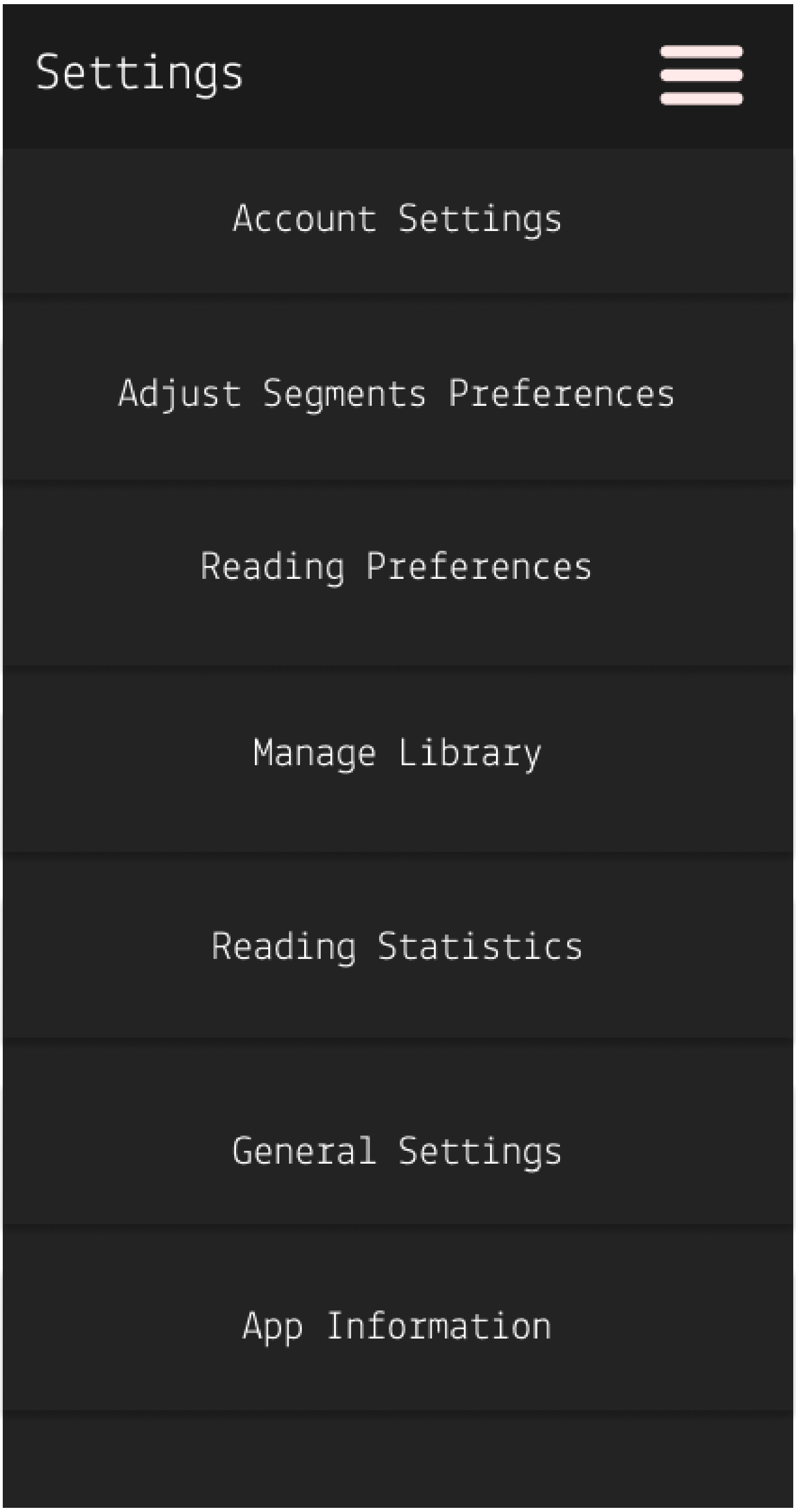
5.4. Uploading Content Interface: Upload Confirmation



Are You Sure?

Please ensure the selected file is in the supported format.

5.5. Settings Interface



Settings

Account Settings

Adjust Segments Preferences

Reading Preferences

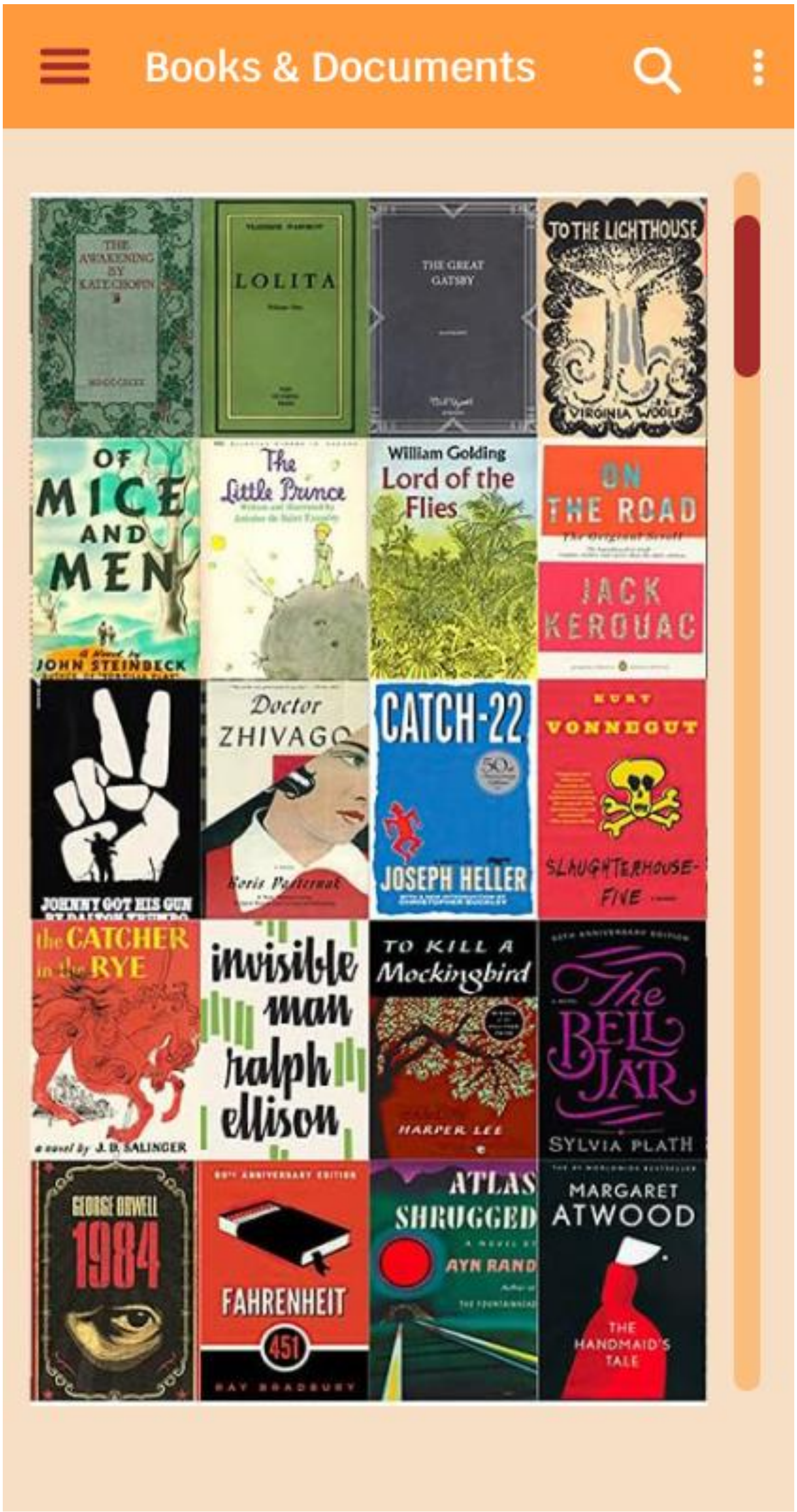
Manage Library

Reading Statistics

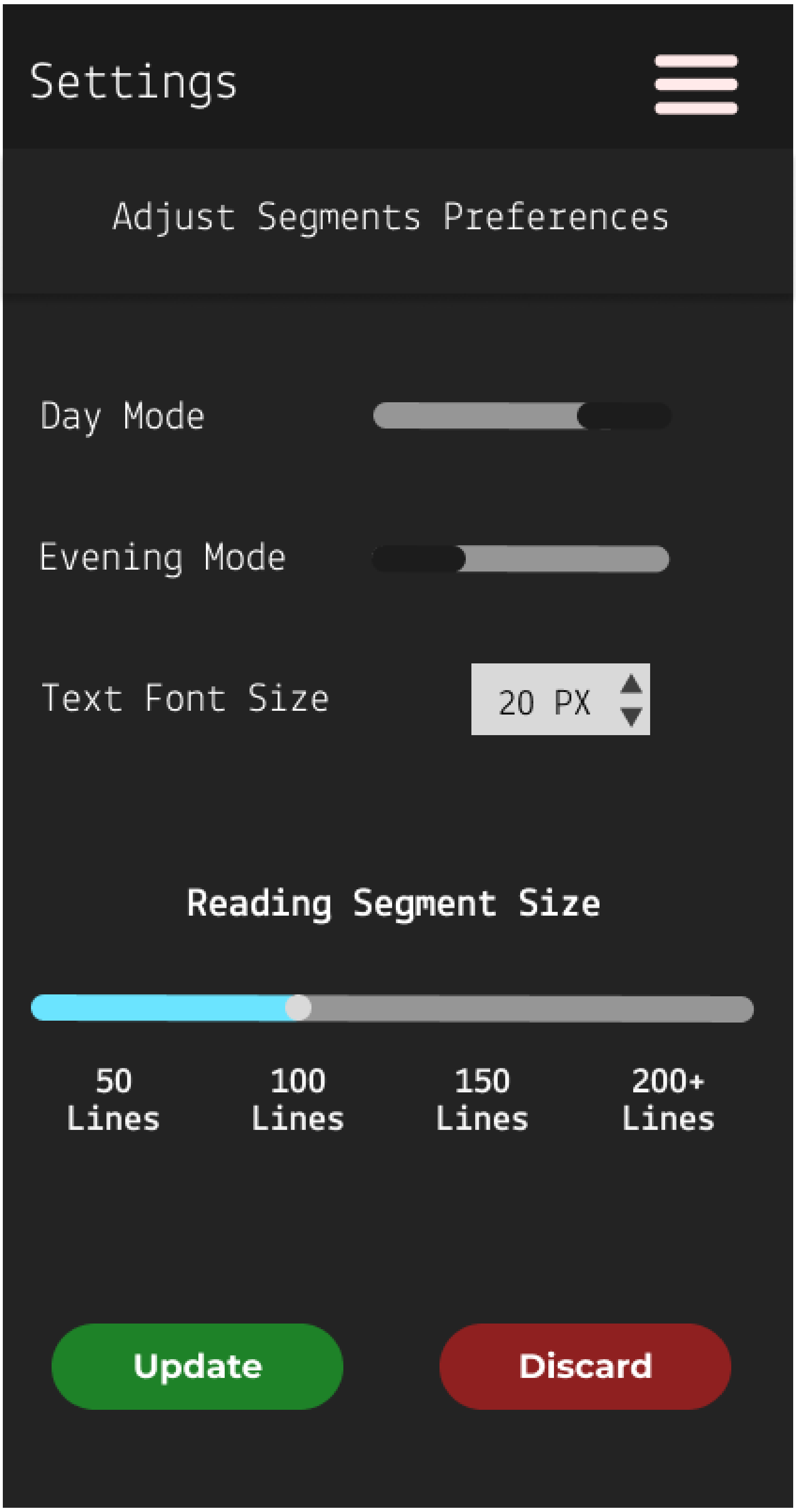
General Settings

App Information

5.6. Manage Library Interface



5.7. Adjust Segment Preferences Interface



Settings

Adjust Segments Preferences

Day Mode

Evening Mode

Text Font Size 20 PX

Reading Segment Size

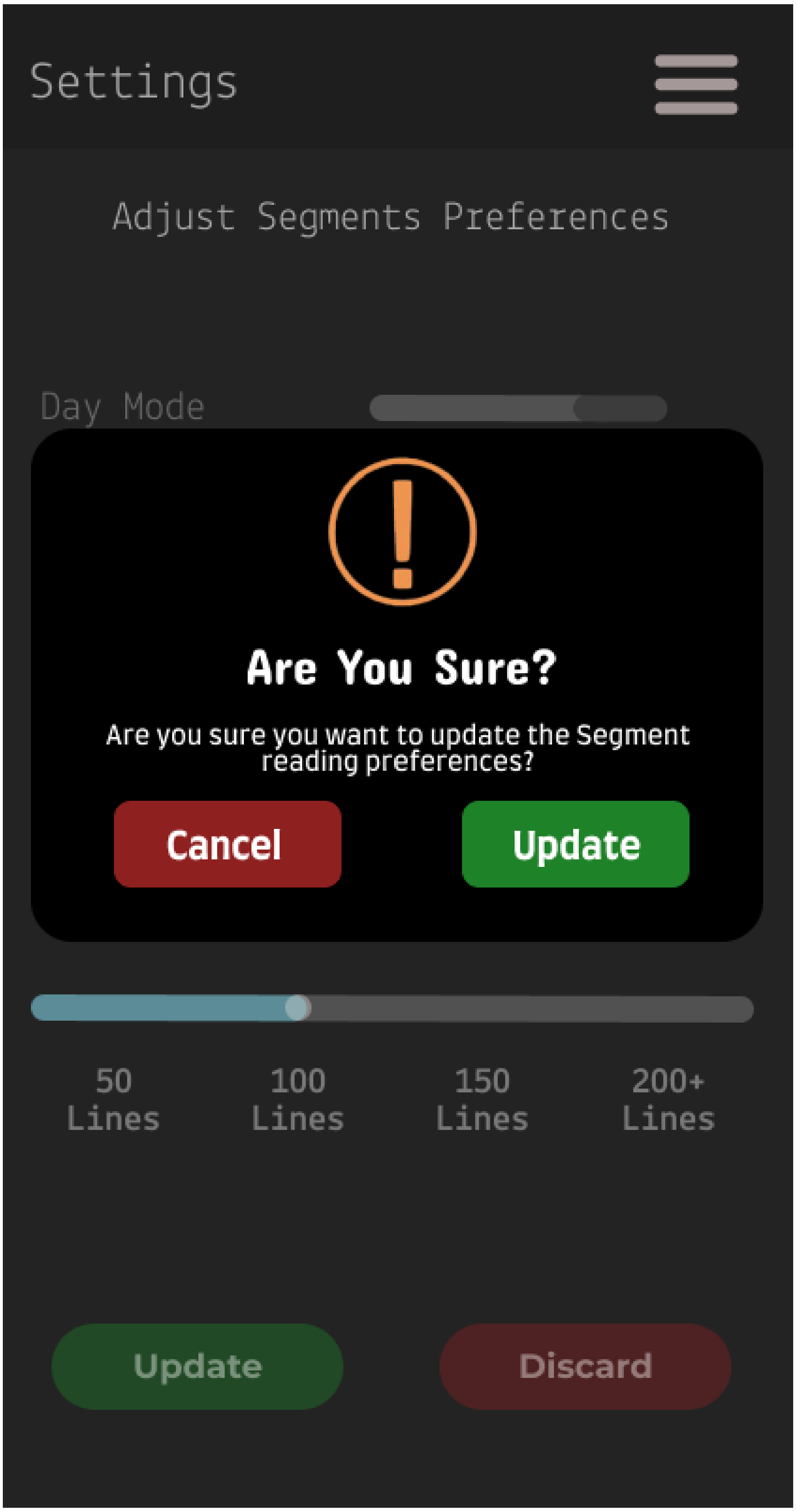
50 Lines

100 Lines

150 Lines

200+ Lines

5.8. Adjust Segment Preferences Interface: Confirmation



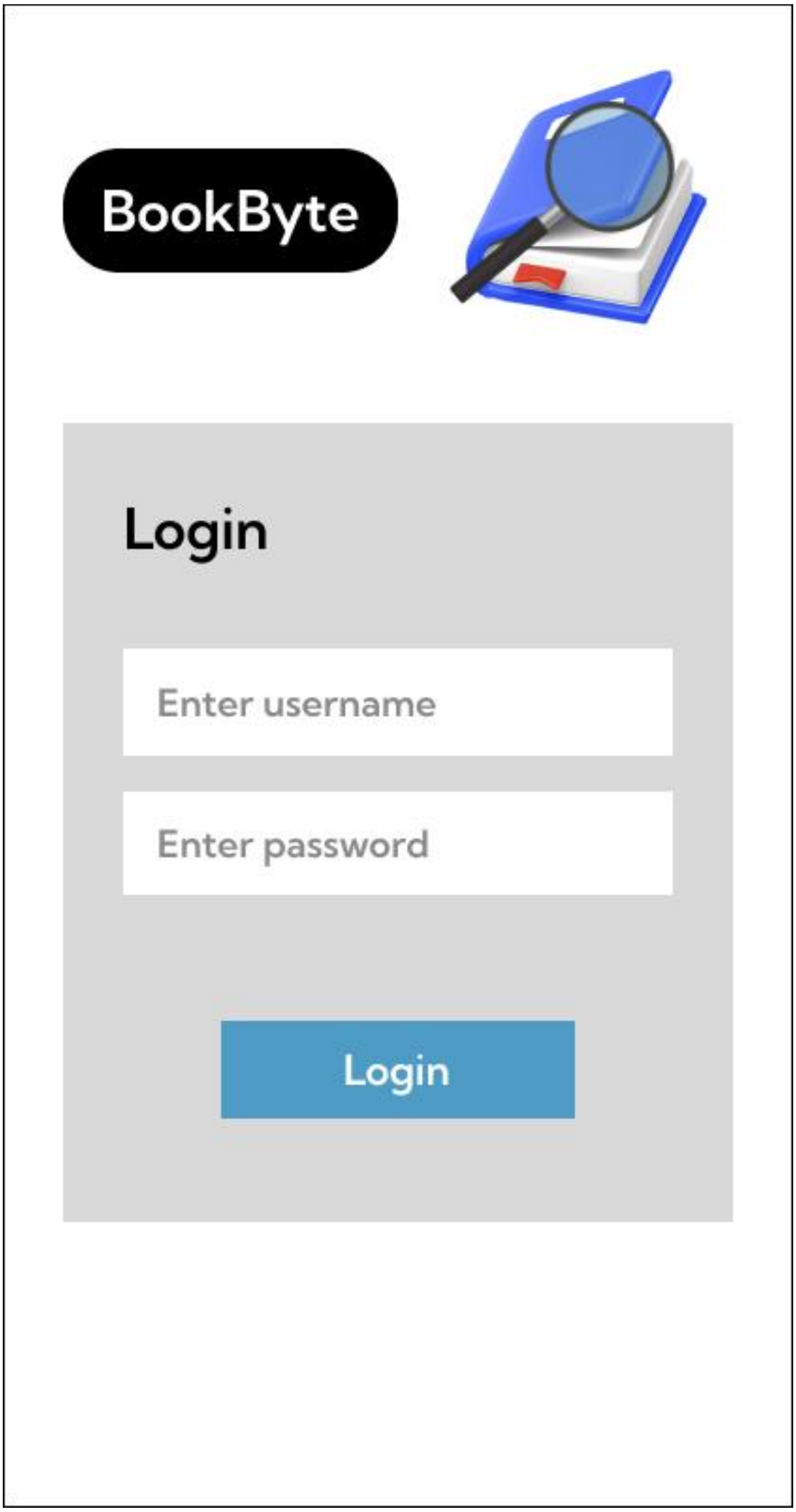
Settings

Adjust Segments Preferences

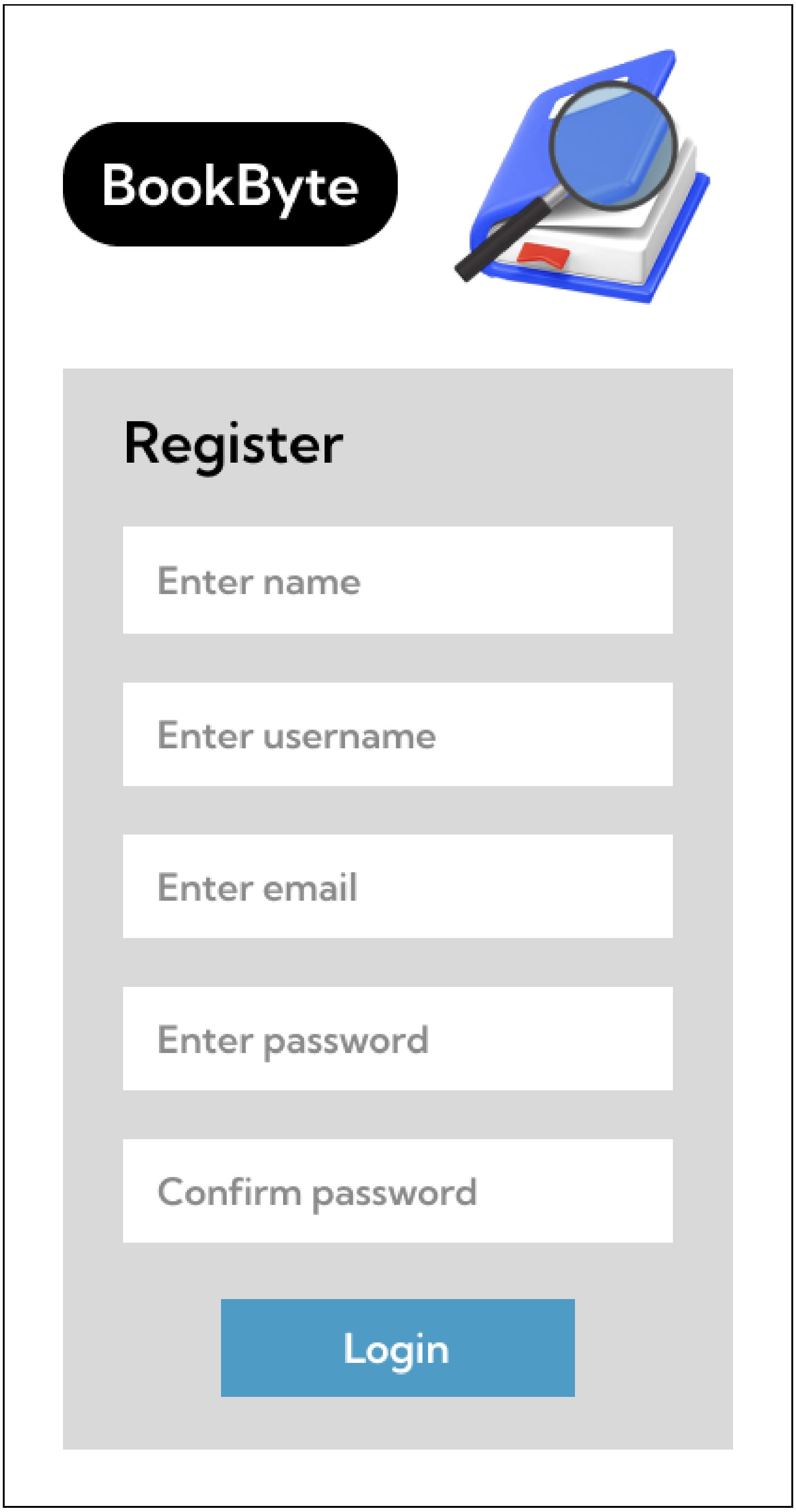
Are You Sure?

Are you sure you want to update the Segment reading preferences?

5.9. Login Interface



5.10. Register Interface


BookByte
Register
Enter name
Enter username
Enter email
Enter password
Confirm password
Login